

FW: EMO - 22 0118 - Hall (EPA) - Bristol (Reg# 11184) - 01/15/2022 Status Report

1 message

Crystal Bazyk <crystal.bazyk@deq.virginia.gov>  
To: "Hurst, Jeffrey (DEQ)" <Jeff.hurst@deq.virginia.gov>, Stacy Bowers <stacy.bowers@deq.virginia.gov>, Susan Blalock <susan.blalock@deq.virginia.gov>

Tue, Jan 18, 2022 at 5:39 PM

**From:** Don Marickovich <dmarickovich@daa.com>  
**Sent:** Tuesday, January 18, 2022 5:02 PM  
**To:** Crystal Bazyk <crystal.bazyk@deq.virginia.gov>; hall.kristen@epa.gov  
**Cc:** Randall Eads <CityManager@bristolva.org>; Sam Hess <sam.hess@bristolva.org>; zac.mitchell@bristolva.org; Ernie Hoch <ehoch@daa.com>; Anthony Tomlin <atomlin@daa.com>; jeff.hurst@deq.virginia.gov; Bowers, Stacy <stacy.bowers@deq.virginia.gov>; Willard, Erin <Willard.ErinM@epa.gov>; Wendy Karably <wkarably@daa.com>; Cynthia Garrett <cgarrett@daa.com>; Carrie Blankenship <CBlankenship@daa.com>  
**Subject:** EMO - 22 0118 - Hall (EPA) - Bristol (Reg# 11184) - 01/15/2022 Status Report  
**Importance:** High

Ms. Hall and Ms. Bazyk,

In accordance with EPA's letter, "Approval of Higher Operating Temperature Values of Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Facility" from August 2021, I am providing the January 15, 2022 status report on the existing wells, well drilling operations, and the expansion of the gas collection system.

Existing/New Well Temperatures

During August to December 2021, existing wells 39, 40, 46, and 47 were monitored periodically for temperature. Starting on October 21<sup>st</sup> the staff also began monitoring gas well 37 and gas well 35 on November 19<sup>th</sup>. Monitoring results are provided in the tables below. Temperatures marked as "ok" were below the 145-degree threshold. Temperatures in red are above 145-degrees. staff began monitoring the new wells for temperature on December 1<sup>st</sup>. In the last two tables below temperatures are provided for any well, new or previously existing, that have had temperatures above 145-degrees.

| Temperature Data (Fahrenheit) |                         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Gas Well                      | August Monitoring Dates |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|                               | 2                       | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 16    | 17    | 18    | 19    | 21    | 23    | 24    | 25    | 27    | 28    | 30    | 31    |
| 39                            | 104.4                   | 100.1 | 99.5  | 100.8 | 107.8 | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    | ok    |
| 37                            |                         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 40                            | 156.5                   | 165.8 | 165.7 | 170.5 | 172.6 | 171.5 | 172.5 | 176.3 | 173.1 | 175.2 | 183.8 | 178   | 175.5 | 177.6 | 176.5 | 163.8 | 162.9 | 94.8  | 84.6  | 69.1  | 72.1  | 70.4  | 72.2  | 96.5  | 86.3  |
| 46                            | 183.2                   | 184.7 | 181.3 | 182.3 | 183.4 | 184   | 184.9 | 170.3 | 168.6 | 179.8 | 186.7 | 178.6 | 172.6 | 170.1 | 183.8 | 183.4 | 181.5 | 183   | 167.1 | 178.2 | 181.7 | 148.6 | 168.1 | 172.6 | 170.8 |
| 47                            | 194.3                   | 196.5 | 196.9 | 197.3 | 196.4 | 194.8 | 195.6 | 195.9 | 195.1 | 195.7 | 195.9 | 197.5 | 197.2 | 196.5 | 194.2 | 194.7 | 194.3 | 194.8 | 193.3 | 193.1 | 193.4 | 190.5 | 178.7 | 178.6 | 180.3 |

## Temperature Data (Fahrenheit)

| Gas Well | September Monitoring Dates |       |       |       |   |   |       |       |       |       |       |    |       |       |       |       |    |    |    |       |       |       |       |       |    |
|----------|----------------------------|-------|-------|-------|---|---|-------|-------|-------|-------|-------|----|-------|-------|-------|-------|----|----|----|-------|-------|-------|-------|-------|----|
|          | 1                          | 2     | 3     | 4     | 5 | 6 | 7     | 8     | 9     | 10    | 11    | 12 | 13    | 14    | 15    | 16    | 17 | 18 | 19 | 20    | 21    | 22    | 23    | 24    | 25 |
| 39       | ok                         | ok    | ok    | ok    |   |   | ok    | ok    | ok    | ok    | ok    |    | ok    | ok    | ok    | ok    |    |    |    | ok    | ok    | ok    | ok    | ok    |    |
| 37       |                            |       |       |       |   |   |       |       |       |       |       |    |       |       |       |       |    |    |    |       |       |       |       |       |    |
| 40       | 94.8                       | 117.5 | 118.2 | 121.4 |   |   | 135.5 | 142.6 | 157.3 | 162.5 | 174.7 |    | 178.8 | 178.6 | 175.3 | 173.7 |    |    |    | 110.4 | 112.8 | 145.5 | 147.9 | 146.3 |    |
| 46       | 145.9                      | 175.3 | 176.9 | 177.5 |   |   | 187.7 | 188.6 | 187.5 | 187.2 | 184.8 |    | 183.6 | 181.3 | 178.3 | 180.7 |    |    |    | 181.2 | 181.7 | 182.3 | 181.9 | 182.4 |    |
| 47       | 179.4                      | 180.2 | 180.7 | 179.3 |   |   | 190.2 | 194.5 | 192.6 | 188.2 | 182.5 |    | 178.2 | 183.5 | 187.2 | 184.8 |    |    |    | 184.5 | 185.3 | 186.4 | 187.3 | 185.2 |    |

## Temperature Data (Fahrenheit)

| Gas Well | September/October Monitoring Dates |       |       |       |       |       |   |   |       |       |       |   |       |   |    |       |    |       |       |       |       |    |       |       |       |
|----------|------------------------------------|-------|-------|-------|-------|-------|---|---|-------|-------|-------|---|-------|---|----|-------|----|-------|-------|-------|-------|----|-------|-------|-------|
|          | 26                                 | 27    | 28    | 29    | 30    | 10/1  | 2 | 3 | 4     | 5     | 6     | 7 | 8     | 9 | 10 | 11    | 12 | 13    | 14    | 15    | 16    | 17 | 18    | 19    | 20    |
| 39       |                                    | ok    | ok    | ok    | ok    | ok    |   |   | ok    | ok    | ok    |   | ok    |   |    | ok    |    | ok    | ok    | ok    | ok    |    | ok    | ok    | 120.5 |
| 37       |                                    |       |       |       |       |       |   |   |       |       |       |   |       |   |    |       |    |       |       |       |       |    |       |       |       |
| 40       |                                    | 152.5 | 154.7 | 151.5 | 157.2 | 162.4 |   |   | 161.4 | 158.9 | 159.4 |   | 158.1 |   |    | 160.2 |    | 159.9 | 161.6 | 161.1 | 161   |    | 160.8 | 158.8 | 157.7 |
| 46       |                                    | 182.7 | 180.3 | 179.5 | 180.2 | 184.3 |   |   | 184.9 | 183.2 | 183.7 |   | 180.2 |   |    | 182.5 |    | 181.4 | 182.1 | 183.4 | 181.4 |    | 175.2 | 171.3 | 161.1 |
| 47       |                                    | 189.4 | 188.3 | 187.2 | 186.9 | 187.2 |   |   | 187.3 | 188.5 | 188.7 |   | 186.9 |   |    | 187.3 |    | 186.8 | 188.4 | 187.1 | 186.9 |    | 186.9 | 187.1 | 186.3 |

## Temperature Data (Fahrenheit)

| Gas Well | October/November Monitoring Dates |       |       |    |       |       |       |       |       |     |    |      |     |     |     |     |     |   |     |     |     |     |     |     |    |
|----------|-----------------------------------|-------|-------|----|-------|-------|-------|-------|-------|-----|----|------|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|----|
|          | 21                                | 22    | 23    | 24 | 25    | 26    | 27    | 28    | 29    | 30  | 31 | 11/1 | 2   | 3   | 4   | 5   | 6   | 7 | 8   | 9   | 10  | 11  | 12  | 13  | 14 |
| 39       | 121.6                             | 119.6 | 120.6 |    | 121.1 | 119.4 | 117.7 | 116.6 | 118.3 | 116 |    | 116  | 115 | 112 | 110 | 109 | 108 |   | 107 | 105 | 104 | 104 | 103 | 103 |    |
| 37       | 147                               | 144.6 | 145.8 |    | 146.3 | 146.8 | 146.3 | 145.9 | 144.8 | 146 |    | 146  | 145 | 145 | 144 | 146 | 146 |   | 147 | 145 | 146 | 146 | 145 | 146 |    |
| 40       | 147.1                             | 148.4 | 147.2 |    | 145.7 | 144.5 | 141.8 | 139.9 | 140.7 | 137 |    | 136  | 135 | 131 | 127 | 125 | 122 |   | 120 | 117 | 117 | 114 | 112 | 109 |    |

|    |       |       |       |  |       |       |       |       |       |     |  |     |     |     |     |     |     |  |     |     |     |     |     |     |  |
|----|-------|-------|-------|--|-------|-------|-------|-------|-------|-----|--|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|-----|-----|--|
| 46 | 166.8 | 182.1 | 182.7 |  | 183.4 | 184.9 | 184.4 | 184.7 | 183.4 | 183 |  | 183 | 180 | 180 | 182 | 183 | 183 |  | 183 | 182 | 182 | 179 | 178 | 177 |  |
| 47 | 185.8 | 185.3 | 186.5 |  | 187.1 | 187.4 | 185.7 | 185.5 | 184.7 | 184 |  | 184 | 184 | 184 | 184 | 184 | 183 |  | 183 | 183 | 182 | 182 | 182 | 184 |  |

## New Gas Well Installation

| Temperature Data (Fahrenheit) |                                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |       |     |     |     |     |     |     |     |
|-------------------------------|------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-----|-----|-----|-----|-----|-----|-----|
| Gas Well                      | November/December Monitoring Dates |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |       |     |     |     |     |     |     |     |
|                               | 15                                 | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 12/1  | 2     | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
| 35                            |                                    |     |     |     | 112 | 110 | 110 | 121 | 117 | 111 | 132 | 128 | 128 | 121 | 123 | 135 | 127   | 125   | 124 | 134 | 120 | 130 | 121 | 124 | 132 |
| 39                            | 102                                | 102 | 100 | 100 | 103 | 90  | 93  | 98  | 98  | 99  | 115 | 113 | 112 | 110 | 110 | 111 | 108   | 109   | 112 | 113 | 110 | 111 | 109 | 104 | 108 |
| 37                            | 145                                | 144 | 144 | 143 | 141 | 145 | 144 | 141 | 140 | 139 | 154 | 141 | 144 | 149 | 148 | 145 | 140   | 143   | 144 | 152 | 150 | 145 | 151 | 151 | 144 |
| 40                            | 104                                | 96  | 94  | 89  | 89  | 79  | 74  | 78  | 90  | 108 | 120 | 119 | 123 | 121 | 120 | 93  | 119   | 108   | 89  | 82  | 78  | 88  | 119 | 124 | 125 |
| 46                            | 177                                | 179 | 180 |     | 181 | 182 | 189 | 190 | 188 | 190 | 186 | 187 | 183 | 181 | 180 | 179 | 191   | 189   | 182 | 190 | 160 | 173 | 183 | 179 | 180 |
| 47                            | 184                                | 186 | 186 |     | 189 | 189 | 188 | 189 | 189 | 189 | 185 | 183 | 185 | 183 | 183 | 189 | 190   | 187   | 180 | 184 | 183 | 182 | 182 | 179 | 174 |
| 60                            |                                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 162   | 158   |     | 145 | 170 | 162 | 161 | 162 | 163 |
| 64                            |                                    |     |     | 153 | 150 | 149 | 152 | 150 | 145 | 158 |     |     |     |     |     | 145 | 144.6 | 144.8 |     | 148 | 148 | 148 | 149 | 144 | 150 |

| Temperature Data (Fahrenheit) |                                             |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |
|-------------------------------|---------------------------------------------|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|
| Gas Well*                     | December 2021/January 2022 Monitoring Dates |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |
|                               | 10                                          | 11  | 12  | 13  | 14** | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 31  | 01/1 | 2   | 3   |
| 35                            | 131                                         | 130 | 98  | 101 | 45   | 88  | 97  | 106 | 111 | 106 | 103 | 106 | 105 | 118 | 110 | 110 | 110 | 114 | 119 | 106 | 109 | 78  | 75   | 60  | 65  |
| 39                            | 110                                         | 118 | 103 | 109 | 60   | 94  | 104 | 106 | 107 | 106 | 106 | 106 | 107 | 110 | 70  | 110 | 110 | 107 | 118 | 109 | 111 |     |      |     |     |
| 37                            | 144                                         | 151 | 150 | 150 | 70   | 150 | 152 | 149 | 152 | 149 | 152 | 153 | 154 | 150 | 150 | 150 | 150 | 153 | 154 | 155 | 152 | 150 | 148  | 150 | 150 |
| 40                            | 119                                         | 130 | 125 | 117 | 60   | 115 | 111 | 117 | 117 | 118 | 114 | 113 | 111 | 110 | 100 | 100 | 90  | 117 | 119 | 117 | 116 |     |      |     | 130 |
| 46                            | 193                                         | 170 | 182 | 180 | 80   | 190 | 185 | 187 | 182 | 179 | 191 | 187 | 189 | 183 | 190 | 190 | 190 | 179 | 197 | 194 | 195 | 190 | 190  | 190 | 180 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 47  | 160 | 178 | 163 | 171 | 130 | 150 | 169 | 174 | 192 | 185 | 183 | 185 | 187 | 183 | 195 | 200 | 190 | 194 | 193 | 191 | 192 | 180 | 180 | 180 | 180 |
| 42  |     |     |     | 146 | 80  | 140 | 143 | 144 | 144 | 147 | 146 | 144 | 140 | 140 | 140 | 140 | 140 | 143 | 143 | 137 |     |     |     |     |     |
| 31R |     |     |     | 148 | 132 | 149 | 149 | 147 | 149 | 147 | 148 | 149 | 149 | 150 | 150 | 150 | 150 | 148 | 149 | 145 | 149 | 149 | 146 | 150 | 145 |
| 49  | 140 |     |     | 153 | 100 | 140 | 140 | 142 | 140 | 143 | 138 |     |     |     |     |     |     | 140 | 134 | 137 | 135 | 140 | 141 |     |     |
| 54  | 141 |     |     | 146 | 60  | 140 | 149 | 146 | 144 | 145 | 148 | 149 | 151 | 150 | 150 | 150 | 150 | 152 | 154 | 148 | 143 | 150 | 151 | 150 | 150 |
| 60  | 157 | 158 | 153 | 150 | 80  | 150 | 154 | 165 | 171 | 168 | 162 | 164 | 153 | 150 | 140 | 150 | 150 | 149 | 147 | 141 | 135 | 140 | 140 | 140 | 120 |
| 61  |     |     |     | 163 | 60  | 120 | 142 | 129 | 119 | 122 | 119 |     |     |     |     |     |     | 122 |     |     | 109 |     |     |     |     |
| 64  | 148 | 151 | 146 | 150 | 95  | 149 | 151 | 147 | 148 | 149 | 149 | 149 | 150 | 150 | 150 | 150 | 150 | 151 | 152 | 151 | 150 | 150 | 151 | 145 | 150 |

| Temperature Data (Fahrenheit) |                               |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
|-------------------------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| Gas Well*                     | January 2022 Monitoring Dates |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
|                               | 4                             | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |  |  |
| 35                            | 54                            | 54  | 50  | 25  | 30  | 40  | 30  | 30  | 50  | 50  | 50  | 50  | 55  |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 39                            | 85                            | 85  | 84  | 80  | 85  | 50  | 40  | 50  | 80  | 80  | 80  | 80  | 84  |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 37                            | 153                           | 153 | 150 | 150 | 150 | 50  | 130 | 145 | 150 | 150 | 150 | 150 | 155 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 40                            | 123                           | 123 | 120 | 120 | 105 | 50  | 100 | 120 | 140 | 140 | 140 | 145 | 140 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 46                            | 196                           | 196 | 185 | 185 | 171 | 150 | 170 | 190 | 195 | 180 | 180 | 180 | 185 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 47                            | 185                           | 185 | 185 | 185 | 185 | 190 | 190 | 190 | 191 | 180 | 185 | 187 | 180 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 42                            | 134                           |     |     |     |     |     | 90  | 120 | 140 | 140 | 140 | 145 | 140 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 31R                           | 150                           | 145 | 150 | 150 | 140 | 115 | 145 | 145 | 145 | 150 | 150 | 155 | 150 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 49                            | 140                           | 104 | 134 | 140 | 140 | 100 | 140 | 140 | 140 | 140 | 140 | 145 | 140 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 54                            | 150                           | 147 | 140 | 140 | 145 | 40  | 140 | 150 | 150 | 150 | 155 | 155 | 150 |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 60                            | 120                           | 120 | 116 |     |     |     | 130 |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |  |  |
| 61                            | 103                           | 143 | 106 |     |     |     | 60  |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |  |  |



|     |            |     |     |     |      |     |              |
|-----|------------|-----|-----|-----|------|-----|--------------|
| 62  | 10/13/2021 | 120 | 120 | 168 | High | Wet | Design Depth |
| 63  | 10/12/2021 | 117 | 110 | 141 | High | Wet | Hit Refusal  |
| 64  | 10/2/2021  | 120 | 120 | 158 | High | Wet | Design Depth |
| 65  | 10/11/2021 | 120 | 100 | 142 | High | Wet | Hit Refusal  |
| 66  | 10/7/2021  | 120 | 102 | 142 | High | Wet | Hit Refusal  |
| 67  | 10/8/2021  | 120 | 100 | 156 | High | Wet | Hit Refusal  |
| 68  | 10/15/2021 | 120 | 75  | 133 | High | Wet | Hit Refusal  |
| 32R | 10/14/2021 | 120 | 120 | 168 | High | Dry | Design Depth |
|     |            |     |     |     |      |     |              |

Drilling operations were completed on October 15th.

## Gas Collection System Expansion

The City contracted with SCS Field Services to expand the gas collection system (GCS) to connect the 21 new gas wells. Construction began November 6th. The construction was substantially complete on December 15th. All 21 new gas wells have been connected to the GCS. The wellheads on these new wells have been opened and are currently undergoing tuning and balancing, and associated air pressure and water discharge lines have been extended to them. Gas well pumps have been installed in 14 of these new wells and are operational; the remaining 7 gas wells (53, 56, 62, 63, 65, 66, 32R) do not have any significant water in them. Please see the attached table which presents measured well depths and monitored water levels in each well.

## Gas Rental Blower Flare Station/Existing Blower Flare Station Control Upgrades

A trailer mounted, 6-inch candlestick, Perennial Energy Inc. rental blower flare station was delivered to the site, connected to the GCS, and became operational during the week of December 13<sup>th</sup>. The flare station, with a design flow rate of about 750 SCFM will be used along with the existing flare station to treat the additional flow from the GCS during periods when the Ingenco plant is not operational. In addition, during the week of December 13<sup>th</sup>, Ingenco/Parnel upgraded the control system of the existing flare station so that both the station and Ingenco can and now do operate at the same time.

## Remediation of the Western Chimney

The City initiated a plan to remediate the LFG flowing out of the "western chimney. This plan is to intercept the LFG from behind the vertical liner (before the LFG exists above the liner), pipe it to a blower (which draws a vacuum behind the liner) which discharges to a single solar powered flare for treatment. The piping system and the blower are installed and the City is awaiting the arrival of the flare.

The next bi-weekly status report will be provided by January 31, 2022. If you have any questions on the information provided, please, contact either me or Mr. Ernest Hoch at (540) 537-0404 or via email at [ehoch@daa.com](mailto:ehoch@daa.com).

Thank you,

Don Marickovich

Senior Design Engineer

**Draper Aden Associates**

*Engineering • Surveying • Environmental Services*

1/24/22, 2:28 PM

Commonwealth of Virginia Mail - FW: EMO - 22 0118 - Hall (EPA) - Bristol (Reg# 11184) - 01/15/2022 Status Report

Lasting Positive Impact®

Phone: 757.300.2608 • Mobile: 757.837.5206

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**2 attachments**



**Bristol - Construction Bid Drawings 2.5\_11-15-21 - Sht 3 wdk annotated.pdf**

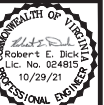
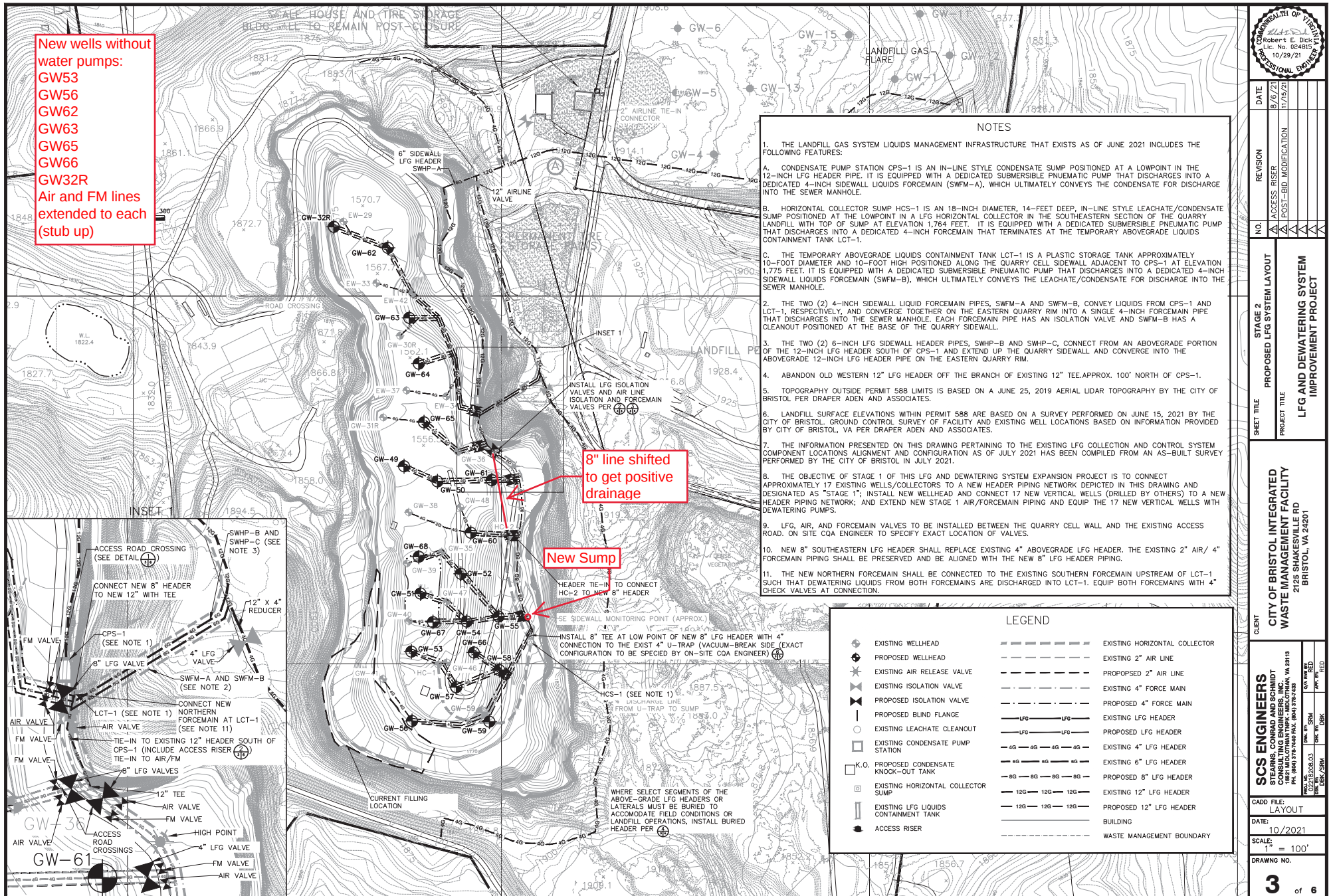
5243K



**LFG Sys Improvements - Wells.Pumps.pdf**

116K

New wells without  
water pumps:  
GW53  
GW56  
GW62  
GW63  
GW65  
GW66  
GW32R  
Air and FM lines  
extended to each  
(stub up)



| DATE                  | 8/6/21   |
|-----------------------|----------|
| REVISION              | 10/19/21 |
| NO.                   | 1        |
| ACCESS RISK           | 1        |
| POST-BID MODIFICATION | 1        |

| STAGE 2       | PROPOSED LFG SYSTEM LAYOUT                    |
|---------------|-----------------------------------------------|
| PROJECT TITLE | LFG AND DEWATERING SYSTEM IMPROVEMENT PROJECT |

CITY OF BRISTOL INTEGRATED FACILITY  
WASTE MANAGEMENT FACILITY  
2128 SHAKESVILLE RD  
BRISTOL, VA 24201

|             |                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CLIENT      | SCS ENGINEERS<br>STEVENSON, CONRAD AND SCHMIDT<br>CONSULTING ENGINEERS, INC.<br>1881 MIDCOTWAY PKWY, MIDDLETON, VA 23113<br>(804) 751-1100 FAX (804) 751-1101<br>WWW.SCS-VA.COM |
| CADD FILE   | LAYOUT                                                                                                                                                                          |
| DATE        | 10/2021                                                                                                                                                                         |
| SCALE       | 1" = 100'                                                                                                                                                                       |
| DRAWING NO. | 3                                                                                                                                                                               |

**Bristol LFG System Improvements - 2021**  
**Gas Well & Pump Installation Table - 12/20/21**

| Well Numbers | Well Depth<br>Drilled (below<br>GS) | Total Casing<br>Length (incl.<br>stick-up) | Casing Material | Depth measured<br>inside well casing<br>(below TOC) | Filled-in<br>Thickness (ft) | Measured<br>Water Level<br>(below TOC) | Water Column<br>Thickenss (ft) | Pump Depth |
|--------------|-------------------------------------|--------------------------------------------|-----------------|-----------------------------------------------------|-----------------------------|----------------------------------------|--------------------------------|------------|
| GW-49        | 110                                 | 110                                        | STEEL           | 100                                                 | 10                          | 43                                     | 57                             | 90         |
| GW-50        | 96                                  | 105                                        | PVC             | 93                                                  | 12                          | 36                                     | 57                             | 83         |
| GW-51        | 114                                 | 120                                        | CPVC            | 105                                                 | 15                          | 39                                     | 66                             | 95         |
| GW-52        | 109                                 | 120                                        | CPVC            | 103                                                 | 17                          | 45                                     | 58                             | 93         |
| GW-53        | 91                                  | 100                                        | CPVC            | 38                                                  | 62                          | NA                                     | 0                              | no pump    |
| GW-54        | 91                                  | 100                                        | CPVC            | 85                                                  | 15                          | 32                                     | 53                             | 75         |
| GW-55        | 104                                 | 110                                        | STEEL           | 90                                                  | 20                          | 33                                     | 57                             | 80         |
| GW-56        | 109                                 | 120                                        | PVC             | 58                                                  | 62                          | NA                                     | 0                              | no pump    |
| GW-57        | 103                                 | 110                                        | CPVC            | 100                                                 | 10                          | 43                                     | 57                             | 90         |
| GW-58        | 92                                  | 100                                        | PVC             | 92                                                  | 8                           | 29                                     | 63                             | 82         |
| GW-59        | 72                                  | 80                                         | PVC             | 74                                                  | 6                           | 36                                     | 38                             | 64         |
| GW-60        | 120                                 | 130                                        | CPVC            | 98                                                  | 32                          | 43                                     | 55                             | 88         |
| GW-61        | 105                                 | 115                                        | CPVC            | 102                                                 | 13                          | 37                                     | 65                             | 92         |
| GW-62        | 120                                 | 130                                        | CPVC            | 83                                                  | 47                          | NA                                     | 0                              | no pump    |
| GW-63        | 117                                 | 127                                        | CPVC            | 64                                                  | 63                          | NA                                     | 0                              | no pump    |
| GW-64        | 120                                 | 130                                        | PVC             | 123                                                 | 7                           | 85                                     | 38                             | 113        |
| GW-65        | 100                                 | 110                                        | PVC             | 44                                                  | 66                          | NA                                     | 0                              | no pump    |
| GW-66        | 102                                 | 110                                        | STEEL           | 33                                                  | 77                          | 32                                     | 1                              | no pump    |
| GW-67        | 100                                 | 110                                        | STEEL           | 104                                                 | 6                           | 42                                     | 62                             | 94         |
| GW-68        | 75                                  | 85                                         | PVC             | 78                                                  | 7                           | 36                                     | 42                             | 68         |
| GW-32R       | 120                                 | 130                                        | CPVC            | 126                                                 | 4                           | 117                                    | 9                              | no pump    |

Note: Measurements taken by SCS Field Services during LFG System Connections Construction