IN THE CIRCUIT COURT OF JEFFERSON COUNTY, ALABAMA
Tenth Judicial Circuit, Birmingham Division

EFFERSON COUNTY BOARD OF HEALTH,	)	
	)	
Plaintiff,	)	
	)	
ASP,	)	
	)	
Intervenor-Plaintiff,	)	**Case No.: 01-CV-2021-902311.00**
	)	
v.	)	
	)	
BLUESTONE COKE, LLC,	)	
	)	
Defendant.	)	

JOINT MOTION TO ENTER AND APPROVE CONSENT DECREE

COME NOW the Jefferson County Board of Health (the "Board" or "Plaintiff") and Gasp ("Gasp" or "Intervenor-Plaintiff") and Bluestone Coke, LLC ("Bluestone" or "Defendant), referred to collectively herein as the "Parties," and hereby move this Court for the approval and entry of the attached Consent Decree. In support of this Motion, the Parties state as follows:

1. This case has been assigned to the Complex track and is currently set for a bench trial at 9:00 am on February 6, 2023.
2. The Parties have been engaged in settlement discussions for well over a year. The negotiations have been successful, and the Parties have agreed to the terms of a proposed Consent Decree. Each of the Parties, including Intervenor-Plaintiff Gasp, are parties to the proposed Consent Decree, which is attached hereto as Exhibit "A."
3. The Parties have also entered into a Forbearance Agreement. As noted in the proposed Consent Decree, the parties request and intend that the Forbearance Agreement be

incorporated into the Consent Decree. The Parties will file a motion with the Court requesting that this Court allow the Forbearance Agreement to be filed under seal.

4. The Consent Decree was negotiated in good faith and at arm's length among the Parties, all of whom are represented by counsel. The Consent Decree is fair, adequate, and reasonable.
5. The Consent Decree is lawful because it does not require or sanction any violations of law.
6. The Consent Decree is in the public interest and has been negotiated and entered into by the Parties with due regard for public health. The Consent Decree includes the following requirements:
    a. Bluestone must pay a substantial civil penalty ($925,000.00), half of which the Board will use to create green spaces, clear blight, and for environmental projects for the benefit of the communities adjacent to Bluestone's plant; and
    b. The public will be provided an opportunity to provide comments (in writing and at a public input session) so that members of the public can publicly voice their preference for how part of the civil penalty should be spent; and
    c. Bluestone must develop a Corrective Action Plan, a Work Practice Plan, and other measures to ensure compliance; and
    d. Bluestone will conduct fenceline air monitoring for at least five years; and
    e. Bluestone will be required to hire an independent auditor to monitor compliance and provide reports of any issues; and
    f. The Consent Decree includes reporting requirements that are in addition to the requirements imposed by local and federal regulations; and
    g. Bluestone will be required to pay stipulated penalties if they fail to comply with the Consent Decree's requirements.

7. The Consent Decree resolves this controversy without expensive and prolonged litigation and spares the Parties the costs of a lengthy trial. Likewise, the entry of the Consent Decree would preserve scarce judicial resources.

WHEREFORE, the Parties respectfully request that this Court approve and enter the Parties' Consent Decree, attached hereto as Exhibit "A."

/s/ Wade C. Merritt
David S. Maxey (MAX006)
Wade C. Merritt (MER028)
Robert D. Hannah (HAN088)
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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing has been served upon the following this the 9th day of December, 2022, via the Court's electronic filing and service system to the extent available or by U.S. Mail to the following addresses:

Robert P. Fowler
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Birmingham, AL 35207
rfowler@bluestone-coke.com

Sarah M. Stokes
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/s/ Wade C. Merritt
Of Counsel

EXHIBIT A

IN THE CIRCUIT COURT OF JEFFERSON COUNTY, ALABAMA
Tenth Judicial Circuit, Birmingham Division

JEFFERSON COUNTY BOARD OF HEALTH,	)	
	)	
Plaintiff,	)	
	)	
GASP,	)	
	)	
Intervenor-Plaintiff,	)	**Case No.: 01-CV-2021-902311.00**
	)	
v.	)	
	)	
BLUESTONE COKE, LLC,	)	
	)	
Defendant.	)	

CONSENT DECREE

This Consent Decree was agreed upon this 1st day of December 2022, between the Jefferson County Board of Health (the "Board" or "Plaintiff"), GASP ("GASP" or "Plaintiff-Intervenor"), and Bluestone Coke, LLC ("Bluestone" or "Defendant"), in the resolution of the above referenced matter.

WITNESSETH

WHEREAS, Bluestone owns a metallurgical coke plant in Jefferson County, Alabama; and

WHEREAS, the Jefferson County Department of Health (the "Health Department") issued Official Notice of Violation No. 3203 ("NOV No. 3203") to Defendant Bluestone on July 15, 2020; and

WHEREAS, NOV No. 3203 describes Bluestone's violations of the Jefferson County Board of Health Air Pollution Control Rules and Regulations (hereinafter, referred

to as the "Rules and Regulations") and Bluestone's Operating Permit, as alleged by the Board; and

WHEREAS, Bluestone initially responded to NOV No. 3203 on July 17, 2020, advising the Board that Bluestone disagreed with the violations as described by the Board, and Bluestone provided supplemental responses on July 28, 2020, and December 7, 2020; and

WHEREAS, the Board filed this action on August 11, 2021; and

WHEREAS, on September 16, 2021, the Health Department issued official Notice of Violation No. 3283 ("NOV No. 3283") to Bluestone; and

WHEREAS, on October 1, 2021, GASP filed a Motion to Intervene and was granted intervention on October 10, 2021, by this Court, and filed a Complaint in Intervention asserting claims for numerous violations by Bluestone at the Bluestone coke plant; and

WHEREAS, in October of 2021, Bluestone chose to cold-idle its facility (i.e., remove the heat from its coke ovens and cease all production); and

WHEREAS, as of the Effective Date of this Consent Decree, Bluestone remains in cold-idle; and

WHEREAS, on November 19, 2021, the Board filed an amended complaint to include NOV 3283 and additional violations, and GASP filed an amended complaint in intervention on February 28, 2022; and

WHEREAS, without any admission by Bluestone that it has violated any of the Rules and Regulations or Bluestone's Operating Permit (whose renewal was denied by the Department; that denial is under administrative challenge), the Board, Bluestone, and

GASP (collectively "the parties") have reached an agreement regarding the settlement of this action and the Official Notices of Violation; and

WHEREAS, the parties agree that the actions to be taken herein are for the purpose of resolving this dispute and protecting the health of the citizens of Jefferson County; and

WHEREAS, the parties agree that settlement of this matter is in the public interest and is the most appropriate way of resolving all matters of dispute regarding this action and the Official Notices of Violation; and

WHEREAS, the parties have reached agreement in settlement of all issues regarding this matter and are desirous of this Consent Decree being performed in accordance with the terms and conditions set out herein.

NOW THEREFORE, in consideration of premises, covenants, and agreements contained herein, the parties agree as follows:

ARTICLE ONE

Future Operations

As of the Effective Date of this Consent Decree, Bluestone remains in cold-idle and the extent to which the Bluestone plant would have to be rebuilt prior to resuming operations has not been determined. This Consent Decree is not (and should not be interpreted to be) a permit or authorization for Bluestone to resume production or any of its operations. The Articles and requirements of this Consent Decree do not replace any of the applicable requirements contained in the Rules and Regulations or any current or future permit. Likewise, none of the Articles contained in this Consent Decree are a permit or authorization for Bluestone to resume production or any of its operations. Rather, this Consent Decree and its Articles are intended to control Bluestone's operations *if* Bluestone

is allowed to resume production after Bluestone first obtains all applicable permits and completes rebuilding or repairs deemed necessary for the safe and compliant operation of the plant. Notwithstanding anything to the contrary that may be contained in this Consent Decree, Bluestone must obtain the applicable permit(s) (as determined by the Health Department) prior to resuming production and/or operations. Likewise, the requirements of this Consent Decree shall not become part of existing or future permits absent those permits imposing the same requirements.

ARTICLE TWO

Corrective Action Plan

Bluestone shall, to the Board's satisfaction, submit a written Corrective Action Plan including a schedule of maintenance and other projects necessary to bring Bluestone into compliance with all violations alleged in the Board's Complaint, as amended. Bluestone must submit this Corrective Action Plan as part of any permit application it submits to the Health Department. The permit application will be deemed incomplete without this Corrective Action Plan. The Corrective Action Plan shall include an assessment of corrective actions needed to achieve compliance with the following categories of items: (1) Operation and Maintenance of Capture and Control System For Pushing Emissions, (2) Operation and Maintenance of Coke Oven Batteries, (3) Doors, Offtakes, and Charging Operations, (4) Requirements For Spare Doors and Lids, (5) Reporting Requirements, including the timely submission of Breakdown/Malfunction Reports, (6) Operation and Maintenance of the Wheel Wash, and (7) Operation and Maintenance of the Quench Towers' Baffles. The Corrective Action Plan shall also include a schedule for the implementation of such corrective actions.

As part of the Corrective Action Plan, Bluestone shall hire (and will pay) an independent contractor to help assess the scope of work needed to achieve compliance. The contractor must have a current Professional Engineering (P.E.) License and have significant audit experience for compliance with Clean Air Act regulations that apply to the by-product recovery coke making process. This auditor should provide these credentials as part of the Corrective Action Plan.

Subject to the Board's approval, based on a reasonable assessment, Bluestone shall incorporate each of the independent contractor's recommendations into the Corrective Action Plan. If the contractor provides multiple methods for achieving compliance for a single violation or type of violation, Bluestone may select from the presented alternatives. If Bluestone rejects any of the contractor's recommendations, Bluestone must, to the Board's satisfaction, propose and justify an acceptable means of achieving compliance. All aspects of the Corrective Action Plan are subject to the Board's approval. Bluestone will not be allowed to resume operations unless and until the Board approves the Corrective Action Plan and all necessary recommendations in the Corrective Action Plan are implemented. The public will be provided an opportunity to comment on this Corrective Action Plan as part of the public comment period if/when a new draft permit is out for public comment.

ARTICLE THREE

Work Practice Plan

At least (60) days prior to resuming production, Bluestone shall review work practices for doors, offtakes, and charging emissions to minimize emissions from these points as required by 40 CFR 63, Subpart L, and shall submit a written Work Practice Plan

to the Board and GASP meeting the requirements of 40 CFR § 63.306. The revised Work Practice Plan is subject to the Board's approval. Bluestone will not be allowed to resume operations unless and until the Board approves the Work Practice Plan.

ARTICLE FOUR

Independent Auditor

Bluestone will hire and pay for an appropriately credentialed and qualified independent auditor to visit the plant every two months for two years after the Corrective Action Plan has been implemented and the plant is in operation, and will perform an inspection and provide a written audit of the plant to assure compliance with the Corrective Action Plan, not limited to the batteries, ovens, lids, doors, wheel wash and quench towers. This auditor will write a bi-monthly report and send his/her report to the Health Department and GASP. Each Audit Report shall be submitted within the first fourteen (14) days after every two months of operation. This auditor must have a current Professional Engineering (P.E.) License and have significant audit experience for compliance with Clean Air Act regulations that apply to the by-product recovery coke making process. This auditor should provide these credentials in the initial report.

ARTICLE FIVE

Monthly Pushing Emissions Control System Reports

Within 30 days of resuming production, Bluestone shall submit a Pushing Emissions Control System Report to the Health Department and GASP, in a format supplied by the Health Department. If any oven has been pushed without the permitted pushing emissions control system (the "control system"), then a report within seven days of the occurrence is required to be supplied to the Health Department and GASP. If every

oven was pushed with the control system for the entire month, then only a monthly report is required.

None of the reporting requirements in this Article or this Consent Decree alter or replace any of the applicable reporting requirements contained in the Rules and Regulations and/or any current or future permit.

Each Report will count the daily number of ovens pushed with the control system and the number of ovens pushed without the control system. The first Monthly Report shall provide information for the period of the first full calendar month following the date Bluestone resumes production and shall be due within the first week of the second calendar month following the date Bluestone resumes production. Each subsequent Monthly Report shall be due within the first week of the calendar month immediately following the applicable coverage period. The requirements of this Article (including the requirement to submit weekly pushing reports if the ovens are pushed without the controls) will cease to be applicable upon Bluestone establishing, to the satisfaction of the Board, acceptable performance with this Consent Decree and the applicable Rules and Regulations or two years after the Corrective Action Plan has been implemented, whichever is later.

ARTICLE SIX

Progress Reports

Bluestone shall submit written Progress Reports every quarter to the Health Department and GASP, beginning two months after the Effective Date of this Consent Decree and ending upon the Board's determination that the Consent Decree has been fully and properly implemented. Each Progress Report shall be submitted within the first fourteen (14) days after each quarter (three months) of operation. The Progress Reports

shall describe the work that Bluestone has performed in accordance with the Corrective Action Plan and Consent Decree, problems or violations encountered or anticipated problems or violations in performing the Corrective Action Plan and this Consent Decree, as well as non-compliance with the requirements of this Consent Decree and the reason for that non-compliance.

ARTICLE SEVEN

Certification of Reports

Each report required in this Consent Decree and submitted by Bluestone shall be signed by an official of the submitting party and include the following certification:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

All reports and plans required by this Consent Decree will be placed on the Health Department's website within 30 days of approval of those documents by the Board.

ARTICLE EIGHT

Fenceline Monitoring

Prior to resuming production, Bluestone shall purchase, install, and operate a fenceline air monitoring system at its facility for the purpose of monitoring the sulfur dioxide (SO2) levels at the boundaries of its property. Bluestone shall operate the fenceline monitoring system for at least five (5) years.

The monitoring system must be fully operational when Bluestone resumes production and monitoring must begin before the resumption of production. The five-year period will begin to run when Bluestone resumes production. Bluestone shall, to the Board's satisfaction, submit a written Fenceline Monitoring Plan that includes fixed monitors, which shall include details regarding the instruments/systems that Bluestone intends to purchase, the frequency of the monitoring, Bluestone's proposed locations for the air monitors (with the parties' understanding and agreement that the Health Department will have the final authority to select the locations of the air monitors in the manner described in the following paragraph), along with proposed plans for quality assurance, maintenance, data collection, and the sharing of all air monitoring data with the Health Department. This Monitoring Plan will be submitted at the time the permit application is submitted. The public will be provided an opportunity to comment on the Fenceline Monitoring Plan as part of the public comment period if/when a new draft permit is out for public comment.

As part of the fenceline air monitoring system required by this Consent Decree, at least two SO2 monitors that capture continuous data will be purchased and installed by Bluestone. One such air monitor will be placed on Bluestone's property along its fenceline in the location most likely to detect the highest concentration of SO2 based on either EPA's model (e.g. EPA Region 4 Modeling Report SO2 Emissions, Jefferson County October 15, 2021 (p. 25-28) report) (attached as Exhibit 1 to this Consent Decree)) or the most updated dispersion model, as determined by the Health Department. The second air monitor will be placed on Bluestone's fenceline at the location best suited for background readings, as determined by the Health Department.

The monitors must monitor according to the federal reference method or federal equivalent method. Bluestone will bear all costs related to the air monitoring system required by this Article, including all costs related to the purchase, installation, operation, and/or maintenance of the system. Bluestone understands and acknowledges that it will not be allowed to resume operations unless and until (1) the Board approves the Fenceline Monitoring Plan and (2) the fenceline monitoring system is fully operational, as demonstrated to the Board's satisfaction. Bluestone will provide the Health Department and GASP with all SO2 data from the monitors each month beginning the first full month after Bluestone resumes production, in a method to be approved by the Board. Bluestone will use an FTP site or the cloud to publicly disseminate this information each month. Bluestone will pay for and be responsible for any costs associated with publicly sharing the air monitoring data.

ARTICLE NINE

Stipulated Penalties

Bluestone shall pay to the Board as stipulated penalties the amount of ONE THOUSAND AND NO/100 DOLLARS ($1,000.00) per day for each day for which Bluestone fails to submit an acceptable Corrective Action Plan by the deadline referenced in **ARTICLE TWO** or complete the required recommendations by the independent contractor as referenced in **ARTICLE TWO,** and for each day for which Bluestone fails to submit an acceptable Work Practice Plan for Subpart L by the deadline referenced in **ARTICLE THREE,** and for each day which Bluestone fails to submit an Audit Report referenced in **ARTICLE FOUR,** and for each day for which Bluestone fails to submit an acceptable Monthly or Weekly Pushing Emissions Control System Report by the deadline

referenced in **ARTICLE FIVE,** and for each day for which Bluestone fails to submit an acceptable Written Progress Report by the deadline referenced in **ARTICLE SIX**, and for each day for which Bluestone fails to submit an acceptable Fenceline Monitoring Plan by the deadline referenced in **ARTICLE EIGHT** or otherwise fails to comply with the terms of **ARTICLE EIGHT**, and for each day it is late in payment of its penalty in **ARTICLE TEN.** The payment of stipulated penalties based on Bluestone's failure to comply with any one Article shall not relieve Bluestone of its obligation to pay stipulated penalties based on its failure to comply with any other Article. The Board shall notify Bluestone of any required payment, and payments shall be made to the Board within fifteen (15) days after the date of noncompliance, as determined by the Board. For the purposes of this Consent Decree, a deliverable is considered submitted by Bluestone on the date it is postmarked (if the deliverable is mailed) or hand-delivered, whichever is sooner.

ARTICLE TEN

Civil Penalty

Bluestone shall pay to the Board a civil penalty in the amount of NINE HUNDRED TWENTY-FIVE THOUSAND AND NO/100 DOLLARS ($925,000) for all violations identified in the Complaint, as amended. This civil penalty is within the range of civil penalties authorized under the controlling federal and state statutes and regulations, including the Rules and Regulations.

Defendant shall pay the civil penalty in twelve (or fewer) installments. Defendant shall pay at least SEVENTY-SEVEN THOUSAND EIGHTY-THREE AND 37/100 DOLLARS ($77,083.37) of the civil penalty within thirty (30) days of the Effective Date of this Consent Decree. Defendant shall make the remaining payments every thirty (30)

days and such payments shall be in an amount of at least SEVENTY-SEVEN THOUSAND EIGHTY-THREE AND 33/100 DOLLARS ($77,083.33). Notwithstanding anything to the contrary that may be contained herein, Defendant shall pay the entire civil penalty within one year of the Effective Date of this Consent Decree.

Within 60 days of receipt of any portion of the civil penalty, the Health Department agrees to transfer 50% of the civil penalty that has been collected by the Health Department to the Sustainable Residential-Industrial Buffers Fund (the "Fund"). All such portions of the civil penalty will be spent for the benefit of the communities (Collegeville, Harriman Park, and Fairmont) adjacent to Bluestone's plant. More specifically, such funds will be used consistent with the purposes of the Sustainable Residential-Industrial Buffers Fund and will be used to create green spaces and clear blight in those communities. The resolution that established this fund is attached as Exhibit 2. As to the portions of the civil penalty that are transferred to the Fund, the Health Department must spend such portions within five years of the Effective Date of this Consent Decree or the time such portions are received by the Health Department, whichever is later. The Health Department will seek public comments, giving the public at least thirty days to comment, and hold a public input session where members of the public can publicly voice its preference for how the funding should be spent, before spending the funds. The Health Officer and the Board retain full and final decision-making authority regarding the disbursement of the civil penalty from the Sustainable Residential-Industrial Buffers Fund.

ARTICLE ELEVEN

Release

Subject to the terms and conditions of this Consent Decree, the Board and GASP, for and in consideration of the civil penalty and the other good and valuable consideration referred to in this Consent Decree, do hereby remise, release, acquit, and forever discharge: Bluestone, its officers, shareholders, directors, limited partners, general partners, partners, servants, agents, employees, parents, subsidiaries, successors, predecessors, affiliates, sister corporations, attorneys and assigns; and all other persons and/or entities of whatever type from all manner of actions pertaining to the violations alleged in this action as well as any other violations regarding the Clean Air Act and Title V air permit known by the Board and GASP, whether asserted or not or admitted or not, existing as of the Effective Date of this Agreement. Notwithstanding anything to the contrary that may be contained in this Consent Decree, if Bluestone fails to comply with any Article or obligation of this Consent Decree, Bluestone shall not be released from any of the Board's or GASP's claims.

ARTICLE TWELVE

Force Majeure

"Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Bluestone or of any entity controlled by Bluestone, or of Bluestone's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Bluestone's best efforts to fulfill the obligation (for example, these could include acts of God, riots, war, terrorist acts, natural catastrophes, pandemic, and quarantines). The requirement that Bluestone exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force

majeure event and best efforts to address the effects of any potential force majeure event (a) as it is occurring and (b) following the potential force majeure, such that the delay and any adverse effects of the delay are minimized. "Force Majeure" does not include Bluestone's financial inability to perform any obligation under this Consent Decree.

If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, Bluestone shall provide notice orally or by electronic transmission to the Board and GASP within 72 hours of when Bluestone first knew that the event might cause a delay. Within seven days thereafter, Bluestone shall provide in writing to the Board and GASP an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Bluestone's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Bluestone, such event may cause or contribute to an endangerment to public health, welfare or the environment. Bluestone shall include with any notice all available documentation supporting the claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Bluestone from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Bluestone shall be deemed to know of any circumstance of which Bluestone or any entity controlled by Bluestone knew or should have known.

If the Board, after a reasonable opportunity for review and comment by GASP, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by the Board and GASP for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. The Board will notify Bluestone and GASP in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

If the Board, after a reasonable opportunity for review and comment by GASP, does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, the Board will notify Bluestone and GASP in writing of its decision.

Bluestone shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Bluestone complied with the previous notice requirements. If Bluestone carries this burden, the delay at issue shall be deemed not to be a violation by Bluestone of the affected obligation of this Consent Decree.

ARTICLE THIRTEEN

Severability

In the event that any Article or portion of this Consent Decree is found to be invalid or otherwise unenforceable, such finding will not affect any other Article or portion of this Consent Decree.

ARTICLE FOURTEEN

Additional Remedies

In the event of a breach by Bluestone of any Article or obligation contained in this Consent Decree, the Board or GASP may, in addition to any other remedy the Board may have available, file a legal action (or otherwise begin legal proceedings) for the purpose of bringing about compliance with this Consent Decree.

ARTICLE FIFTEEN

Effective Date

The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket.

ARTICLE SIXTEEN

Attorneys' Fees

Bluestone agrees to be responsible for and to reimburse the Board and GASP for any and all of the Board's and GASP's attorneys' fees, expenses, and any other costs associated with any successful legal action taken by the Board and/or GASP to enforce the terms of this Consent Decree. Otherwise, each party shall bear its own costs and attorneys' fees.

ARTICLE SEVENTEEN

Incorporation into Final Order

The parties agree and will request the Court to fully incorporate this Consent Decree into a Final Order. The parties agree and will request the Court to retain jurisdiction to enforce this Consent Decree. The parties agree to take all reasonable steps to accomplish the terms of this Article, including the filing of a joint motion requesting the Court to (1) fully incorporate this Consent Decree into a Final Order and (2) retain jurisdiction to enforce the terms of this Consent Decree.

If any party fails to perform any obligation imposed in this Consent Decree, then any other party may seek a Court Order compelling specific performance of any provision of the Consent Decree through the use of its civil contempt powers.

ARTICLE EIGHTEEN

Entire Agreement

This Consent Decree constitutes the entire agreement between the parties concerning the subject matter hereof. All prior agreements, discussions, representations, warranties, and covenants are merged herein. There are no warranties, representations, covenants or agreements, expressed or implied, between the parties except those expressly set forth in this Consent Decree. In order to be effective, any amendments or modifications of this Consent Decree must be in writing and executed and agreed upon by all parties. Where the modification constitutes a material change to this Consent Decree, it shall be effective only upon approval by the Court.

ARTICLE NINETEEN

Counterparts

This Consent Decree may be executed in one or more counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument.

ARTICLE TWENTY

Authority

Each party to this Consent Decree represents and warrants that the execution, delivery, and performance of this Consent Decree and the consummation of the transactions and actions provided in this Consent Decree have been duly authorized by all necessary action of the respective entity and that the person executing this Consent Decree on its behalf has the full capacity to bind that entity. Each party further represents and warrants that it has been represented by independent counsel of its choice in connection with the negotiation and execution of this Consent Decree, and that counsel has reviewed this Consent Decree. Each signatory specifically represents that they have the authority to bind their respective entity to the terms of this Consent Decree.

ARTICLE TWENTY-ONE

Transfer

The obligations of this Consent Decree apply to and are binding upon the Parties and any successors, assigns, or other entities or persons otherwise bound by law. Bluestone will ensure that all successors, assigns, future owners, or other entities or persons otherwise bound by agreement will comply with all obligations of this Consent Decree to ensure that

the terms of the Consent Decree are implemented. Bluestone will provide documentation of this assurance to GASP and the Board.

At least 30 days prior to a transfer of ownership or operation, Bluestone shall provide a copy of this Consent Decree to the proposed transferee. The transferee will sign an agreement stating that it assumes all responsibilities and obligations of this Consent Decree. Bluestone shall provide written notice of the transfer, together with a copy of the written agreement stating that the transferee assumes all responsibilities and obligations stated in this Consent Decree to the Board and GASP, ten days after the transfer. Any attempt to transfer ownership or operation of the Facility without complying with this Paragraph constitutes a violation of this Consent Decree, and Bluestone's parent company and/or former owners are responsible.

Bluestone shall provide a copy of this Consent Decree to all officers, employees, and agents whose duties might reasonably include compliance with any provision of this Consent Decree, as well as to any contractor retained to perform work required under this Consent Decree. Bluestone shall condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

In any action to enforce this Consent Decree, Bluestone shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

ARTICLE TWENTY-TWO

Termination

After Bluestone has complied with all of the requirements of this Consent Decree, including the payment of the civil penalty and any accrued stipulated penalties as required

by this Consent Decree, Bluestone may serve upon the Board and GASP a Request for Termination, stating that Bluestone has satisfied those requirements, together with all necessary supporting documentation.

Following receipt of Bluestone's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Bluestone has satisfactorily complied with the requirements for termination of this Consent Decree. If the Board, after consultation with GASP, agrees that the Consent Decree may be terminated, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

ARTICLE TWENTY-THREE

Forbearance Agreement

The parties have entered into a Forbearance Agreement, and the parties agree to make a good faith effort to have this Agreement filed under seal with this Court. The Forbearance Agreement is fully incorporated herein as part of this Consent Decree. If the Court does not allow this Agreement to be filed under seal, such a decision shall not affect the enforceability of this Agreement or the Consent Decree, or otherwise alter the fact that this Agreement is fully incorporated into the Consent Decree.

ARTICLE TWENTY-FOUR

Notices

Unless otherwise specified, whenever notifications, reports, plans, submissions, data, or communications are required by this Consent Decree, they shall be made in writing and addressed as follows:

As to the Board or the Health Department by mail:

Jason Howanitz, P.E.
Principal Air Pollution Control Engineer
Jefferson County Department of Health
1400 Sixth Avenue South
Birmingham, AL 35233

AND

Wade Merritt
Spain & Gillon, LLC
505 20th Street North
Suite 1200
Birmingham, AL 35203

As to the Board or the Health Department by email:

Jason Howanitz, P.E.
Jefferson County Department of Health
jason.howanitz@jcdh.org

AND

Wade Merritt
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As to Bluestone by mail:

Don Wiggins
Bluestone Coke
3500 35th Ave N.
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AND

Rob Fowler
302 South Jefferson Street
Roanoke, VA 24011

As to Bluestone by email:

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dwiggins@bluestonecoke.com

AND

Rob Fowler
rfowler@bluestone-coal.com

As to GASP by mail:

Michael Hansen
GASP
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AND

Sarah Stokes
Southern Environmental Law Center
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Suite 282
Birmingham, AL 35233

As to GASP by email:

Michael Hansen
Executive Director, GASP
mhansen@gaspgroup.org

AND

Sarah Stokes
Southern Environmental Law Center
sstokes@selcal.org

Any party may, by written notice to the other parties, change its designated notice recipient or notice address provided above.

Notices and reports submitted pursuant to this Consent Decree shall be deemed submitted upon mailing or emailing, unless otherwise provided in this Consent Decree or by mutual agreement of the parties in writing.

Dated and entered this __ day of _____, 20__.

_____
CIRCUIT COURT JUDGE PATRICK J. BALLARD

IN WITNESS WHEREOF, the parties hereto have hereunto executed this Consent Decree by and through their duly authorized agents the day and year first above written.

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THE JEFFERSON COUNTY BOARD OF HEALTH

By: ME Wilson MD

Mark E. Wilson, M.D.
Health Officer of Jefferson County, Alabama

Date: 12-1-2022

BLUESTONE COKE, LLC

By: _____

STEPHEN W. BALL

Its: EXECUTIVE VICE-PRESIDENT

Date: 12-1-22

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GASP

By: 

Michael Hansen
Executive Director, GASP

Date: 11/30/2022

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EXHIBIT 1

EPA Region 4 Modeling Report
Sulfur Dioxide Emissions
Jefferson County, Alabama
October 15, 2021 (Revised)

1. Summary and Background

1.1 Summary

This report presents the results of air dispersion modeling performed by the United States Environmental Protection Agency (EPA), to evaluate the impacts from the major sulfur dioxide (SO_2) air emissions sources located in Jefferson County, Alabama, and to evaluate the appropriateness of the SO_2 monitoring network design in the area. The relatively large amount of SO_2 emissions from facilities in Jefferson County and elevated ambient monitoring concentrations measured in the North Birmingham area prompted this modeling evaluation. The EPA modeling was performed with actual SO_2 emissions from the major Jefferson County sources during the 2017-2021 time periods. The modeling results demonstrate that ambient SO_2 concentrations may have exceeded the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS) near the Bluestone Coke facility from 2017-2020, with the emissions from Bluestone Coke being the primary contributor to the modeled exceedances. Bluestone Coke's emission levels for January through June 2021 were much lower than the previous four years and did not indicate modeled SO_2 exceedances. However, the most recent Bluestone Coke Title V operating permit allows production and emission levels at or above 2017 through 2020 actual emission levels. As a result, the Jefferson County Department of Health (JCDH) requested that the EPA perform additional modeling runs to evaluate possible changes that Bluestone Coke could make to its operations to resolve the modeled exceedances of the NAAQS. This report provides the results of the modeling analyses of 2017-2021 actual emissions from the major sources in Jefferson County. The report also presents modeling done to evaluate several potential control options (including reduced emission limits and facility modifications), at the Bluestone Coke facility, which show compliance with the NAAQS. The report also summarizes the modeling procedures, inputs, and assumptions used to complete the modeling.

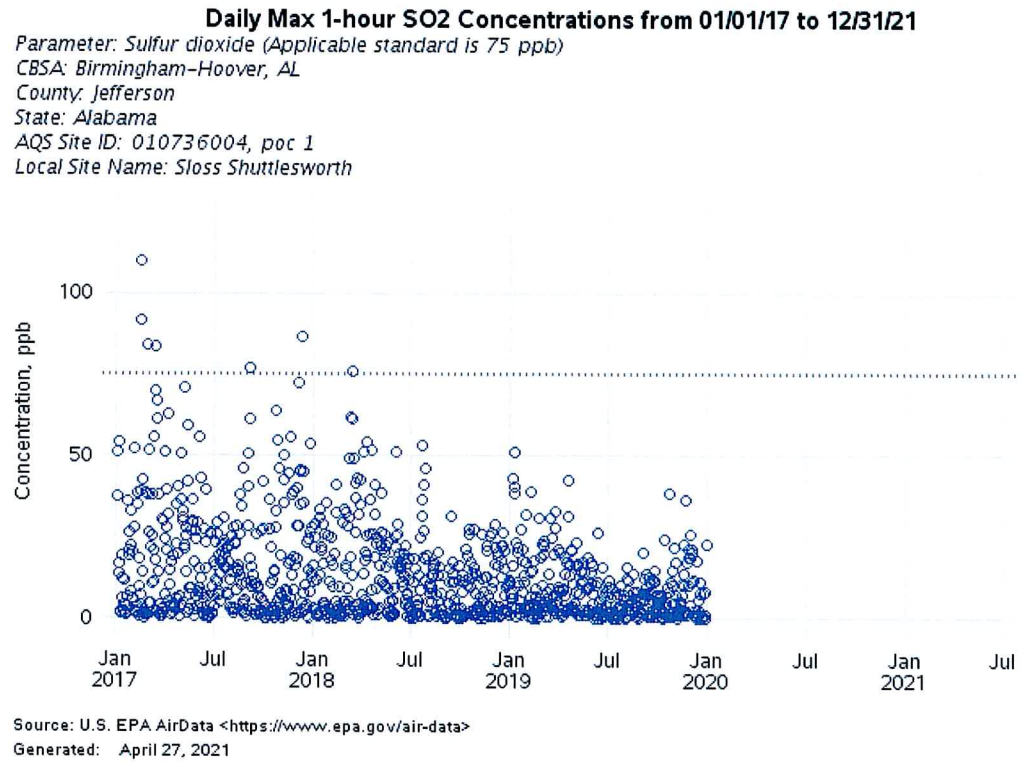
1.2 Background

In 2016, the EPA evaluated the SO_2 emissions and air quality monitoring data around two foundry coke production facilities, Bluestone Coke (formerly ERP Compliant Coke and Walter Coke) and ABC Drummond Coke. The EPA, ADEM, and JCDH decided that these facilities were not required to be characterized under the SO_2 Data Requirements Rule (DRR) because the SO_2 emissions from each facility individually were below the DRR SO_2 emissions threshold of 2,000 tons per year (tpy). The combined emissions from the two facilities were approximately 3,500 tpy. To provide added protection to the community and to evaluate potential impacts of SO_2 emissions from the facilities, the JCDH and the EPA agreed that the JCDH would install and operate an SO_2 monitor at the existing Shuttlesworth ambient air monitoring site, located near the Bluestone Coke facility boundary, as shown in Figure 1. Figure 1 also shows the location of the North Birmingham SO_2 ambient air monitoring site that is located approximately 1 kilometer southwest of the Bluestone Coke facility.

Figure 1. Location of the Shuttleworth and North Birmingham SO_2 Ambient Monitoring Sites

Figure 2a and 2b display the measured ambient air concentrations at the Shuttlesworth and North Birmingham monitoring sites, respectively, from 2017-2021 (note that the Shuttlesworth site stopped collecting SO_2 data at the end of 2019). The measured SO_2 ambient concentrations at the Shuttleworth site were significantly higher than the values at the North Birmingham site from 2017-2019. Additionally, during 2017 and early 2018, there were measured exceedances of the 1-hour SO_2 NAAQS (75 parts per billion (ppb)). The calculated 2017-2019 3-year SO_2 "design value[1]" for the Shuttlesworth monitor was 60 ppb and for the North Birmingham monitor was 31 ppb[2]. In June 2019, EPA conducted a technical systems audit (TSA) of JCDH's ambient monitoring network and found data quality problems with the Shuttlesworth SO_2 monitoring data. The results of the TSA indicated that the 2017 and possibly 2018 data are likely invalid and are biased low (meaning that the reported values are likely below the actual ambient concentrations). For these reasons, EPA recommended to the JCDH that additional work be done to better characterize ambient SO_2 concentrations in the area.

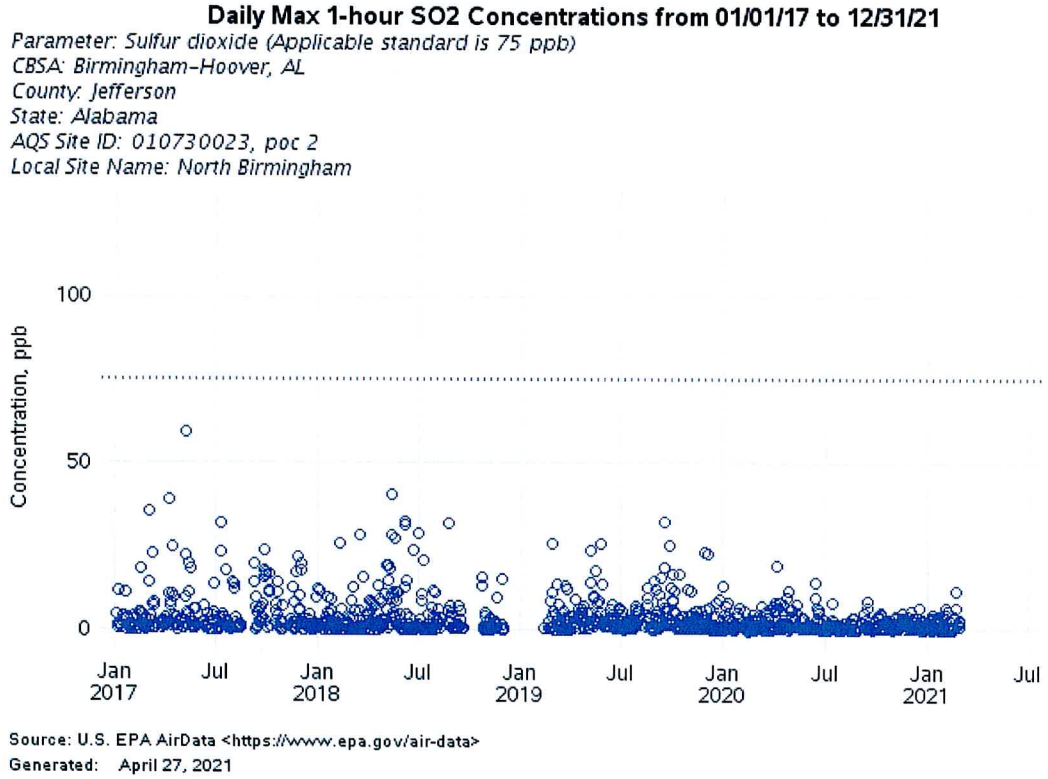
Figure 2a. Daily Maximum 1-hour SO_2 Concentrations at the Shuttlesworth Ambient Monitoring Site



[1] A "design value" is a statistic that describes the air quality status of a given location relative to the level of the National Ambient Air Quality Standards (NAAQS). For the 1-hour SO_2 NAAQS, the design value is calculated as the 3-year average of the 99th percentile of the daily maximum 1-hour concentrations.

[2] Note that the North Birmingham design value is classified as "incomplete" due to periods of missing data from the monitor.

Figure 2b. Daily Maximum 1-hour SO_2 Concentrations at the North Birmingham Ambient Monitoring Site



In December 2018, ERP Coke (now Bluestone Coke) submitted the results of an air modeling analysis performed to evaluate potentially raising the heights of its boiler stacks to reduce ambient SO_2 concentrations measured at the Shuttlesworth monitor in 2017 and 2018. In early 2019, EPA modeling staff reviewed ERP's modeling analysis and identified several concerns regarding how the modeling was conducted and determined that it did not follow the EPA's modeling regulations and guidance. Additionally, the EPA was concerned that the modeling analysis' focus of only evaluating concentrations at the Shuttleworth monitor location did not address potentially higher SO_2 concentrations at other locations near ERP (Bluestone) Coke and ABC Drummond Coke. The EPA preliminarily concluded that the stack height increases proposed by ERP may not be sufficient to address the elevated ambient SO_2 concentrations in the area around the two coke facilities.

Due to concerns about the quality of the data from the Shuttlesworth and North Birmingham monitors and questions about whether the monitors were in appropriate locations to measure the maximum ambient SO_2 concentrations in the area, in 2020, the EPA and the JCDH agreed to perform a comprehensive air modeling analysis of SO_2 emissions sources in the Birmingham area to evaluate the potential for exceedances of the 1-hour SO_2 NAAQS. The EPA deferred approval of JCDH's ambient SO_2 monitoring network, pending the results of the comprehensive modeling analysis. The EPA and the JCDH agreed to work together to conduct this modeling. In the EPA's response letter to the JCDH's 2020 Network Plan, dated October 28, 2020, the EPA stated:

> "If the modeling indicates a potential concern for SO_2 concentrations in the area, the JCDH will implement a strategy to resolve the modeled concentrations which may include installation of an SO_2 monitor(s) at the point(s) of maximum modeled concentration. The monitor(s) would need to collect a minimum of 3 years of data to confirm the status of air quality with regard to the SO_2 NAAQS."

The EPA modeling staff have worked with the JCDH to obtain necessary emissions and modeling input information to conduct the comprehensive dispersion modeling analysis focusing on the area around ABC Drummond Coke and Bluestone Coke. The following sections of this report summarize the modeling information and results.

2. EPA's Air Quality Modeling Analysis for the Jefferson County Area

2.1 Introduction

The EPA performed a comprehensive air dispersion modeling analysis using the regulatory AERMOD modeling system to evaluate large SO_2 emissions sources in Jefferson County, Alabama. The JCDH provided the EPA with emissions inventory information and input parameters needed to run AERMOD for the large SO_2 emissions sources in the county. While the emissions inventory provided by the JCDH included much of the information needed for the modeling, it contained some erroneous data (e.g., locations of some sources and emissions units) and lacked some needed information (e.g., building locations and dimensions for evaluating building downwash and ambient air boundary (fenceline) information for the coke facilities). In order to complete the modeling, EPA modeling staff worked with the JCDH to fill in the data gaps and correct erroneous data as best as possible (e.g., measuring building dimensions at the two coke facilities using 3-D building measurement tools in Google Earth). For some model input parameters, professional judgement was needed to make informed decisions and assumptions in order to complete the modeling. These data gaps and assumptions create uncertainty in the modeling. However, the EPA believes that the level of overall uncertainty in the modeling analysis is moderate to low for the 2019 emissions year and the primary conclusions from the modeling presented at the end of this report are valid.

The procedures used by the EPA to complete the modeling analysis follow EPA's Guideline on Air Quality Models, contained in 40 CFR Part 51, Appendix W, and EPA's "SO_2 NAAQS Designations Modeling Technical Assistance Document[3]," August 2016 (SO_2 Modeling TAD).

2.2 Model Selection and Modeling Components

The EPA performed the modeling using the AERMOD modeling system, which is the recommended model for regulatory modeling analyses of SO_2 emissions. The AERMOD modeling system contains the following components:

- AERMOD: the dispersion model
- AERMAP: the terrain processor for AERMOD
- AERMET: the meteorological data processor for AERMOD
- BPIPPRM: the building input processor
- AERMINUTE: a pre-processor to AERMET incorporating 1-minute automated surface observation system (ASOS) wind data
- AERSURFACE: the surface characteristics processor for AERMET

The EPA used AERMOD version 19191, which was the current version of the model at the time the modeling was performed. A newer version of AERMOD (version 21112) was released by EPA in May 2021, but the modeling had been completed at that time and based upon the changes made in version 21112, the modeling results would not likely have significantly impacted the overall conclusions of this analysis. A discussion of each of the major components of the modeling is included in the following sections of this report.

2.3 Modeling Parameter: Rural or Urban Dispersion

For any dispersion modeling exercise, the determination of whether a source is in an "urban" or "rural" area is important in determining the boundary layer characteristics that affect the model's prediction of downwind concentrations. For SO_2 modeling, the urban/rural determination is also important because AERMOD invokes a 4-hour half-life for urban SO_2 sources. Section 6.3 of the SO_2 Modeling TAD details the procedures used to determine if a source is urban or rural based on land use or population density.

The EPA used a land-use evaluation tool developed by the South Carolina Department of Health and Environmental Control (SCDHEC)[4] to analyze the land-use around the two primary emissions SO_2 sources in the area (Bluestone Coke and ABC Drummond Coke). The EPA's modeling guidance recommends that the urban/rural determination be based land use within 3 kilometers of the primary emissions sources of concern. Figure 3 displays a land-use map of the area depicting a 3-km radius circle centered on a point between the Bluestone and ABC Drummond Coke facilities. As shown in Table 1, the majority of land-use area within this 3-km circle is classified as rural (69.8 percent). Therefore, for the purpose of performing the modeling of the sources in Jefferson County, the EPA determined that it was most appropriate to run the model in rural mode.

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[3] https://www.epa.gov/so2-pollution/technical-assistance-documents-implementing-2010-sulfur-dioxide-standard

[4] Available at https://gis.dhec.sc.gov/landcover/

Figure 3. Land Uses Within a 3-km Radius Circle Centered on a Point Between the Bluestone and ABC Drummond Coke Facilities.

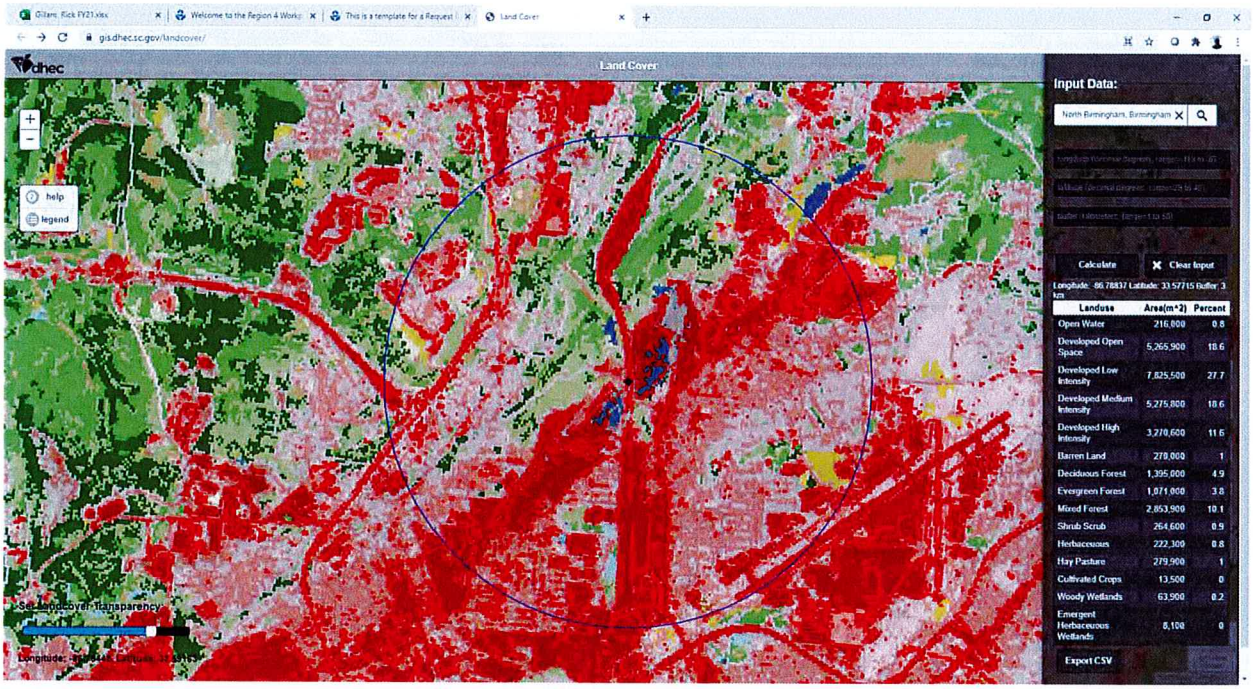


Table 1. Calculated Areas of Land Use Categories for Making the Urban/Rural Determinations.

Land Use	Area(m^2)	Percent	Urban/Rural
Open Water	216,000	0.8	Rural
Developed Open Space	5,265,900	18.6	Rural
Developed Low Intensity	7,825,500	27.7	Rural
Developed Medium Intensity	5,275,800	18.6	Urban
Developed High Intensity	3,270,600	11.6	Urban
Barren Land	270,000	1	Rural
Deciduous Forest	1,395,000	4.9	Rural
Evergreen Forest	1,071,000	3.8	Rural
Mixed Forest	2,853,900	10.1	Rural
Shrub Scrub	264,600	0.9	Rural
Herbaceous	222,300	0.8	Rural
Hay Pasture	279,900	1	Rural
Cultivated Crops	13,500	0	Rural
Woody Wetlands	63,900	0.2	Rural
Emergent Herbaceous Wetlands	8,100	0	Rural
	Urban	30.2	
	Rural	69.8	
	Total	100	

2.4 Modeling Parameter: Area of Analysis (Receptor Grid)

EPA's SO_2 Modeling TAD recommends that the first step towards characterization of air quality in the area around a source or group of sources is to determine the extent of the area of analysis and the spacing of the receptor grid. Considerations presented in the Modeling TAD include but are not limited to: the location of the SO_2 emission sources or facilities considered for modeling; the extent of significant concentration gradients due to the influence of nearby sources; and sufficient receptor coverage and density to adequately capture and resolve the model predicted maximum SO_2 concentrations.

The large sources of SO_2 emissions in Jefferson County are shown in Figure 4. A total of seven sources (facilities) in Jefferson County were included in the modeling. No other point sources of SO_2 emissions were determined by the EPA to have the potential to cause significant concentration gradient impacts within the area of analysis. Therefore, the EPA defined a receptor grid covering the Birmingham metropolitan area, extending 30 km in each direction, centered on the halfway point between the ABC Drummond and Bluestone Coke facilities. Figure 5 displays the 30-km receptor grid. As discussed above, the focal point of the modeling grid centered between ABC Drummond and Bluestone Coke was selected because they are the largest emitters of SO2 in Jefferson County and prior modeling and monitoring indicated the potential for exceedances of the 1-hour SO2 NAAQS in vicinity of these facilities. The seven sources' contributions to receptors in the 30 km modeling grid were included whether these facilities were within the modeling grid or not.

The grid receptor spacing for the area of analysis chosen by the EPA is as follows:

- A spacing of 100 meters out to a distance of 5 km from the sources,
- A spacing of 250 meters from that point out to a distance of 10 km from the sources, and
- A spacing of 500 meters from that point out to a distance of 30 km.

The primary impacts were found within 5 km, so most of the maps showing modeled results are limited to 5 km to make them easier to read. Figure 6 displays the 5-km receptor grid.

The receptor network contained 30665 receptors for the 30 km grid, and 9889 receptors for the 5 km grid. Consistent with the Modeling TAD, the EPA placed receptors in locations that would be considered ambient air relative to each modeled facility.

Figure 4. Area of Analysis for Jefferson County Area

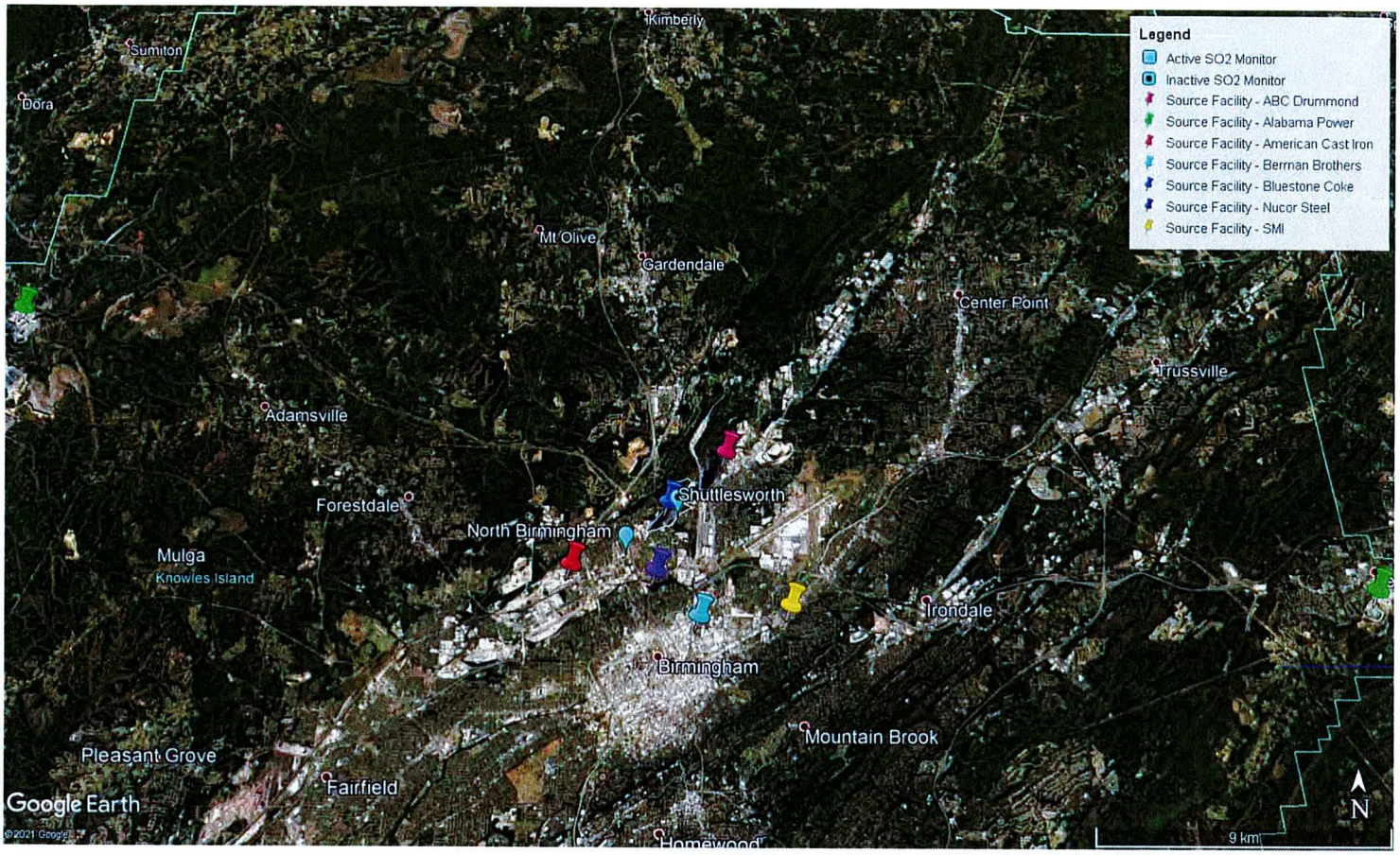


Figure 5. 30-km Receptor Grid for the Jefferson County Area

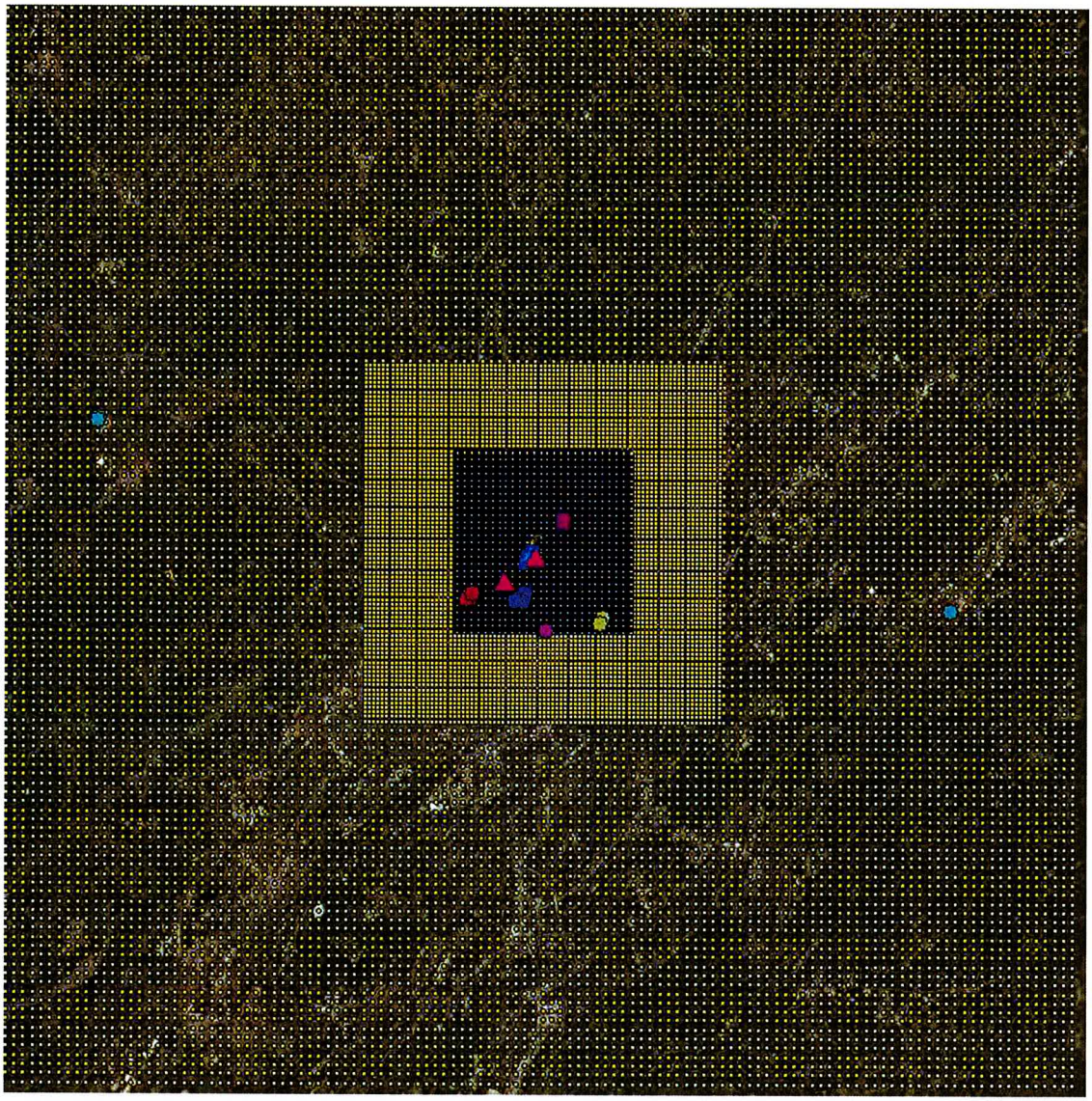
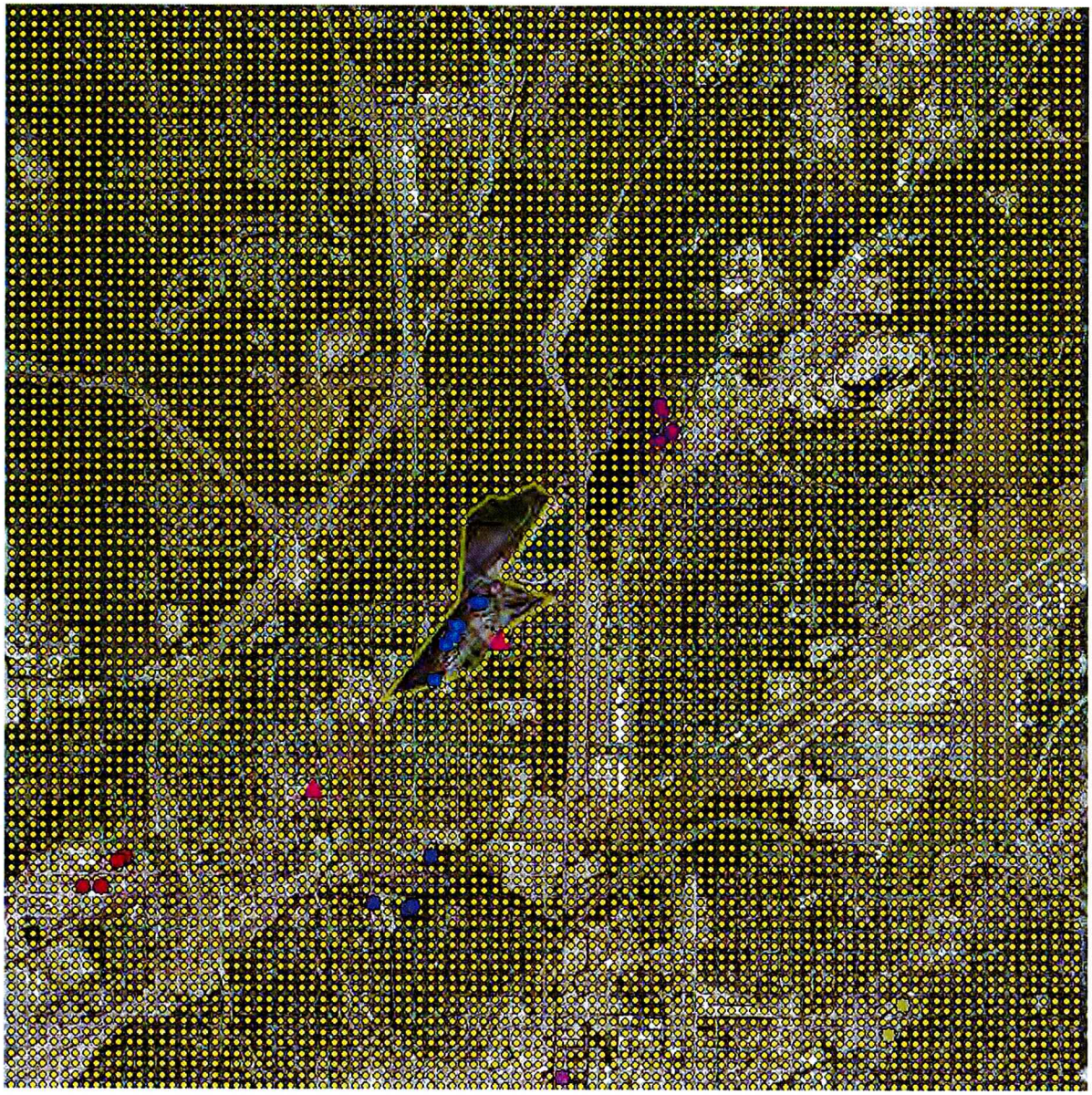


Figure 6. 5-km Receptor Grid for the Jefferson County Area



2.5 *Modeling Parameter: Source Characterization*

Section 6 of the Modeling TAD offers recommendations on source characterization, including source types, use of accurate stack parameters, inclusion of building dimensions for building downwash, and the use of actual stack heights with actual emissions.

The primary facilities included in the modeling were the ABC Drummond and Bluestone Coke facilities. In addition to the coke plants, the other major emitters of SO_2 included in the area of analysis were: American Cast Iron Pipe Company, Nucor Steel Birmingham, Berman Brothers Iron, SMI, and Alabama Power Company. No other sources were directly modeled in the

analysis. The impacts from all other smaller emissions sources in Jefferson County were accounted for with the ambient background concentration discussed in Section 2.9 of this report.

JCDH provided source characterization information for these sources within the area of analysis[5]. Specifically, JCDH provided actual stack heights in conjunction with actual emissions, as well as the stack parameters, e.g., exit temperature, exit velocity, location, and diameter. The information provided by JCDH is contained in a Microsoft Excel spreadsheet included with this report as Appendix A (years 2017 to 2019).

The EPA determined that building downwash may be important for the two primary sources (Bluestone Coke and ABC Drummond Coke). At both coke plants, a number of structures adjacent to emission release points may produce an area of wake effect influence, or building downwash, beyond the footprint of the structure/building. Information about the two coke facilities' building layouts and locations was not available from JCDH. Therefore, the EPA used Google Earth to obtain all building dimensions and Universal Transverse Mercator or UTM coordinates for the structures in the modeling analysis. Figure 7 below is a screenshot of a portion of the Bluestone area viewed in Google Earth with the 3D feature turned on.

The AERMOD pre-processor, BPIPPRM, was used to assist in assessing building downwash. In all, 46 structures around the 17 emission sources were modeled. Note, there is a floating roof tank adjacent to the flare at Bluestone Coke, which EPA modeled the maximum height to provide the most conservative output.

[5] Email from Jason Howanitz, JCDH, to Rick Gillam, EPA Region 4, dated November 10, 2020.

Figure 7. Google Earth 3D View of a Portion of the Bluestone Coke Facility

2.6 Modeling Parameter: Emissions

The AERMOD modeling analysis was performed around the ABC Drummond Coke and Bluestone Coke facilities. The major modeled emissions units at these two facilities were three coke oven gas boilers and an emergency flare on the Bluestone property, as well as two boiler stacks and two underfiring stacks on the ABC Drummond property. In addition to the two Coke facilities, sources were modeled from the nearby American Cast Iron, Nucor Steel Birmingham, Alabama Power Company, Berman Brothers Iron, and SMI Steel facilities. For all facilities, JCDH provided annual actual SO_2 emissions between 2017-2020. This information is summarized in Table 2.

There were several inconsistencies in the emissions information that JCDH provided, with several emission rates and parameters either missing or not matching reported figures in other locations, a lack of needed parameters for the Bluestone flare source, incorrect or missing source locations, and a lack of hours of operation for 2017, 2018, or 2020. In addition, an ambient air boundary was only provided for the Bluestone Coke and ABC Drummond Coke facilities. The EPA modeling staff worked with the JCDH to fill the data gaps as much as possible and used professional judgement to make assumptions when data was not available (e.g., source parameters for modeling the Bluestone Flare). The most complete year of emissions along with hours of operation of the facilities was provided for 2019. Therefore, the primary modeling results presented in this report are based upon 2019 actual emissions. Appendix B to this report is an electronic Microsoft Excel spreadsheet that contains all of the emissions and source parameter data, including supplemental data and assumptions that the EPA used in our modeling runs.

Table 2. Actual SO_2 Emissions Between 2017 – 2020 from Facilities in the Jefferson County Area.

Facility Name	SO_2 Emissions (tpy)			
	2017	2018	2019	2020
Bluestone Coke	903	1,306	1,142	476
ABC Drummond	1,473	1,439	1,544	1,526
Alabama Power Company	213	858	975	880
Berman Brothers	33	33	37	26
Nucor Steel	20	24	31	24
American Cast Iron	8	21	2	19
SMI	0	0	74	79
Total from All Modeled Facilities	2,650	3,681	3,805	3,030

2.7 Modeling Parameter: Meteorology and Surface Characteristics

The most recent 5 years of meteorological data (2016-2020) were used in this modeling effort. The selection of data was based on spatial and climatological (temporal) representativeness. The representativeness of the data was determined based on: 1) the proximity of the meteorological monitoring site to the area under consideration, 2) the complexity of terrain, 3) the exposure of the meteorological site, and 4) the period of time during which data are collected.

For the North Birmingham area of analysis, the EPA selected surface meteorology from the Birmingham airport, located 5 km east of Bluestone Coke, and coincident upper air observations from the Shelby County Airport NWS office located 43 km southwest of Bluestone Coke, as best representative of meteorological conditions within the area of analysis. The area of study is located in the same shallow valley as the Birmingham Airport. Therefore, surface meteorological data from the Birmingham Airport is expected to be representative of the area.

The EPA used AERSURFACE version 20060 using data from the Birmingham Airport to estimate the surface characteristics (albedo, Bowen ratio, and surface roughness (z_o)) of the area of analysis. Albedo is the fraction of solar energy reflected from the earth back into space, the Bowen ratio is the method generally used to calculate heat lost or heat gained in a substance. Surface roughness (sometimes referred to as "Zo") is related to the height of obstacles to the wind flow, which is an important factor in determining the magnitude of mechanical turbulence in the boundary layer. The EPA estimated surface roughness values for 9 spatial sectors out to 1 km at a monthly temporal resolution for dry, wet, or average conditions as indicated by a comparison of observed precipitation for each month to 30-year (1991-2020) climatological normals. Each month during the period modeled (2016-2020) was classified as dry, wet or average based on a comparison of observed precipitation during the month to the 30^{th} and 70^{th} percentile values of precipitation for the month based on climatological norms. Months with total precipitation less than the 30^{th} percentile were classified as "dry"; months with total precipitation greater than the 70^{th} percentile were classified as "wet" and all other months were classified as "average".

Figures 8 and 9 show the locations of the Birmingham Airport and the Shelby County Airport NWS office relative to the area of analysis.

Figure 8. Area of Analysis and the Birmingham Airport (BHM)

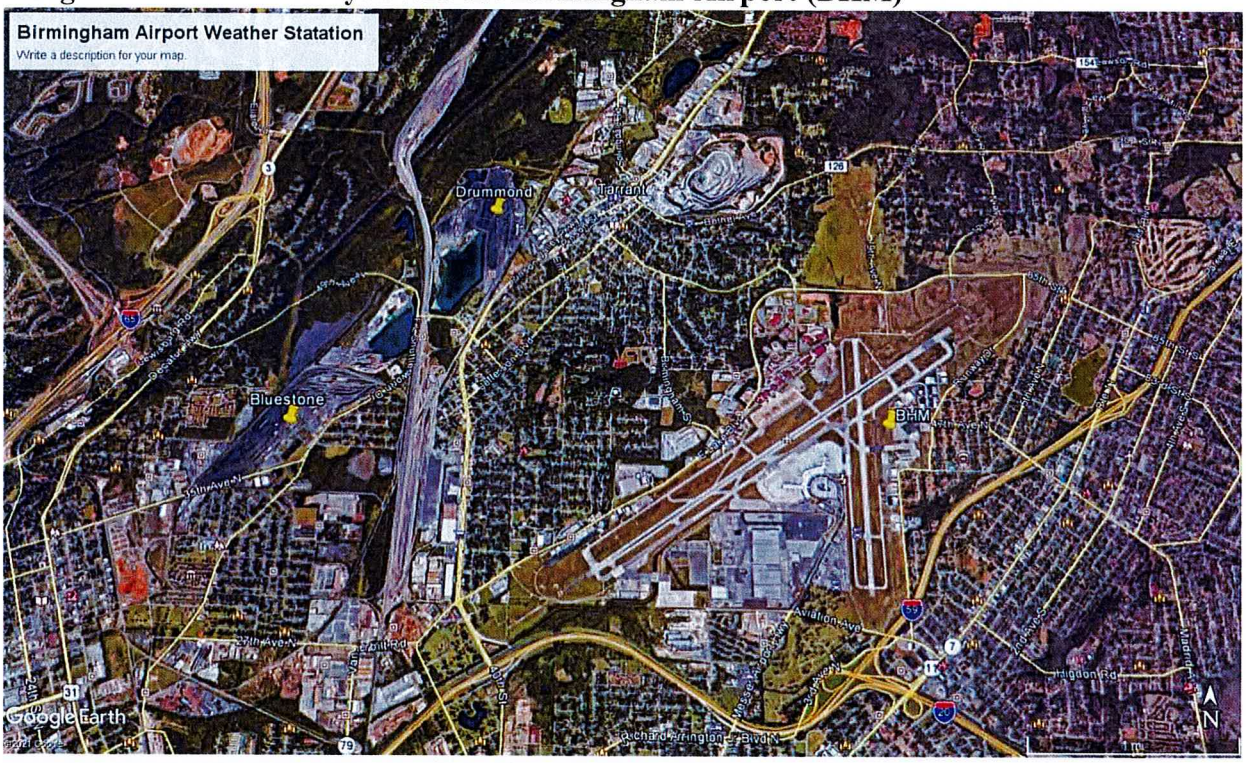
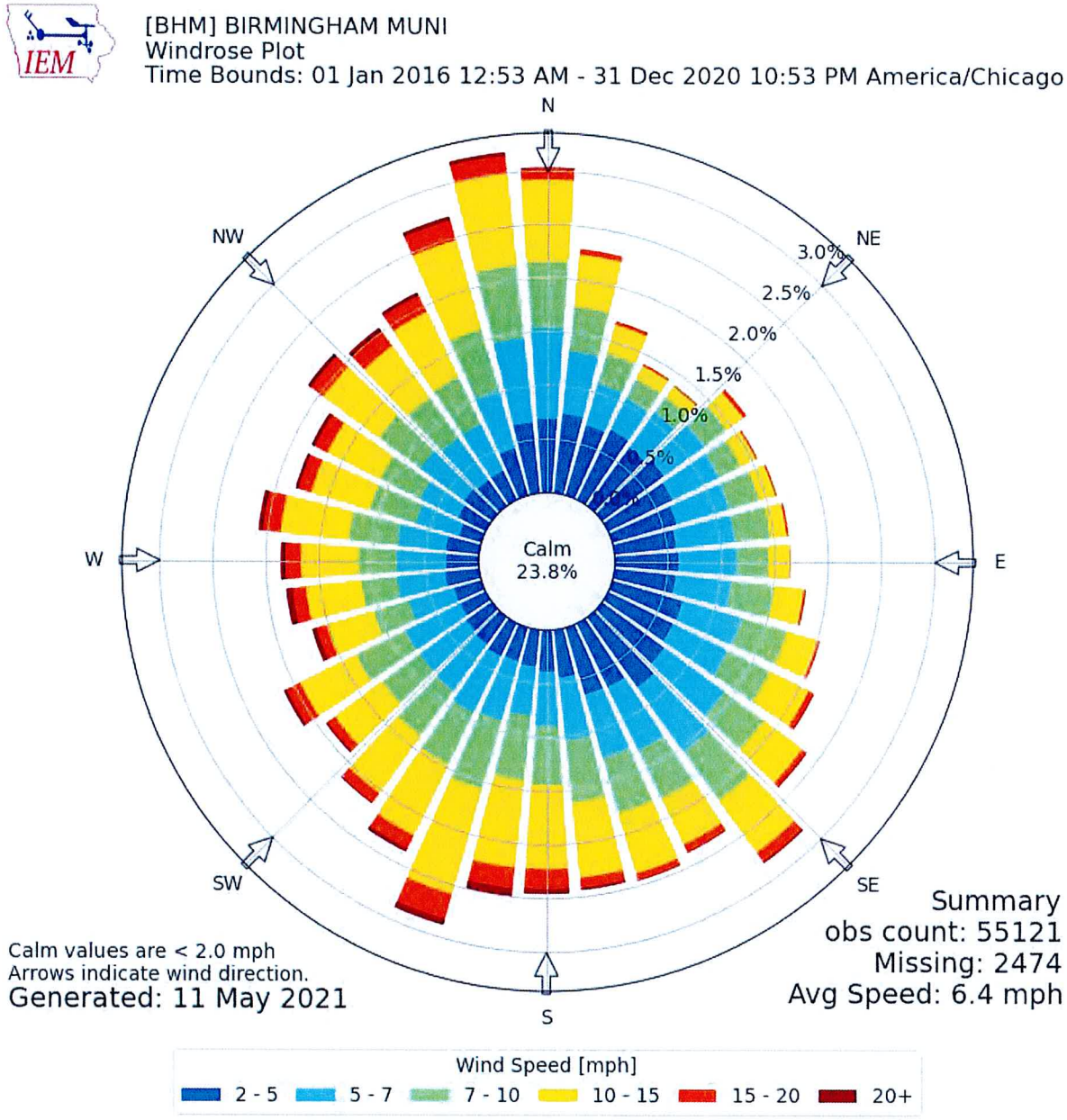


Figure 9. Area of Analysis, the Birmingham Airport (BHM) and the Shelby County Airport NWS Office (BMX)

A 5-year surface wind rose for the Birmingham airport is presented in Figure 10. The frequency and magnitude of wind speed and direction are defined in terms of from where the wind is blowing. The Birmingham airport and the area of study are located in a shallow valley generally oriented from southwest to northeast. Nighttime drainage flow patterns are indicated in the wind rose. This is particularly evident in the lower wind speed categories (2-5 mph) which depict frequent light winds from the eastern and northeastern quadrant. For all wind speed categories, the most frequent winds are from the north and south-southwest.

Figure 10. Birmingham Airport Cumulative Annual Wind Rose for Years 2016-20



Meteorological data from the above surface and upper air NWS stations were used in generating AERMOD-ready files with the AERMET processor (version 19191). The output meteorological data created by the AERMET processor is suitable for being applied with AERMOD input files for AERMOD modeling runs. EPA followed the methodology and settings presented in 40 CFR Appendix W (the Guideline on Air Quality Models), the AERMET User's Guide and the AERSURFACE User's Guide in the processing of the raw meteorological data into an AERMOD-ready format, and used AERSURFACE to best represent surface characteristics.

Hourly surface meteorological data records are read by AERMET and include all the necessary elements for data processing. However, wind data taken at hourly intervals may not always portray wind conditions for the entire hour, which can be variable in nature. Hourly wind data may also be overly prone to indicate calm conditions, which are not modeled by AERMOD. In order to better represent actual wind conditions at the meteorological tower, wind data of 1-minute duration was obtained for the Birmingham Airport, but in a different formatted file to be processed by a separate preprocessor, AERMINUTE. These data were subsequently integrated into the AERMET processing to produce final hourly wind records of AERMOD-ready meteorological data that better estimate actual hourly average conditions and that are less prone to over-report calm wind conditions. This allows AERMOD to apply more hours of meteorology to modeled inputs, and therefore produce a more complete set of concentration estimates. As a guard against excessively high concentrations that could be produced by AERMOD in very light wind conditions, EPA set a minimum threshold of 0.5 meters per second in processing meteorological data for use in AERMOD. In setting this threshold, no wind speeds lower than this value would be used for determining concentrations. This threshold was specifically applied to the 1-minute wind data.

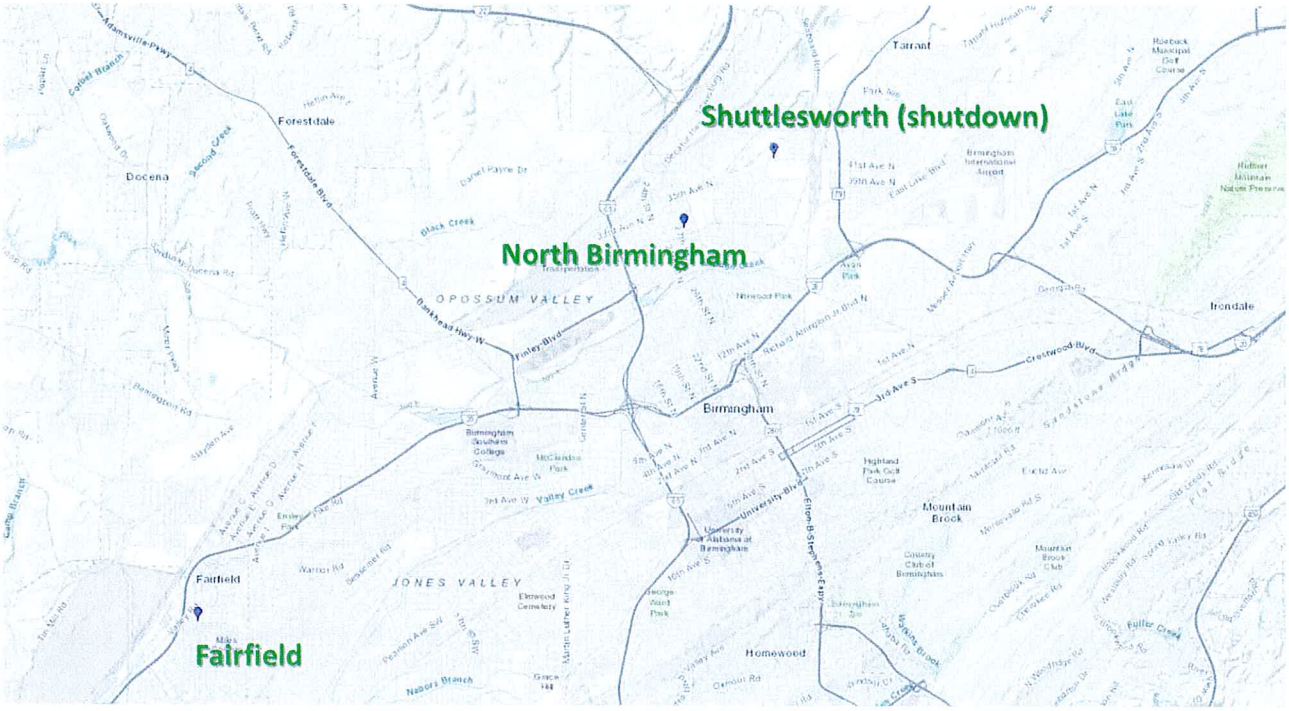
2.8 Modeling Parameter: Geography, Topography and Terrain

The terrain in the area of analysis is best described as a wide, shallow valley with some moderate hills/elevated terrain. To account for these terrain changes, the AERMAP terrain program within AERMOD was used to specify terrain elevations for all the receptors. The source of the elevation data incorporated into the model is from the USGS National Elevation Database.

2.9 Modeling Parameter: Background Concentrations of SO_2

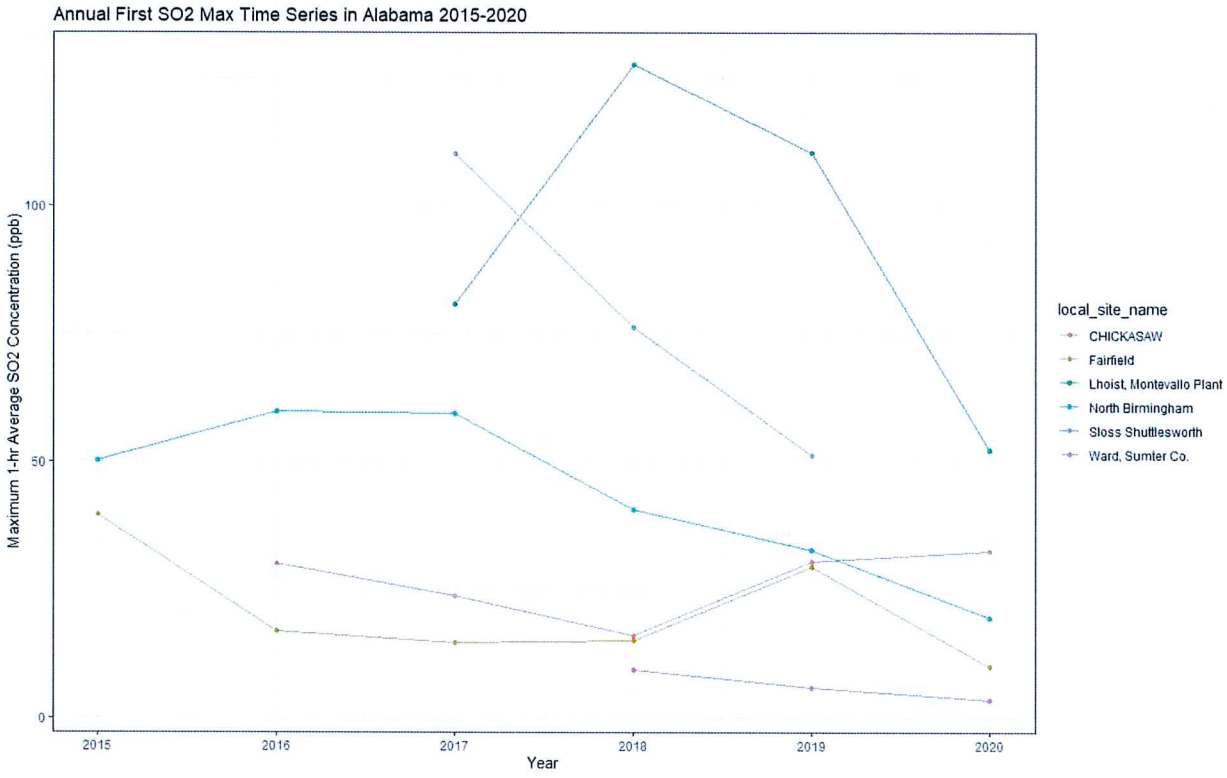
The Modeling TAD offers two mechanisms for characterizing background concentrations of SO_2 that are ultimately added to the modeled design values: 1) a "Tier 1" approach, based on a monitored design value, or 2) a temporally varying "Tier 2" approach, based on the 99th percentile monitored concentrations by hour of day and season or month. For this area of analysis, the EPA choose the Tier 1 mechanism for characterizing background concentrations of SO_2 using the monitored 2019 design value at the Fairfield monitoring station (AQS ID: 01-073-1003) as shown in Figure 11.

Figure 11. SO_2 Air Monitoring Network Near the Facilities



The other closest monitors to the facilities are at the North Birmingham (AQS ID: 01-073-0023) and Shuttlesworth (AQS ID: 01-073-6004) monitoring stations which are within 1.5 miles of the two coke facilities. The EPA choose the Fairfield monitoring station because it is located far enough away from the major SO_2 emission sources included in the modeling so it would not double-count their impacts. The Fairfield monitor is located over 8 miles from the two coke facilities. The EPA also believes that the Fairfield monitor design value accounts for nearby minor sources that were not modeled and is representative of the background concentrations occurring in the area. Additionally, no data were excluded based on meteorology, such as wind direction. The single value of the background concentration for this area of analysis was determined by the EPA to be 29 micrograms per cubic meter ($\mu g/m^3$), equivalent to 11 ppb,[6] and that value was incorporated into the final AERMOD results. The annual first SO_2 maximum was also compared to nearby monitoring stations which can be seen in Figure 12.

Figure 12. Annual First SO_2 Max Time Series in Alabama 2015-2020



In Figure 12, the Fairfield monitor has a lower annual maximum concentration compared to the North Birmingham and Shuttlesworth monitors indicating that the Fairfield monitor is not heavily influenced by major source emissions that were included in the model. Therefore, the EPA believes the Fairfield SO_2 2019 design value is representative of the background concentration in the area.

2.10 Summary of Modeling Inputs and Results

The AERMOD modeling input parameters for the Jefferson County area of analysis are summarized below in Table 3.

Table 3. AERMOD Modeling Input Parameters for the Area of Analysis for the Jefferson County Area

Input Parameter	Value
AERMOD Version	19191
Dispersion Characteristics	Rural
Modeled Sources	43
Modeled Stacks	27
Modeled Structures	46
Modeled Fencelines	1
Total receptors	30,665 (30-km grid) 9,889 (5-km grid)
Emissions Type	Actual
Emissions Years	2017-2019
Meteorology Years	2016-2020
NWS Station for Surface Meteorology	Birmingham Airport (BHM)
NWS Station Upper Air Meteorology	Shelby County Airport (BMX)
NWS Station for Calculating Surface Characteristics	Birmingham Airport (BHM)
Methodology for Calculating Background SO_2 Concentration	Tier 1 using AQS ID: 01-073-1003
Calculated Background SO_2 Concentration	11 ppb

As discussed in Section 2.6, the most complete year of emissions data is 2019. This year is also representative of Bluestone Coke's normal operations. Therefore, the results from modeling the 2019 actual emissions are presented in Table 4, which shows the magnitude and geographic location of the highest predicted modeled concentration based on the input parameters.

[6] The SO_2 NAAQS level is expressed in ppb but AERMOD gives results in $\mu g/m^3$. The conversion factor for SO_2 (at the standard conditions applied in the ambient SO_2 reference method) is 1ppb = approximately 2.619 $\mu g/m^3$.

Table 4. Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentration Averaged Over Three Years for the Area of Analysis for the Jefferson County Area

Averaging Period	Data Period	Receptor Location (UTM Zone 16)		99th Percentile Daily Maximum 1-hour SO_2 Concentration ($\mu g/m^3$)	
		UTM Easting (m)	UTM Northing (m)	Modeled Concentration (including background)	NAAQS Level
99th Percentile 1-Hour Average	2019	518,263	3,714,570	622.15	196.4*

*Equivalent to the 2010 SO_2 NAAQS of 75 ppb reflecting a 2.619 $\mu g/m^3$ conversion factor

Figures 13 through 17 show modeled concentrations in the Jefferson County area from 2017-2021 and can be found on the following pages in chronological order. The EPA's modeling indicates that the 2019 highest predicted 99th percentile daily maximum 1-hour concentration within the chosen modeling domain was 622.15 $\mu g/m^3$, equivalent to 237.46 ppb. This modeled concentration included the background concentration of 11 ppb, and is based on 2019 actual emissions from the modeled facilities. This maximum modeled value exceeds the 1-hour SO_2 NAAQS of 75 ppb and is located near the western boundary of the Bluestone Coke facility, as shown in Figure 15 below (indicated by the light blue dot). As can be seen in the figure, there are many areas around the Bluestone facility that have modeled concentrations above the NAAQS (orange and red receptor locations). Note that AERMOD predicted modeled exceedance near the Berman Brothers facility near the southeastern edge of Figure 15. The EPA investigated these model-predicted exceedances and determined that they are within the fenceline of the Berman Brothers facility, and therefore are not occurring in ambient air locations. Since the general public does not have access to these locations, they would not be classified as exceedances of the NAAQS.

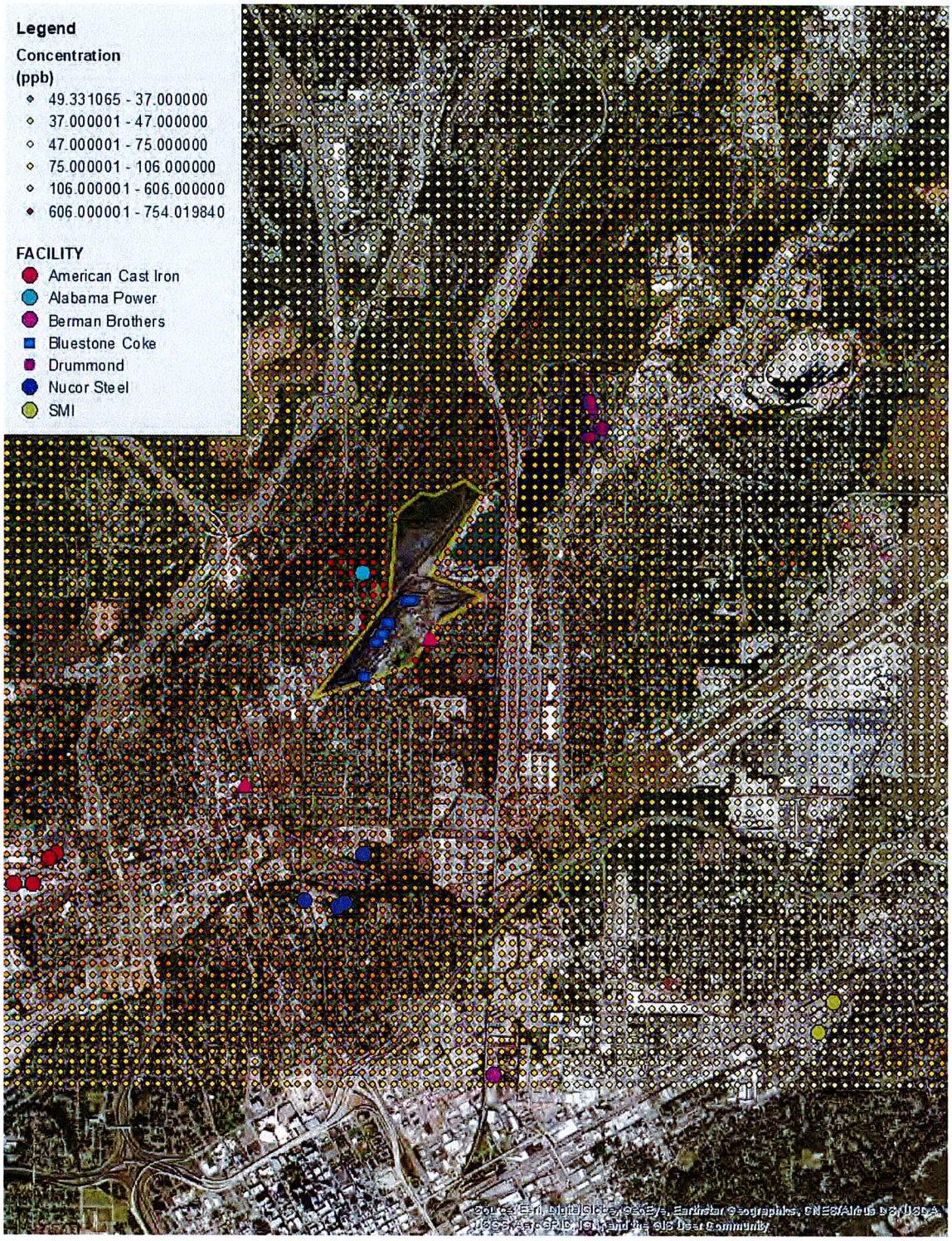
The modeling results indicate that three coke oven gas boilers on Bluestone Coke's property (source ID#'s in the modeling: BS29, BS31, and BS32) are the primary drivers of these modeled exceedances, with significant contribution also from the Bluestone coke oven gas flare (BS28). The results also indicate that the maximum concentrations are located to the west of the facility, as opposed to the east, where the Shuttlesworth monitor (AQS ID: 01-073-6004) operated from 2017-2019.

The EPA also modeled actual emissions from 2017, 2018, 2020, and 2021 to compare to the 2019 results. The results of the 2017 and 2018 model runs are shown in Figures 13 and 14, and show a similar pattern of concentration gradients to 2019. The magnitude of the modeled concentrations is significantly higher in 2017, likely due to significantly higher emissions from Bluestone Coke's three boilers and its flare, when compared to the emissions from those sources in 2018 and 2019. As shown in Figure 16, modeled SO_2 concentrations in 2020 are slightly lower, due to decreased emissions from the Bluestone boilers and flare. The updated 2020 emissions were transmitted from JCDH to the EPA in May 2021[7]. However, there were still modeled NAAQS exceedances around the Bluestone facility in 2020.

In August 2021, JCDH provided to EPA partial year emissions information for 2021 (January to June, 2021) for Bluestone[8] which shows that Bluestone has operated at a significantly lower production level, with zero SO_2 emissions from the boilers or flare. The information provided by JCDH indicates that no coke oven gas (COG) has been burned in the boilers or flare in 2021 and has instead all been burned in the coke oven batteries resulting in SO_2 emissions from the two underfire stacks (source ID #'s BS16 and BS17 in the modeling). As such, concentrations are significantly lower and no NAAQS exceedances around Bluestone were modeled. The 2021 modeling results are presented below in Figure 17.

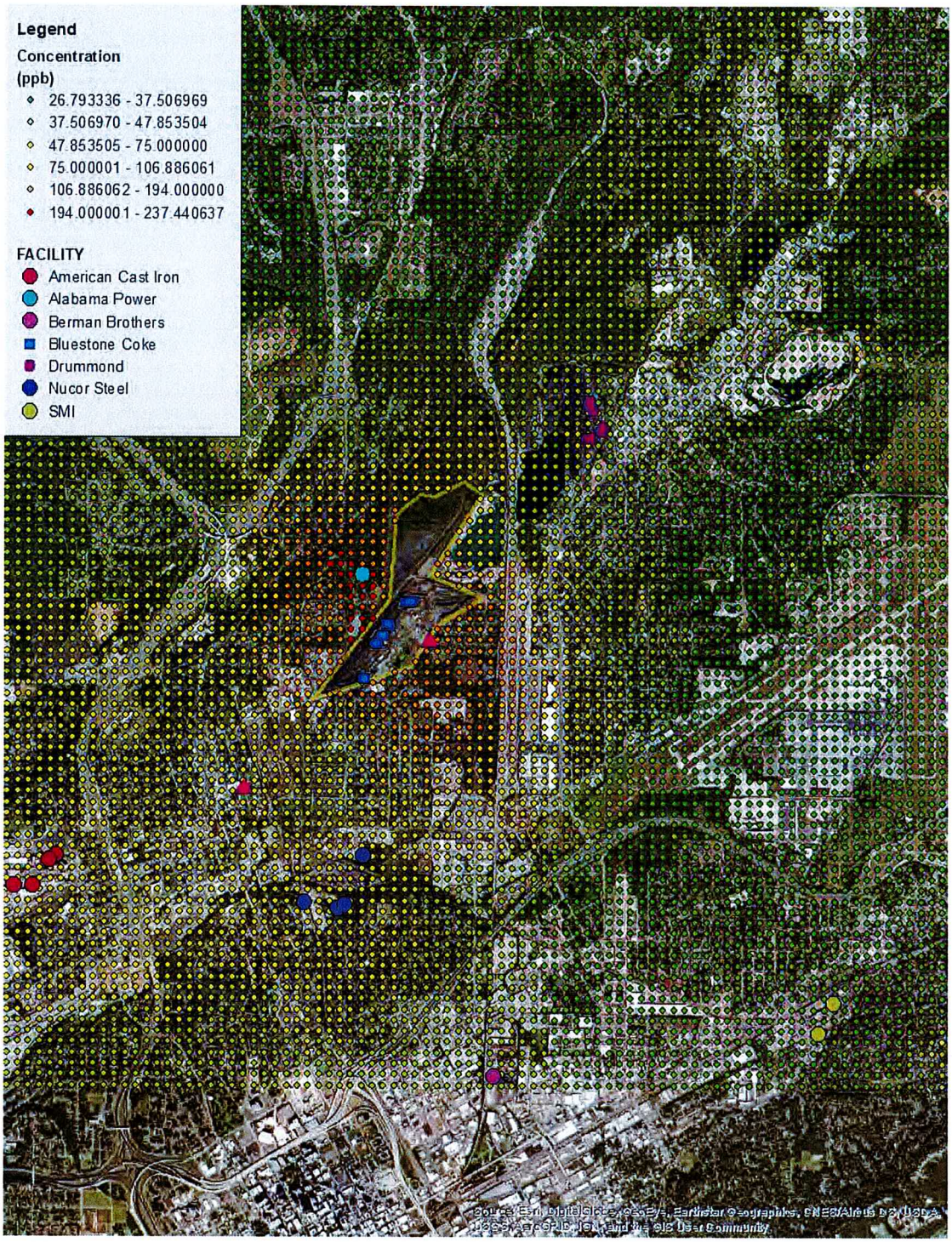
[7] Emails from Jason Howanitz, JCDH, to Rick Gillam, EPA, dated May 13, 2021 and July 26, 2021.
[8] Email from Jason Howanitz, JCDH, to Rick Gillam, EPA, dated August 17, 2021.

Figure 13. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations from Modeling 2017 Actual Emissions for the Jefferson County Area



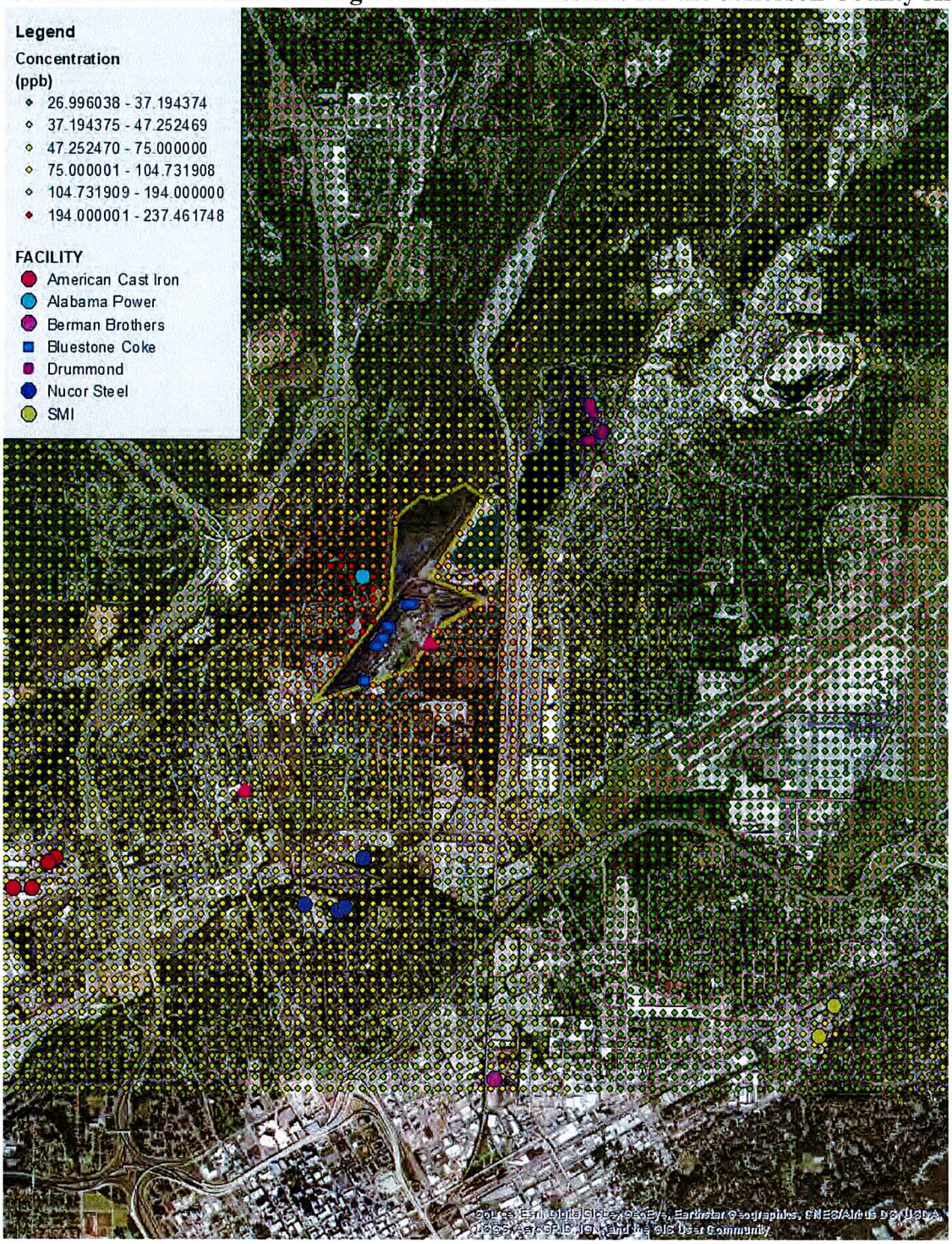
Note: The light blue dot indicates the location of maximum modeled concentration and pink triangles show the locations of the Shuttlesworth (closest to Bluestone Coke) and North Birmingham (southwest of Bluestone Coke) ambient air monitors.

Figure 14. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations from Modeling 2018 Actual Emissions for the Jefferson County Area



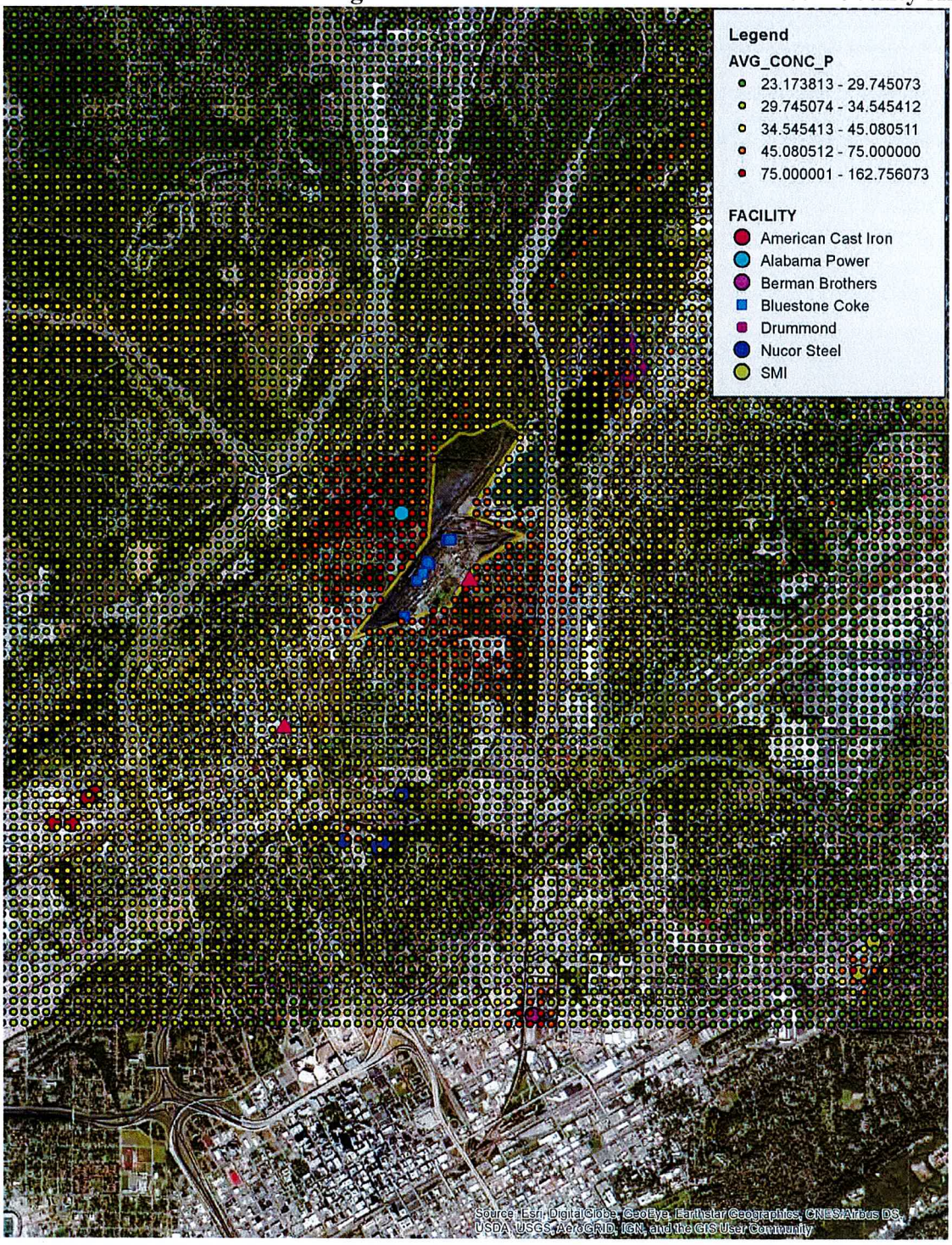
Note: The light blue dot indicates the location of maximum modeled concentration and pink triangles show the locations of the Shuttlesworth (closest to Bluestone Coke) and North Birmingham (southwest of Bluestone Coke) ambient air monitors.

Figure 15. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations from Modeling 2019 Actual Emissions for the Jefferson County Area



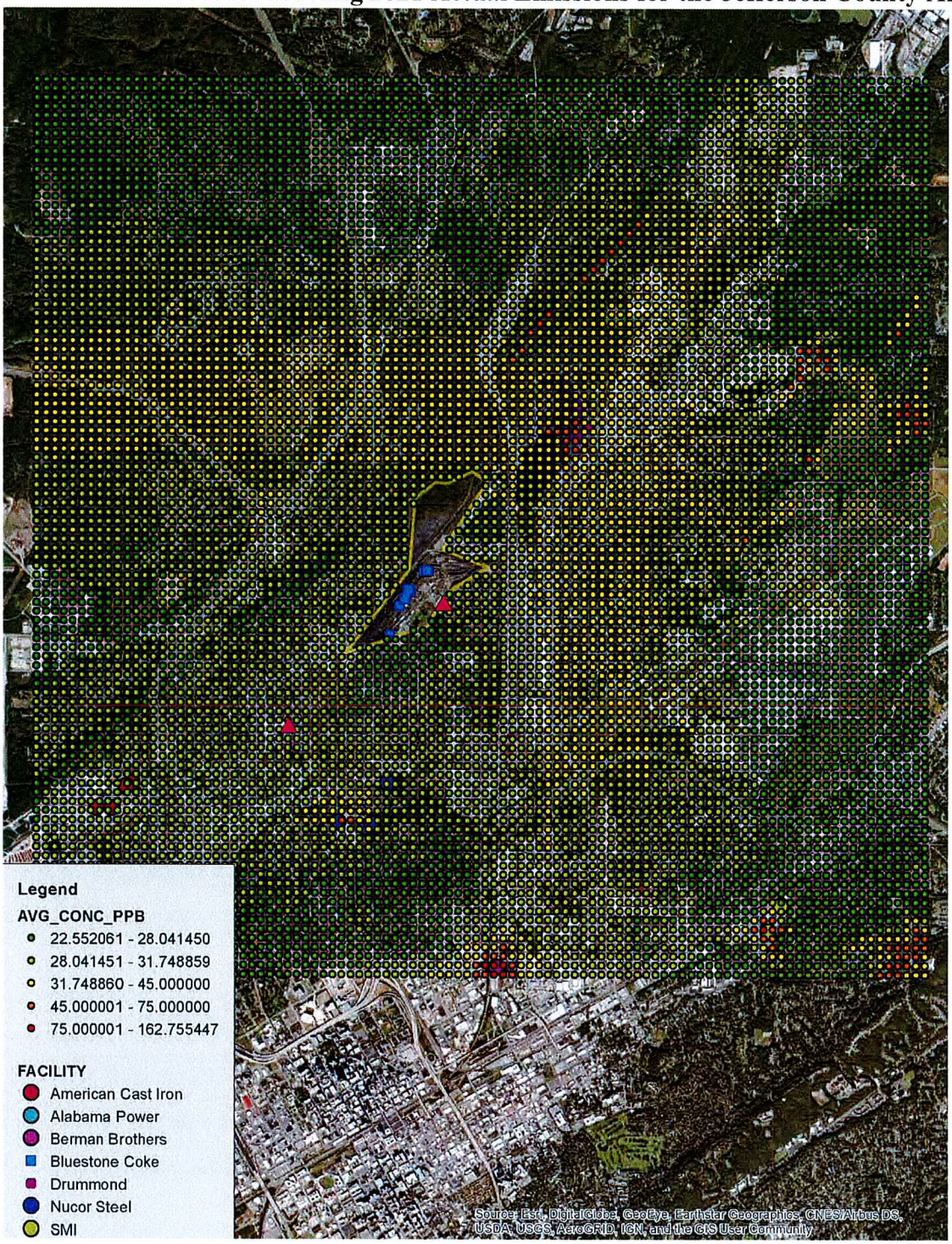
Note: The light blue dot indicates the location of maximum modeled concentration and pink triangles show the locations of the Shuttlesworth (closest to Bluestone Coke) and North Birmingham (southwest of Bluestone Coke) ambient air monitors.

Figure 16. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations from Modeling 2020 Actual Emissions for the Jefferson County Area



Note: The light blue dot indicates the location of maximum modeled concentration and pink triangles show the locations of the Shuttlesworth (closest to Bluestone Coke) and North Birmingham (southwest of Bluestone Coke) ambient air monitors.

Figure 17. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations from Modeling 2021 Actual Emissions for the Jefferson County Area



Note: The pink triangles show the locations of the Shuttlesworth (closest to Bluestone Coke) and North Birmingham (southwest of Bluestone Coke) ambient air monitors.

2.11 Results of Sensitivity Analysis Modeling for Evaluating Control Options at Bluestone Coke

In May 2021, the EPA met with the JCDH and shared the results of the modeling of 2019 actual emissions summarized in Section 2.10 above. During this meeting, it was decided that the EPA would perform additional "sensitivity modeling" to evaluate potential emissions control options at the Bluestone Coke facility that could be implemented to resolve the modeled 1-hour SO_2 NAAQS exceedances near the facility. The results of the model runs are summarized in Table 5 below. Figures 18-26 display maps of the sensitivity modeling results.

The sensitivity model results shown in Table 5 indicate that there are several paths to meeting the 1-hour SO_2 NAAQS in the area surrounding Bluestone Coke in the North Birmingham area. Based upon this modeling, some possible options for achieving modeled attainment of the NAAQS are:

- Model Run #2: Make no changes to the boilers' stack heights, reduce Bluestone Coke's boiler emissions by approximately 99% from the current permitted allowable limits (equivalent to reducing boiler emissions by 95% from 2019 actual emissions levels), and reduce flare emissions by 3% from 2019 actual emissions levels.

- Model Run #4: Increase the boilers' stack heights by 30 feet to the heights modeled in the ERP modeling (discussed above in Section 1.2 of this report), reduce boiler allowable emissions by 93% (equivalent to reducing boiler emissions by 52% from the 2019 actual emissions levels), and reduce flare emissions by 5% from 2019 actual emissions levels.

- Model Run #6: Increase the boilers' stack heights by 58 feet to the Good Engineering Practice (GEP) formula height[9], reduce boiler allowable emissions by 88% (equivalent to reducing boiler emissions by 16% from the 2019 actual emissions levels), and reduce flare emissions by 5% from 2019 actual emissions levels.

- Model Run #8: Increase the boilers' stack heights to the maximum allowed GEP height (65 meters = 213 feet), reduce boiler allowable emissions by 86% (equivalent to establishing a new permitted allowable limit for the boilers at the 2019 actual emissions levels), and reduce flare emissions by 5% from 2019 actual emissions levels.

- Model Run #10: Increase the boilers' stack heights to the maximum allowed GEP height (65 meters = 213 feet), reduce boiler allowable emissions by 93% (equivalent to reducing boiler emissions by 50% from the 2019 actual emissions levels), and reduce flare emissions by 3% from 2019 actual emissions levels.

[9] GEP formula height is defined in the Code of Federal Regulations, 40 CFR Part 51.100(hh).

The options listed above are only some potential ways that Bluestone Coke could resolve the modeled exceedances. In addition to these options, Bluestone Coke could evaluate other possible operational changes and reduce emissions from other modeled SO_2 emissions units at their facility to achieve modeled attainment. The EPA's sensitivity modeling focused on several possible changes for the Bluestone facility. It is recommended that the JCDH present these options to Bluestone Coke and provide them an opportunity to determine the best option that would meet their facility operational needs.

Note that while the modeling results in Section 2.10 are based upon 2019 actual emissions, the modeling to evaluate Bluestone's control options is based upon changes from Bluestone's permitted allowable SO_2 emissions. Bluestone's permitted allowable emissions limits are contained in their Title V permit issued on February 12, 2016. The allowable limits are: Boilers 1 and 3: 1.8 lbs/MMBtu heat input = 428.4 lb/hr; Boiler 4: 1.2 lbs/MMBtu heat input = 240 lb/hr. To ensure Bluestone's emissions will not cause modeled exceedances of the NAAQS in the future, any selected control options would need to be incorporated into the Bluestone Coke permit along with the modeled SO_2 emissions limits.

Table 5. Sensitivity Analyses for Potential SO2 Control Options at Bluestone Coke

Sensitivity Modeling Run	Boiler Emissions (g/s)	% of Boiler 2019 Actuals	% of Boiler Allowable Emissions[10]	Boiler Heights (m)	Flare Emissions (g/s)	% of Flare 2019 Actuals	M M C (p
1. Current Boiler Stack Heights, 2019 Actual Emissions	**21.4**	**100%**	**14%**	**24.08/22.86**	**5.04**	**100%**	**237**
2. Current Boiler Stack Heights, Boiler Emissions Reduced 95% from 2019 Actuals	**1.07**	**5%**	**0.70%**	**24.08/22.86**	**4.89**	**97%**	**73.**
3. Raise Boiler Stacks 30 ft, 2019 Actual Emissions	**21.38**	**100%**	**14%**	**33.22/32.00**	**5.04**	**100%**	**140**
4. Raise Stacks 30 ft, Boiler Emissions Reduced by 52% from 2019 Actuals	**10.05**	**48%**	**7%**	**33.22/32.00**	**4.80**	**95%**	**73.**
5. Boilers GEP Formula Height (Raise Boiler Stacks 58 ft), 2019 Actual Emissions	**21.38**	**100%**	**14%**	**41.84/41.53**	**5.04**	**100%**	**82.**

[10] Bluestone's currently permitted allowable SO_2 emissions limits for their boilers are: Boilers 1 and 3: 1.8 lbs/MMBtu heat input = lbs/MMBtu heat input = 240 lb/hr.

6. Boilers GEP Formula Height (Raise Stacks 58 ft), Boiler Emissions Reduced 16% from 2019 Actuals	**17.96**	**84%**	**12%**	**41.84/41.53**	**4.80**	**95%**	**74.1**
7. Maximum GEP Height (213 ft), 2019 Actual Emissions	**21.39**	**100%**	**14%**	**65**	**5.04**	**100%**	**77.3**
8. Maximum GEP Height (213 ft), 2019 Actual Emissions, Flare Reduced 5%	**21.39**	**100%**	**14%**	**65**	**4.80**	**95%**	**74.1**
9. Maximum GEP Height (213 ft), Boilers at Max Allowable Permitted Limits, Flare at 2019 Actual Emissions	**138.19**	**713%**	**100%**	**65**	**5.04**	**100%**	**140**
10. Maximum GEP Height (213 ft), Boiler Emissions Reduced 50% from 2019 Actuals, Flare Reduced 3%	**10.69**	**50%**	**7%**	**65**	**4.89**	**97%**	**74.**

Figure 18. Run 2, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations at Bluestone Coke's Boilers Existing Stack Heights with Emissions Reduced by 95% from 2019 Actual Emissions

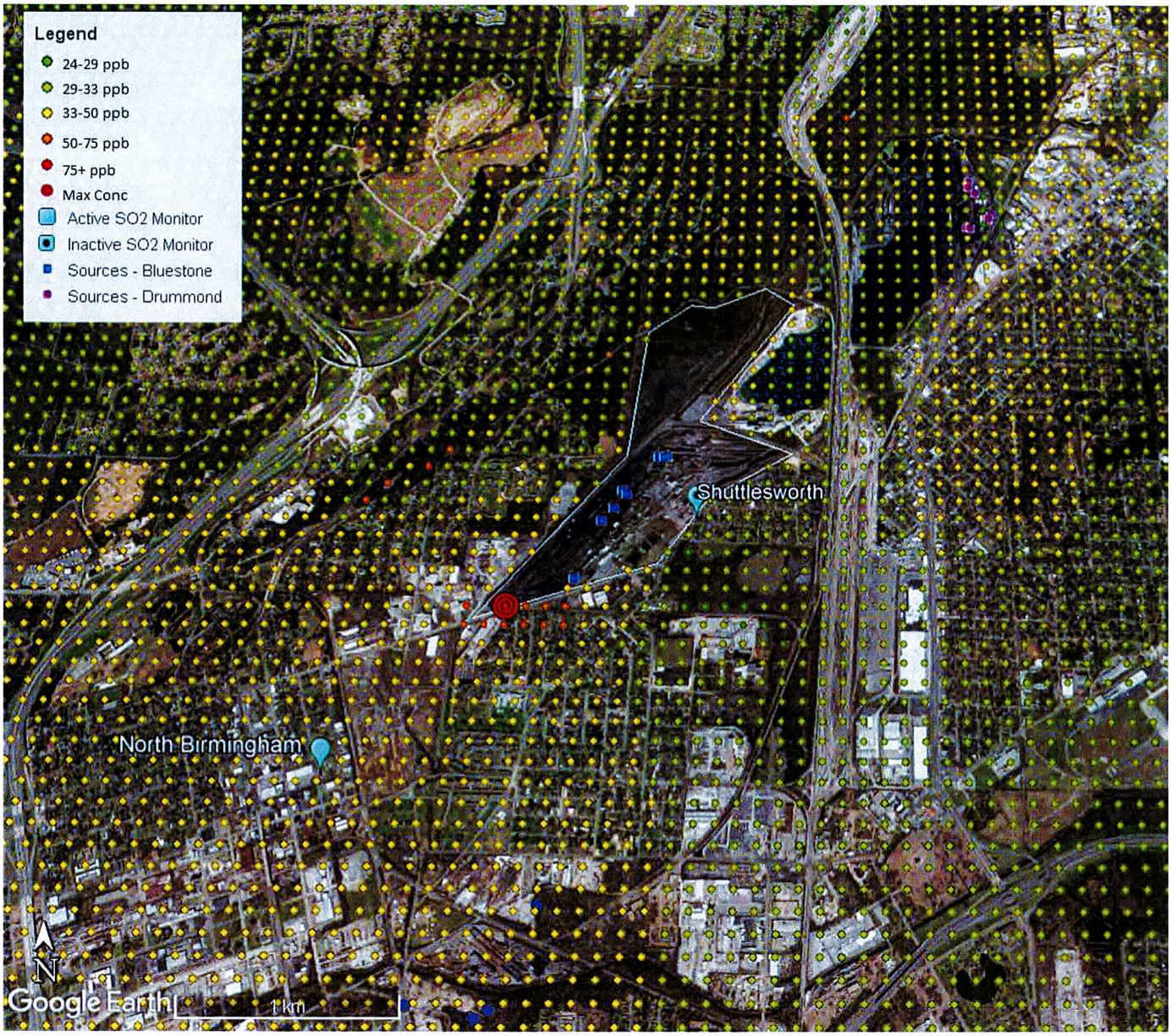


Figure 19. Run 3, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boiler Stacks Raised 30 feet and 2019 Actual Emissions

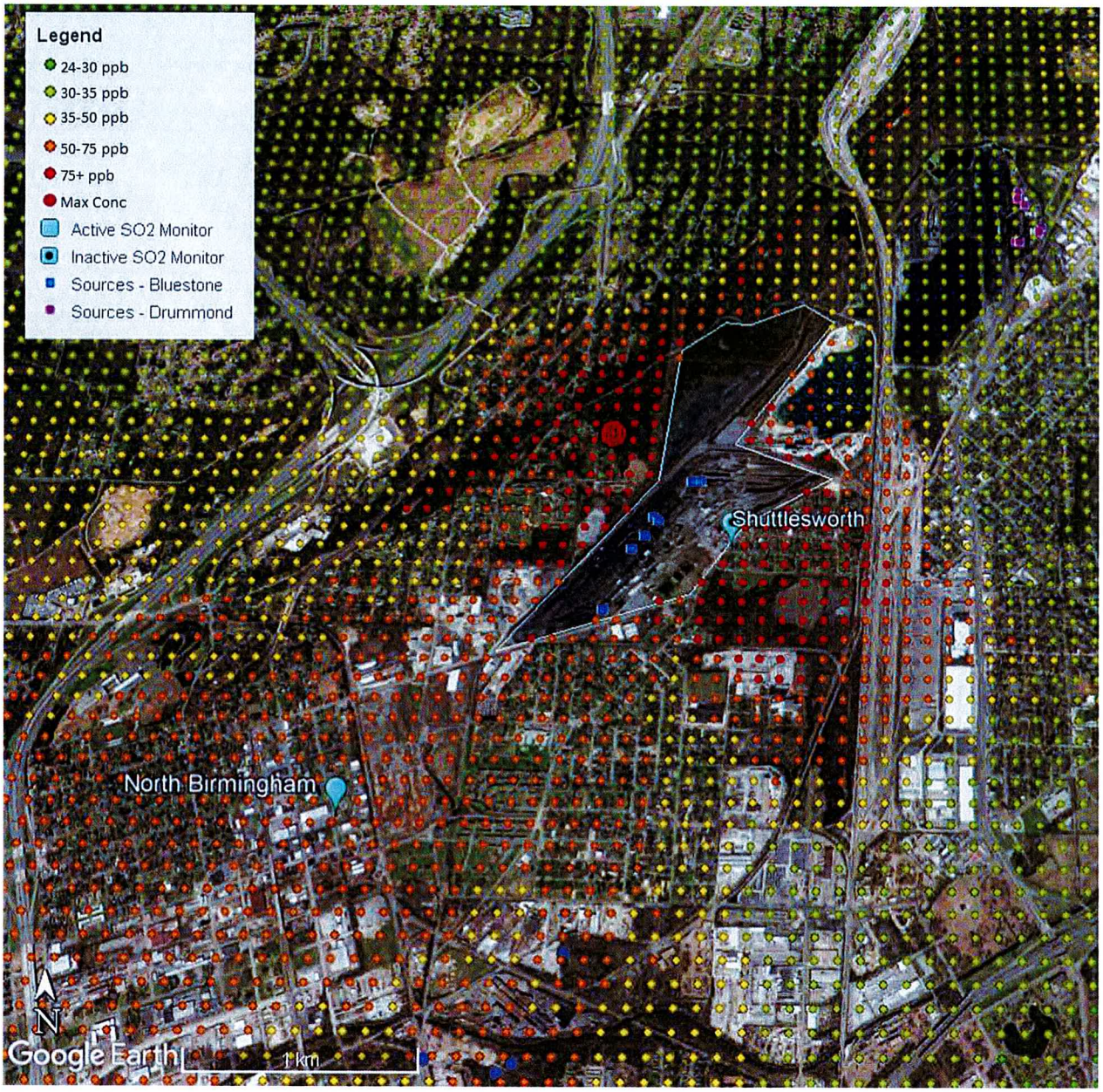


Figure 20. Run 4, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boiler Stacks Raised 30 feet and Boiler Emissions Reduced by 52% from 2019 Actual Emissions

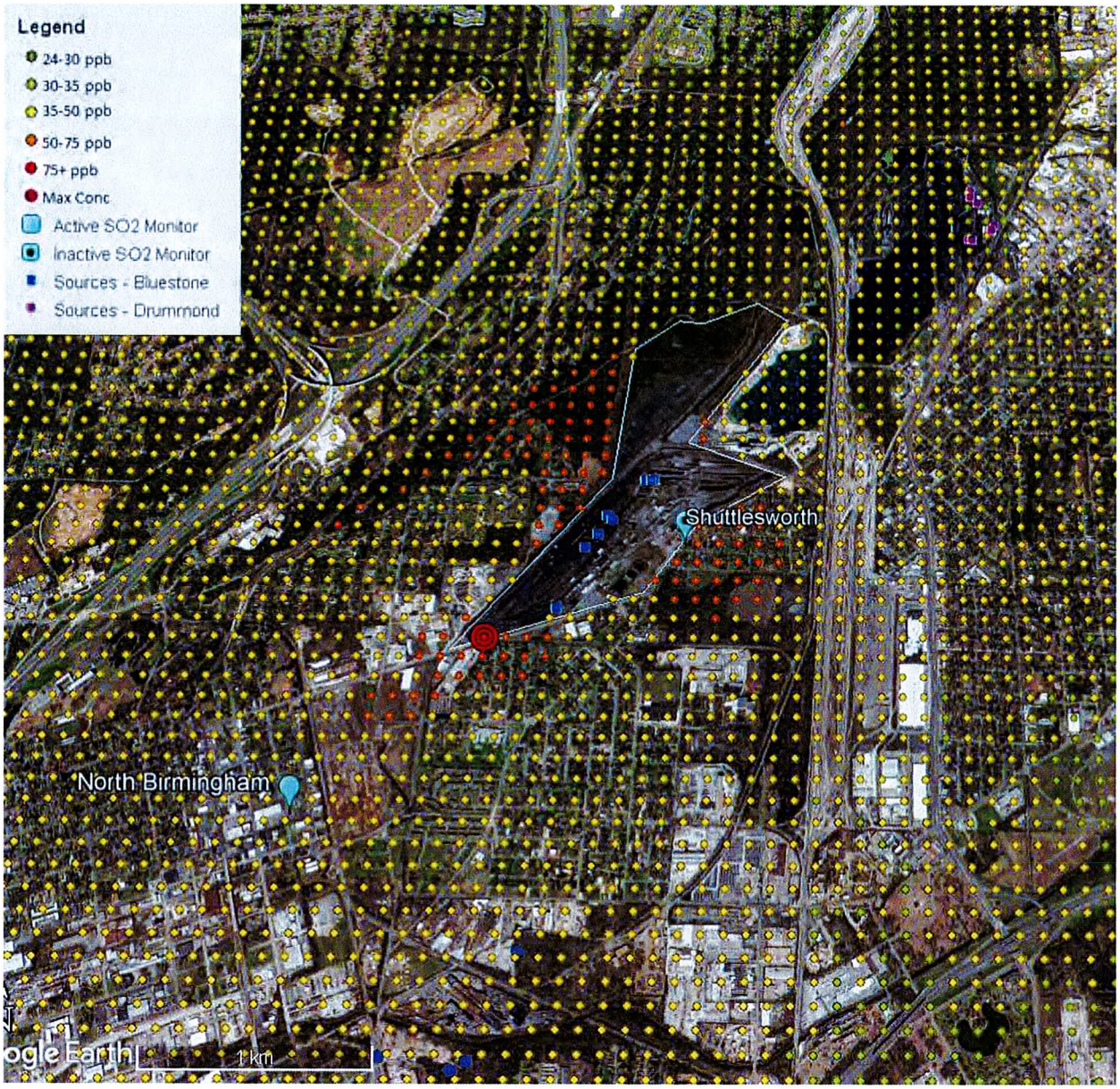


Figure 21. Run 5, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boilers Stacks Raised to GEP Formula Height (Raise Stack Heights by 58 feet) and 2019 Actual Emissions

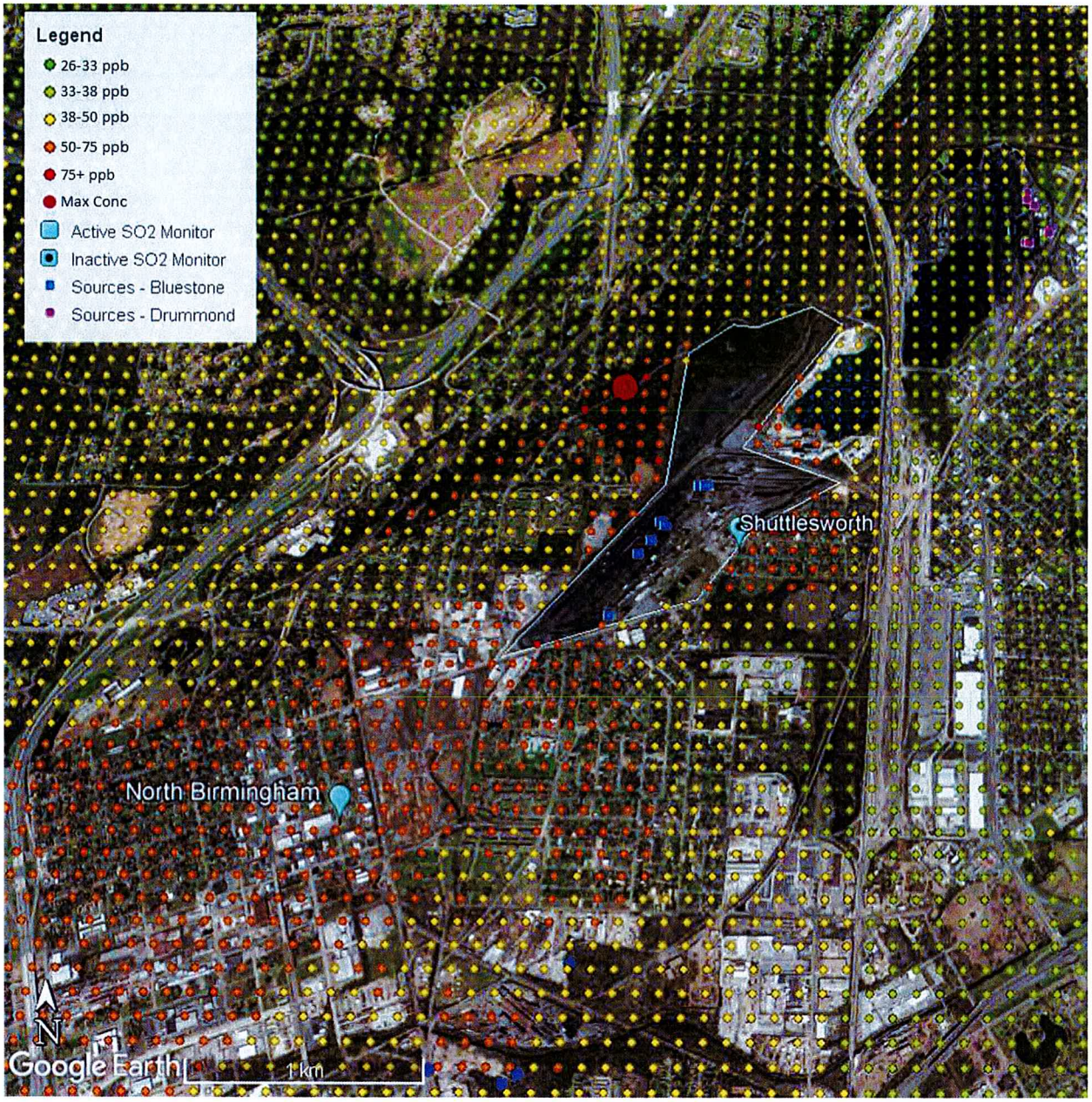


Figure 22. Run 6, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boilers Stacks Raised to GEP Formula Height (Raise Stack Heights by 58 feet) with Boilers Emissions Reduced by 84%

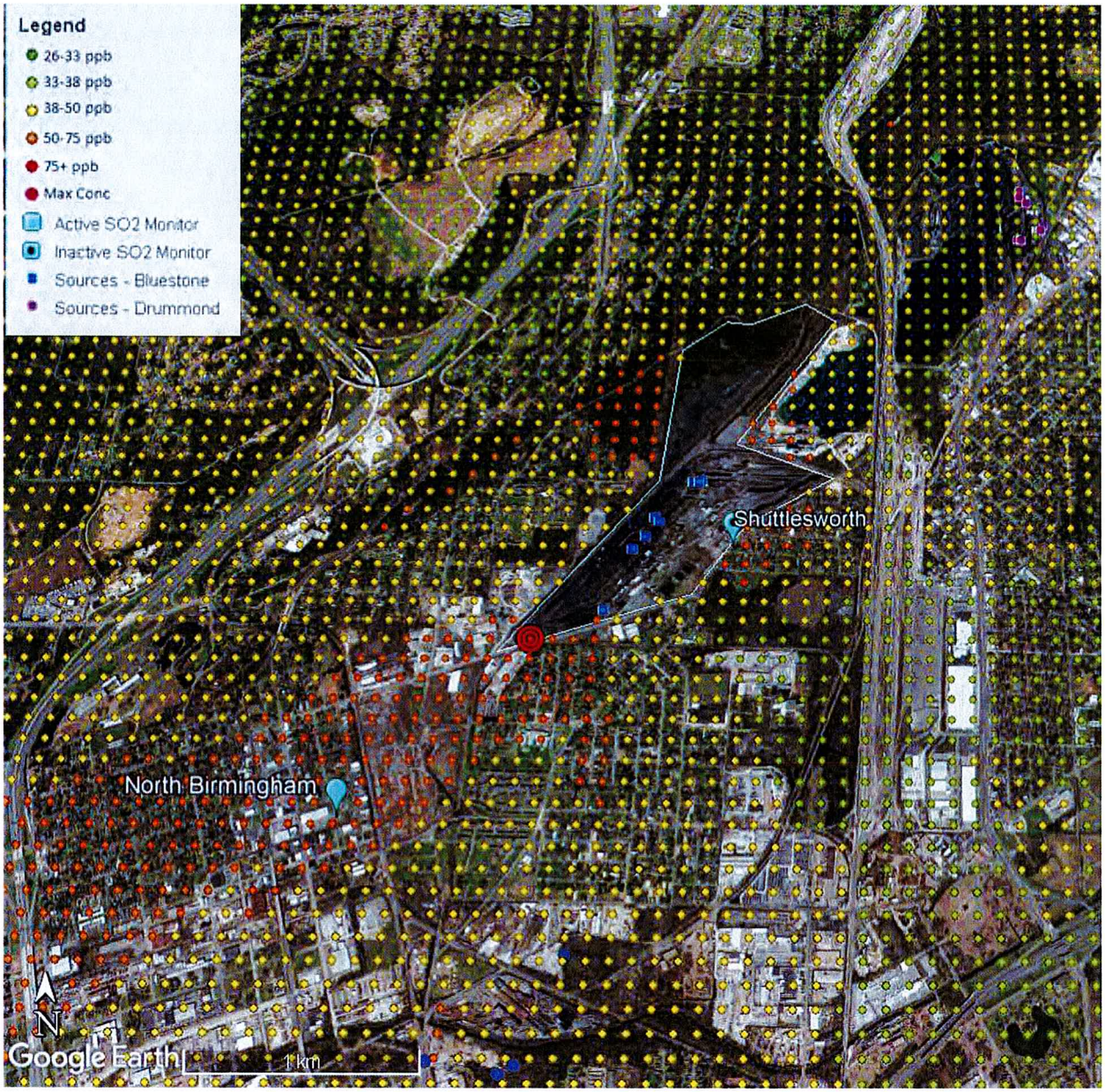


Figure 23. Run 7. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boilers Stacks Raised to Maximum Allowed GEP Height (213 feet) at 2019 Actual Emissions

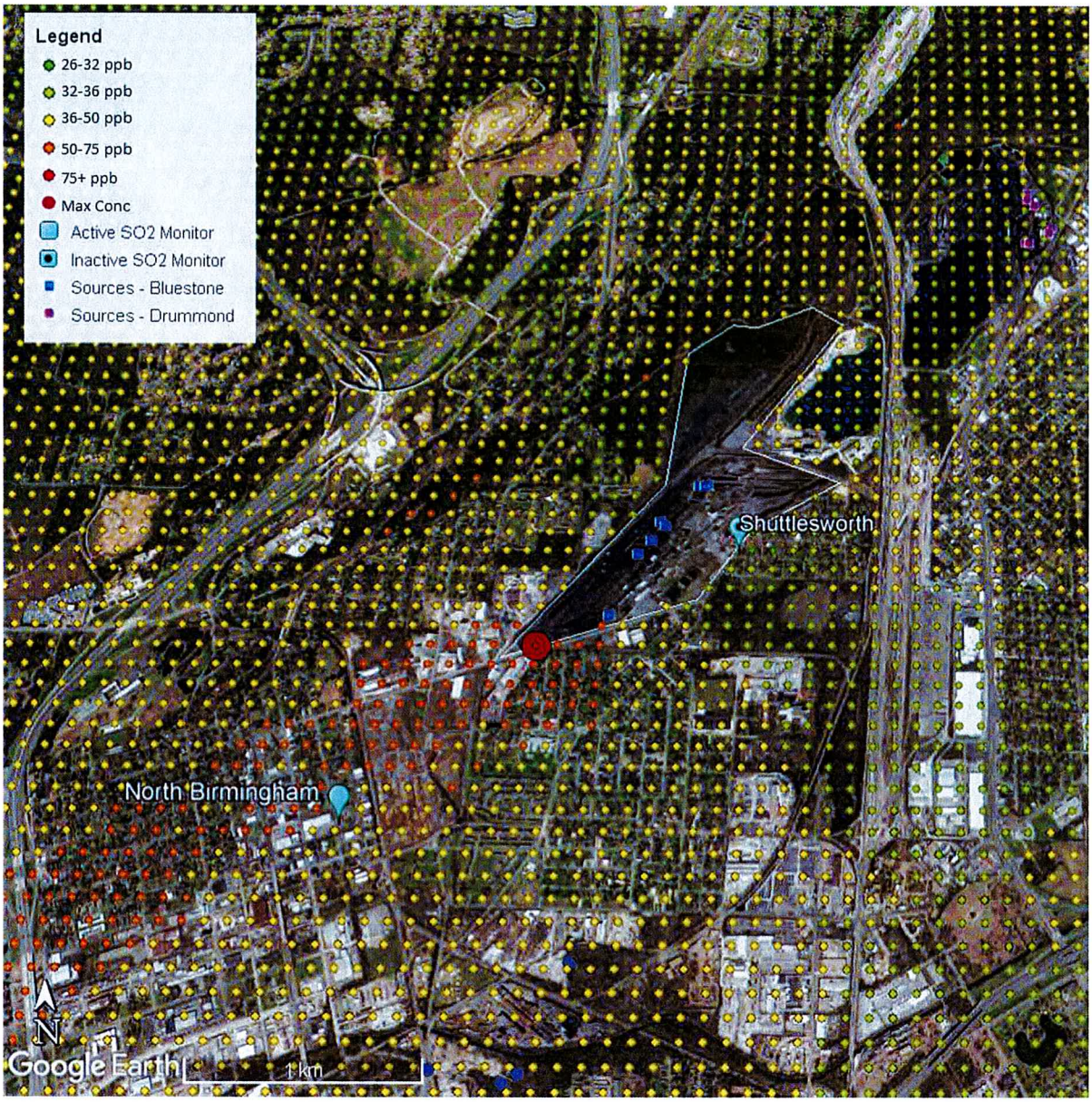


Figure 24. Run 8, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boilers Stacks Raised to Maximum Allowed GEP Height (213 feet) with Boilers at 2019 Actual Emissions and Flare Emissions Reduced 5%

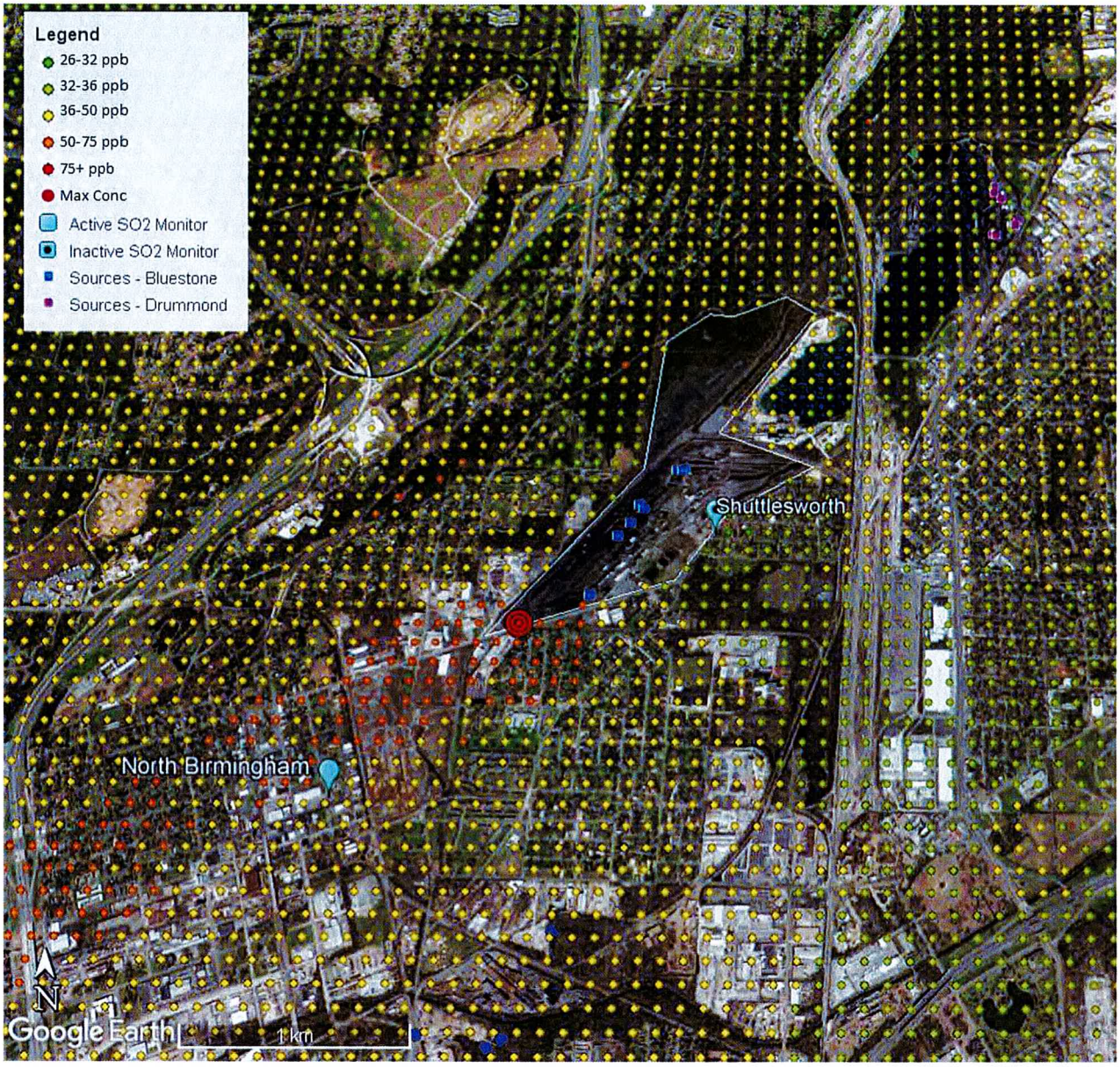


Figure 25. Run 9, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boilers Stacks Raised to Maximum Allowed GEP Height (213 feet), Boilers at Current Maximum Allowable Permitted Emissions Limits and Flare at 2019 Actual Emissions

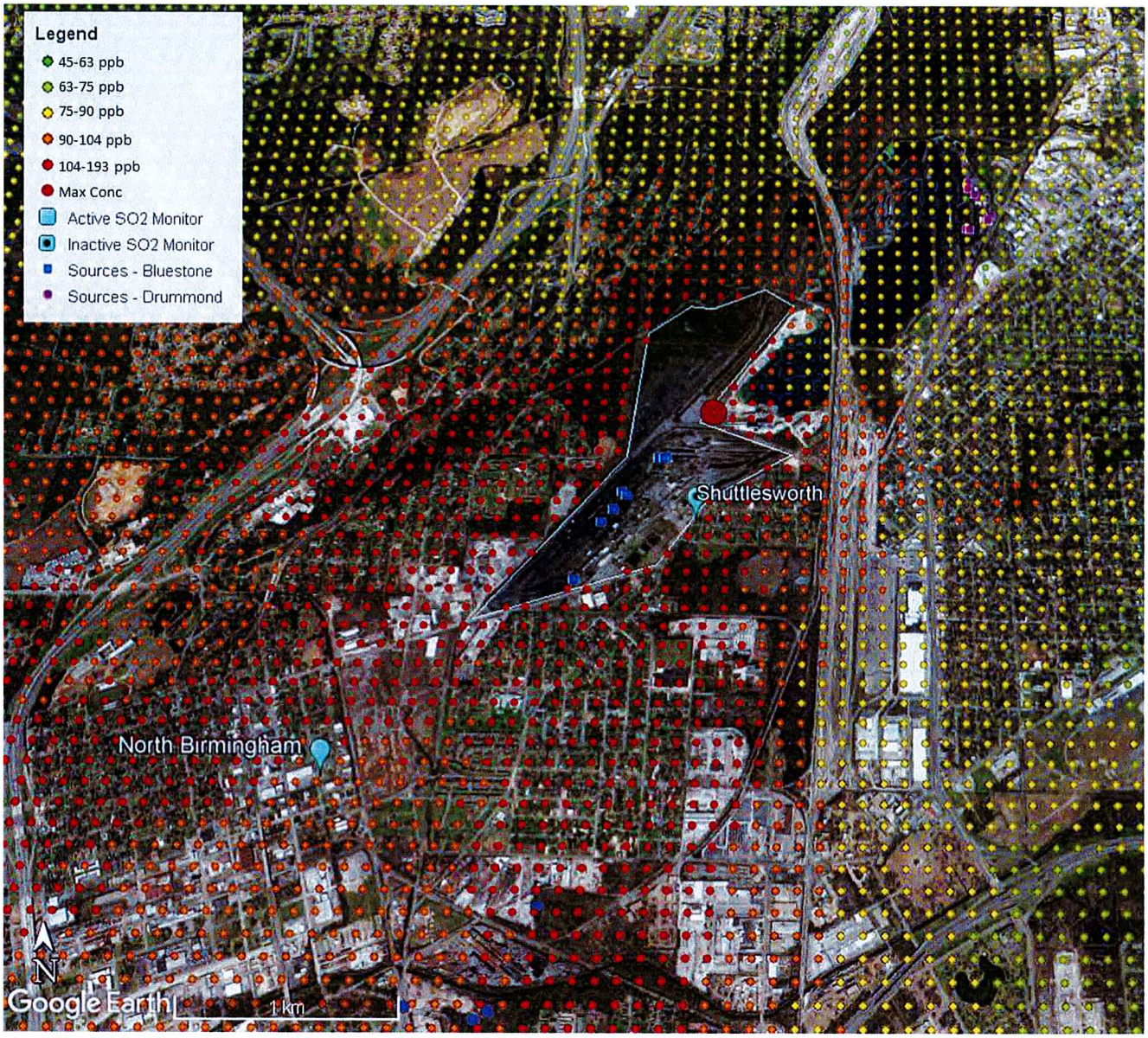


Figure 26. Run 10, Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations with Boilers Stacks Raised to Maximum Allowed GEP Height (213 feet) with Boilers Emissions Reduced 50% and Flare Emissions Reduced 3% from 2019 Actual Emissions

Appendix A

Microsoft Excel Electronic Emissions Inventory Spreadsheet Provided by the Jefferson County Department of Health

Appendix B

Microsoft Excel Electronic Emissions Inventory Spreadsheet with Supplemental Information Collected by EPA Region 4 Modeling Staff (includes the final emissions and source parameters used in EPA's modeling runs)

EXHIBIT 2

JEFFERSON COUNTY BOARD OF HEALTH
October 9, 2019

BOARD OF HEALTH RESOLUTION
SUSTAINABLE INDUSTRIAL-RESIDENTIAL BUFFERS FUND

WHEREAS, while some communities in Jefferson County were originally developed near industrial facilities where workers were employed, these communities are now more likely to experience blight, diminished property values, and decreased access to amenities that promote good health and quality of life (1);

WHEREAS, neighborhood blight contributes to poor health and health disparities (2);

WHEREAS, blight, including large numbers of abandoned houses in local neighborhoods resulting in safety and health hazards, as well as environmental problems, have been identified as significant concerns by residents of Jefferson County (3);

WHEREAS, a guiding principle for local city planning efforts is to avoid locating residential land uses near industrial land uses (4);

WHEREAS, the City of Birmingham established the Birmingham Land Bank Authority to work collaboratively and transparently with community stakeholders and the City of Birmingham to steward vacant, abandoned, and tax-delinquent properties and dispose of them to the best use as defined by the needs of the community to reduce community blight and stabilize neighborhoods (5);

WHEREAS, Birmingham's Neighborhood Revitalization and Public Safety Committee has recommended utilizing the Land Bank to facilitate development of abandoned land and blighted property, including converting some abandoned land into green spaces (6);

WHEREAS, various environmental improvement projects and other innovations can decrease the impact of industrial activity on nearby residential areas; for example, buffer zones and targeted planting of trees and other plants around heavy industrial sites can reduce particulates and some other pollutants in the air, mitigate heat, protect the water and soil, and improve the aesthetics of the surrounding areas (7);

THEREFORE, BE IT RESOLVED, that the Jefferson County Board of Health:

1) Approves transfer of $2,000,000.00 from the General Fund Unassigned Fund Balance to the General Fund Committed Fund Balance to establish the Sustainable Industrial-Residential Buffers Fund;

2) Directs the Jefferson County Health Officer to direct the use of this Fund for the public health benefit of residential areas in close proximity to heavy industrial sites in Jefferson County, including creation of buffer zones, green spaces and other environmental improvement projects;

3) Intends for this Fund to provide matching funds for local, state or federal grants, or to co-fund with other entities who make substantial financial or in-kind contributions, projects that provide a public health benefit. The Fund may also be used to engage consultants or designers to make recommendations or plans for such projects.

Yolanda Clayton, MD, Chair
Jefferson County Board of Health

References:

1) Birmingham Community Framework Plans. Found at https://www.imaginebham.com/

2) Erwin de Leon and Joseph Schilling, "Urban Blight and Public Health: Addressing the Impact of Substandard Housing, Abandoned Buildings, and Vacant Lots" The Urban Institute, April 11, 2017.

3) The Community Themes and Strengths Assessment, "Community Matters: Assessment, Visioning and Planning for a Healthy Jefferson County, Alabama;" 2019.

4) "Future Land Use, Regulations and Urban Design," from the City of Birmingham Comprehensive Plan, Part IV, Chapter 134. Adopted by the Birmingham City Council on October 2, 2013.

5) "Planting Healthy Air" Nature Conservancy https://www.nature.org/content/dam/tnc/nature/en/documents/20160825_PHA_ExSummary_Final.pdf

6) "Our Mission," Birmingham Land Bank; Found at http://birminghamlandbank.org/about/

7) Neighborhood Revitalization & Public Safety Committee Report, in "The Woodfin Way: A Citizen-led Transition for Progress in Birmingham," March 15, 2018.