

MISSOURI PUBLIC SERVICE COMMISSION

STAFF'S GAS INCIDENT REPORT

US Route 169 and Northwest Barry Road
Kansas City, Missouri
July 1, 2020 Gas Incident



Spire Missouri Inc., d/b/a Spire Missouri West
(Formerly known as “Missouri Gas Energy” or “MGE”)

Case No. GS-2021-0019

*Industry Analysis Division
Safety Engineering
Department
June 30 2021 - Jefferson City, Missouri*

**** Denotes Confidential Information ****

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SPIRE MISSOURI WEST
CASE NO. GS-2021-0019**

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SPIRE MISSOURI WEST
CASE NO. GS-2021-0019

I. EXECUTIVE SUMMARY

Commission rules require operators of natural gas pipelines in Missouri to take measures to protect buried pipelines from excavation damage. These measures include, but are not limited to, carrying out a written excavation damage prevention program, participating in the Missouri One Call System, providing educational material to excavators working in areas where pipelines are located, and providing temporary marking of buried pipelines in areas of excavation activity.

Spire Missouri Inc. d/b/a Spire Missouri West (Formerly known as “Missouri Gas Energy” or “MGE”) uses ** [REDACTED] ** (“Contract Locator”), to respond to requests received through the Missouri One Call System, Inc. (“MOCS”)¹ to locate Spire’s natural gas facilities.² ** [REDACTED] **, a Kansas City, Missouri contract locate company, is currently the only contractor Spire uses to perform these services in Missouri.

Prior to the incident, on May 28, 2020 an employee of ** [REDACTED] ** (“the Excavator”), an excavating company, notified MOCS that it planned to excavate in an area that included the grass median and west shoulder of the northbound lanes of U.S. Route 169 south of Northwest Barry Road in Kansas City, Missouri, on June 3, 2020.³

On June 1, 2020 the Contract Locator responded by stating “Clear/No Conflict,” indicating that Spire had no facilities in the area to be excavated.⁴

At approximately 3:32 p.m. CDT⁵ on July 1, 2020, the Excavator, using auger equipment to install a new guard rail, damaged⁶ a 12-inch diameter gas distribution main which

¹ Missouri One Call System, Inc. is the qualified one-call system for Missouri. It is a nonprofit corporation providing a single point of contact to be used by participating utilities to receive locate requests for planned excavations.

² Spire Response to Staff Data Request 0003, 0019, 0020.

³ Spire Response to Staff Data Request 0003, 0003.1.

⁴ Spire Response to Staff Data Request 0003, 0023.1, part 1.

⁵ All subsequent time references in this report are in Central Daylight Time (“CDT”).

⁶ See Appendix C, Photographs 5 and 6.

1 is part of Spire's system.⁷ This pipeline runs east to west under U.S. Route 169 south of
2 Northwest Barry Road in Kansas City, Missouri.⁸ The auger penetrated the edge of a protective
3 casing and into the pipeline, resulting in an unplanned release of natural gas.⁹

4 Spire was notified of the release shortly after it occurred and worked through
5 July 1, 2020 and into July 2, 2020 to shut down the pipeline and repair the damaged segment.
6 Spire returned the pipeline to service by 5:40 p.m. on July 2, 2020.

7 Spire notified the Safety Engineering Department Staff ("Staff") of the incident at
8 approximately 6:08 p.m. on July 1, 2020, and Staff started its investigation at that time.¹⁰ On
9 July 21, 2020, Staff filed a motion recommending that the Commission establish a case for
10 purposes of receiving a report resulting from Staff's investigation of the incident. The
11 Commission granted the motion on July 29, 2020.

12 Spire initially notified the National Response Center ("NRC") of a natural gas incident
13 at approximately 7:00 p.m. on July 1, 2020. Spire provided its 48-hour confirmation of the
14 incident to the NRC at approximately 10:00 p.m. on July 5, 2020.¹¹ Staff has a recommendation
15 related to timely reporting for Spire's 48-hour confirmation of the incident.

16 In Spire's Pipeline and Hazardous Material Safety Administration ("PHMSA")
17 F 7100.1 incident report,¹² Spire identified the apparent cause of the incident as: "Excavation
18 Damage," specifically "One-Call Notification Practices Not Sufficient."¹³ Spire identified the
19 root cause as "Expired Locate," with the contributing factors of "Failed to Mark" and
20 "Inaccurate Records."¹⁴ Staff has a recommendation related to Spire's root cause
21 analysis processes.¹⁵

⁷ Spire Response to Staff Data Request 0034.1.

⁸ Spire Response to Staff Data Request 0002; *See* App. C, Photograph 1.

⁹ Spire Response to Staff Data Request 0002.

¹⁰ Staff Gas Incident Notification record.

¹¹ 20 C.S.R. 4240-40.020(3) (requiring immediate notice of federal incidents and revision or confirmation within 48 hours of confirmed discovery, to the extent practicable).

¹² 20 C.S.R. 4240-40.020(6) (requiring incident reports to be to be submitted for federally reportable incidents occurring on natural gas distribution systems); 20 C.S.R. 4240-40.020(5) (Requirements for report submission).

¹³ *See generally*, Spire Response to Staff Data Request 0034.1.

¹⁴ *See infra* Section V.9; *See supra* Section III.G., Investigation of Failures: Staff Expert Clinton L. Foster. *See* App. A (more detailed information about the incident) (Before Staff's Incident Report was finalized, App. A-C, "Detailed Discussion Of Facts And Staff's Investigation," "Figures," and "Photographs," were provided to Spire for Spire's review and submission of corrections by Spire to Staff regarding the factual content and the identification of confidential information in Appendices A to C. Spire reviewed Staff's transmittal of Appendices A to C and provided a response identifying suggested corrections to certain Staff factual statements. Staff considered all of Spire's suggestions before finalizing its Appendices A to C.).

¹⁵ *See infra* Section V.9.

1 A Staff inspector was dispatched to the incident site on July 2, 2020. The inspector arrived
2 on-site at 9:00 a.m., observed Spire's work to stop the flow of gas to the damaged portion of
3 the pipeline, and the beginning of Spire's work to repair the damaged portion of the pipeline.
4 Three Staff inspectors were assigned to the incident investigation, including the inspector
5 dispatched to the site of the incident, to conduct additional discovery. This additional discovery
6 included submitting Data Requests to Spire and reviewing responses, and collecting
7 information from additional sources.

8 As a result of its investigation, Staff found that sufficient facts/information existed to
9 assert the following violations of Commission rules:

- 10 1. Failure to have adequate procedures within Spire's ** [REDACTED]
11 [REDACTED] ** to comply with 20 C.S.R. 4240-40.030(12)(I)3.G. was a
12 violation of 20 C.S.R. 4240-40.030(12)(I)1.
- 13 2. Failure to provide a copy of the applicable sections of the Missouri Underground Facility
14 Safety and Damage Prevention Act, Chapter 319, Revised Statutes of Missouri (RSMo),
15 in Spire's annual mailings to excavators was a violation of 20 C.S.R. 4240-40.030(12)(I)1.
16 to carry out Spire's written program ** [REDACTED]
17 [REDACTED] **, a procedure necessary to meet the requirements of 20 C.S.R.
18 4240-40.030(12)(I)3.B.
- 19 3. Failure to provide temporary marking of Spire's buried pipeline in the area of excavation
20 activity before, as far as practical, the activity begins was a violation of 20 C.S.R.
21 4240-40.030(12)(I)1. to carry out Spire's written program ** [REDACTED]
22 [REDACTED] **, a procedure necessary to meet the requirements
23 of 20 C.S.R. 4240-40.030(12)(I)3.G.
- 24 4. Failure to evaluate the notification of a planned excavation activity to determine the need
25 for and extent of inspections, was a violation of 20 C.S.R. 4240-40.030(12)(I)1. to carry
26 out Spire's written program ** [REDACTED]
27 **, a procedure necessary to meet the requirements of 20 C.S.R. 4240-40.030(12)(I)4.
- 28 5. Failure to have and follow written procedures for the oversight and inspection of a contract
29 locator in its procedural manual for operations, maintenance and emergencies required by
30 20 C.S.R. 4240-40.030(12)(C)1., was a violation of 20 C.S.R. 4240-40.030(12)(C)2.A.

1 Staff’s recommendations regarding these violations, are addressed in the
2 applicable discussions in Section III (Staff Analysis of the Incident) and listed in Section V
3 (Staff Recommendations) of this report, and it recommends the Commission require Spire to
4 file an action plan to address Staff’s recommendations.

5 *Staff Experts: Kathleen A. McNelis PE, Greg A. Williams and Clinton L. Foster*

6 **II. PURPOSE AND SCOPE OF STAFF’S INVESTIGATION**

7 The purpose and scope of Staff’s investigation was to:

- 8 • Identify the probable cause(s) of the incident;
- 9 • Investigate, analyze and determine if there have been violations of Commission rules
10 related to:
 - 11 ○ Incident Reporting Requirements in 20 C.S.R. 4240-40.020;
 - 12 ○ Missouri Pipeline Safety Standards in 20 C.S.R. 4240-40.030, including but not
13 limited to the operator’s¹⁶ emergency response and failure investigation; and
 - 14 ○ Drug and Alcohol Testing Requirements in 20 C.S.R. 4240-40.080; and
- 15 • Make recommendations, as applicable to Spire with an objective of minimizing the
16 possibility of recurrence.

17 *Staff Expert: Kathleen A. McNelis PE*

18 **III. STAFF ANALYSIS OF INCIDENT**

19 **A. Incident Description and Emergency Response**

20 On May 28, 2020, an employee of the Excavator called MOCS to notify MOCS that it
21 planned to excavate in an area that included the grass median and west shoulder of the
22 northbound lanes of U.S. Route 169 south of Northwest Barry Road in Kansas City, Missouri
23 on June 3, 2020.¹⁷

¹⁶ 20 C.S.R. 4240-40.030(1)(B)26 (defining “operator” as “a person who engages in the transportation of gas.”);
20 C.S.R. 4240-40.030(1)(B)27 (defining “person” as “any individual, firm, joint venture, partnership,
corporation, association, county, state, municipality, political subdivision, cooperative association, or joint stock
association, and including any trustee, receiver, assignee, or personal representative of them.”); 20 C.S.R.
4240-40.030(1)(B)41 (defining “Transportation of Gas” as “the gathering, transmission, or distribution of gas by
pipeline or the storage of gas in Missouri.”).

¹⁷ Spire Response to Staff Data Request 0003, 0003.1.

1 On June 1, 2020 Spire's Contract Locator responded with "Clear/No Conflict,"
2 indicating that Spire had no facilities in the area to be excavated.¹⁸ ** [REDACTED] **
3 ("Contract Locator Employee A"), and ** [REDACTED] ** ("Contract Locator Employee B") are
4 employees of the Contract Locator assigned to respond to the notice of planned excavation.¹⁹

5 At approximately 3:32 p.m. on July 1, 2020, the Excavator using auger equipment to
6 install a new guard rail damaged²⁰ a 12-inch diameter main,²¹ which is part of Spire's natural
7 gas distribution system.²² This main runs east to west under U.S. Route 169 south of Northwest
8 Barry Road in Kansas City, Missouri.²³ The auger penetrated the edge of a protective casing
9 and into the pipeline, resulting in an unplanned release of natural gas.²⁴

10 The main was operating at a pressure of approximately 128 pounds per square inch
11 gauge (psig) at the time of the incident.²⁵ The maximum allowable operating pressure
12 established by Spire for this main is 150 psig.²⁶

13 The Excavator notified a Spire Civic Improvement Inspector soon after the damage
14 occurred.²⁷ The Spire Civic Improvement Inspector notified an operations supervisor, who
15 dispatched a serviceperson and a maintenance crew to the site at approximately 3:37 p.m.²⁸ The
16 Spire serviceperson arrived on-site at 3:40 p.m., and the Spire maintenance crew arrived at
17 3:45 p.m.²⁹ The Kansas City Fire Department closed the remainder³⁰ of U.S. Route 169 in the
18 area of the incident at approximately 3:45 p.m.³¹ At approximately 4:00 p.m. the auger
19 equipment was removed and began excavating to further expose the damaged segment of

¹⁸ Spire Response to Staff Data Request 0003, 0023.1, Part 1.

¹⁹ Spire Response to Staff Data Request 0021 (indicating that once a locate request has been sent by Missouri One Call to the Contract Locator and Company, the locate request is assigned to a Contract Locator employee by the contract supervisor. However, Spire clarified in Response to Staff Data Request 0039.1 that the contract supervisor was assigned to locate request 201494113 and was assigned to covered task 1291 - Locate Underground Pipelines.).

²⁰ See App. C, Photographs 5 and 6.

²¹ Main means a distribution line that serves as a common source of supply for more than one service line.

²² Spire Response to Staff Data Request 0034.

²³ Spire Response to Staff Data Request 0002; See App. C, Photograph 1.

²⁴ Spire Response to Staff Data Request 0002.

²⁵ Spire Response to Staff Data Request 0002.

²⁶ Spire Response to Staff Data Request 0034.

²⁷ Spire Response to Staff Data Request 0002.

²⁸ Spire Response to Staff Data Request 0002.

²⁹ Spire Response to Staff Data Request 0002.

³⁰ One lane in the northbound direction was closed prior to the incident due to the work being completed by the Excavator.

³¹ Spire Response to Staff Data Request 0002.

1 pipeline.³² At 5:00 p.m. Spire attempted to stop the flow of gas to the damaged main by closing
2 the valve on the west side of U.S. Route 169, however the valve did not fully close and allowed
3 natural gas to continue to flow.³³

4 Spire decided to stop the flow of natural gas to the leaking segment by installing
5 temporary control fittings on the main upstream and downstream of the damage. Spire began
6 excavating to expose the main on the west and east sides of the highway at 7:00 p.m. and
7 7:30 p.m., respectively, to install control fittings. By 7:40 p.m. the pipeline pressure decreased
8 to 80 psig. At 8:00 p.m. the leaking pipeline was further exposed and a repair clamp³⁴ was
9 installed in an attempt to stop the leak, however the repair clamp did not fully stop the leaking
10 natural gas.

11 Additionally, on July 1, 2020 Spire conducted a leakage survey of the area surrounding
12 the incident site to check for the migration of natural gas and any additional leaks. Spire did not
13 identify migration of natural gas or additional leaks.³⁵

14 On the next day, July 2, 2020, the excavations located on either side of U.S. Route 169
15 were used to hot tap and line stop³⁶ the pipeline. The hot tapping and line stopping was
16 completed on the west and east sides of U.S. Route 169 at 8:51 a.m. and 11:07 a.m.,
17 respectively, stopping the flow of natural gas to the leaking segment.³⁷

18 At 11:25 a.m. the band clamp was removed from the damaged section of main, and at
19 approximately 3:30 p.m. an encapsulation sleeve³⁸ was installed on the damaged section of
20 main. By 5:40 p.m., the line stops were both removed and the main was returned to service.

21 Spire estimated property damage from the incident to be \$65,283, not including the
22 estimated cost of natural gas loss,³⁹ so the unplanned release of natural gas met the criteria for

³² Spire Response to Staff Data Request 0002.

³³ Spire Response to Staff Data Request 0002.

³⁴ See Appendix C, Photographs 3, 4 (A repair clamp is a type of repair equipment which fits around the pipeline and is tightened to "clamp" onto the pipeline.).

³⁵ Spire Response to Staff Data Request 0002.

³⁶ See App. C, Photograph 2 (Hot tapping and line stopping a pipeline is a method to isolate a segment of a pipeline through the use of a specialized fitting(s) which can tap an active pipeline and insert a plug into the pipeline which stops the flow of product).

³⁷ Spire Response to Staff Data Request 0002.

³⁸ An encapsulation sleeve or weld-over sleeve is a type of repair equipment which is welded onto and around the pipeline.

³⁹ Spire Response to Staff Data Request 0034.1.

1 a federal incident.⁴⁰ There were no deaths or injuries as a result of this incident, and gas volume
2 lost was estimated to be less than 3 million cubic feet.

3 Staff did not find any violations of Commission rules with respect to Spire’s emergency
4 response to the incident.

5 *Staff Expert: Clinton L. Foster*

6 **B. Incident Reporting Requirements**

7 *1. Regulatory Requirements:*

8 20 C.S.R. 4240-40.020(3)(A) requires that at the earliest practicable moment following
9 discovery, but no later than one (1) hour after confirmed discovery,⁴¹ each operator shall give
10 notice, in accordance with subsection (3)(B), of each federal incident as defined in section (2).

11 20 C.S.R. 4240-40.020(3)(B) requires that each notice required by subsection (3)(A)
12 must be made to the NRC.

13 20 C.S.R. 4240-40.020(3)(C) requires that within forty-eight (48) hours after the
14 confirmed discovery of an incident, to the extent practicable, an operator must revise or confirm
15 its initial telephonic notice required in subsection (3)(B) with an estimate of the amount of gas
16 released, an estimate of the number of fatalities and injuries, and all other significant facts that
17 are known by the operator that are relevant to the cause of the incident or extent of the damages.
18 If there are no changes or revisions to the initial report, the operator must confirm the estimates
19 in its initial report.

20 20 C.S.R. 4240-40.020(4)(A) requires operators to notify designated Commission
21 personnel by telephone within two hours following discovery of a Missouri reportable

⁴⁰ 20 C.S.R. 4240-40.020 (2)(D) (defining a federal incident to be any of the following events: 1. An event that involves a release of gas from a pipeline and that results in one or more of the following consequences: A. A death or personal injury necessitating in-patient hospitalization; or B. Estimated property damage of fifty thousand dollars (\$50,000) or more, including loss to the operator and others, or both, but excluding the cost of gas lost; or C. Unintentional estimated gas loss of three (3) million cubic feet or more; or 2. An event that is significant, in the judgement of the operator, even though it did not meet the criteria of paragraph (2)(D)1.)

⁴¹ 20 C.S.R. 4240-40.020(2)(C) (defining “confirmed discovery” to mean when it can be reasonably determined, based on information available to the operator at the time a reportable event has occurred, even if only based on a preliminary evaluation.).

1 incident⁴² by the operator, or as soon thereafter as practicable if emergency efforts to protect
2 life and property would be hindered.

3 20 C.S.R. 4240-40.020(6) requires that operators of distribution pipeline systems must
4 submit U.S. Department of Transportation Form PHMSA F 7100.1 as soon as practicable but
5 not more than 30 days after detection of an incident required to be reported under section (3).

6 2. Spire Actions to Comply with 20 C.S.R. 4240-40.020(2)(C), (3), (4), and (6)

7 Spire confirmed discovery of an incident meeting the reporting requirements of
8 20 C.S.R. 4240-40.020(2)(C) and (4)(A) at approximately 5:24 p.m. on July 1, 2020.⁴³ The
9 incident reporting requirements in 20 C.S.R. 4240-40.020(3), (4), and (6) were completed
10 as follows:

11 a. Spire made the initial telephone notification of a natural gas incident to a
12 designated Commission personnel at approximately 6:08 p.m. on July 1, 2020.⁴⁴

13 b. Spire notified the NRC of a natural gas incident at approximately 7:00 p.m. on
14 July 1, 2020 (NRC Report Number 1280866).⁴⁵

15 c. Spire provided 48-hour confirmation of the incident to the NRC at
16 approximately 10:00 p.m. on July 5, 2020 (NRC Report Number 1281146).

17 d. Spire completed and submitted USDOT-PHMSA form PHMSA F 7100.1, titled
18 "Incident Report – Gas Distribution System," to Staff and PHMSA on July 31, 2020.⁴⁶

⁴² 20 C.S.R. 4240-40.020(4)(A) (requiring reporting of the following events within areas served by the operator:
1. An event that involves a release of gas involving the operator's actions or pipeline system, or where there is a suspicion by the operator that the event may involve a release of gas involving the operator's actions or pipeline system, and results in one (1) or more of the following consequences: A. A death; B. A personal injury involving medical care administered in an emergency room or health care facility, whether inpatient or outpatient, beyond initial treatment and prompt release after evaluation by a health care professional; or C. Estimated property damage of ten thousand dollars (\$10,000) or more, including loss to the gas operator or others, or both, and including the cost of gas lost; or 2. An event that is significant, in the judgment of the operator, even though it did not meet the criteria of paragraph (4)(A)1.).

⁴³ Spire Response to Staff Data Request 0048.

⁴⁴ 20 C.S.R. 4240-40.020(4)(A) (requiring the operator to notify designated Commission personnel by telephone within two hours following discovery, unless emergency efforts to protect life and property would be hindered and then as soon thereafter as practicable, for each event which meets the natural gas incident reporting requirements.).

⁴⁵ Spire Response to Staff Data Request 0034.1.

⁴⁶ Information provided by Spire's July 31, 2020 e-mail to Commission Staff; and Spire Response to Staff Data Request 0034.

1 3. Staff Analysis:

2 Spire complied with the reporting requirements of 20 C.S.R. 4240-40.020(4)(A) by
3 telephone notification of a natural gas incident to designated Commission personnel at
4 approximately 6:08 p.m. on July 1, 2020.

5 Spire complied with the reporting requirements of 20 C.S.R. 4240-40.020(3)(A) and
6 20 C.S.R. 4240-40.030(3)(B), by notification to the NRC of a natural gas incident at
7 approximately 7:00 p.m. on July 1, 2020.

8 Spire did not submit its confirmation or revision of its initial incident notification to the
9 NRC within 48 hours of confirmed discovery of the incident. Spire submitted the notification
10 at approximately 10:00 p.m. on July 5, 2020, which is approximately 99 hours following
11 confirmed discovery of the incident. Spire did not provide notification to the NRC within
12 48 hours, however Staff notes that 20 C.S.R. 4240-40.020(3)(C) provides “... to the extent
13 practicable”. Staff recognizes that when an event is classified as an incident due to cost and/or
14 gas release volume estimates, it may take some time to gather the information and either
15 confirm or revise to the NRC. Staff has included a recommendation below related to timely
16 reporting to the NRC.

17 Spire complied with the requirements of 20 C.S.R. 4240-40.020(6), by submitting its
18 USDOT-PHMSA form PHMSA F 7100.1 titled “Incident Report – Gas Distribution System”
19 to Staff and PHMSA on July 31, 2020. Spire’s submission time was not more than 30 days after
20 detection of an incident, as required by 20 C.S.R. 4240-40.020(6)(A).

21 4. Violations:

22 Staff found that Spire’s procedures and actions were consistent with the requirements
23 of 20 C.S.R. 4240-40.020(3), (4), and (6), however Staff included one recommendation below
24 as a result of its investigation related to more timely reporting to the NRC.

25 5. Staff Recommendations:

26 Staff recommends that Spire review, evaluate and update, as necessary, its reporting
27 procedures to ensure that such procedures require revision or confirmation of its initial
28 telephonic notice to the NRC within 48 hours after the confirmed discovery of an incident as
29 required by 20 C.S.R. 4240-40.020(3)(C).

30 *Staff Expert: Greg A. Williams*

1 **C. Damage Prevention Program**

2 In its PHMSA F 7100.1 incident report, Spire indicated that a third-party excavator
3 damaged Spire’s facilities, causing this incident. Spire’s narrative description of the incident⁴⁷
4 includes the following statements:

5 The contractor was not working under a valid locate at the time of the
6 damage. A locate was requested by the contractor on May 28th for the
7 area being worked. The locator did not complete a proper locate at that
8 time, and the original locate had expired before the work began and was
9 not renewed.⁴⁸

10 *1. Regulatory Requirements:*

11 Commission Rule 20 C.S.R. 4240-40.030(12)(I)1. requires operators of buried pipelines
12 to have and carry out a written program to prevent pipeline damage by excavation activities in
13 accordance with subsection 20 C.S.R. 4240-40.030(12)(I).

- 14 • 20 C.S.R. 4240-40.030(12)(I)3.B. requires the written program to provide for
15 annual mailings to excavators. The mailings must either include a copy of the
16 applicable sections of Chapter 319, RSMo concerning underground facility
17 safety and damage prevention pertaining to excavators, or a summary of the
18 provisions of Chapter 319, RSMo approved by designated Commission
19 personnel. Chapter 319, RSMo § 319.010 to § 319.050, includes provisions for
20 both excavators and underground facility owners.
- 21 • 20 C.S.R. 4240-40.030(12)(I)3.G. requires that the written program provide for
22 temporary marking of buried pipelines in the area of excavation activity before,
23 as far as practical, the activity begins.
- 24 • Commission Rule 20 C.S.R. 4240-40.030(12)(I)4. requires that each notification
25 identified in subparagraph (12)(I)3.D. should be evaluated to determine the need

⁴⁷ Spire Response to Staff Data Request 0034.

⁴⁸ Spire Response to Staff Data Request 0034

1 for and the extent of inspections. The following factors should be considered in
2 determining the need for and extent of those inspections:

- 3 • The type and duration of the excavation activity involved;
- 4 • The proximity to the operator's facilities;
- 5 • The type of excavating equipment involved;
- 6 • The importance of the operator's facilities;
- 7 • The type of area in which the excavation activity is being performed;
- 8 • The potential for serious incident should damage occur;
- 9 • The prior history of the excavator with the operator; and
- 10 • The potential for damage occurring which may not be easily recognized by the
11 excavator.

12 Staff notes that Spire appears to base its narrative description that the Excavator was not
13 working under a valid locate at the time of the damage on an interpretation of certain provisions
14 of Chapter 319, RSMo. Specifically, the requirement to provide notice of intent to excavate to
15 the notification center at least two working days but not more than ten working days before
16 commencing the excavation activity in § 319.026.1, which states:

17 An excavator shall serve notice of intent to excavate to the notification
18 center by toll-free telephone number operated on a twenty-four hour
19 per-day, seven day per-week basis or by facsimile or by completing
20 notice via the internet at least two working days, **but not more than ten**
21 **working days, before the expected date of commencing the**
22 **excavation activity.** The notification center receiving such notice shall
23 inform the excavator of all notification center participants to whom such
24 notice will be transmitted and shall promptly transmit all details of such
25 notice provided under subsection 2 of this section to every notification
26 center participant in the area of excavation.⁴⁹

27 Additionally, § 319.026.6 requires that if an excavator is unable to begin the
28 excavation within ten working days, the excavator shall make a relocate request before
29 beginning the excavation:

⁴⁹ RSMo § 319.026.1 [Emphasis added].

1 6. When markings have been provided in response to a notice of intent
2 to excavate, excavators may commence or continue to work within the
3 area described in the notice for so long as the markings are visible. **If an**
4 **excavator is unable to begin the excavation within ten working days**
5 **as described in the request, the excavator shall make a relocate**
6 **request before beginning the excavation...**⁵⁰

7 Further, Chapter 319, RSMo § 319.030.1 requires that:

8 Every person owning or operating an underground facility to whom notice of
9 intent to excavate is required to be given shall, upon receipt of such notice as
10 provided in this section from a person intending to commence an excavation,
11 inform the excavator as promptly as practical, but not in excess of two working
12 days, unless the excavator agrees to extend the start date and time provided in
13 the locate request through methods established by the notification center, of the
14 approximate location of underground facilities in or near the area of the
15 excavation so as to enable the person engaged in the excavation work to locate
16 the facilities in advance of and during the excavation work, provided that no
17 excavation shall begin earlier than the scheduled excavation date provided on
18 the locate request unless the excavator has confirmed that all underground
19 facilities have been located. The utility owner or operator shall provide the
20 approximate location of its underground facilities by the use of markings as
21 designated in Section 319.015.⁵¹

22 2. Spire Actions to Comply with 20 C.S.R. 4240-40.030(12)(I)

23 In regards to compliance with the requirement of 20 C.S.R. 4240-40.030(12)(I)1., Spire
24 identified ** [REDACTED] ⁵² ** as the written
25 program to prevent damage by excavation activities for Spire West facilities that was in effect
26 on the dates of May 28, 2020, and June 1, 2020.⁵³ Spire stated that it provided a copy of the
27 ** [REDACTED] **, to the Contract Locator on
28 May 25, 2020.⁵⁴ ** [REDACTED]
29 [REDACTED] **

⁵⁰ RSMo § 319.026.6 [Emphasis added].

⁵¹ RSMo § 319.030.1.

⁵² See Spire Response to Staff Data Request 0018.1.

⁵³ Spire Response to Staff Data Request 0001, part b ** [REDACTED]
[REDACTED] **

⁵⁴ Spire Response to Staff Data Request 0042.2, part iv.

1 However, this standard does not include procedures for conducting a “visual scan of the area”
2 or to “confirm the location of the facility using conductive methods.”⁵⁵

3 On July 1, 2020 Spire adopted a new written program to prevent damage by excavation
4 activities for Spire West facilities titled ** [REDACTED]

5 [REDACTED] **56 ** [REDACTED]

6 [REDACTED]

7 [REDACTED] **57

8 Regarding compliance with the requirement of 20 C.S.R. 4240-40.030(12)(I)3.B. to
9 provide excavator education, Spire provided Staff with a copy of the annual mailer sent to
10 excavators in 2019 and 2020.⁵⁸ The mailer⁵⁹ provided information about Spire’s natural gas
11 system, instructions on how to make a request to locate underground utilities, and what to do
12 in the event of a damaged natural gas pipeline. Additionally, Spire provided copies of its 2019
13 and 2020 mailer distribution lists, and both lists included the Excavator.⁶⁰ A copy of the mailer
14 is included as Exhibit 1 of Appendix D of this report.

15 Commission Rule 20 C.S.R. 4240-40.030(12)(I)3.B requires that annual mailings to
16 excavators include a copy of the applicable sections of Chapter 319, RSMo, or a summary of
17 the provisions of Chapter 319, RSMo approved by designated Commission personnel to
18 excavators annually. Spire stated that it did not provide a copy of Chapter 319, RSMo to
19 excavators and instead chose to provide a summary of the provisions.⁶¹ Spire stated that it has
20 been utilizing the same summary for at least the last 15 years, but that it was unable to locate a
21 copy of the approval of the summary by designated Commission personnel.⁶²

22 Regarding compliance with the requirement of 20 C.S.R. 4240-40.030(12)(I)3.G. to
23 provide for temporary marking of its buried pipelines in the area of excavation activity, Spire

⁵⁵ Spire Response to Staff Data Request 0014.3; 0024.2.

⁵⁶ Spire Response to Staff Data Request 0014, 0018.

⁵⁷ Spire Response to Staff Data Request 0053.1.

⁵⁸ Spire Response to Staff Data Request 0018.7, 0009.2.

⁵⁹ Spire Response to Staff Data Request 0009.2.

⁶⁰ Spire Response to Staff Data Request 0018.2, 0018.9.

⁶¹ Spire Response to Staff Data Request 0018.9.

⁶² Spire Response to Staff Data Request 0018.9, as expanded upon in Spire’s May 26, 2021 review comments on App. A facts.

1 did not mark its pipeline as required by ** [REDACTED]

2 [REDACTED] **

3 Spire received a notification of a planned excavation in the area on May 28, 2020
4 from the Missouri One Call System.⁶³ Spire responded to the notice of planned excavation on
5 June 1, 2020 with a status of “Clear/No Conflict”⁶⁴ indicating Spire had no facilities in the area
6 to be excavated.⁶⁵ In response to Staff Data Request 0014.2, requesting Spire to explain
7 specifically what the Contract Locating Company did, or failed to do that contributed to this
8 incident, Spire stated that “The contract locator did not perform a visual scan of the area or
9 confirm the location of the facility using conductive methods.”⁶⁶

10 Regarding compliance with the requirement of 20 C.S.R. 4240-40.030(12)(I)4. to
11 evaluate each notification to determine the need for and extent of inspections, Spire established

12 ** [REDACTED] **⁶⁷

13 Subsection 8.2 of the standard states:

14 ** [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]
21 [REDACTED]

- 22 A. [REDACTED]
- 23 B. [REDACTED]
- 24 C. [REDACTED]
- 25 D. [REDACTED]
- 26 E. [REDACTED]

⁶³ Spire Response to Staff Data Request 0003, 0003.1.

⁶⁴ Spire Response to Staff Data Request 0003.

⁶⁵ Spire Response to Staff Data Request 0023.1, part 1, (indicating a “Clear/No Conflict” response only applies when there are no Company facilities within the dig area).

⁶⁶ Spire Response to Staff Data Request 0014.2.

⁶⁷ Spire Response to Staff Data Request 0064.

- 1 F. [REDACTED]
- 2 G. [REDACTED]
- 3 [REDACTED]
- 4 H. [REDACTED]
- 5 I. [REDACTED]
- 6 J. [REDACTED]
- 7 K. [REDACTED]
- 8 [REDACTED] **68

9 The location of the incident included a 12-inch steel pipeline operating at 128 psig, and
10 a serious incident occurred due to damage to the pipeline.⁶⁹

11 In response to Staff Data Request 0033.1, Spire described the process used to identify
12 locations where inspections of planned excavations is necessary:⁷⁰

- 13 ** [REDACTED]
- 14 [REDACTED]
- 15 [REDACTED]
- 16 [REDACTED] **71

17 Additionally, Spire stated that ** [REDACTED]
18 [REDACTED] **72 Rather,
19 the Company's process for checking accuracy of locates applies to all tickets regardless of
20 response types or location.⁷³

⁶⁸ Spire Response to Staff Data Request 0018.1.
⁶⁹ See generally Spire Response to Staff Data Request 0034.1.
⁷⁰ Spire Response to Staff Data Request 0033.1 (Spire refers to the locations where inspections of planned excavations were necessary per 20 C.S.R. 4240-40.030(12)(I)4. as "high profile" locations.).
⁷¹ Spire Response to Staff Data Request 0033.1.
⁷² Spire Response to Staff Data Request 0033.1.
⁷³ Spire Response to Staff Data Request 0033.1.

1 Spire provided the ** [REDACTED] ** in response to Staff Data
2 Request 0033. In the report, Spire stated:

3 ** [REDACTED]
4 [REDACTED]
5 [REDACTED] **⁷⁴

6 Since the time of the incident, Spire has updated this process. The new system is an
7 automated notification system which alerts Spire in the event a notification of planned
8 excavation is received within an identified “high profile” area.⁷⁵ In response to Staff Data
9 Request 0033.1, Spire stated:

10 ** [REDACTED]
11 [REDACTED]
12 [REDACTED] **⁷⁶

13 In response to Staff Data Request 0064, part 3, Spire provided its effectiveness
14 evaluation of procedures utilized with respect to compliance with the requirements of 20 C.S.R.
15 4240-40.030(12)(I)4. following the July 1, 2020 incident.⁷⁷

16 Spire’s response stated that:

17 Prior to the incident, the Company had begun assessing what constitutes
18 a high profile locate ticket as part of its Ticket Management System
19 rollout. The Company continues this process and has not made any
20 revisions at this time.⁷⁸

21 3. Staff Analysis:

22 In regards to 20 C.S.R. 4240-40.030(12)(I)1., Spire’s written program in effect at the
23 time of the locate request (** [REDACTED] **)

⁷⁴ Spire Response to Staff Data Request 0033.

⁷⁵ See Spire Response to Staff Data Request 0033.1.

⁷⁶ Spire Response to Staff Data Request 0033.1.

⁷⁷ See Spire Response to Staff Data Request 0064.

⁷⁸ Spire Response to Staff Data Request 0064, Part 3.

1 required temporary marking of Spire’s facilities,⁷⁹ but it did not include specific procedures for
2 requiring locators to perform a visual scan of the work area and to confirm the location of
3 Spire’s facilities through conductive methods. According to the information provided by Spire,
4 performing a visual scan of the work area and confirmation of the locations by conductive
5 methods would have been necessary to provide for temporary marking of Spire’s buried
6 pipelines.⁸⁰

7 Spire’s currently effective ** [REDACTED] ** which supersedes ** [REDACTED]
8 [REDACTED] ** includes a reference to the Common Ground Alliance
9 Best Practice Marking Standards.⁸¹ The current Common Ground Alliance Best Practice
10 Marking Standards require a visual scan and the use of electromagnetic locating when
11 possible.⁸² Staff has recommendations related to Spire’s adoption and implementation of the
12 Common Ground Alliance Best Practice Marking Standards.⁸³

13 In regards to 20 C.S.R. 4240-40.030(12)(I)3.B., Spire’s written program in effect at the
14 time of the incident provided for an annual excavator educational mailing to excavators, and
15 specified that a copy of Chapter 319, RSMo shall be included.⁸⁴ However, the mailer that was
16 sent to excavators did not include a copy of Chapter 319, RSMo, and was silent with respect to
17 renewal of locates marked “Clear/No Conflict.”⁸⁵ Although Spire indicated that the root cause
18 of the incident was the Excavator’s failure to renew the locate request, it does not appear that
19 Spire has provided educational material to excavators regarding this requirement in the event
20 Spire provides a “Clear/No Conflict” response to an earlier request. Staff is concerned that Spire
21 may not have revised and updated the summary to address additions and revisions to the statute
22 if Spire has been providing the same summary of its interpretation of the requirements of
23 Chapter 319, RSMo to excavators for 15 years. Staff has a recommendation related to Spire
24 providing a copy of applicable sections of Chapter 319, RSMo with its educational materials to
25 excavators going forward.⁸⁶ Additionally, Staff notes that the currently effective Spire damage

⁷⁹ Spire Response to Staff Data Request 0018.1.

⁸⁰ Spire Response to Staff Data Request 0014.2.

⁸¹ See Spire Response to Staff Data Request 0018.

⁸² Common Ground All. Best Prac. 17 §§ 4.07, 4.12.

⁸³ See *Infra* Section III.C.5.A., Section V.2.

⁸⁴ Spire Response to Staff Data Request 0018.1.

⁸⁵ Spire Response to Staff Data Request 0009.2.

⁸⁶ See *infra* Section V.3.

1 prevention program, ** [REDACTED] ** does not require that a copy of Chapter 319, RSMo be
2 included in the annual mailer sent to excavators. Staff has a recommended procedural change
3 related to this below.⁸⁷

4 Regarding the requirement in 20 C.S.R. 4240-40.030(12)(I)3.G., Spire's written
5 program required Spire to provide for temporary markings of buried pipelines, however Spire
6 did not do so. Spire's failure to comply with the requirement to provide temporary markings of
7 its pipeline caused or contributed to this incident. To evaluate if this was an isolated
8 occurrence of failure to mark facilities, Staff reviewed annual and incident report⁸⁸ data for
9 Spire Missouri West.

10 Table 1 displays the number of excavation damages on Spire Missouri West distribution
11 facilities for calendar year 2015-2019.⁸⁹ During this 5-year time period, Spire Missouri West
12 has reported a total of 1,874 damages to its pipeline caused by locating practices not sufficient.

13 **Table 1 - Excavation damages in Spire Missouri West distribution system operating area by apparent root cause**
14 **2015-2019**

Year	Excavation Damage Apparent Root Cause				Total
	One-Call Notification Practices Not Sufficient	Locating Practices Not Sufficient	Excavation Practices Not Sufficient	Other	
2015	125	418	377	0	920
2016	152	349	311	9	821
2017	130	449	301	9	889
2018	159	297	364	50	870
2019	151	361	392	27	931
Totals (2015-2019)	717	1,874	1,745	95	4,431

16 Table 2 displays data from federal incidents attributed to Excavation Damage cause with root
17 cause or contributing factor of locating practices not sufficient from Jan 1, 2015 through
18 9/22/2020 in Spire Missouri West operating Area.
19

⁸⁷ See Spire Response to Staff Data Request 0014, 0018.

⁸⁸ 20 C.S.R. 4240-40.020(7)(A) (providing annual reporting requirements); 20 C.S.R. 4240-40.020(6) (providing federal incident reporting requirements); 20 C.S.R. 4240-40.020(4) (providing Missouri incident reporting requirements).

⁸⁹ Information obtained from Spire's Response to Staff Data Request 0046.

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1 **Table 2 - Federal Incidents attributed to Excavation Damage cause with root cause or contributing factor of locating**
2 **practices not sufficient from Jan 1, 2015 through date of Staff Data Request 0046 (9/22/2020) in Spire Missouri West**
3 **operating area**
4

Date	Address	Property Damage	Property Damage Including Gas Loss	Gas Released (MCF⁹⁰)
3/13/2015	Rangeline & Newman Rd., Joplin, MO	\$13,152.00	\$41,708.00	5,436.00
6/09/2017	6512 E 155th St, Grandview, MO	\$155,284.00	\$157,082.00	309.85
7/01/2020	MO 169 Highway and Barry Road, Kansas City, MO	\$65,283.00	\$65,697.00	100.59
Total between 1/1/2015 and 9/22/2020		\$233,719.00	\$264,487.00	5,846.44

5
6 **Table 3 displays data from Missouri state reportable incidents attributed to the general cause of**
7 **excavation damage with a root cause or contributing factor of locating practices not sufficient**
8 **from Jan 1, 2015 through date of Staff Data Request 0046 (9/22/2020) in Spire Missouri West**
9 **operating Area.**

10 **Table 3 - Missouri state reportable incidents attributed to excavation damage cause with root cause or contributing**
11 **factor of locating practices not sufficient from Jan 1, 2015 through date of Staff Data Request 0046 (9/22/2020) in Spire**
12 **Missouri West operating area**
13

Date	Address	Property Damage	Property Damage Including Gas Loss	Gas Released (MCF)
3/30/2016	E. Gregory Blvd. & Oak St., Kansas City, MO	\$19,537.00	\$23,499.00	923.21
4/4/2016	100 N Broadway, Oak Grove, MO	\$16,928.00	\$19,766.00	661.36
7/29/2019	2015 W Foxwood Dr, Raymore, MO	\$24,564.00	\$25,628.00	215.42
7/6/2020	3250 N Progress Ave, Joplin, MO	\$15,517.00	\$19,434.00	950.74
Total between 1/1/2015 and 9/22/2020		\$76,546.00	\$88,327.00	2,750.73

14
15 The data shown in Table 1-Annual Report indicates that excavation damage by apparent root
16 cause-locating practices not sufficient have occurred regularly over the five years preceding the
17 incident. The data shown in Tables 2-Federal and 3-State indicate that the incidents caused or
18 contributed to by the factor of insufficient locating practices not sufficient can be costly and
19 result in the release of a large volume of natural gas. Because the current incident does not

⁹⁰ MCF is the unit equal to 1,000 cubic feet.

1 appear to be an isolated event, Staff believes that procedural changes would be beneficial to
2 reduce the number of damages attributable to locating practices not sufficient going forward.
3 Staff has recommendations related to Spire's adoption and implementation of the Common
4 Ground Alliance Best Practice Marking Standards to provide for temporary markings of
5 Spire's buried pipelines.⁹¹

6 Spire's written procedures were consistent with the requirements of 20 C.S.R.
7 4240-40.030(12)(I)4. to identify types of locations where inspections of planned excavations
8 were necessary. However, Spire did not implement its procedure because the main had not
9 been marked. The incident occurred on a 12-inch steel pipeline operating at 128 psig, and a
10 serious incident occurred due to damage to the pipeline⁹², which according to Spire's
11 established procedures meant that Spire should have considered making on-site field visits to
12 the excavation site. Spire stated:

13 ** [REDACTED]
14 [REDACTED]
15 [REDACTED] **⁹³

16 This indicates to Staff if Spire had implemented its procedure, ** [REDACTED]
17 [REDACTED] **, and the incident may have been avoided. Spire did not adequately implement its procedure to
18 evaluate the notification of intent to excavate to determine the need for and extent of
19 inspections.
20

21 Subsequent to the incident, Spire implemented a new damage prevention
22 standard, ** [REDACTED]

23 [REDACTED] ** states the following:

24 ** [REDACTED]
25 [REDACTED]
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]

⁹¹ See *Infra* Section III.C.5.A., Section V.2.
⁹² See Spire Response to Staff Data Request 0034.1 at 4, 11.
⁹³ Spire Response to Staff Data Request 0033.

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[REDACTED]
[REDACTED] **94

** [REDACTED] ** does not include the following criteria from the superseded standard:

- A. [REDACTED]
 - B. [REDACTED]
 - C. [REDACTED]
 - D. [REDACTED]
 - E. [REDACTED]
 - F. [REDACTED]
 - G. [REDACTED]
- [REDACTED] **

** [REDACTED] ** does not include the following factors⁹⁵ listed in 20 C.S.R. 4240-40.030(12)(I)4.:

- Type of excavating equipment involved;
- The potential for serious incident should damage occur;
- Prior history of the excavator with the operator; and
- The potential for damage occurring which may not be easily recognized by the excavator.⁹⁶

** [REDACTED] ** does not include all the requirements of 20 C.S.R. 4240-40.030(12)(I)4. Staff is concerned that the omission of some of the elements of 20 C.S.R. 4240-40.030(12)(I)4. from ** [REDACTED] ** may lead to these criteria not being considered when evaluating each notification. Staff has a recommendation pertaining to this.

Since the time of the incident, Spire has implemented a new ** [REDACTED] ** which includes an automated process to determine if a notification received per 20 C.S.R. 4240-40.030(12)(I)3.D. is in a “high profile” location and requires Spire personnel to be on-site. Spire’s currently effective damage prevention program does not address the

⁹⁴ Spire Response to Staff Data Request 0014, 0018.
⁹⁵ See Spire Response to Staff Data Request 0014, 0018.
⁹⁶ 20 C.S.R. § 4240-40.030(12)(I)4.C,F-H.

1 implementation of this new automated process. Without the inclusion of procedures relating to
2 the use of the new automated evaluation process in Spire's damage prevention program, Staff
3 is concerned that the process will not be implemented as intended if Spire does not define
4 personnel roles and responsibilities.

5 4. Violations

6 Failure to have adequate procedures within Spire's ** [REDACTED]
7 [REDACTED] ** to comply with 20 C.S.R. 4240-40.030(12)(I)3.G. was a
8 violation of 20 C.S.R. 4240-40.030(12)(I)1.

9 Failure to provide a copy of the applicable sections of Chapter 319, RSMo, in Spire's
10 annual mailings to excavators was a violation of 20 C.S.R. 4240-40.030(12)(I)1. to carry out
11 Spire's written program to comply with the provisions of 20 C.S.R. 4240-40.030(12)(I)3.B.

12 Failure to provide temporary marking of Spire's buried pipeline in the area of
13 excavation activity, as is practical, before the activity begins was a violation of 20 C.S.R.
14 4240-40.030(12)(I)1. to carry out Spire's written program to comply with the provisions of
15 20 C.S.R. 4240-40.030(12)(I)3.G.

16 Failure to evaluate the notification of a planned excavation activity to determine the
17 need for and extent of inspections, was a violation of 20 C.S.R. 4240-40.030(12)(I)1. to carry
18 out Spire's written program ** [REDACTED] **,
19 a procedure necessary to meet the requirements of 20 C.S.R. 4240-40.030(12)(I)4.

20 5. Staff Recommendations:

21 In order to minimize possibility of a recurrence of incident, Staff has the following
22 recommendations in regards to Spire's damage prevention program:

23 A. Subsequent to the incident, Spire has taken action to update its damage
24 prevention program from ** [REDACTED] ** to
25 ** [REDACTED] **. In order to ensure compliance with the requirements of 20 C.S.R.
26 4240-40.030(12)(I)3.G. to provide for temporary markings of buried pipelines in the area of
27 excavation going forward, Staff recommends that Spire:

- 28 1. Review the Common Ground Alliance Best Practice Marking Standards and
29 determine which practices and procedures Spire intends to incorporate by

1 reference within a Standard Operating Procedure (SOP) and then identify which
2 are considered as best practices and which are procedures.

3 2. Reference a specific version of the Common Ground Alliance Best Practice
4 Marking Standards as opposed to referencing “the current version”.

5 3. Establish a schedule for review of revisions to Common Ground Appliance Best
6 Practice Marking Standards. Staff further recommends that Spire follow this
7 schedule.

8 4. Reviews revisions to Common Ground Appliance Best Practice Marking
9 Standards to determine when and how to adopt into Spire’s procedures and
10 training requirements.⁹⁷

11 B. In future annual mailers to excavators, Staff recommends that Spire include a copy of
12 the applicable sections of Chapter 319, RSMo concerning underground facility safety
13 and damage prevention pertaining to excavators. Subsequent to the incident, Spire
14 has taken action to update its damage prevention program from ** [REDACTED]
15 [REDACTED] ** to ** [REDACTED] **. In order to
16 ensure that Spire’s written program complies with the requirements of 20 C.S.R.
17 4240-40.030(12)(I)3.B., Staff recommends that Spire amend ** [REDACTED] ** to
18 include a requirement that the annual mailers include a copy of the applicable sections
19 of Chapter 319, RSMo concerning underground facility safety and damage prevention
20 pertaining to excavators.

21 C. Regarding Spire’s ** [REDACTED] ** Staff recommends that ** [REDACTED]
22 [REDACTED] ** be amended to include all of the factors listed in 20 C.S.R.
23 4240-40.030(12)(I)4. as considerations for determining the need for, and extent of,
24 inspections. Staff further recommends that Spire follow this procedure.

25 D. Additionally, Staff recommends that Spire consider adding the following criteria as
26 considerations for determining the need for, and extent of, inspections to** [REDACTED]

- 27 i. [REDACTED]
- 28 ii. [REDACTED]
- 29 iii. [REDACTED] **

⁹⁷ See *supra* Section III.C., Damage Prevention: Staff Experts Greg A. Williams and Clinton L. Foster.

1 E. Staff recommends Spire develop and include in its damage prevention program a
2 description of Spire's ** [REDACTED] ** and procedures for its
3 implementation. Staff further recommends Spire follow these procedures.

4 *Staff Experts Greg A. Williams and Clinton L. Foster*

5 **D. Operator Qualification**

6 In its PHMSA F 7100.1 incident report, Spire stated that Spire's Contract Locator did
7 not complete a proper locate for the request made on May 28, 2020. Staff therefore evaluated
8 Spire's qualification program with respect to training and qualification of contract locators, as
9 well as the qualifications of individuals assigned to complete the May 28, 2020 locate request.

10 *1. Regulatory Requirements:*

11 20 C.S.R. 4240-40.030(12)(D)., Qualification of Pipeline Personnel, prescribes the
12 required qualifications of individuals performing covered tasks on a pipeline facility,⁹⁸
13 including any other entity or individual performing covered tasks on behalf of the operator.⁹⁹
14 A "covered task" is defined by 20 C.S.R. 4240-40.030(12)(D)1.B. as "an activity, identified by
15 the operator, that:

- 16 (I) Is performed on a pipeline facility;
- 17 (II) Is an operations, maintenance or emergency-response task;
- 18 (III) Is performed as a requirement of this rule; and
- 19 (IV) Affects the operation or integrity of the pipeline."¹⁰⁰

20 20 C.S.R. 4240-40.030(12)(D)2.C. defines "qualified" to mean "that an individual has
21 been evaluated and can:

- 22 (I) Perform assigned covered tasks; and
- 23 (II) Recognize and react to abnormal operating conditions."¹⁰¹

⁹⁸ 20 C.S.R. 4240-40.030(1)(B)33 (defining a "pipeline facility" as "new and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation.").

⁹⁹ 20 C.S.R. 4240-40.030(12)(D)1.A. ("This subsection applies to all individuals who perform covered tasks, regardless of whether they are employed by the operator, a contractor, a subcontractor, or any other entity performing covered tasks on behalf of the operator.").

¹⁰⁰ 20 C.S.R. § 4240-40.030(12)(D)1.B.

¹⁰¹ 20 C.S.R. 4240-40.030(12)(D)2.A. (defining "abnormal operating condition" as "a condition identified by the operator that may indicate a malfunction of a component or deviation from normal operations that may:(a) indicate

1 Therefore, an individual must be evaluated in order to be considered qualified to
2 perform covered tasks.

3 *Program Requirements:*

4 20 C.S.R. 4240-40.030(12)(D)3., among other things, requires that each operator have
5 and follow a written qualification program that includes provisions to:

- 6 A. Identify covered tasks;
- 7 B. Ensure through evaluation that individuals performing covered tasks are
8 qualified and have the necessary knowledge and skills to perform the tasks
9 in a manner that ensures the safe operation of pipeline facilities;
- 10 C. Allow individuals that are not qualified pursuant to this subsection to
11 perform a covered task if directed and observed by an individual that is
12 qualified;
- 13 D. Evaluate an individual if the operator has reason to believe that the
14 individual's performance of a covered task contributed to an incident
15 meeting the Missouri reporting requirements in 20 C.S.R. 4240-
16 40.020(4)(A);
- 17 E. Evaluate an individual if the operator has reason to believe that the
18 individual is no longer qualified to perform a covered task;
- 19 F. Communicate changes, including changes to rules and procedures, that
20 affect covered tasks to individuals performing those covered tasks and their
21 supervisors, and incorporate those changes in subsequent evaluations;
- 22 G. Identify the interval for each covered task at which evaluation of
23 the individual's qualifications is needed, with a maximum interval of
24 thirty-nine (39) months;
- 25 H. Evaluate an individual's possession of the knowledge and skills under
26 paragraph (12)(D)4. at intervals not to exceed thirty-nine (39) months;
- 27 I. Ensure that covered tasks are:
28 (I) Performed by qualified individuals, or

a condition exceeding design limits; (b) result in a hazard(s) to persons, property, or the environment; or (c) require an emergency response.”).

(II) Directed and observed by qualified individuals.”¹⁰²

2. Spire Actions to Comply with 20 C.S.R. 4240-40.030(12)(D)

Spire provided copies of its ** [REDACTED] **, Contract Locator’s ** [REDACTED] ** and Spire’s covered task list that was in effect at the time of the July 1, 2020 incident. Spire stated that contract locators performing work on Spire facilities are required to qualify under Spire’s Operator Qualification (OQ) plan.¹⁰³

Spire stated; “The covered task of 1291 – Locate Underground Pipelines is the only covered task that applies to contract locators that perform or manage locating of the Company’s natural gas facilities.”¹⁰⁴

The Contract Locator provides its own operator qualification performance evaluations and training for its employees¹⁰⁵ in accordance with Spire’s OQ plan. A copy of ** [REDACTED] ** was provided to the Contract Locator on May 25, 2020.¹⁰⁶

Spire stated that the operator qualification evaluation methods used by the Contract Locator to evaluate covered task 1291 – Locate Underground Pipelines for Contract Locator employees included methods such as written exam, oral exam, Gas Locating Work Observation Checklist, performance on the job, and on the job training.¹⁰⁷

In response to Staff Data Request 0042, Spire provided qualification records for both Contract Locator Employees A and B.¹⁰⁸ The qualification records from Spire’s response included ** [REDACTED]

** [REDACTED] **¹⁰⁹ ** [REDACTED] ** for both Contract Locator Employees A and B included documentation that the required evaluations had been completed.

¹⁰² 20 C.S.R. 4240-40.030(12)(D)3.A-I.

¹⁰³ Spire Response to Staff Data Request 0040, 0040.2, 0041.1.

¹⁰⁴ Spire Response to Staff Data Request 0041, part 1.

¹⁰⁵ Spire Response to Staff Data Request 0041, part 2.

¹⁰⁶ Spire Response to Staff Data Request 0042.2.

¹⁰⁷ See Spire Response to Staff Data Request 0043.1, part c, subpart i.

¹⁰⁸ See generally, Spire Response to Staff Data Request 0042.

¹⁰⁹ See Spire Response to Staff Data Request 0042.

1 3. Staff Analysis:

2 Staff reviewed Spire's OQ Plan, the Contract Locator's ** [REDACTED]
3 [REDACTED] ** and Spire's covered task list that was in
4 effect at the time of the July 1, 2020 incident and found that both the plan and covered task lists
5 met the requirements of 20 C.S.R. 4240-40.030(12)(D)3. for a written qualification program.

6 Staff reviewed the qualification records for Contract Locator Employees A and B, and
7 found both had completed training and qualification in accordance with Spire's OQ Plan.

8 For the covered task of 1291 – Locate Underground Pipelines, Spire's OQ program is a
9 combination of both ** [REDACTED] ** and qualification training, which includes
10 performance evaluations performed by the Contract Locator. Since Contract Locator Employee
11 A responded incorrectly to locate ticket 201494113 as a "Clear/No Conflict" on June 1, 2020
12 and did not locate Spire's gas pipeline, Staff agrees that covered task locate underground
13 pipeline was not performed correctly and required an evaluation in accordance with 20 C.S.R.
14 4240-40.030(12)(D)3.E. to determine if re-qualification was necessary.

15 As a result of the July 1, 2020 incident, Spire determined that ** [REDACTED]
16 [REDACTED]

17 [REDACTED] **110 ** [REDACTED]
18 [REDACTED]
19 [REDACTED]

20 [REDACTED] **, 111

21 4. Violations

22 Staff did not find any violation with respect to Spire's actions to comply with the
23 requirements of 20 C.S.R. 4240-40.030(12)(D), or Spire's procedures in its ** [REDACTED]
24 [REDACTED] **

25 5. Staff Recommendations:

26 Staff had no recommendations relating to Spire's Operator Qualification Plan based on
27 Staff's analysis of this incident.

28 *Staff Expert: Greg A. Williams*

¹¹⁰ Spire Response to Staff Data Request 0043, part 1.

¹¹¹ Spire Response to Staff Data Request 0043, part 2.

1 **E. Drug and Alcohol Testing**

2 The actions of the Contract Locator caused or contributed to this incident, therefore
3 Staff investigated the Contract Locator’s conformance with Commission Drug and Alcohol
4 Testing requirements.

5 *1. Regulatory Requirements:*

6 Missouri pipeline safety rules adopt the Federal Drug and Alcohol Testing regulations¹¹²
7 by reference.¹¹³ At the time the incident occurred, the Commission Rules adopted the Code of
8 Federal Regulations dated October 1, 2017, 49 C.F.R. parts 40 and 199 by reference.¹¹⁴ The
9 descriptions and quotations of applicable requirements below are based on the October 1, 2017,
10 49 C.F.R. parts 40 and 199.

11 49 C.F.R. 199.101 requires each operator to maintain and follow a written anti-drug
12 plan that conforms to Part 199 and the Department of Transportation (“DOT”) Procedures.¹¹⁵
13 49 C.F.R. 199.202 requires each operator to maintain and follow a written alcohol misuse plan
14 that conforms to Part 199 and the DOT Procedures.

15 20 C.S.R. 4240-40.080(4)(B) states that the references to “accident” in 49 CFR 199.105
16 and 199.225 should refer to a “federal incident reportable under 20 C.S.R. 4240-40.020.”

17 49 C.F.R. § 199.3 defines “employee” and “covered employee” as:

18 a person who performs a covered function, including persons employed
19 by operators, contractors engaged by operators, and persons employed
20 by such contractors.¹¹⁶

21 49 C.F.R. § 199.3 defines “covered function” as:

22 an operations, maintenance, or emergency-response function regulated
23 by part 192, 193, or 195 of this chapter that is performed on a pipeline
24 or on an LNG facility.¹¹⁷

¹¹² 49 C.F.R. §§ 40 and 199, effective October 1, 2017, incorporated by reference by the Commission at the time of the incident, July 1, 2020.

¹¹³ 20 C.S.R. 4240-40.080(1).

¹¹⁴ Subsequent to the incident, Commission adopted more recent Federal amendments in File No. GX-2020-0112 effective July 30, 2020.

¹¹⁵ 49 C.F.R. § 199.3 (defining DOT procedures as the Procedures for Transportation Workplace Drug and Alcohol Testing Programs published by the Office of the Secretary of Transportation in part 40 of Title 49).

¹¹⁶ 49 C.F.R. § 199.3.

¹¹⁷ *Id.*

1 49 C.F.R.199.3 defines “prohibited drug” as follows:

2 Prohibited drug means any of the following substances specified in
3 Schedule I or Schedule II of the Controlled Substances Act (21 U.S.C.
4 812): marijuana, cocaine, opiates, amphetamines, and phencyclidine
5 (PCP).¹¹⁸

6 With respect to contractor employees, 49 C.F.R. §§ 199.115 and 199.245 provide that
7 an operator may provide by contract that the drug and alcohol testing, education and training
8 required by 49 C.F.R.§ 199 be carried out by the contractor, provided that the operator remains
9 responsible for ensuring compliance with the requirements of 49 CFR 199 and 40.

10 Drug tests are required for covered employees for: pre-employment, post-accident and
11 at any time during employment as part of a pool of covered employees subject to random
12 selection for testing. These requirements are as follows:

- 13 • Pre-employment: 49 C.F.R. §199.105(a) requires that: “No operator may hire
14 or contract for the use of any person as an employee unless that person passes a
15 drug test or is covered by an anti-drug program that conforms to the requirements
16 of this part.”¹¹⁹
- 17 • Randomly during employment: 49 C.F.R. § 199.105(c) provides that “except as
18 provided in paragraphs (c)(2) through (4) of this section, the minimum annual
19 percentage rate for random drug testing shall be 50 percent of covered
20 employees.”¹²⁰
- 21 • Post-Accident: 49 C.F.R. § 199.105(b) provides the post-accident¹²¹ drug testing
22 requirements: “As soon as possible but no later than 32 hours after an accident,
23 an operator shall drug test each employee whose performance either contributed
24 to the accident or cannot be completely discounted as a contributing factor to the
25 accident. An operator may decide not to test under this paragraph but such a

¹¹⁸ *Id.*

¹¹⁹ 49 C.F.R. § 199.105(a).

¹²⁰ 49 C.F.R § 199.105(c)(1).

¹²¹ 20 C.S.R. 4240-40.080(4)(B)(stating that the references to “accident” in §§199.3, 199.100, 199.105, 199.200, 199.221, 199.225, 199.227 and 199.234 should refer to a “federal incident reportable under 20 C.S.R. 4240-40.020” instead.)

1 decision must be based on the specific information that the covered employee's
2 performance had no role in the cause(s) or severity of the accident."¹²²

3 Alcohol tests are required for covered employees post-accident:

- 4 • Post-Accident: 49 C.F.R. 199.225(a) provides the post-accident¹²³ alcohol
5 testing requirements: "As soon as practicable following an accident, each
6 operator must test each surviving covered employee for alcohol if that
7 employee's performance of a covered function either contributed to the accident
8 or cannot be completely discounted as a contributing factor to the accident. The
9 decision not to administer a test under this section must be based on specific
10 information that the covered employee's performance had no role in the cause(s)
11 or severity of the accident. If a test required by this section is not administered
12 within eight (8) hours following the accident, the operator shall cease attempts
13 to administer an alcohol test and shall state in the record the reasons for not
14 administering the test."¹²⁴

15 2. Spire Actions to Comply with 20 C.S.R. 4240-40.080

16 Spire provided copies of the ** [REDACTED]

17 [REDACTED]
18 [REDACTED] ** in response to
19 Staff Data Request 0035.

20 Spire also provided documentation that the two Contract Locator employees involved
21 in this incident were drug tested consistently with pre-employment requirements. Spire also
22 provided documentation that ** [REDACTED]

23 [REDACTED] ** Additionally,
24 Spire provided documentation that ** [REDACTED]

25

¹²² 49 C.F.R. § 199.105(b)(1).

¹²³ 20 C.S.R. 4240-40.080(4)(B) (stating that the references to "accident" in §§199.3, 199.100, 199.105, 199.200, 199.221, 199.225, 199.227 and 199.234 should refer to a "federal incident reportable under 20 C.S.R. 4240-40.020" instead.).

¹²⁴ 49 C.F.R. 199.225(1)-(2).

1 [REDACTED]
2 [REDACTED]” **125
3 For the quarter completed directly prior to the incident, Spire provided¹²⁶ the number of
4 covered employees working for Spire and the number of covered employees working for the
5 Contract Locator, as well as the number of random drug tests conducted. During the quarter in
6 which the incident occurred, Spire provided the number of covered employees working for
7 Spire and the number of covered employees working for the Contract Locator, as well as the
8 number of random drug tests conducted.

9 Spire provided documentation of drug and alcohol testing for the 2020 calendar year for
10 both Spire and the Contract Locator. Spire had 436 covered employees during the 2020 calendar
11 year and conducted 219 random drug tests. The Contract Locator had 8,810 covered employees
12 during the 2020 calendar year and conducted 5,254 random drug tests.

13 3. Staff Analysis:

14 Spire identified two Contract Locator employees, Contract Locator Employees A and
15 B, whose performance either contributed to the incident or could not be completely discounted
16 as a contributing factor to the incident that occurred on July 1, 2020.¹²⁷

17 Contract Locator Employees A and B, were both initially assigned to Missouri
18 One-Call locate ticket number 201494113 on May 28, 2020 for the area along Highway 169
19 and south of Northwest Barry Road in Kansas City, Missouri¹²⁸. Spire stated that once a locate
20 request has been sent by the Missouri One Call to the Contract Locator and Company, the locate
21 request is assigned to a Contract Locator employee by the contract supervisor.¹²⁹ ** [REDACTED]

22 [REDACTED]
23 [REDACTED] **130 Contract
24 Locator Employee A provided the response of “Clear/No Conflict” for this locate ticket on
25 June 1, 2020.¹³¹

¹²⁵ Spire Response to Staff Data Request 0037.

¹²⁶ Spire Response to Staff Data Request 0038.

¹²⁷ Spire Response to Staff Data Request 0001, 0039.

¹²⁸ Spire Response to Staff Data Request 0002, 0020.

¹²⁹ Spire Response to Staff Data Request 0021.

¹³⁰ Spire Response to Staff Data Request 0039.1.

¹³¹ Spire Response to Staff Data Request 0003, 0039.1.

1 Contract Locator Employee A was tested for drugs, and for alcohol on July 2, 2020
2 following the incident.¹³² Contract Locator Employee B was tested for drugs on July 6, 2020.¹³³

3 Thirty days had elapsed between the response of “Clear/No Conflict” on June 1, 2020,
4 and the incident on July 1, 2020. Due to the time that had elapsed, Staff concludes post-incident
5 alcohol tests cannot be used to determine if alcohol affected the individuals’ performance of
6 any covered functions on June 1, 2020. Staff does not find that Spire violated the provisions of
7 20 C.S.R. 4240-40.080 in this matter.

8 Spire provided documentation demonstrating the anti-drug program met the
9 requirements for pre-employment testing because the two identified individuals were drug
10 tested pre-employment.

11 Spire provided data showing that the number of random covered employee drug tests
12 Spire and the Contractor Locator performed met the requirement of an annual random testing
13 rate of 50 percent of covered employees distributed throughout the calendar year of 2020.

14 *4. Violations*

15 Staff found that Spire’s procedures and actions were consistent with the requirements
16 of 20 C.S.R. 4240-40.080.

17 *5. Staff Recommendations:*

18 Staff has no recommendations relating to drug and alcohol testing based on Staff’s
19 analysis of this incident.

20 *Staff Expert: Clinton L. Foster*

21 **F. Spire’s Oversight of Contractors**

22 *1. Regulatory Requirements:*

23 20 C.S.R. 4240-40.030(12)(B)3. states that each operator is responsible for ensuring that
24 all work completed on its pipelines by its consultants and contractors complies with this rule.¹³⁴

¹³² Spire Response to Staff Data Request 0020, 0037, 0039.

¹³³ Spire Response to Staff Data Request 0020, 0037.2, 0039; Response to Staff Data Request 0037 ** [REDACTED]

¹³⁴ 20 C.S.R. 4240-40.030(12)(B)3.

1 20 C.S.R. 4240-40.030(12)(C)1. requires each operator to prepare and follow a manual
2 of written procedures for conducting operations and maintenance activities and for emergency
3 response.¹³⁵

4 20 C.S.R. 4240-40.030(12)(C)2.A. requires that the manual required by
5 paragraph (12)(C)1. must include procedures for operating, maintaining, and repairing the
6 pipeline in accordance with each of the applicable requirements of 20 C.S.R. 4240-40.030(12),
7 (13), and (14).¹³⁶

8 2. Spire's Actions to Comply with 20 C.S.R. 4240-40.030(12)(B)3. And (12)(C)2.

9 Staff requested copies of all Spire policies and procedures related to the oversight
10 and inspection contract locators locating Spire's natural gas facilities.¹³⁷ Spire responded that

11 ** " [REDACTED]
12 [REDACTED]

13 [REDACTED] ¹³⁸ As part of Spire's [REDACTED] **, Spire ** [REDACTED]
14 [REDACTED] **

15 Spire's description of its quality control/audit process used to evaluate a locate request
16 completed as a "Clear/No Conflict" is as follows:

17 During an audit of a "Clear/No Conflict" locate, the Company verifies the
18 response provided by the contract locator using Company installation
19 records and other information provided by contract locator. The Company
20 does not have a written procedure detailing this process.¹³⁹

21 3. Staff Analysis:

22 At the time of this incident, Spire did not have written procedures in its
23 procedural manual for operations, maintenance and emergencies required by 20 C.S.R.
24 4240-40.030(12)(C)1. for the oversight and inspection of a contract locator to ensure that its
25 work is compliant with 20 C.S.R. 4240-40.030.

¹³⁵ 20 C.S.R. 4240-40.030(12)(C)1.

¹³⁶ 20 C.S.R. 4240-40.030(12)(C)2.A.

¹³⁷ Spire Response to Staff Data Request 0023.

¹³⁸ Spire Response to Staff Data Request 0023.

¹³⁹ Spire Response to Staff Data Request 0028.

1 4. Violations

2 Failure to have and follow written procedures for the oversight and inspection of a
3 contract locator¹⁴⁰ in its procedural manual for operations, maintenance and
4 emergencies required by 20 C.S.R. 4240-40.030(12)(C)1., was a violation of 20 C.S.R.
5 4240-40.030(12)(C)2.A.¹⁴¹ Staff has two recommendations pertaining to this violation.

6 5. Staff Recommendations:

7 In order to ensure compliance with the requirements of 20 C.S.R. 4240-40.030(12)(B)3.,
8 Staff recommends that Spire:

- 9 A. Create or modify existing O&M procedures to define the process of how Spire
10 personnel will conduct oversight and inspection of contractors performing the
11 task of locating Spire’s facilities to ensure compliance with 20 C.S.R.
12 4240-40.030(12)(B)3. Such procedure must include but not be limited to
13 oversight and inspection of instances when a contractor completes a locate
14 request as a “Clear/No Conflict”. Staff further recommends that Spire follow
15 these new or modified procedures.
- 16 B. Develop and implement a written procedure for conducting random field quality
17 audits of “Clear/No Conflict” locates and include consideration of all factors that
18 contributed to this incident. Staff further recommends that Spire follow these
19 new or modified procedures.

20 *Staff Expert: Greg A. Williams*

21 **G. Investigation of Failures**

22 1. Regulatory Requirements:

23 20 C.S.R. 4240-40.030(12)(L), Investigation of Failures, states that each operator shall
24 establish procedures for analyzing accidents and failures for the purposes of determining the
25 causes of the failure and minimizing the possibility of a recurrence.¹⁴²

¹⁴⁰ 20 C.S.R. 4240-40.030(12)(B)3. states that each operator is responsible for ensuring that all work completed on its pipelines by its consultants and contractors complies with this rule.

¹⁴¹ 20 C.S.R. 4240-40.030(1)(G)3. (requiring each operator maintain, modify as appropriate, and follow the plans, procedures, and programs that it is required to establish under this rule, therefore, failing to have the procedure is additionally a violation of 20 C.S.R. 4240- 40.030(1)(G)3.).

¹⁴² 20 C.S.R. 4240-40.030(12)(L).

2. Spire Actions to Comply with 20 C.S.R. 4240-40.030(12)(L)

Spire estimated property damage from the incident to be \$65,283, not including the estimated cost of natural gas loss,¹⁴³ so the unplanned release of natural gas met the criteria for a federal incident.¹⁴⁴

In response to Staff Data Request 0061.3, Spire stated that ** [REDACTED] [REDACTED] ** was the procedure Spire established in effect at the time of the incident for investigating reportable incidents on Spire facilities.¹⁴⁵ This procedure requires, among other things, an investigation and attempt to determine the incident cause, and recommendations, if any, on corrective action needed to prevent a recurrence.

According to Spire, the results of its failure analysis were as follows:

** [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] **146

Spire stated that the map of the pipeline crossing was inaccurate, showing it 200 feet south of the actual crossing in Spire’s mapping records.¹⁴⁷

¹⁴³ Spire Response to Staff Data Request 0034.1.

¹⁴⁴ 20 C.S.R. 4240-40.020(2)(D) (defining a federal incident to be any of the following events: 1. An event that involves a release of gas from a pipeline and that results in one or more of the following consequences: A. A death or personal injury necessitating in-patient hospitalization; or B. Estimated property damage of fifty thousand dollars (\$50,000) or more, including loss to the operator and others, or both, but excluding the cost of gas lost; or C. Unintentional estimated gas loss of three (3) million cubic feet or more; or 2. An event that is significant, in the judgement of the operator, even though it did not meet the criteria of paragraph (2)(D)1.

¹⁴⁵ Spire Response to Staff Data Request 0061.3.

¹⁴⁶ Spire Response to Staff Data Request 0033.

¹⁴⁷ Spire Response to Staff Data Request 0005.2.

1 Further, Spire stated that “[t]he Company has determined that the mapping error was a
2 contributing factor to the mis-locate but not the cause of the incident.”¹⁴⁸

3 Staff requested Spire’s explanation of the Contract Locator’s error that contributed to
4 this incident. Spire stated; “the contract locator did not perform a visual scan of the area or
5 confirm the location of the facility using conductive methods.”¹⁴⁹

6 Subsequent to the incident, Spire established the procedure ** [REDACTED]
7 [REDACTED] ** to investigate reportable incidents on Spire
8 facilities, which replaces ** [REDACTED] **. ** Both procedures
9 include a requirement to perform an investigation and attempt to determine the incident cause,
10 and recommendations, if any, on corrective action needed to prevent a recurrence.

11 Spire stated:

12 As a result of this incident, the Company has identified that verifying
13 highway crossing locations would be beneficial additional information to
14 obtain on its system. The Company already has a process in place to report
15 inaccurately mapped facilities and plans to further enhance this process
16 during its upcoming Mobile Workforce System Implementation in Fall of
17 2020. After implementation, the system will show the field personnel their
18 approximate location in relation to the mapped facilities. If the physical
19 location of the facility is not accurate they will be able to submit a map
20 correction condition to have the location updated.¹⁵⁰

21 3. Staff Analysis:

22 Staff determined that Spire’s procedures for investigation of failures meets the
23 minimum requirements of 20 C.S.R. 4240-40.030(12)(L). Staff further determined that Spire
24 conducted its investigation to analyze the incident—for the purpose of determining the cause(s)
25 of the failure and minimizing the possibility of a recurrence—per its established procedure.
26 Staff notes that neither the procedure that existed at the time of the incident, nor the procedure

¹⁴⁸ Spire Response to Staff Data Request 0005.3.

¹⁴⁹ Spire Response to Staff Data Request 0014.2.

¹⁵⁰ Spire Response to Staff Data Request 0006.

1 that has subsequently replaced it includes a standardized root cause analysis¹⁵¹ procedure. Staff
2 is therefore unable to follow the logic Spire used to determine the root cause of the incident.
3 Staff is concerned about inconsistency in investigations of separate incidents, or multiple
4 investigations of the same without a standardized root cause analysis process.

5 Spire's analysis concluded that the root cause¹⁵² of this incident was "Expired
6 Locate".¹⁵³ Staff does not follow the Company's logic used to determine that this was the root
7 cause of the incident. Spire responded to the May 28, 2020 initial request to mark underground
8 facilities with a status of "Clear/No Conflict" indicating that there were no Spire facilities in
9 the area of the excavation instead of marking its facilities in the area of excavation. Staff
10 concludes that Spire responded to the initial request with a status of "Clear/No Conflict" due to
11 a combination of inadequate procedures and inaccurate mapping.

12 By attributing the incident cause solely to the Excavator, Staff is concerned that Spire
13 is overlooking the role of its errors in the cause of this incident. Staff knows that Spire's initial
14 response of "Clear/No Conflict" was incorrect, but we do not know what subsequent events
15 might have occurred if Spire had properly located its facilities in response to the
16 Excavator's May 28, 2020 request. Staff does not know what might have occurred in the
17 following circumstances:

- 18 a. If Spire had initially informed the Excavator that a gas pipeline was
19 present in the area of excavation by marking it (as opposed to providing a
20 response of "Clear/No Conflict"), it is possible the Excavator would have
21 renewed its request to locate that gas pipeline prior to July 1, 2020.
- 22 b. If Spire had properly marked its facilities in response to the Excavator's
23 May 28, 2020 request, those markings might still have been visible to the
24 Excavator on July 1, 2020.

¹⁵¹ See *Pipeline Glossary*, PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., <https://primis.phmsa.dot.gov/comm/glossary/#RootCauseAnalysis> (last visited June 9, 2021) (defining "Root Cause Analysis" as "a problem solving process that focuses on the task of finding the root cause and determining the best prevention solutions to a problem.").

¹⁵² Common Ground All. Best Prac. 17 App. A (defining "root cause" as "the primary reason an event occurred.").

¹⁵³ See *supra* Section III.C. (Information about the regulatory role of Chapter 319, RSMo).

1 c. If the Excavator had requested that Spire renew its response, Spire might
2 or might not have recognized and corrected its previous errors by marking
3 the facilities.

4 Because Spire made the initial error, and it cannot be demonstrated that a request to
5 renew the facility markings by the Excavator following that error would have prevented the
6 incident, Staff's opinion is that Spire's failure to locate its facilities in response to the
7 Excavator's May 28, 2020 request contributed at least as much to causing this incident, as the
8 Excavator's failure to request that Spire renew the markings.

9 Additionally, Spire's PHMSA F 7100.1 Incident Report form¹⁵⁴ stated that the
10 Excavator did not request the marking of underground facilities by notification to the One-Call
11 System. As described in Section III.C. of this Report, Spire first received a notification of a
12 planned excavation in the area on May 28, 2020 via Missouri One-Call System.¹⁵⁵ Although
13 the request to mark underground utilities was made more than 10 days prior to excavation¹⁵⁶,
14 Staff disagrees with Spire's assessment that no notification was made to the One-Call Center to
15 request marking of underground utilities.¹⁵⁷

16 Spire indicated that ** [REDACTED] ** was a
17 contributing factor to the incident. Staff expresses concern that, although Spire has implemented
18 an updated system to allow field personnel to report mapping errors, currently, there appears to
19 be no requirements in Spire's O&M procedures requiring field personnel to report errors
20 identified during O&M activities.

21 4. Violations

22 Staff did not find that Spire's procedures and actions were inconsistent with the
23 requirements of 20 C.S.R. 4240-40.030(12)(L). However, Spire's procedures do not provide a
24 written processes that focuses on the tasks of identification of the root cause(s), or for

¹⁵⁴ See generally, Spire Response to Staff Data Request 0034.1.

¹⁵⁵ Spire Response to Staff Data Request 0003, 0003.1.

¹⁵⁶ RSMo § 319.026 states that an excavator shall serve notice of intent to excavate to the notification center by toll-free telephone number operated on a twenty-four hour per-day, seven day per-week basis or by facsimile or by completing notice via the internet at least two working days, but not more than ten working days, before the expected date of commencing the excavation activity.

¹⁵⁷ See discussion *supra* Section III.C. (detailing inadequate procedures relating to responding to requests to mark underground utilities).

1 determining the best prevention solutions to prevent recurrence of failures. As a result of this
2 investigation, Staff makes the following four recommendations.

3 5. Staff Recommendations:

- 4 A. Staff recommends that Spire create or modify existing O&M procedures to
5 require Spire personnel and its contractors to report mapping errors of Spire’s
6 natural gas system when identified through O&M activities, including but not
7 limited to patrols and leakage surveys. Staff further recommends that Spire
8 follow these new or modified procedures.
- 9 B. Staff recommends that Spire create or modify existing O&M procedures to
10 investigate each field reported mapping error, and make timely correction of
11 identified errors in the mapping system. Staff further recommends that Spire
12 follow these new or modified procedures.
- 13 C. Staff recommends that Spire create or adopt a standardized, rigorous root cause
14 analysis procedure. This procedure should be used when conducting
15 investigations of failures. The procedure should address how to determine the
16 predominant reason(s) that the event occurred, and to identify where a change in
17 behavior would reasonably be expected to lead to a change in the outcome, i.e.
18 avoidance of the event. Staff further recommends that Spire follow this
19 procedure.
- 20 D. Staff recommends that Spire update Part G3 of its PHMSA F 7100.1 Incident
21 Report for this incident to reflect that Spire received an initial notification from
22 the One-Call Center to request marking of underground utilities.

23 *Staff Expert: Clinton L. Foster*

24 **H. Distribution Integrity Management Program (“DIMP”)**

25 2. Regulatory Requirements:

26 Commission Rules for Gas Distribution Integrity Management Program (“DIMP”)
27 require that each gas distribution operator develop and implement an integrity management
28 program no later than August 2, 2011. Program elements must include a demonstration of
29 knowledge of the system, identification of threats, evaluation and ranking of risk, identification

1 and implementation of measures to address risks, measurement of performance, monitoring of
2 results and evaluation of effectiveness. Data to be considered in DIMP should include, but is
3 not limited to, incident history.

4 At a minimum, operators must consider the following categories of threats to each gas
5 distribution pipeline:

- 6 • Corrosion,
- 7 • Natural Forces,
- 8 • Excavation Damage,
- 9 • Other Outside Force Damage,
- 10 • Material or Welds,
- 11 • Equipment Failure,
- 12 • Incorrect Operation, and
- 13 • Other concerns that could threaten the integrity of its pipeline.

14 3. Spire Actions to Comply with 20 C.S.R. 4240-40.030(17)

15 Currently, Spire has one combined DIMP Plan for its Missouri operations, and is in
16 compliance with the requirements of 4 C.S.R. 240-40.030(17).¹⁵⁸

17 In its incident report provided to PHMSA,¹⁵⁹ Spire lists the apparent cause of the
18 incident as “excavation damage.”¹⁶⁰ An operator’s DIMP must consider “excavation damage”
19 as one of the threat categories. In the DIMP Plan that was effective for Spire Missouri West at
20 the time of the incident,¹⁶¹ ** [REDACTED]

21 [REDACTED] **

¹⁵⁸ Staff conducts routine inspections of the DIMP Plans and DIMP implementation by the natural gas operators jurisdictional to the Commission. Staff conducted its most recent inspection of Spire’s DIMP in September 2020.

¹⁵⁹ 20 C.S.R. 4240-40.020(6)(A) (requiring that each operator must submit a federal incident report on Form PHMSA F 7100.1 as soon as practicable but not more than thirty (30) days after detection of an incident required to be reported under 20 C.S.R. 4240-40.020(3)). (Spire provided the initial incident report in Response to Staff Data Request 0034, and a supplemental incident report in Response to Staff Data Request 0034.1).

¹⁶⁰ Ibid.

¹⁶¹ Spire Response to Staff Data Request 0004 (Spire stated that the DIMP plan that was in effect on July 1, 2020, was revised on December 31, 2019. The Company provided Staff a copy of this plan on January 15, 2020. Staff notes that a copy of this DIMP plan has been filed in Commission Case GE-2020-0295 (file date August 28, 2020)).

1 The instructions for completing the incident report requires that operators
2 further delineate type of excavation damage by party causing the damage as first party
3 (operator personnel), second party (contractor working for operator) or third party
4 (people or contractors not associated with the operator). In its incident report provided to
5 PHMSA, Spire indicated that the incident was the result of third-party excavation damage.
6 Spire's Narrative description of the incident includes the following statements:

7 The contractor was not working under a valid locate at the time of the
8 damage. A locate was requested by the contractor on May 28th for the area
9 being worked. The locator did not complete a proper locate at that time, and
10 the original locate had expired before the work began and was not renewed.¹⁶²

11 Beginning with the reporting period for calendar year 2015, PHMSA has required
12 operators to categorize and report excavation damages according to the following apparent root
13 causes in annual reports to PHMSA¹⁶³:

14 **One-Call Notification Practices Not Sufficient:** Damages resulting from no
15 notification made to the One-Call Center; or notification to one-call center made, but
16 not sufficient; or wrong information provided to One Call Center.

17 **Locating Practices Not Sufficient:** Damages resulting from facility that could not be
18 found or located; or facility marking or location not sufficient; or facility was not located
19 or marked; or incorrect facility records/maps.

20 **Excavation Practices Not Sufficient:** Damages resulting from failure to maintain
21 marks; or failure to support exposed facilities; or failure to use hand tools where
22 required; or failure to test-hole (pot-hole); or improper backfilling practices; or failure
23 to maintain clearance; or other insufficient excavation practices.

¹⁶² Spire Response to Staff Data Request 0034 (Spire provided the initial incident report).

¹⁶³ 20 C.S.R. 4240-40.020((7)(A) (requiring annual reports); *See* App. D, Ex. 2 (Instructions for completing the annual reports from 2015 to present).

1 **Other:** Damages resulting from One-Call Center error; or abandoned facility; or
2 deteriorated facility; or previous damage or data not collected; or other.¹⁶⁴

3 In the DIMP Plan that was effective for Spire Missouri West at the time of the incident,
4 Spire identified and tracks these apparent root causes as “sub-threats” under the “primary
5 threat” of excavation damage.¹⁶⁵

6 In response to Staff data request 0056, Spire stated that the subject incident will be
7 included in the threat of Main Excavation Damage with the sub-threat of “Excavation Practices
8 Not Sufficient” for the MO-West suburban region in Spire’s DIMP.

9 4. Staff Analysis:

10 Spire has indicated that it will attribute the subject incident to the sub-threat of
11 “Excavation Practices Not Sufficient” in its DIMP.¹⁶⁶ By attributing the cause of the incident
12 solely to this sub-threat, Spire is recognizing only the risk associated with actions of excavators
13 (in this instance: failing to renew requests to locate facilities). However, Staff notes that
14 additional causes attributable to errors made by Spire prior to the incident contributed to this
15 incident. The Excavator properly requested that the facilities be located in the area of excavation
16 activity on May 28, 2020. Spire incorrectly responded that the area was “Clear/No Conflict,”
17 thus failing to provide for temporary markings of buried pipelines in the area of excavation
18 activity. Only after this incorrect response by Spire did the Excavator fail to renew the request
19 to locate the facilities.

20 Staff’s concern is that by attributing the cause of the incident solely to the actions of the
21 Excavator (“Excavation Practices Not Sufficient”) in its DIMP, Spire is overlooking the role
22 that “Locating Practices Not Sufficient” (inaccurate facility maps and failure to have and follow
23 adequate procedures) had in this incident. Spire’s failure to recognize the role that “Locating
24 Practices Not Sufficient” had in this incident may make it less likely that Spire will place
25 sufficient emphasis on the need to determine and implement measures to reduce this risk as
26 required by 20 C.S.R. 4240-40.030(17)(D)4. going forward.

¹⁶⁴ [Operator Reports Submitted to PHMSA - Forms and Instructions | PHMSA \(dot.gov\)](#)

¹⁶⁵ Spire Response to Staff Data Request 0004(Spire stated that the DIMP plan that was in effect on July 1, 2020, was revised on December 31, 2019)(The Company provided Staff a copy of this plan on January 15, 2020). Staff notes that a copy of this DIMP plan has been filed in Commission Case GE-2020-0295 (file date August 28, 2020)).

¹⁶⁶ Spire Response to Staff Data Request 0056

1 5. Violations

2 Staff did not find any violations of 20 C.S.R. 4240-40.030(17).

3 6. Staff Recommendations:

4 Staff recommends that Spire begin including considerations of all factors contributing
5 to incidents in its DIMP risk evaluation going forward.

6 *Staff Expert: Kathleen A. McNelis PE*

7 **IV. STAFF'S FINDINGS**

8 As a result of its investigation, Staff found that sufficient facts/information exist to assert
9 the following violations:

- 10 1. Failure to have adequate procedures within Spire's ** [REDACTED]
11 [REDACTED] ** to comply with 20 C.S.R. 4240-40.030(12)(I)3.G.
12 was a violation of 20 C.S.R. 4240-40.030(12)(I)1.

13 (*See III.C. Damage Prevention: Staff Experts Clinton L. Foster and Greg A. Williams*)

- 14 2. Failure to provide a copy of the applicable sections of Chapter 319, RSMo in Spire's
15 annual mailings to excavators was a violation as a violation of 20 C.S.R. 4240-
16 40.030(12)(I)1. to carry out Spire's written program to comply with the provisions
17 of 20 C.S.R. 4240-40.030(12)(I)3.B.

18 (*See III.C. Damage Prevention: Staff Experts Clinton L. Foster and Greg A. Williams*)

- 19 3. Failure to provide temporary marking of Spire's buried pipeline in the area of
20 excavation activity before, as far as practical, the activity begins was a violation of
21 20 C.S.R. 4240-40.030(12)(I)1. to carry out Spire's written program to comply with
22 the provisions of 20 C.S.R. 4240-40.030(12)(I)3.G.

23 (*See III.C. Damage Prevention: Staff Experts Clinton L. Foster and Greg A. Williams*)

1 4. Failure to evaluate the notification of a planned excavation activity to determine the
2 need for and extent of inspections, was a violation of 20 C.S.R. 4240-40.030(12)(I)1.
3 to carry out Spire's written program ** [REDACTED]
4 [REDACTED]**, a procedure necessary to meet the requirements of 20 C.S.R.
5 4240-40.030(12)(I)4.

6 (See III.C. *Damage Prevention: Staff Experts Clinton L. Foster and Greg A. Williams*)

7 5. Failure to have and follow written procedures for the oversight and inspection of a
8 contract locator in its procedural manual for operations, maintenance and
9 emergencies required by 20 C.S.R. 4240-40.030(12)(C)1., was a violation of
10 20 C.S.R. 4240-40.030(12)(C)2.A.

11 (See III.F. *Spire Oversight of Contractors: Staff Expert Greg A. Williams*)

12 **V. STAFF'S RECOMMENDATIONS**

13 In summary, throughout this Report, Staff has identified several areas that either require
14 improvement or are violations of Commission rules. Staff summarizes below its
15 recommendations related to these areas requiring improvement and violations of
16 Commission rules.

- 17 1. Staff recommends that Spire review, evaluate and update, as necessary, its reporting
18 procedures to ensure that such procedures require revision or confirmation of its initial
19 telephonic notice to the NRC within 48 hours after the confirmed discovery of an
20 incident as required by 20 C.S.R. 4240-40.020(3)(C).¹⁶⁷
- 21 2. Subsequent to the incident, Spire has taken action to update its damage prevention
22 program from ** [REDACTED] ** to
23 ** [REDACTED] **. In order to ensure compliance with the requirements of 20 C.S.R.
24 4240-40.030(12)(I)3.G. to provide for temporary markings of buried pipelines in the
25 area of excavation going forward, Staff recommends that Spire:

¹⁶⁷ See *supra* Section III.B., Mo. Pub. Serv. Comm'n Rep. Requirements: Staff Experts Greg A. Williams.

- A. Review the Common Ground Alliance Best Practice Marking Standards and determine which practices and procedures Spire intends to incorporate by reference within a Standard Operating Procedure (SOP) and then identify which are considered as best practices and which are procedures.
- B. Reference a specific version of the Common Ground Alliance Best Practice Marking Standards as opposed to referencing “the current version”.
- C. Establish a schedule for review of revisions to Common Ground Appliance Best Practice Marking Standards. Staff further recommends that Spire follow this schedule.
- D. Reviews revisions to Common Ground Appliance Best Practice Marking Standards to determine when and how to adopt into Spire’s procedures and training requirements.¹⁶⁸

3. In future annual mailers to excavators, Staff recommends that Spire include a copy of the applicable sections of Chapter 319, RSMo concerning underground facility safety and damage prevention pertaining to excavators. Subsequent to the incident, Spire has taken action to update its damage prevention program from ** [REDACTED] ** to ** [REDACTED] **. In order to ensure that Spire’s written program complies with the requirements of 20 C.S.R. 4240-40.030(12)(I)3.B., Staff recommends that Spire amend ** [REDACTED] ** to include a requirement that the annual mailers include a copy of the applicable sections of Chapter 319, RSMo concerning underground facility safety and damage prevention pertaining to excavators.

4. Regarding Spire’s ** [REDACTED] ** Staff recommends that ** [REDACTED] ** be amended to include all of the factors listed in 20 C.S.R. 4240-40.030(12)(I)4. as considerations for determining the need for, and extent of, inspections. Staff further recommends that Spire follow this procedure.

¹⁶⁸ See *supra* Section III.C., Damage Prevention: Staff Experts Greg A. Williams & Clinton L. Foster.

- 1 5. Additionally, Staff recommends that Spire consider adding the following criteria as
2 considerations for determining the need for, and extent of, inspections to **** [REDACTED]**:
- 3 A. **[REDACTED]**
- 4 B. **[REDACTED]**
- 5 C. **[REDACTED]** ^{**169}
- 6 6. Staff recommends Spire develop and include in its damage prevention program a
7 description of Spire’s **** [REDACTED]** ^{**} and procedures for its
8 implementation. Staff further recommends Spire follow these procedures.¹⁷⁰
- 9 7. In order to ensure compliance with the requirements of 20 C.S.R. 4240-40.030(12)(B)3.,
10 Staff recommends that Spire:
- 11 A. Create or modify existing O&M procedures to define the process of how Spire
12 personnel will conduct oversight and inspection of contractors performing the
13 task of locating Spire’s facilities to ensure compliance with 20 C.S.R. 4240-
14 40.030(12)(B)3. Such procedure must include but not be limited to oversight
15 and inspection of instances when a contractor completes a locate request as a
16 “Clear/No Conflict”. Staff further recommends that Spire follow these new or
17 modified procedures.
- 18 B. Develop and implement a written procedure for conducting random field quality
19 audits of “Clear/No Conflict” locates and include consideration of all factors that
20 contributed to this incident. Staff further recommends that Spire follow these
21 new or modified procedures.¹⁷¹
- 22 8. Staff recommends that Spire create or modify existing O&M procedures to require Spire
23 personnel and its contractors to report mapping errors of Spire’s natural gas system
24 when identified through O&M activities, including but not limited to, patrols and
25 leakage surveys. Staff further recommends that Spire follow these new or modified
26 procedures.¹⁷²

¹⁶⁹ See *supra* Section III.C., Damage Prevention: Staff Experts Greg L. Williams & Clinton L. Foster.

¹⁷⁰ See *supra* Section III.C., Damage Prevention: Staff Experts Greg L. Williams & Clinton L. Foster.

¹⁷¹ See *supra* Section III.C., Spire Oversight of Contractors: Staff Expert Greg L. Williams.

¹⁷² See *supra* Section III.G., Investigation of Failures: Staff Expert Clinton L. Foster.

1 9. Staff recommends that Spire create or modify existing O&M procedures to investigate
2 each field reported mapping error, and make timely corrections of identified errors in
3 the mapping system. Staff further recommends that Spire follow these new or modified
4 procedures.¹⁷³

5 10. Staff recommends that Spire create or adopt a standardized, rigorous root cause analysis
6 procedure. This procedure should be used when conducting investigations of failures.
7 The procedure should address how to determine the predominant reason(s) that the event
8 occurred, and to identify where a change in behavior would reasonably be expected to
9 lead to a change in the outcome, i.e. avoidance of the event. Staff further recommends
10 that Spire follow this procedure.¹⁷⁴

11 11. Staff recommends that Spire update Part G3 of its PHMSA F 7100.1 Incident Report
12 for this incident to reflect that Spire received an initial notification from the One-Call
13 Center to request marking of underground utilities.¹⁷⁵

14 12. Staff recommends that Spire begin including considerations of all causes contributing
15 to incidents in its DIMP risk evaluation going forward.¹⁷⁶

16 Staff recommends that the Commission order Spire to file an action plan, by
17 December 31, 2021, which addresses the recommendations (numbered 1-11 above). Staff further
18 recommends that the Commission order Spire to include in its action plan filing when it will
19 effectuate that action plan. Finally, Staff recommends:

20 1. The Commission require that the action plan include Spire’s proposed
21 resolution for addressing each recommendation and the timeframe for
22 implementing the resolution.

23 2. The Commission require Spire to file updates every six months as to how
24 the plan has been effectuated.

¹⁷³ See *supra* Section III.G., Investigation of Failures: Staff Expert Clinton L. Foster.

¹⁷⁴ See *supra* Section III.G., Investigation of Failures: Staff Expert Clinton L. Foster.

¹⁷⁵ See *supra* Section III.G., Investigation of Failures: Staff Expert Clinton L. Foster.

¹⁷⁶ See *supra* Section III.H., Distribution Integrity Mgmt. Program (“DIMP”): Staff Expert Kathleen McNelis P.E.

1 If for any recommendation Spire believes no action is necessary, Staff recommends the
2 Commission order Spire to explain, and provide supporting documentation as available, the
3 reason(s) Spire believes no action is required.

4 **APPENDICES**

5 **A. DETAILED DISCUSSION OF FACTS AND STAFF INVESTIGATION**

6 **B. FIGURES**

7 **C. PHOTOGRAPHS**

8 **D. COPIES OF REFERENCED DOCUMENTS**

9 **E. CREDENTIALS AND CASE PARTICIPATION**

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of Spire Missouri Inc. d/b/a Spire)
Missouri West Concerning a Natural Gas Pipeline) Case No. GS-2021-0019
Incident Along Highway 169 in Kansas City, Missouri)

AFFIDAVIT OF KATHLEEN A. MCNELIS, PE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW Kathleen A. McNelis, PE, and on her oath states that she is of sound mind and lawful age; that she contributed to the foregoing *Staff's Gas Incident Report*; and that the same is true and correct according to her best knowledge and belief.

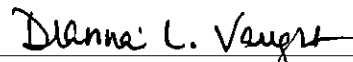
Further the Affiant sayeth not.



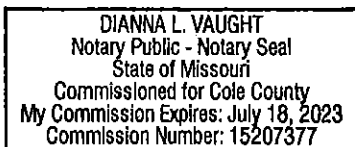
Kathleen A. McNelis, PE

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 28th day of June, 2021.



Notary Public



**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of Spire Missouri Inc. d/b/a Spire)
Missouri West Concerning a Natural Gas Pipeline) Case No. GS-2021-0019
Incident Along Highway 169 in Kansas City, Missouri)

AFFIDAVIT OF GREG A. WILLIAMS

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW Greg A. Williams, and on his oath states that he is of sound mind and lawful age; that he contributed to the foregoing *Staff's Gas Incident Report*; and that the same is true and correct according to his best knowledge and belief.

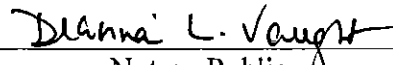
Further the Affiant sayeth not.



Greg A. Williams

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 28th day of June, 2021.



Notary Public

