

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION**

CONCERNED PASTORS FOR SOCIAL
ACTION, et al.,

Plaintiffs,

v.

NICK A. KHOURI, et al.,

Defendants.

Case No. 16-10277

Hon. David M. Lawson

Mag. J. Stephanie Dawkins Davis

**PLAINTIFFS' MOTION TO ENFORCE PARAGRAPHS 29 AND 30 OF
SETTLEMENT AGREEMENT**

Plaintiffs Concerned Pastors for Social Action, Melissa Mays, American Civil Liberties Union of Michigan, and Natural Resources Defense Council respectfully move the Court to order relief necessary to ensure the City of Flint's and City Administrator's immediate compliance with Paragraphs 29 and 30 of the Settlement Agreement ordered by the Court on March 28, 2017. *See* ECF Nos. 147-1, 152.¹

Counsel for Plaintiffs communicated with opposing counsel in accordance with Local Rule 7.1(a) explaining the nature of the relief sought in this motion and seeking concurrence in the relief. State Parties indicated that they take no position

¹ Pending with the Court is Plaintiffs' unopposed motion to exceed the page limit for their brief in support of this Motion to Enforce Paragraphs 29 and 30 of Settlement Agreement. ECF No. 165.

on the motion. City Defendants indicated that they do not concur in the motion.

Dated: June 21, 2018

Respectfully submitted,

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**PLAINTIFFS' BRIEF IN SUPPORT OF MOTION TO ENFORCE
PARAGRAPHS 29 AND 30 OF SETTLEMENT AGREEMENT**

TABLE OF CONTENTS

TABLE OF AUTHORITIES	iii
CONCISE STATEMENT OF THE ISSUE PRESENTED.....	iv
CONTROLLING AUTHORITIES.....	v
INTRODUCTION	1
STATEMENT OF FACTS	3
I. Replacement of service lines under the Settlement Agreement.....	3
II. The City’s Paragraph 30 Report.....	7
III. The parties’ dispute concerning the validity of the Paragraph 30 Report’s conclusions	9
STANDARD OF REVIEW	13
ARGUMENT	14
I. The Court should reject the City’s analysis because it uses a flawed method that presumes the answer to the question it must consider	14
II. The Court should reject the City’s analysis because the City fails to provide reasonable support for its conclusion that there were no more than 18,000 lead or galvanized steel service lines in March 2017	17
A. The difference between the projected hit rate for 2017 (80%) and the observed hit rate (70.1%) does not prove that the 18,000 pipe ceiling was an overestimate.....	18
B. The City provides no reasonable support for its projected decrease in hit rates for 2018 and 2019.....	20
1. The density map provides no support for the City’s projected declining hit rates	20

2.	The City’s listing of general variables it considered, without more, provides no support for the City’s hit rate predictions	22
3.	Even assuming there is some support for a declining hit rate in 2018 and 2019, the City has not supported its specific numeric projections	25
III.	The City’s conclusion that it will not need additional funding to complete its obligations under the Agreement is invalid	26
IV.	A revised evaluation is necessary to implement the Agreement.....	27
	CONCLUSION	30

TABLE OF AUTHORITIES

CASES

<i>Dotson v. U.S. Dep’t of Hous. & Urban Dev.</i> , 731 F.2d 313 (6th Cir. 1984)	14
<i>G.G. Mark & Assocs. v. Peng</i> , 309 F. App’x 928 (6th Cir. 2009)	13
<i>Huguley v. Gen. Motors Corp.</i> , 67 F.3d 129 (6th Cir. 1995)	14
<i>Nat’l Ecological Found. v. Alexander</i> , 496 F.3d 466 (6th Cir. 2007)	14
<i>Pedreira v. Sunrise Children’s Servs., Inc.</i> , 802 F.3d 865 (6th Cir. 2015)	13
<i>Shy v. Navistar Int’l Corp.</i> , 701 F.3d 523 (6th Cir. 2012)	14
<i>United States v. Armour & Co.</i> , 402 U.S. 673 (1971)	14
<i>Vanguards of Cleveland v. City of Cleveland</i> , 23 F.3d 1013 (6th Cir. 1994)	14
<i>Waste Mgmt. of Ohio, Inc. v. City of Dayton</i> , 132 F.3d 1142 (6th Cir. 1997)	14
<i>Whitlock v. FSL Mgmt., LLC</i> , 843 F.3d 1084 (6th Cir. 2016)	13

OTHER AUTHORITIES

Fed. R. Evid. 702 adv. comm. note	24
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CONCISE STATEMENT OF THE ISSUE PRESENTED

The Settlement Agreement requires the City of Flint to “conduct an evaluation,” “consider[ing] all relevant information available,” to determine whether it is “reasonably likely” that there were more than 18,000 lead and galvanized steel service lines in Flint as of March 28, 2017. Did the City violate this requirement by relying on guesswork and a rigged formula, and by failing to use the data available to it to draw reasonable conclusions about how many lead and galvanized steel service lines are in Flint, and about how much it will cost to replace them?

CONTROLLING AUTHORITIES

Nat'l Ecological Found. v. Alexander, 496 F.3d 466 (6th Cir. 2007)

Waste Mgmt. of Ohio, Inc. v. City of Dayton, 132 F.3d 1142 (6th Cir. 1997)

INTRODUCTION

In the Court-ordered Settlement Agreement resolving this Safe Drinking Water Act case, the parties “agree[d] that replacing all lead and galvanized steel water service lines in the City of Flint . . . will help reduce lead contamination in the City’s drinking water.” Settlement Agmt. (Agmt.) 3, ECF No. 147-1. To that end, the City of Flint and City Administrator (together, the City) committed to locating lead and galvanized steel service lines at thousands of homes in Flint and replacing them.

As a starting point, the Agreement required the City to conduct excavations² at a minimum of 18,000 households over three years to locate lead and galvanized steel service lines. *Id.* ¶ 9. However, when the Agreement was executed in March 2017, the parties did not know with certainty how many service lines in Flint needed to be replaced, or where they were. The parties thus did not know whether 18,000 excavations would be sufficient to locate all service lines in Flint needing replacement.

To account for this, the City agreed to analyze the data it collected during the first year of excavations and assess whether there were likely more than 18,000

² An excavation involves digging a hole or channel at the location of a service line for the purpose of identifying the material of the buried service line. Agmt. ¶ 2(*l*). If an excavation covered by the Agreement uncovers a lead or galvanized steel service line, the City must remove the line and replace it with a copper line. *Id.* ¶ 10.

service lines in Flint that needed to be replaced when the Agreement was executed, and how much it will cost to replace those lines (Paragraph 30 analysis). If the City's Paragraph 30 analysis concludes that Flint likely had more than 18,000 service lines needing replacement, then the number of excavations the City must conduct is increased to that new number. *Id.* ¶ 33. The Paragraph 30 analysis is critical to the Agreement's success: it determines how many total service lines the City must excavate and replace, and whether the State must seek additional funding to ensure the City has enough money to finish the job.

The City submitted a report concluding that there were not likely more than 18,000 service lines needing replacement, and that the \$97 million in available funding under the Agreement will be sufficient to complete the required work. The City, however, failed to conduct the evaluation the Agreement requires.

First, the City used an illogical, rigged formula that could never result in a conclusion that there were more than 18,000 lead and galvanized steel service lines in Flint. The City's approach effectively insulates it from a finding that would require it to complete additional excavations and pipe replacements. Second, the City's estimates of the percentage of homes in Flint that will require service line replacement moving forward are unsupported by the available data. Instead of conducting a reasoned evaluation, the City relies on guesswork and undocumented personal observations of City staff to reduce the projected number of service lines

for replacement. The consequences of the City's shoddy analysis are not academic. If the City's estimates are off by even two percent, it will run out of funding under the Agreement.

After months of meetings and correspondence with the City to try to bring it into compliance with the Agreement, Plaintiffs seek relief from the Court. The City's refusal to conduct the required evaluation undermines the central purpose of the Agreement: to protect all Flint residents from lead exposure from the pipes bringing tap water into their homes. Accordingly, Plaintiffs respectfully request that the Court order the City to revise its estimates using sound methods applied by an expert qualified to conduct statistical predictive modeling. In the alternative, Plaintiffs request that the City use the rate of replacements observed to date to estimate the total number of remaining lead and galvanized service lines.

STATEMENT OF FACTS

I. Replacement of service lines under the Settlement Agreement

The centerpiece of the Settlement Agreement is a requirement that the City remove thousands of lead and galvanized steel service lines at occupied homes in Flint by January 1, 2020. *See* Agmt. ¶¶ 8-20. Flint had roughly 28,400 occupied homes when the Agreement was executed.³ But not all the service lines connecting

³ Chaudhary Decl. Ex. 19; *see* Woods Decl. ¶ 57 & n.15 (explaining uncertainty concerning the total number of occupied homes in Flint).

to those homes need to be replaced. Some are made of copper or other materials that are not known to contribute to lead contamination in drinking water.

Accordingly, the Agreement aims to provide sufficient funding to replace all service lines in Flint that are composed of lead or galvanized steel.

The Agreement requires the City to conduct excavations to determine the service line composition at 18,000 homes (at a rate of at least 6,000 per year) and replace lead and galvanized steel service lines with copper ones. *Id.* The State⁴ must provide up to \$97 million to reimburse the City for conducting these excavations and pipe replacements. *Id.* ¶¶ 21-27.

The 18,000 figure⁵ is the minimum number of excavations the City is required to conduct to identify all the lead and galvanized steel service lines at Flint's roughly 28,400 occupied homes. It was arrived at through extensive negotiation, like all the Agreement's terms. *See id.* at 3. The 18,000 figure, however, was based on incomplete and imperfect information. *E.g.*, Chaudhary Decl. Ex. 2 attach. ¶ 3 (letter from EPA explaining that Flint's records of the locations of lead service lines were inadequate and incomplete). In March 2017,

⁴ Plaintiffs refer to State Defendants, the State of Michigan, and the Michigan Department of Environmental Quality collectively as "the State."

⁵ An April 2016 report indicated that there could be up to 20,000 lead and galvanized steel service lines. Chaudhary Decl. Ex. 3 at 2 tbl.1 (total of categories labeled "Lead Materials," "Galvanized Materials," and "Unknown"). The 20,000 figure assumes that all lines that city records indicate are of unknown composition are in fact made of lead or galvanized steel. *See id.*; *see also id.* Ex. 12 at 2.

when the Agreement was entered, the City did not know how many lead and galvanized steel service lines were in Flint, and publicly available estimates had fluctuated widely over time. *Compare id.* Ex. 3 at 2 tbl.1 (April 2016 estimate of 20,272 service lines), *with id.* Exs. 6, 7 (January 2017 estimate of 29,000 service lines). Similarly, no one knew where these lines were located.

To account for these uncertainties, the Agreement requires the City to excavate at least 6,000 service lines in 2017 and then use the data from those excavations to calculate the total number of service lines that need replacement in Flint. *See* Agmt. ¶ 29. To that end, the City must “conduct an evaluation” following the first year of excavations and pipe replacements. *Id.* The evaluation must estimate the total number of lead and galvanized steel service lines serving occupied homes in Flint as of the Agreement’s execution and the cost to replace them. *Id.*; *see also id.* ¶ 33 (referring to the “updated total number of estimated lead and galvanized steel service lines in the City”). The City must determine “whether the data and information available to it support any of the following conclusions:

- (i) it is reasonably likely that there were more than 18,000 lead and galvanized steel service lines at [eligible households in Flint] as of [March 28, 2017],” and/or
- (ii) the \$97 million in funding available under the Agreement “can reasonably be expected to cover the costs of completing the 18,000 excavations and replacements . . . and the total number of any additional lead and galvanized steel service lines

anticipated in light of the evaluation of (i).” *Id.* ¶ 29. The City “shall consider all relevant information available,” including information obtained through excavations and pipe replacements completed during 2017. *Id.*

Paragraph 30 of the Agreement required the City to produce a written statement (Report) “summarizing the data and information used in the evaluation,” and describing the evaluation’s conclusions. *Id.* ¶ 30. The conclusions in the City’s Report are important: If there were likely more than 18,000 lead and galvanized steel service lines in Flint as of the Agreement’s execution, then the City must complete excavations and replacements at the new total number of estimated lead and galvanized steel service lines in the City by March 28, 2020. *Id.* ¶ 33. In this way, the new estimate of the total number of lead and galvanized steel service lines in Flint will become the minimum number of excavations the City must complete.

Correspondingly, if the \$97 million in allocated funding is likely not sufficient to complete the required excavations and replacements at the estimated total number of homes with service lines needing replacement, the State must “undertake all reasonable efforts to secure additional monies (including, if necessary, seeking appropriations from the Michigan State Legislature) sufficient to reimburse the City” for the required work. *Id.* ¶ 32. The State’s obligation to seek additional funding can be triggered only through the analysis conducted under Paragraphs 29 and 30. *See id.* ¶¶ 29-30.

The evaluation under Paragraphs 29 and 30 is critical. If the City later discovers that it needs more money to complete its work, the State will not be required to seek those funds from the state legislature. Thus, this evaluation is the only mechanism under the Agreement that ensures the City will have enough money to replace Flint's lead and galvanized steel service lines.

II. The City's Paragraph 30 Report

The City submitted its Paragraph 30 Report on February 8, 2018. Chaudhary Decl. Ex. 8. The Report summarized the excavation and pipe replacement work completed as of the Report's date: through February 8, 2018, the City conducted approximately 8843 excavations. *Id.* at 2. Those 8843 excavations uncovered 6256 lead or galvanized steel service lines. *Id.* In other words, the City discovered a lead or galvanized steel service line at roughly 70.7% of the homes where it conducted excavations. The parties refer to this percentage as the "hit rate."

The Report then concluded that it is "*not* reasonably likely that there were more than 18,000 lead or galvanized steel service lines" in Flint as of March 2017. *Id.* at 1 (emphasis added). The City appears to have reached this conclusion in two steps: First, it subtracted the number of lines it had excavated to date from 18,000. *Id.* at 2. Second, it assumed the hit rate for the remaining 9173⁶ lines "will continue

⁶ The City appears to have subtracted incorrectly. The Report concludes that, "[w]ith 8,843 excavations completed, the City's remaining obligations under the Settlement Agreement are to conduct 9,173 excavations." Chaudhary Decl. Ex. 8 at

to drop” to 60% in 2018 and 50% in 2019, i.e., that the City will uncover lead or galvanized steel service lines at a lower percentage of homes during the 2018 and 2019 work. *Id.*

The Report went on to conclude that the \$97 million in available funding “can reasonably be expected to cover the costs” of completing the remaining required work. *Id.* at 1. The City reached this conclusion using the number of remaining excavations it believes it needs to perform under the Agreement (9173). The City then applied its decreasing hit rate to that figure to conclude that it will likely need to replace 5169⁷ more service lines in 2018 and 2019. *See id.* at 2, 4.

Based on the City’s projections, it will need \$59,221,184 to complete an additional 9173 excavations and 5169 replacements. *Id.* at 3. The remaining available funding under the Agreement is \$59,750,000. *Id.* Thus, the City’s estimates leave a little over \$500,000 left from the original \$97 million. Assuming a pipe replacement costs \$4985 (the average of the City’s projections for 2018 and

2. However, 18,000 minus 8843 equals **9157**, not 9173. To avoid confusion, Plaintiffs use the City’s figure (9173).

⁷ Again, the City’s reported numbers appear to be based on calculation errors. Using the City’s reported 9173 remaining excavations (which itself is based on a subtraction error, *see supra* note 5), and using the City’s statements that it will conduct 6000 excavations in 2018 and 3173 excavations in 2019, applying the City’s projected hit rates yields a total of 5187 (not 5169) remaining replacements: [6000 multiplied by 0.6 = 3600 replacements in 2018] + [3173 multiplied by 0.5 = 1587 replacements in 2019] = **5187** (3600 + 1587) total remaining replacements in 2018 and 2019, not 5169, as the City reports.

2019), this funding will cover at most a discrepancy of 106 replacements.⁸

III. The parties' dispute concerning the validity of the Paragraph 30 Report's conclusions

On March 1, 2018, after a meeting with the City and its engineering firm (AECOM), *id.* Ex. 9, Plaintiffs notified the City that they did not concur with its conclusions about the likely number of lead and galvanized steel service lines in Flint and the likelihood that the available \$97 million in funding will cover the costs of the required work. *Id.* Ex. 12; *see* Agmt. ¶ 30.⁹ Plaintiffs explained that the City did not provide sufficient analysis or information to support its conclusion that it is reasonably likely that, as of March 2017, Flint had no more than 18,000 lead and galvanized steel service lines. Chaudhary Decl. Ex. 12 at 2. Plaintiffs also noted that the City had not explained the “data and information” underlying its projection that the hit rate will decrease by 10% from the observed hit rate in 2017 (70%) in each of the following two years. *Id.* (quoting Agmt. ¶ 30). Plaintiffs asked for additional documentation to support the City's conclusions. *Id.* at 2-3.

In response to Plaintiffs' inquiries, the City provided two additional documents: a density map created in 2016 by the University of Michigan-Flint, and a brief “Follow-Up Summary” containing additional narrative descriptions of the

⁸ Including the \$2,000,000 buffer in the City's budget, *see* Chaudhary Decl. Ex. 8 at 4 (entries for “Construction Contingency”), the remaining funding (\$2,528,816) will cover at most 507 additional replacements.

⁹ The State did not object to any of the conclusions in the Paragraph 30 Report.

City's analysis. *Id.* Exs. 13, 14. The Follow-Up Summary noted that the number of service lines requiring replacement in 2017 (roughly 70%) was lower than the City expected (80%). *Id.* Ex. 13. Relying on this lower-than-expected hit rate, the City concluded that the original 18,000 figure likely overestimated the number of lead and galvanized steel service lines in Flint. *See id.* (paragraph (1) under heading labeled, "Conclusions").

The City said that the 2016 "density map" it provided was based on postal service records, city records, and possibly additional information; the City is not certain exactly what data the map makers relied on. Chaudhary Decl. ¶ 17. The map purports to show through color-coding whether the density of lead, galvanized, and unknown service lines is likely to be high (red areas) or low (green areas). *Id.* Ex. 14. The University of Michigan-Flint team that created the map admitted that there were up to 13,000 homes for which the city records had no information about the service line material, that the team had to disregard many of the records that "were in pencil and unreadable," and that the team did "not [have] necessarily good information on what kind of updates were made" to the records over time. *Id.* Ex. 22; *see also id.* Ex. 1. The City says it started excavating in the red areas of the map and will move towards the green areas in 2018 and 2019.

Plaintiffs explained in a letter dated March 30, 2018, that the density map and Follow-Up Summary were not adequate to support the City's conclusions.

Id. Ex. 15. Plaintiffs noted that the City had not provided any information about the assumptions underlying the map’s predictions, and had not conducted any analyses to test the reliability of the map—created in 2016—based on the new data collected from the 2017 pipe replacement work. Plaintiffs also explained that without any information about the basis for the City’s expected hit rate for 2017 (80%), and which variables drove the difference between that expected hit rate and the lower observed hit rate (70%), the City could not reasonably draw conclusions about whether that trend would continue. As a result, Plaintiffs explained that the City could not reasonably conclude from this fact (that its observed hit rate in 2017 was 10% lower than expected), that the 18,000 figure was “likely an overestimation.” *Id.* at 3-4. Plaintiffs reiterated their request for any written analysis or modeling that would support continued reliance on the density map. *Id.* at 4.

The City confirmed subsequently that it had no additional “specific information or written documentation . . . describing how the City came to its projections [for the decreased hit rates].” *Id.* Ex. 17 at 1, 2. As a result, the only explanation for the City’s numbers is the assertion that

those projections were the result of deductive reasoning, based on the FAST Start Phase I-IV experiences, institutional knowledge of the age, and condition of the City’s infrastructure possessed by the City’s Department of Public Works, and the professional expertise and training of AECOM in assessing and planning for public works projects of this type.

Id. Ex. 11 at 2.

Because of the lack of analysis and support for the City’s projected decreased hit rates, Plaintiffs proposed several statistically sound options for updating the City’s service line and cost estimates. First, Plaintiffs proposed that the City use the observed hit rate as of the date of the Report—70.7%¹⁰—as the projected hit rate moving forward. *Id.* Ex. 15 at 3. Alternatively, Plaintiffs proposed that the City use the observed hit rate for excavations conducted through July 31, 2018, as the projected hit rate, thereby including additional information in the observed rate. *Id.* Ex. 18 at 3. The City rejected both options. *See id.* Ex. 20.

After Plaintiffs notified the City that they intended to file this motion, *see id.* Ex. 21, the City provided five additional files that purport to “provide additional support” for the City’s Paragraph 30 Report. *Id.* Ex. 23. These files include a list of fire hydrants in the City, including their dates of fabrication, and a map of those hydrants, color-coded by age. *Id.* The City also provided several maps showing the composition of service lines based on the City’s water service line records, which have been digitized by a consultant. *Id.* Finally, the City provided the results of additional excavations completed between April 26 and June 4, 2018. *Id.* Of those excavations, 37.2% uncovered lead or galvanized steel service lines. The City asserts that these documents show that its conclusions in the Paragraph 30 Report

¹⁰ 70.7% is the reported observed hit rate for all excavations conducted through February 8, 2018. Chaudhary Decl. Ex. 8 at 2. 70.1% is the reported observed hit rate for those excavations conducted during 2017 (Phase IV) alone. *Id.* at 2 n.6.

are “correct.” *Id.*

In subsequent correspondence, Plaintiffs explained that the hydrant map and spreadsheet are insufficient because they do not explain how the hydrant ages informed the City’s projected hit rates, and that because the other maps were created after the City submitted its Paragraph 30 Report, they could not have been used to inform the Report’s conclusions. *Id.* Ex. 24. Plaintiffs again explained that the documentation provided by the City to date does not provide adequate support for the conclusions in its Report. *Id.*

For four months, through correspondence, in-person meetings, and phone calls, Plaintiffs have attempted to work with the City to resolve their objections to the Paragraph 30 Report.

STANDARD OF REVIEW

The Settlement Agreement, which operates as a consent decree, is “a prospective form of relief involving continuous court oversight.” *Whitlock v. FSL Mgmt., LLC*, 843 F.3d 1084, 1094 (6th Cir. 2016); *Pedreira v. Sunrise Children’s Servs., Inc.*, 802 F.3d 865, 871 (6th Cir. 2015) (“A consent decree is essentially a settlement agreement subject to continued judicial policing.” (citation omitted)); Order 2, ECF No. 152.

Interpreting a consent decree is generally “a question of contractual interpretation.” *G.G. Mark & Assocs. v. Peng*, 309 F. App’x 928, 934 (6th Cir.

2009) (internal quotation marks omitted). Accordingly, “[t]he court’s task in interpreting a consent decree is ‘to ascertain the intent of the parties at the time of settlement.’” *Nat’l Ecological Found. v. Alexander*, 496 F.3d 466, 477-78 (6th Cir. 2007) (quoting *Huguley v. Gen. Motors Corp.*, 67 F.3d 129, 134 (6th Cir. 1995)). The meaning of the consent decree “must be discerned within its four corners,” *United States v. Armour & Co.*, 402 U.S. 673, 682 (1971), and the decree “should be construed to preserve the position for which the parties bargained,” *Vanguards of Cleveland v. City of Cleveland*, 23 F.3d 1013, 1018 (6th Cir. 1994).

In addition, “equitable considerations are an inherent part” of a court’s power to interpret and oversee a consent decree. *Waste Mgmt. of Ohio, Inc. v. City of Dayton*, 132 F.3d 1142, 1145 (6th Cir. 1997). In this way, the Court must interpret the decree in light of “the circumstances surrounding its formation.” *Dotson v. U.S. Dep’t of Hous. & Urban Dev.*, 731 F.2d 313, 318 (6th Cir. 1984) (internal quotation marks omitted). The Court “has broad equitable remedial powers” to enforce the Court-ordered Agreement. *Shy v. Navistar Int’l Corp.*, 701 F.3d 523, 533 (6th Cir. 2012) (citation omitted).

ARGUMENT

I. The Court should reject the City’s analysis because it uses a flawed method that presumes the answer to the question it must consider

The City’s conclusion that there were not more than 18,000 lead or galvanized steel service lines for replacement in Flint is invalid because the City

used a formula that guaranteed its estimate would never exceed 18,000. In other words, “no” was the only answer possible under the City’s Paragraph 30 analysis. This fundamental error makes that analysis meaningless.

The City’s flawed method starts with an assumption that there are 18,000 service lines to be excavated and subtracts the number of excavations completed as of February 2018 (8843), stating that the City has an obligation to complete only 9173¹¹ more excavations. Chaudhary Decl. Ex. 8 at 2. The City then applied its anticipated hit rates (60% in 2018 and 50% in 2019) to those remaining excavations to conclude that it will likely need to replace only an additional 5169 lead and galvanized steel service lines. *Id.* at 4; *see supra* p. 8 & note 6.

Through its analysis, the City has only calculated how many lead and galvanized steel service lines are likely to be discovered if the City does 9173 more excavations. But the answer to that question says nothing about whether there were likely more or fewer than 18,000 total lead and galvanized steel service lines in Flint as of the Agreement’s execution. The City’s Report thus ignores the core question the City was required to answer: what does the new data say about how many lead and galvanized steel service lines there were in Flint as of March 2017?

To answer that question, the City must apply a valid projected hit rate to the total number of occupied homes that have not yet been excavated (19,557), not

¹¹ *See supra* note 5 (explaining the City’s subtraction error).

just—as the City has done—to the bare minimum number of excavations the City must still complete under the Agreement (9173). Applying the hit rate to only this subset of homes essentially ignores the rest of homes in Flint and artificially reduces the total number of homes eligible for service line replacement. It also makes the City’s analysis a farce: even assuming a 99.9% hit rate, the City still would conclude there were fewer than 18,000 lead and galvanized steel lines in Flint when the Agreement was executed.¹² The City’s approach, in other words, could never estimate more than 18,000 lines, and effectively renders Paragraphs 32 and 33 of the Agreement dead letter.

Had the City applied a valid projected hit rate¹³ to the correct number of remaining homes—the number of occupied homes in Flint that have not yet been excavated (19,557), Woods Decl. ¶ 57 (*d1*)—the City would have to answer “yes” to the central question of whether there were likely more than 18,000 lead and galvanized steel pipes in Flint when the Agreement was executed. *See id.* ¶¶ 52-57.

In fact, the City has already answered “yes” to this question and endorsed the approach described by Plaintiffs. In a May 2018 letter to EPA calculating the number of service lines Flint still needs to replace, the City applied the observed

¹² 9173 remaining excavations (as reported by the City) x 99.9% hit rate, rounded to the nearest whole number = 9164 lines remaining to be replaced. Adding this number (9164) to the total lead and galvanized steel lines identified during 2017 (6256) = 6256 + 9164 = **15,420** total lead or galvanized steel lines.

¹³ As explained *infra* pp. 20-26, the City’s projected hit rates are invalid.

hit rate to the *total* number of homes that have not yet been excavated. Chaudhary Decl. Ex. 19. It concluded that the City “still has approximately 14,000 lead, galvanized or other [service lines] left to replace.” *Id.* Adding 14,000 to the total lead and galvanized steel pipes already identified (6256) yields more than 20,000 pipes. Thus, mere months after the City told Plaintiffs that Flint likely had no more than 18,000 service lines needing replacement, it projected to EPA that Flint likely had more than 20,000 lines needing replacement as of March 2017. This correspondence underscores the incoherence of the City’s Paragraph 30 Report.

II. The Court should reject the City’s analysis because the City fails to provide reasonable support for its conclusion that there were no more than 18,000 lead or galvanized steel service lines in March 2017

The City’s conclusion that “the original 18,000 ceiling was likely an overestimation” appears to be based on two premises: First, while the City’s consultants projected that a service line would need to be replaced at “80% of the addresses” in areas excavated in 2017, the observed hit rate was lower, 70%. *See id.* Ex. 13 at 1. Second, this hit rate can be “expected to decline” in 2018 and 2019 because the City’s remaining excavations will be in areas “originally projected . . . to have much lower concentrations of service lines requiring replacement.” *Id.*

Plaintiffs have repeatedly asked the City for supporting documentation, written analysis, or statistical modeling to explain how it calculated its projected hit rate for 2017 (80%) and the expected decline in hit rates moving forward (60%

for 2018, 50% for 2019). *See, e.g.*, Chaudhary Decl. Exs. 9 at 1 (asking the City to “explain the basis” for the projected declining hit rates, and asking “[w]hat data” the City considered), 12 at 2-3; Chaudhary Decl. ¶ 19.

The City has offered scant support to explain the fundamental premises on which it bases its analysis. The City’s conclusion that Flint likely had no more than 18,000 pipes needing replacement in March 2017 is untenable.

A. The difference between the projected hit rate for 2017 (80%) and the observed hit rate (70.1%) does not prove that the 18,000 pipe ceiling was an overestimate

The City does not know how its original 80% projected hit rate was calculated. It cannot identify who generated the 80% figure, the process or modeling she used, or the data, records, and other specific factors she considered. Chaudhary Decl. ¶ 17; *see* Woods Decl. ¶¶ 13-14. The City has told Plaintiffs that “we just don’t know” what the projection was based on. Chaudhary Decl. ¶ 17.

When Plaintiffs raised concerns about this missing information, the City hypothesized that the 80% projection was based on a “review of available City records, age of local water-related infrastructure (fire hydrants/water mains), and other available data etc.” *Id.* Ex. 13. Assuming this is true, however, the City has not provided any information on *how* these factors were applied to calculate the 80% prediction; for example, what did the City assume about the relationship between the age of a fire hydrant on a block and the likelihood that homes on that

same block have lead or galvanized steel service lines? Woods Decl. ¶ 14. More critically, the City offers no information on whether the factors that informed the predicted 80% hit rate have proven to be good predictors of the presence of lead and galvanized steel service lines; for example, does the presence of a fire hydrant installed before a certain year in fact reliably predict that homes on that block have lead or galvanized steel service lines? *Id.* ¶¶ 14-15.

Without information on the factors that went into calculating the 80% projection *and* whether those factors were accurate predictors of the presence of pipes that need replacing, the City cannot draw any reasonable conclusions about the significance of the difference between the predicted hit rate (80%) and the observed hit rate (70.1%) for the work completed through 2017. *Id.* ¶ 20. It certainly cannot conclude that its overestimation of the hit rate is a trend that will continue as the City expands its work to other areas of Flint. In other words, even if the City overestimated the proportion of lead and galvanized steel service lines in the areas where it conducted work in 2017, it cannot reasonably conclude that it also overestimated the proportion of lines for replacement in other areas of the City without analyzing the discrepancy between the 2017 predicted and observed hit rates. *Id.* ¶¶ 20-22.

To reach these conclusions in a sound way, the City should have identified all the factors it believes predict the presence of a lead or galvanized steel service

line, built a model that predicts the outcome based on those factors, and then tested how well those factors performed as predictors using the data collected in 2017. *See id.* ¶¶ 18-19. The City has not done this analysis. *Id.* ¶ 15. Thus, contrary to the City’s assertion, the fact that the observed hit rate was lower than expected for 2017 does not, without more, prove that the “original 18,000 ceiling was likely an overestimation.” Chaudhary Decl. Ex. 13 at 1; *see* Woods Decl. ¶ 22.

B. The City provides no reasonable support for its projected decrease in hit rates for 2018 and 2019

The documents offered by the City provide no support for the second premise underlying its Paragraph 30 Report, that the projected hit rate will be 60% for work conducted in 2018 and 50% for work conducted in 2019. The 2016 density map does not show what the City claims. And the City’s citation to general factors, without explaining how those factors led to the City’s specific projections, do not suffice for the “evaluation” considering all available “data and information” that the Agreement requires. Agmt. ¶¶ 29-30. Plaintiffs cannot—and the Court should not—accept the City’s handwaving as adequate support for its projections.

1. The density map provides no support for the City’s projected declining hit rates

First, the City’s primary reliance on a density map created in 2016 by the University of Michigan-Flint, Chaudhary Decl. Ex. 14, is unwarranted. The City claims that it is reasonable to conclude that the map’s red shaded areas will have

higher hit rates than the map's green shaded areas and so, as the City's excavation work moves away from the map's red areas, the hit rate will necessarily decline. Chaudhary Decl. ¶ 17. While this argument is facially appealing, it is fundamentally flawed.

The City does not know, and the map does not indicate, what information the University of Michigan-Flint used to develop the map. *Id.*; *see id.* Ex. 14; Woods Decl. ¶ 27. To the extent the map relies on the City's historical records of service line composition, those records were incomplete, and the map does not indicate whether it says anything about the more than 10,000 homes in Flint for which the City had no records in 2016. *See* Chaudhary Decl. Ex. 1 at 1-2; Woods Decl. ¶ 27. Moreover, the city records that were available when the map was created have been shown to be inaccurate to a significant degree. Chaudhary Decl. Ex. 5 at 5 (showing that 27% (16 of 58) of homes where city records showed a full copper service line in fact had at least partial lead or galvanized steel lines). Importantly, the map also does not appear to include information about homes that the City's records indicate have copper service lines. Woods Decl. ¶ 26. Because of the lack of information about the data reflected in the map, one cannot infer anything from the map about the relative density of lead and galvanized steel service lines in different areas of Flint. *See id.* ¶¶ 30-32.

As a result, the map cannot support the City's projected declines in the hit

rate. This is because the hit rate depends on the total number of homes in a given area; the hit rate is equal to the total number of lead and galvanized service lines in an area, divided by the total number of replacement eligible households in that area. Thus, the total number of homes in the area—including homes with copper service lines—is a key component of the hit rate. *Id.* ¶¶ 30-31. Because the map does not say anything about the density of homes with copper service lines, one cannot draw any conclusions about the hit rates of the green shaded areas compared to the red shaded areas. *Id.* ¶¶ 31-39. For example, if a red shaded area contains 10 lead or galvanized service lines and 20 total homes, then the expected hit rate is 50%. If that same red shaded area contains 10 lead or galvanized steel service lines, but 100 total homes, then the expected hit rate is only 10%.

Moreover, the City’s reliance on a map created in 2016, before the Agreement was executed, is not sufficient to meet the Agreement’s requirement to “consider all relevant information available,” including information obtained through excavations completed after March 2017. Agmt. ¶ 29. The entire purpose of the Paragraph 30 analysis was to use *new* data to develop a reliable estimate of the total number of lead and galvanized steel service lines in Flint.

2. The City’s listing of general variables it considered, without more, provides no support for the City’s hit rate predictions

The variables the City repeatedly cites in support of its projected hit rates are hopelessly general, and the City has provided no explanation for how it applied

those variables to calculate its specific 60% and 50% projections. For instance, the Follow-Up Summary identifies a few variables the City considered as part of its projections, including “age of local water-related infrastructure (fire hydrants/water mains), and other available data etc.” Chaudhary Decl. Ex. 13 at 1. But the general reference to the “age of local water-related infrastructure”—let alone “other available data etc.”—does not meaningfully explain why the City expects hit rates of 60% and 50% in the areas slated for work in 2018 and 2019, respectively.

The list of hydrants and the hydrant age map the City recently provided (Chaudhary Decl. ¶ 27 & Ex. 23-2) are more of the same. To be sure, it is intuitive to think that the age of fire hydrants on a certain block may correlate, to some degree, with the presence of lead and galvanized steel service lines. But the City has provided nothing to show how its hydrant map (with hydrant ages color-coded) and list of more than 3600 hydrants led to the specific projections that 60% and 50% of the service lines the City excavates in 2018 and 2019, respectively, will need to be replaced. *See* Woods Decl. ¶¶ 42-43. In this way, the City has sent Plaintiffs large amounts of raw data, but with no analysis of how those data fit together, or how the City used those data, to support its conclusions.¹⁴

To the extent the City purports to have used these data to inform its

¹⁴ The other “water card” maps recently provided by the City, Chaudhary Decl. Exs. 23-3, 23-4, likewise contain no description about how the information in the maps was used (if at all) to inform the conclusions in the Paragraph 30 Report.

projections, its explanation for how it did so falls flat. The City's general references to the "experiences" of the FAST Start program, the Department of Public Works' "institutional knowledge of the age, and condition of the City's infrastructure," and AECOM's "professional experience," Chaudhary Decl. Ex. 11 at 2, are not a reasonable foundation for the specific 60% and 50% projections. This amounts to a plea from the City to trust its say-so about where the lead and galvanized service lines are in Flint. Reliance on personal, undocumented experience alone is unjustified, especially when the City has provided no details on the specific experience of the officials on whom it is relying, "how that experience leads to the conclusion reached, why that experience is a sufficient basis for the opinion, and how that experience is reliably applied to the facts." *Cf.* Fed. R. Evid. 702 adv. comm. note. These kinds of speculative estimates are exactly what the Agreement sought to avoid by requiring the Paragraph 30 analysis.

The City's recent reliance on the reported 37.2% hit rate for the 954 excavations conducted between April 26 and June 4, 2018, Chaudhary Decl. Ex. 23, does not support the City's projected hit rates, either. The City has provided no information about how those 954 homes relate to the factors the City relies on (e.g., how old are the hydrants near those homes?), or about whether those 954 homes are representative of the full area in which excavations will be conducted in 2018. *See* Woods Decl. ¶¶ 44-49. Without this information, there is no basis to

conclude that the low hit rate observed was not due to chance. *Id.*

In sum, although the factors the City cites seem appealing because they could be plausibly related to the likely presence of lead and galvanized steel service lines, the City has provided no analysis or explanation for how it applied those factors to derive its specific predictions. Its predictions have thus effectively emerged from a black box. This Court should not give credit to conclusions that cannot be explained.

3. Even assuming there is some support for a declining hit rate in 2018 and 2019, the City has not supported its specific numeric projections

Even if the Court accepts the broad notion that the hit rate may decrease as the City moves into the areas slated for excavations in 2018 and 2019, the City has offered only its *ipse dixit* in support of its specific prediction that the hit rate will decrease by 10% in each of the next two years. The City has not explained how it calculated those specific reductions (and has conceded that its derivation of these reductions was “not statistical,” Chaudhary Decl. ¶ 19), and has failed to provide a complete, precise list of factors the City considered and how it applied those factors. Indeed, it appears that the 60% and 50% predictions are guesses.

The basis for these predictions is even more puzzling considering that the City had not yet identified which areas were slated for work in each of 2018 and 2019 at the time the City submitted its Paragraph 30 Report. *See* Chaudhary Decl.

Ex. 17. How could the City differentiate between the likelihood of discovering a lead or galvanized steel service line in 2018 versus 2019 when it had not even determined in which areas it would conduct excavations in each of those years?

This is a dispositive problem, because the amount by which the hit rate will decline will determine how much funding the City will need to complete the required service line replacements. The City anticipates that it will need all but roughly \$528,000 of the available \$97 million in funding. If the City's hit rate estimates are wrong by just two percent, it will not have enough money.¹⁵

III. The City's conclusion that it will not need additional funding to complete its obligations under the Agreement is invalid

Because the City's conclusion about the total number of lead and galvanized steel service lines is untenable, so too is its conclusion about the funding needed to replace the remaining lines. The City's calculations (which apply its unsupported hit rates, *see supra* pp. 20-26) indicate that it expects to replace only 5169 more service lines in 2018 and 2019. *See* Chaudhary Decl. Ex. 8 at 2, 4. The City's cost estimates indicate that if the City completes 9137¹⁶ more excavations and replaces

¹⁵ 6000 excavations in 2018 * 62% hit rate = 3720 replacements, 120 more than the City anticipates. 3173 excavations in 2019 * 52% hit rate = 1650 replacements, 63 more than the City anticipates. Thus, if the City's hit rates are 2% too low, it will need to complete an additional 183 replacements, requiring \$912,255 (assuming \$4985 per replacement).

¹⁶ Again, the City's arithmetic appears incorrect. The City's budget chart reports that it will conduct 9137 more excavations, Chaudhary Decl. Ex. 8 at 4,

an additional 5169 pipes, it will have only \$528,000 left of the \$97 million, plus an additional \$2 million the City budgeted for “[c]onstruction contingenc[ies].” *See id.*; *see supra* pp. 8-9. Assuming there are no other construction contingencies requiring extra expenses, this remaining funding will cover at most an additional 507 replacements. *See supra* note 7.

But the City cannot draw a valid conclusion about the funding needed until it has a sound estimate for how many pipes it must excavate and replace. As explained *supra* pp. 14-17, the City’s calculations considered only 18,000 homes in Flint, and ignored the remaining 10,400 homes by virtue of its manipulated formula. Its projected hit rates for work expected in 2018 and 2019 are also unsupported. *See supra* pp. 20-26. As a result, the City’s estimates about the number of lead and galvanized pipes to be replaced are likely off by thousands. The City will run out of money. The Court must therefore reject the City’s conclusion that the \$97 million in available funding will be sufficient to complete the required excavations and pipe replacements.

IV. A revised evaluation is necessary to implement the Agreement

Plaintiffs ask the Court to implement the Agreement to preserve the positions for which the parties bargained and ensure that the City conducts enough

transposing two digits from the statement earlier in its Report that it will complete 9173 more excavations (the latter number is also incorrect, *see supra* note 5).

excavations to identify and replace Flint's lead and galvanized steel service lines. Plaintiffs therefore request that the Court order the City to revise its Paragraph 30 Report using one of the methods described below.

Creation of a sound predictive model. Plaintiffs request that the Court order the City to create a sound model that will predict the total number of lead and galvanized steel service lines in Flint as of March 28, 2017. The City has said that it does not have staff with the relevant expertise to conduct statistical modeling. Chaudhary Decl. ¶ 19. Thus, Plaintiffs request that the Court order the City to hire a consultant (a statistician) with expertise in predictive modeling to construct and run the model. The City must ensure that the statistician uses well-documented and well-established statistical methods to support his or her modeling decisions.

Before running the model, the City should provide to all parties for review and comment a clear and complete description of all analytical assumptions and methods in the proposed model, and Plaintiffs ask that the Court provide the parties an opportunity to raise objections to the proposed model. The Court should then require the City to update its predictions with the model results, and to recalculate a data-informed estimate of the total number of replacement eligible homes with service lines needing replacement. The Court should require the City to revise its Paragraph 30 Report using the model results, and to include with the revised Report all explanatory and outcome data in addition to the model's results.

In light of the City's persistent failure to meet deadlines imposed under the Agreement, *see* Pls.' Mot. to Enforce Settlement Agmt. 4-14, ECF No. 155, Plaintiffs respectfully request that the Court issue the following interim deadlines to ensure that the City promptly completes the modeling work:

- 8/22/2018, or 1 week after this Court's order on the motion (whichever is earlier): The City must propose 3 experts for the project
- 1 week thereafter: The parties must agree on an expert for the project
- 2 weeks thereafter: The City must submit the proposed model to all parties for review and comment
- 1 week thereafter: Plaintiffs and the State provide comments and/or raise objections on proposed model
- 1 week thereafter: The parties resolve any comments and objections on the proposed model from Plaintiffs or the State
- 2 weeks thereafter: The City must submit a revised Paragraph 30 Report

Expediently fixing the problems with the City's Paragraph 30 Report is critical because the City has already begun conducting excavations for the second of the three years of work under the Agreement. Chaudhary Decl. Ex. 23. The City has already begun to plan for both the second and third years of work (2018 and 2019).

Application of the observed hit rate. If the City declines to conduct the modeling analysis described above, or fails to meet any of the deadlines ordered by the Court, then Plaintiffs respectfully request that the Court order the City to revise its Paragraph 30 Report by applying the observed hit rate to date to the total number of occupied homes at which the City has not yet conducted excavations.

As described above, the City has not used all its data to assess whether the

factors it purports to rely on (such as the age of nearby fire hydrants or city records) are in fact good predictors of the presence of service lines needing replacement. *See* Woods Decl. ¶¶ 12-22. In the absence of this assessment, the observed hit rate (70.7% as of Feb. 8, 2018) is a sound predictor of the future hit rate. *Id.* ¶¶ 52-56. Indeed, in a May 2018 letter to EPA, the City applied exactly the approach Plaintiffs suggest, using a 70% projected hit rate to conclude that the City “has approximately 14,000 lead, galvanized or other left to replace.” Chaudhary Decl. Ex. 19. Applying the 70.7% hit rate yields an estimate of 20,083 total lead and galvanized steel service lines as of March 28, 2017. Woods Decl. ¶ 57.

This is likely a conservative approach. *But see id.* ¶ 57 nn.15 & 18. The City may have access to data that would support different assumptions and ultimately yield a lower estimate for the total number of lead and galvanized steel service lines in Flint. But the City has failed to provide any such data, or any support for applying a different hit rate, despite Plaintiffs’ repeated requests. *See, e.g.,* Chaudhary Decl. Exs. 9, 12 at 2-3, 15 at 4; Woods Decl. ¶ 13.

CONCLUSION

For the foregoing reasons, Plaintiffs request that the Court order the above-described relief to enforce the Settlement Agreement.

Dated: June 21, 2018

Respectfully submitted,

/s/ Sarah C. Tallman
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CERTIFICATE OF SERVICE

I hereby certify that on June 21, 2018, I electronically filed Plaintiffs' Motion to Enforce Paragraphs 29 and 30 of Settlement Agreement and accompanying Brief and exhibits with the Clerk of the Court using the ECF system.

/s/ Sarah C. Tallman

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