



## Memorandum

| Analyte (mg/kg)                          | Number of Samples analysed | Number of Detects | Minimum Concentration | Minimum Detect | Maximum Concentration | Maximum Detect |
|--|----------------------------|-------------------|-----------------------|----------------|-----------------------|----------------|
| >C10 - C40 (Sum of Total)                | 9                          | 1                 | <50                   | 290            | 290                   | 290            |
| Benzene                                  | 9                          | 0                 | <0.2                  | ND             | <0.2                  | ND             |
| Toluene                                  | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Ethylbenzene                             | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Xylene (o)                               | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Xylene (m & p)                           | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Xylene Total                             | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| BTEX (Sum of Total) - Lab Calc           | 9                          | 0                 | <0.2                  | ND             | <0.2                  | ND             |
| 1,2,4-trimethylbenzene                   | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Isopropylbenzene                         | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Styrene                                  | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Polycyclic aromatic hydrocarbons         | 9                          | 2                 | <0.5                  | 3.3            | 7.4                   | 7.4            |
| Pyrene                                   | 9                          | 2                 | <0.5                  | 1.1            | 1.7                   | 1.7            |
| Acenaphthene                             | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Acenaphthylene                           | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Anthracene                               | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Benz(a)anthracene                        | 9                          | 1                 | <0.5                  | 0.6            | 0.6                   | 0.6            |
| Benzo(a)pyrene                           | 9                          | 1                 | <0.5                  | 0.8            | 0.8                   | 0.8            |
| Benzo[b+j]fluoranthene                   | 9                          | 2                 | <0.5                  | 0.6            | 0.8                   | 0.8            |
| Benzo(k)fluoranthene                     | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Benzo(g,h,i)perylene                     | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Chrysene                                 | 9                          | 1                 | <0.5                  | 0.6            | 0.6                   | 0.6            |
| Dibenz(a,h)anthracene                    | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Fluoranthene                             | 9                          | 2                 | <0.5                  | 1.1            | 1.8                   | 1.8            |
| Fluorene                                 | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Indeno(1,2,3-c,d)pyrene                  | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Naphthalene                              | 9                          | 0                 | <0.5                  | ND             | <0.5                  | ND             |
| Phenanthrene                             | 9                          | 2                 | <0.5                  | 0.5            | 1.1                   | 1.1            |
| Benzo(a)pyrene TEQ (zero) - Lab Calc     | 9                          | 1                 | <0.5                  | 0.9            | 0.9                   | 0.9            |
| Benzo(a)pyrene TEQ (half LOR) - Lab Calc | 9                          | 9                 | 0.6                   | 0.6            | 1.2                   | 1.2            |





## Memorandum

| Analyte (mg/kg)                     | Number of Samples analysed | Number of Detects | Minimum Concentration | Minimum Detect | Maximum Concentration | Maximum Detect |
|-------------------------------------|----------------------------|-------------------|-----------------------|----------------|-----------------------|----------------|
| Benzo(a)pyrene TEQ (LOR) - Lab Calc | 9                          | 9                 | 1.2                   | 1.2            | 1.6                   | 1.6            |

**Table 6 Summary of Non-PFAS results – Groundwater**

| Analyte (µg/L)                  | Number of Samples analysed | Number of Detects | Minimum Concentration | Minimum Detect | Maximum Concentration* | Maximum Detect |
|---------------------------------|----------------------------|-------------------|-----------------------|----------------|------------------------|----------------|
| 1,4-Dioxane                     | 15                         | 0                 | <0.5                  | ND             | <0.5                   | ND             |
| Arsenic (Filtered)              | 15                         | 4                 | <0.001                | 0.001          | 0.017                  | 0.017          |
| Cadmium (Filtered)              | 15                         | 8                 | <0.0001               | 0.0002         | 0.0006                 | 0.0006         |
| Chromium (III+VI) (Filtered)    | 15                         | 2                 | <0.001                | 0.001          | 0.001                  | 0.001          |
| Copper (Filtered)               | 15                         | 7                 | <0.001                | 0.001          | 0.038                  | 0.038          |
| Lead (Filtered)                 | 15                         | 1                 | <0.001                | 0.007          | 0.007                  | 0.007          |
| Mercury (Filtered)              | 15                         | 0                 | <0.0001               | ND             | <0.0001                | ND             |
| Nickel (Filtered)               | 15                         | 10                | <0.001                | 0.001          | 0.004                  | 0.004          |
| Zinc (Filtered)                 | 15                         | 12                | <0.005                | 0.009          | 0.039                  | 0.039          |
| C6-C10 minus BTEX (F1)          | 15                         | 0                 | <20                   | ND             | <20                    | ND             |
| C6 - C10 Fraction               | 15                         | 0                 | <20                   | ND             | <20                    | ND             |
| >C10-C16 minus Naphthalene (F2) | 15                         | 0                 | <100                  | ND             | <100                   | ND             |
| >C10 - C16 Fraction             | 15                         | 0                 | <100                  | ND             | <100                   | ND             |
| >C16 - C34 Fraction (F3)        | 15                         | 0                 | <100                  | ND             | <100                   | ND             |
| >C34 - C40 Fraction (F4)        | 15                         | 0                 | <100                  | ND             | <100                   | ND             |
| >C10 - C40 (Sum of Total)       | 15                         | 0                 | <100                  | ND             | <100                   | ND             |
| Benzene                         | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Toluene                         | 15                         | 0                 | <2                    | ND             | <2                     | ND             |
| Ethylbenzene                    | 15                         | 0                 | <2                    | ND             | <2                     | ND             |
| Xylene (o)                      | 15                         | 0                 | <2                    | ND             | <2                     | ND             |
| Xylene (m & p)                  | 15                         | 0                 | <2                    | ND             | <2                     | ND             |
| Xylene Total                    | 15                         | 0                 | <2                    | ND             | <2                     | ND             |





## Memorandum

| Analyte (µg/L)                       | Number of Samples analysed | Number of Detects | Minimum Concentration | Minimum Detect | Maximum Concentration* | Maximum Detect |
|--------------------------------------|----------------------------|-------------------|-----------------------|----------------|------------------------|----------------|
| BTEX (Sum of Total) - Lab Calc       | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| 1,2,4-trimethylbenzene               | 11                         | 0                 | <5                    | ND             | <5                     | ND             |
| Isopropylbenzene                     | 11                         | 0                 | <5                    | ND             | <5                     | ND             |
| Styrene                              | 11                         | 0                 | <5                    | ND             | <5                     | ND             |
| Polycyclic aromatic hydrocarbons     | 15                         | 1                 | <0.5                  | 2.2            | 2.2                    | 2.2            |
| Pyrene                               | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Acenaphthene                         | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Acenaphthylene                       | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Anthracene                           | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Benz(a)anthracene                    | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Benzo(a)pyrene                       | 15                         | 0                 | <0.5                  | ND             | <0.5                   | ND             |
| Benzo[b+j]fluoranthene               | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Benzo(k)fluoranthene                 | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Benzo(g,h,i)perylene                 | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Chrysene                             | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Dibenz(a,h)anthracene                | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Fluoranthene                         | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Fluorene                             | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Indeno(1,2,3-c,d)pyrene              | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Naphthalene                          | 15                         | 1                 | <1                    | ND             | 2.2                    | 2.2            |
| Phenanthrene                         | 15                         | 0                 | <1                    | ND             | <1                     | ND             |
| Benzo(a)pyrene TEQ (zero) - Lab Calc | 15                         | 0                 | <0.5                  | ND             | <0.5                   | ND             |

Do not hesitate to contact the undersigned if you have any queries.

Kind Regards

██████████  
██

Attachments: Summary Tables – soil, leachate and groundwater (PFAS only)

Figures 7B to 7K



|                  |       |        |         |         |         |         |         |         |         |         |         |         |         |
|------------------|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| amidoacetic acid | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| DS)              | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0008  | 0.0018  | 0.0002  | 0.0005  | <0.0002 | 4.81    | <0.0002 |
|                  | mg/kg | 0.0002 | 0.0009  | 0.0008  | 0.0005  | 0.0006  | 0.0141  | 0.0149  | 0.0002  | 0.0321  | 0.0023  | 0.0112  | 0.0008  |
|                  | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amidoacetic acid | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Lab Calc         | mg/kg | 0.0002 | 0.0264  | 0.0344  | 0.0724  | 0.0215  | 0.881   | 2.62    | 0.0188  | 1.15    | 0.0686  | 0.347   | 0.0314  |
|                  | mg/kg | 0.0002 | 0.0047  | 0.0137  | 0.012   | 0.0065  | 0.0115  | 0.202   | 0.0078  | 0.0159  | 0.0046  | 0.0278  | 0.0126  |
| FHxS)            | mg/kg | 0.0002 | 0.01    | 0.0154  | 0.0347  | 0.0117  | 0.636   | 2.39    | 0.0134  | 0.602   | 0.0307  | 0.122   | 0.0131  |
|                  | mg/kg | 0.0002 | 0.0009  | 0.0102  | 0.0052  | 0.0025  | 0.0039  | 0.164   | 0.0031  | 0.0133  | 0.0013  | 0.013   | 0.0043  |
|                  | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amide            | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amidoethanol     | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amide            | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amidoethanol     | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| : FTS)           | mg/kg | 0.0005 | 0.0006  | 0.001   | <0.0005 | <0.0005 | 0.0007  | <0.0005 | <0.0005 | 0.0022  | <0.0005 | <0.0005 | 0.0017  |
|                  | mg/kg | 0.0002 | 0.002   | 0.0024  | 0.0037  | 0.0012  | 0.0479  | 0.0824  | 0.0007  | 0.0583  | 0.0025  | 0.0127  | 0.002   |
|                  | mg/kg | 0.0002 | 0.0024  | 0.0039  | 0.0083  | 0.0036  | 0.0302  | 0.7     | 0.0078  | 0.0677  | 0.0079  | 0.0299  | 0.005   |
|                  | mg/kg | 0.001  | 0.002   | 0.008   | 0.004   | 0.003   | 0.004   | 0.026   | 0.001   | 0.003   | 0.003   | 0.004   | 0.003   |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | 0.0012  | 0.0016  | 0.0026  | 0.001   | 0.0064  | 0.243   | 0.0011  | 0.0374  | 0.0015  | 0.0059  | 0.0011  |
|                  | mg/kg | 0.0002 | 0.0296  | 0.038   | 0.0573  | 0.0219  | 0.0586  | 1.59    | 0.0313  | 0.173   | 0.0207  | 0.0424  | 0.038   |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| :OS)             | mg/kg | 0.0002 | 0.0164  | 0.019   | 0.0377  | 0.0098  | 0.245   | 0.233   | 0.0054  | 0.552   | 0.0379  | 0.225   | 0.0183  |
| SA)              | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0.0004  | <0.0002 | 0.0012  | 0.001   | <0.0002 | 0.0007  | <0.0002 | 0.0007  | 0.0003  |
|                  | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | 0.0707  | 0.114   | 0.168   | 0.0618  | 1.06    | 5.65    | 0.0718  | 1.56    | 0.112   | 0.495   | 0.1     |
| )                | mg/kg | 0.0002 | 0.0674  | 0.109   | 0.157   | 0.0576  | 1.01    | 4.93    | 0.0638  | 1.46    | 0.102   | 0.453   | 0.0941  |



|                  |       |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|------------------|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| amidoacetic acid | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| (DS)             | mg/kg | 0.0002 | 0.0021  | <0.0002 | 0.0048  | 0.0004  | 0.0009  | 0.0004  | 0.0007  | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005  | <0.0002 |
|                  | mg/kg | 0.0002 | 0.0006  | 0.0548  | 0.02    | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003  | <0.0002 |
|                  | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                  | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amidoacetic acid | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Lab Calc         | mg/kg | 0.0002 | 0.0469  | 3.44    | 1.95    | 0.0269  | 0.0154  | 0.05    | 0.0256  | 0.008   | 0.007   | 0.0028  | 0.0152  | 0.0026  | 0.0275  | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| FHxS)            | mg/kg | 0.0002 | 0.0075  | 0.241   | 0.154   | 0.0005  | 0.0012  | 0.0018  | 0.0014  | 0.0042  | 0.003   | 0.0016  | 0.012   | 0.0026  | 0.007   | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amide            | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amidoethanol     | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amide            | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amidoethanol     | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| (FTS)            | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                  | mg/kg | 0.0002 | 0.0006  | 0.0185  | 0.0079  | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002  | <0.0002 | <0.0002 | <0.0002 | 0.0003  | 0.001   | <0.0002 |
|                  | mg/kg | 0.0002 | 0.0004  | 0.0063  | 0.0058  | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006  | <0.0002 | 0.0002  | <0.0002 |
|                  | mg/kg | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
|                  | mg/kg | 0.0002 | <0.0002 | 0.0003  | 0.0003  | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006  | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | 0.0006  | 0.0005  | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | 0.001   | 0.0105  | 0.0108  | <0.0002 | 0.0004  | 0.0003  | 0.0003  | 0.0022  | 0.0005  | 0.0008  | 0.0004  | <0.0002 | 0.0007  | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| (OS)             | mg/kg | 0.0002 | 0.0394  | 3.2     | 1.8     | 0.0264  | 0.0142  | 0.0482  | 0.0242  | 0.0038  | 0.004   | 0.0012  | 0.0032  | <0.0002 | 0.0205  | <0.0002 |
| (SA)             | mg/kg | 0.0002 | 0.0006  | 0.0006  | 0.0024  | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
|                  | mg/kg | 0.0002 | 0.0522  | 3.53    | 2.01    | 0.0273  | 0.0167  | 0.0507  | 0.0266  | 0.0104  | 0.0075  | 0.0036  | 0.0162  | 0.0029  | 0.0308  | <0.0002 |
| )                | mg/kg | 0.0002 | 0.0485  | 3.47    | 1.97    | 0.0269  | 0.0158  | 0.0503  | 0.0259  | 0.0104  | 0.0075  | 0.0036  | 0.0156  | 0.0029  | 0.0292  | <0.0002 |



| PFAS |   | mg/kg |        |         | 30 | 0  | <0.0002 | ND     | <0.0002 | ND     | 0.0001  | 0.0001  | 0        | Exceedances | Exceedances |
|------|---|-------|--------|---------|----|----|---------|--------|---------|--------|---------|---------|----------|-------------|-------------|
|      |   |       |        |         |    |    |         |        |         |        |         |         |          | 0           | 0           |
|      | N-Ethyl perfluorooctane sulfonamidoacetic acid  | mg/kg | 0.0002 | <0.0002 | 30 | 0  | <0.0002 | ND     | <0.0002 | ND     | 0.0001  | 0.0001  | 0        | 0           | 0           |
|      | Perfluorodecanesulfonic acid (PFDS)             | mg/kg | 0.0002 | 0.11    | 30 | 13 | <0.0002 | 0.0003 | 0.004   | 0.0048 | 0.00055 | 0.0001  | 0.00095  | 483         | 0           |
|      | Perfluoroheptane sulfonic acid                  | mg/kg | 0.0002 | 0.12    | 30 | 19 | <0.0002 | 0.0002 | 0.054   | 0.0548 | 0.0056  | 0.00055 | 0.012    | 19          | 19          |
|      | 10:2 Fluorotelomer sulfonic acid                | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | 4:2 Fluorotelomer sulfonic acid                 | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | N-Methyl perfluorooctane sulfonamidoacetic acid | mg/kg | 0.0002 | <0.0002 | 30 | 0  | <0.0002 | ND     | <0.0002 | ND     | 0.0001  | 0.0001  | 0        | 0           | 0           |
|      | PFHxS and PFOS (Sum of Total) - Lab Calc        | mg/kg | 0.0002 | 0.168   | 30 | 30 | 0.0026  | 0.0026 | 3.44    | 3.44   | 0.39    | 0.02945 | 0.84     | 30          | 30          |
|      | Perfluorobutane sulfonic acid                   | mg/kg | 0.0002 | 0.0003  | 30 | 14 | <0.0002 | 0.0002 | 0.202   | 0.202  | 0.011   | 0.0001  | 0.037    | 14          | 14          |
|      | Perfluorohexane sulfonic acid (PFHxS)           | mg/kg | 0.0002 | 0.024   | 30 | 30 | 0.0005  | 0.0005 | 2.39    | 2.39   | 0.15    | 0.01185 | 0.45     | 30          | 30          |
|      | Perfluoropentanoic acid                         | mg/kg | 0.0002 | <0.0002 | 30 | 12 | <0.0002 | 0.0009 | 0.164   | 0.164  | 0.0075  | 0.0001  | 0.03     | 12          | 12          |
|      | 8:2 Fluorotelomer sulfonic acid                 | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | N-Ethyl perfluorooctane sulfonamide             | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | N-Ethyl perfluorooctane sulfonamidoethanol      | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | N-Methyl perfluorooctane sulfonamide            | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | N-Methyl perfluorooctane sulfonamidoethanol     | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | 6:2 Fluorotelomer Sulfonate (6:2 FTS)           | mg/kg | 0.0005 | <0.0005 | 30 | 5  | <0.0005 | 0.0006 | 0.0022  | 0.0022 | 0.00042 | 0.00025 | 0.00045  | 5           | 5           |
|      | Perfluorooctanoic acid (PFOA)                   | mg/kg | 0.0002 | 0.002   | 30 | 22 | <0.0002 | 0.0002 | 0.0824  | 0.0824 | 0.0085  | 0.00095 | 0.019    | 22          | 22          |
|      | Perfluoropentane sulfonic acid                  | mg/kg | 0.0002 | 0.0014  | 30 | 20 | <0.0002 | 0.0002 | 0.7     | 0.7    | 0.03    | 0.00145 | 0.13     | 20          | 20          |
|      | Perfluorobutanoic acid                          | mg/kg | 0.001  | <0.001  | 30 | 12 | <0.001  | 0.001  | 0.026   | 0.026  | 0.0024  | 0.0005  | 0.0048   | 12          | 12          |
|      | Perfluorodecanoic acid                          | mg/kg | 0.0002 | <0.0002 | 30 | 3  | <0.0002 | 0.0003 | 0.0006  | 0.0006 | 0.00013 | 0.0001  | 0.0001   | 0           | 0           |
|      | Perfluorododecanoic acid                        | mg/kg | 0.0002 | <0.0002 | 30 | 0  | <0.0002 | ND     | <0.0002 | ND     | 0.0001  | 0.0001  | 0        | 0           | 0           |
|      | Perfluoroheptanoic acid                         | mg/kg | 0.0002 | 0.0004  | 30 | 16 | <0.0002 | 0.0003 | 0.243   | 0.243  | 0.01    | 0.00035 | 0.044    | 16          | 16          |
|      | Perfluorohexanoic acid (PFHxA)                  | mg/kg | 0.0002 | 0.0027  | 30 | 27 | <0.0002 | 0.0003 | 1.59    | 1.59   | 0.072   | 0.00245 | 0.29     | 27          | 27          |
|      | Perfluorononanoic acid                          | mg/kg | 0.0002 | <0.0002 | 30 | 1  | <0.0002 | 0.0003 | 0.0003  | 0.0003 | 0.00011 | 0.0001  | 0.000037 | 0           | 0           |
|      | Perfluorooctane sulfonic acid (PFOS)            | mg/kg | 0.0002 | 0.144   | 30 | 29 | <0.0002 | 0.0009 | 3.2     | 3.2    | 0.24    | 0.01975 | 0.66     | 29          | 29          |
|      | Perfluorooctane sulfonamide (FOSA)              | mg/kg | 0.0002 | <0.0002 | 30 | 9  | <0.0002 | 0.0003 | 0.0024  | 0.0024 | 0.00033 | 0.0001  | 0.00049  | 0           | 0           |
|      | Perfluorotetradecanoic acid                     | mg/kg | 0.0005 | <0.0005 | 30 | 0  | <0.0005 | ND     | <0.0005 | ND     | 0.00025 | 0.00025 | 0        | 0           | 0           |
|      | Perfluorotridecanoic acid                       | mg/kg | 0.0002 | <0.0002 | 30 | 0  | <0.0002 | ND     | <0.0002 | ND     | 0.0001  | 0.0001  | 0        | 0           | 0           |
|      | Perfluoroundecanoic acid                        | mg/kg | 0.0002 | <0.0002 | 30 | 0  | <0.0002 | ND     | <0.0002 | ND     | 0.0001  | 0.0001  | 0        | 0           | 0           |
|      | PFAS (Sum of Total)                             | mg/kg | 0.0002 | 0.177   | 30 | 30 | 0.0029  | 0.0029 | 5.65    | 5.65   | 0.54    | 0.057   | 1.2      | 30          | 30          |
|      | PFAS (Sum of Total)(WA DER List)                | mg/kg | 0.0002 | 0.173   | 30 | 30 | 0.0029  | 0.0029 | 4.93    | 4.93   | 0.5     | 0.05395 | 1.1      | 30          | 30          |



|                      |      |        |         |         |        |         |         |         |         |         |         |         |         |         |
|----------------------|------|--------|---------|---------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| onamidoacetic acid   | µg/L | 0.0005 | 0.0032  | <0.0005 | 0.014  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| l (PFDS)             | µg/L | 0.0005 | <0.0005 | <0.0005 | 0.0076 | <0.0005 | <0.0005 | 0.001   | 0.0021  | <0.0005 | <0.0005 | <0.0005 | 0.0022  | <0.0005 |
| id                   | µg/L | 0.0005 | 0.0149  | 0.0147  | 0.287  | 0.0036  | 0.0309  | 0.0217  | 0.0144  | 0.0262  | 0.0644  | 0.0512  | 0.0202  | 0.214   |
| acid                 | µg/L | 0.001  | <0.001  | <0.001  | <0.002 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| id                   | µg/L | 0.001  | <0.001  | <0.001  | <0.002 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| ifonamidoacetic acid | µg/L | 0.0005 | 0.0131  | <0.0005 | 0.0426 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| al) - Lab Calc       | µg/L | 0.0003 | 1.17    | 0.498   | 17.5   | 0.223   | 1.01    | 2.28    | 1.93    | 2.82    | 1.88    | 4.32    | 4.78    | 10.6    |
| j                    | µg/L | 0.0005 | 0.0097  | 0.0698  | 0.052  | 0.0131  | 0.0242  | 0.0142  | 0.0205  | 0.0138  | 0.0229  | 0.0246  | 0.0498  | 0.0948  |
| d (PFHxS)            | µg/L | 0.0005 | 0.346   | 0.386   | 3.34   | 0.0853  | 0.358   | 0.378   | 0.358   | 0.322   | 0.596   | 0.358   | 0.58    | 5.14    |
| id                   | µg/L | 0.0005 | 0.002   | 0.0105  | 0.0132 | <0.0005 | 0.0013  | 0.0052  | 0.0143  | 0.005   | 0.004   | 0.0073  | 0.0182  | 0.005   |
| id                   | µg/L | 0.001  | 0.002   | <0.001  | 0.007  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 0.001   | 0.004   | <0.001  |
| onamide              | µg/L | 0.001  | 0.001   | <0.001  | <0.005 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| onamidoethanol       | µg/L | 0.001  | <0.001  | 0.002   | <0.005 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| ifonamide            | µg/L | 0.001  | <0.001  | <0.001  | <0.005 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| ifonamidoethanol     | µg/L | 0.001  | <0.001  | <0.001  | <0.005 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| (6:2 FTS)            | µg/L | 0.001  | 0.006   | <0.001  | 0.01   | <0.001  | 0.002   | 0.003   | 0.005   | <0.001  | 0.002   | 0.002   | 0.012   | <0.001  |
| l)                   | µg/L | 0.0005 | 0.0153  | 0.0313  | 0.302  | 0.0047  | 0.0119  | 0.0085  | 0.0111  | 0.0061  | 0.0199  | 0.0095  | 0.0091  | 0.0346  |
| id                   | µg/L | 0.0005 | 0.0158  | 0.0779  | 0.126  | 0.0164  | 0.023   | 0.0208  | 0.0226  | 0.0217  | 0.0338  | 0.0304  | 0.0503  | 0.196   |
|                      | µg/L | 0.002  | <0.002  | <0.002  | 0.02   | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  |
|                      | µg/L | 0.0005 | 0.0014  | <0.0005 | 0.0046 | <0.0005 | 0.0006  | 0.0006  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                      | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                      | µg/L | 0.0005 | 0.0043  | 0.0101  | 0.053  | 0.0018  | 0.0014  | 0.0025  | 0.0055  | 0.002   | 0.0025  | 0.0033  | 0.0069  | 0.006   |
| ra)                  | µg/L | 0.0005 | 0.0335  | 0.0704  | 0.286  | 0.0101  | 0.0197  | 0.0446  | 0.111   | 0.0341  | 0.0307  | 0.06    | 0.121   | 0.0541  |
|                      | µg/L | 0.0005 | <0.0005 | <0.0005 | 0.005  | <0.0005 | <0.0005 | 0.0007  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| i (PFOS)             | µg/L | 0.0003 | 0.824   | 0.112   | 14.2   | 0.138   | 0.65    | 1.9     | 1.57    | 2.5     | 1.28    | 3.96    | 4.2     | 5.48    |
| i (FOSA)             | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.002 | <0.0005 | 0.0007  | 0.0194  | 0.0174  | 0.0269  | 0.0013  | 0.0161  | 0.0357  | 0.0505  |
|                      | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                      | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                      | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                      | µg/L | 0.0003 | 1.29    | 0.785   | 18.8   | 0.273   | 1.12    | 2.42    | 2.15    | 2.96    | 2.06    | 4.52    | 5.11    | 11.3    |
| List)                | µg/L | 0.0003 | 1.24    | 0.69    | 18.3   | 0.253   | 1.07    | 2.36    | 2.1     | 2.88    | 1.96    | 4.42    | 5       | 10.8    |



|                   |      |        |         |         |         |        |         |         |         |         |         |         |         |         |         |         |
|-------------------|------|--------|---------|---------|---------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| amidoacetic acid  | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0058 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| FDS)              | µg/L | 0.0005 | 0.006   | 0.003   | <0.0005 | 0.0188 | <0.0005 | 0.148   | 0.0063  | 0.1     | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0017  | <0.0005 |
|                   | µg/L | 0.0005 | 0.16    | 0.227   | 0.0638  | 0.0616 | 0.0443  | 0.13    | 0.024   | 0.201   | 0.568   | 0.0046  | 0.0026  | 0.0054  | 0.0072  | 0.2     |
|                   | µg/L | 0.001  | <0.001  | <0.001  | <0.002  | <0.002 | <0.001  | 0.002   | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
|                   | µg/L | 0.001  | <0.001  | <0.001  | <0.002  | <0.002 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| namidoacetic acid | µg/L | 0.0005 | <0.0005 | <0.0005 | 0.0028  | 0.0316 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Lab Calc          | µg/L | 0.0003 | 3.28    | 3.17    | 10.5    | 22.7   | 1.57    | 17.2    | 5.45    | 18.7    | 48.9    | 0.174   | 0.223   | 1.43    | 2       | 20      |
|                   | µg/L | 0.0005 | 0.0801  | 0.0296  | 0.0126  | 0.018  | 0.0451  | 0.0681  | 0.0044  | 0.0143  | 0.014   | 0.0012  | 0.0005  | <0.0005 | 0.0025  | 0.03    |
| 2FHxS)            | µg/L | 0.0005 | 1.15    | 1.42    | 0.323   | 0.726  | 1.26    | 1.77    | 0.113   | 0.341   | 1.12    | 0.0183  | 0.0268  | 0.0292  | 0.116   | 0.9     |
|                   | µg/L | 0.0005 | 0.0143  | 0.0063  | <0.002  | 0.0296 | 0.0062  | 0.0306  | <0.0005 | 0.0096  | 0.0045  | 0.001   | 0.002   | 0.0008  | <0.0005 | 0.05    |
|                   | µg/L | 0.001  | 0.002   | <0.001  | <0.002  | 0.004  | 0.005   | 0.018   | <0.001  | 0.005   | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| imide             | µg/L | 0.001  | <0.001  | <0.001  | <0.005  | <0.005 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| imidoethanol      | µg/L | 0.001  | <0.001  | <0.001  | <0.005  | <0.005 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| namide            | µg/L | 0.001  | <0.001  | <0.001  | <0.005  | <0.005 | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| namidoethanol     | µg/L | 0.001  | <0.001  | <0.001  | <0.005  | <0.005 | 0.005   | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| 2 FTS)            | µg/L | 0.001  | 0.002   | 0.003   | 0.007   | 0.003  | 0.006   | 0.009   | <0.001  | 0.006   | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
|                   | µg/L | 0.0005 | 0.116   | 0.16    | 0.067   | 0.127  | 0.0643  | 0.148   | 0.0057  | 0.163   | 0.0713  | 0.0059  | 0.0025  | 0.0082  | 0.0033  | 0.14    |
|                   | µg/L | 0.0005 | 0.138   | 0.056   | 0.011   | 0.0264 | 0.153   | 0.141   | 0.0073  | 0.0258  | 0.0376  | 0.0018  | 0.0015  | 0.0011  | 0.0044  | 0.04    |
|                   | µg/L | 0.002  | <0.002  | <0.002  | 0.016   | 0.014  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  |
|                   | µg/L | 0.0005 | 0.0019  | <0.0005 | <0.002  | 0.0192 | <0.0005 | 0.053   | <0.0005 | 0.003   | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0025  | 0.00    |
|                   | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.002  | <0.002 | <0.0005 | 0.0019  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                   | µg/L | 0.0005 | 0.0245  | 0.0097  | 0.0138  | 0.0478 | 0.0229  | 0.0222  | <0.0005 | 0.0157  | 0.0047  | 0.0009  | 0.0012  | 0.0023  | 0.0008  | 0.03    |
|                   | µg/L | 0.0005 | 0.211   | 0.0452  | 0.061   | 0.163  | 0.238   | 0.2     | 0.0066  | 0.077   | 0.0204  | 0.0053  | 0.0093  | 0.0111  | 0.0044  | 0.1     |
|                   | µg/L | 0.0005 | 0.003   | 0.0006  | 0.0326  | 0.011  | <0.0005 | 0.0102  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.00    |
| FOS)              | µg/L | 0.0003 | 2.13    | 1.75    | 10.2    | 22     | 0.311   | 15.4    | 5.34    | 18.4    | 47.8    | 0.156   | 0.196   | 1.4     | 1.88    | 19.     |
| OSA)              | µg/L | 0.0005 | 0.0503  | 0.0013  | <0.002  | <0.002 | <0.0005 | 0.0507  | 0.0083  | 0.0836  | 0.0013  | <0.0005 | <0.0005 | <0.0005 | 0.0026  | 0.00    |
|                   | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.005  | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                   | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.002  | <0.002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                   | µg/L | 0.0005 | <0.0005 | 0.0005  | <0.002  | 0.0082 | <0.0005 | 0.0364  | <0.0005 | 0.0018  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0007  | <0.0005 |
|                   | µg/L | 0.0003 | 4.09    | 3.71    | 10.8    | 23.3   | 2.16    | 18.2    | 5.52    | 19.5    | 49.6    | 0.195   | 0.242   | 1.46    | 2.03    | 20.     |
| t)                | µg/L | 0.0003 | 3.73    | 3.42    | 10.7    | 23.1   | 1.96    | 17.7    | 5.47    | 19      | 49      | 0.189   | 0.238   | 1.45    | 2.01    | 20.     |



|                          |      |        |         |         |         |         |         |         |         |         |         |         |         |         |
|--------------------------|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| sulfonamidoacetic acid   | µg/L | 0.0005 | 0.0007  | <0.0005 | <0.0005 | 0.0176  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| acid (PFDS)              | µg/L | 0.0005 | 0.0546  | <0.0005 | <0.0005 | 0.0255  | 0.144   | 0.0016  | 0.0017  | <0.0005 | 0.0019  | <0.0005 | <0.0005 | <0.0005 |
| c acid                   | µg/L | 0.0005 | 0.24    | 0.0041  | 0.146   | 2.12    | 0.0451  | 0.0403  | 0.0143  | 0.0017  | 0.0017  | <0.0005 | 0.0014  | <0.0005 |
| nic acid                 | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| ic acid                  | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| e sulfonamidoacetic acid | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0006  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Total) - Lab Calc        | µg/L | 0.0003 | 36.8    | 0.216   | 6.55    | 136     | 7.79    | 1.37    | 1.02    | 0.132   | 0.179   | 0.0113  | 0.0608  | 0.0201  |
| acid                     | µg/L | 0.0005 | 0.105   | 0.0017  | 0.0045  | 0.131   | 0.0124  | 0.0084  | 0.0023  | 0.0008  | 0.0005  | <0.0005 | 0.001   | <0.0005 |
| acid (PFHxS)             | µg/L | 0.0005 | 1.71    | 0.0175  | 0.694   | 9.58    | 0.254   | 0.174   | 0.21    | 0.0307  | 0.013   | 0.0019  | 0.0145  | 0.0034  |
|                          | µg/L | 0.0005 | 0.0248  | 0.003   | 0.0018  | 0.0451  | 0.0058  | 0.0059  | 0.0021  | <0.0005 | 0.0017  | <0.0005 | 0.0015  | <0.0005 |
| ic acid                  | µg/L | 0.001  | 0.011   | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| sulfonamide              | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| sulfonamidoethanol       | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| e sulfonamide            | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| e sulfonamidoethanol     | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| ate (6:2 FTS)            | µg/L | 0.001  | 0.008   | <0.001  | <0.001  | <0.001  | 0.029   | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| FOA)                     | µg/L | 0.0005 | 0.154   | 0.0076  | 0.0736  | 0.716   | 0.0177  | 0.024   | 0.0087  | 0.0013  | 0.0033  | <0.0005 | 0.0035  | <0.0005 |
| c acid                   | µg/L | 0.0005 | 0.183   | 0.0024  | 0.0157  | 0.254   | 0.0164  | 0.0138  | 0.0075  | 0.0013  | 0.0013  | <0.0005 | 0.0013  | <0.0005 |
|                          | µg/L | 0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  |
|                          | µg/L | 0.0005 | 0.0549  | <0.0005 | <0.0005 | 0.0033  | 0.0401  | <0.0005 | <0.0005 | <0.0005 | 0.0005  | <0.0005 | <0.0005 | <0.0005 |
|                          | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                          | µg/L | 0.0005 | 0.0237  | 0.0024  | 0.0033  | 0.0159  | 0.0031  | 0.0035  | 0.0016  | <0.0005 | 0.0018  | <0.0005 | 0.0016  | <0.0005 |
| PHxA)                    | µg/L | 0.0005 | 0.172   | 0.0181  | 0.0223  | 0.243   | 0.0196  | 0.0248  | 0.0091  | 0.002   | 0.0097  | 0.001   | 0.0107  | <0.0005 |
|                          | µg/L | 0.0005 | 0.0064  | <0.0005 | <0.0005 | 0.001   | 0.002   | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| acid (PFOS)              | µg/L | 0.0003 | 35.1    | 0.198   | 5.86    | 126     | 7.54    | 1.2     | 0.813   | 0.101   | 0.166   | 0.0094  | 0.0463  | 0.0167  |
| nide (FOSA)              | µg/L | 0.0005 | 0.0415  | <0.0005 | <0.0005 | 0.118   | 0.0284  | 0.0011  | 0.0011  | <0.0005 | 0.0016  | <0.0005 | <0.0005 | <0.0005 |
| cid                      | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                          | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                          | µg/L | 0.0005 | 0.0057  | <0.0005 | <0.0005 | <0.0005 | 0.0053  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                          | µg/L | 0.0003 | 37.9    | 0.255   | 6.82    | 139     | 8.18    | 1.5     | 1.07    | 0.139   | 0.203   | 0.0123  | 0.0818  | 0.0201  |
| DER List)                | µg/L | 0.0003 | 37.3    | 0.248   | 6.66    | 137     | 7.9     | 1.44    | 1.05    | 0.136   | 0.196   | 0.0123  | 0.0791  | 0.0201  |



|                             |      |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
|-----------------------------|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| amidoacetic acid            | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| amidoacetic acid (FDS)      | µg/L | 0.0005 | <0.0005 | 0.0008  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                             | µg/L | 0.0005 | 0.0005  | 0.002   | 0.0022  | 0.0031  | <0.0005 | 0.0082  | 0.0006  | 0.0071  | <0.0005 | 0.0041  | 0.0094  | 0.0021  | 0.0005  |
|                             | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
|                             | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| amidoacetic acid - Lab Calc | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                             | µg/L | 0.0003 | 0.053   | 0.227   | 0.422   | 0.326   | 0.0233  | 0.723   | 0.0269  | 0.176   | 0.0131  | 0.434   | 1       | 0.0463  | 0.0005  |
|                             | µg/L | 0.0005 | <0.0005 | 0.0006  | 0.0005  | 0.0009  | 0.0019  | 0.0037  | <0.0005 | 0.0016  | <0.0005 | 0.0012  | 0.0011  | 0.0006  | 0.0005  |
| PFHxS)                      | µg/L | 0.0005 | 0.0075  | 0.0466  | 0.0336  | 0.0565  | 0.0062  | 0.113   | 0.002   | 0.0423  | 0.0017  | 0.0338  | 0.0398  | 0.0059  | 0.0005  |
|                             | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0104  | 0.0009  | 0.004   | <0.0005 | <0.0005 | 0.001   | 0.001   | 0.0005  |
|                             | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| amide                       | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| amidoethanol                | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| amide                       | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| amidoethanol                | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
| amidoethanol (2 FTS)        | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |
|                             | µg/L | 0.0005 | <0.0005 | 0.0014  | 0.0007  | 0.0025  | <0.0005 | 0.0048  | 0.0018  | 0.0079  | 0.0009  | 0.0035  | 0.0117  | 0.0032  | 0.0005  |
|                             | µg/L | 0.0005 | <0.0005 | 0.0017  | 0.0009  | 0.003   | <0.0005 | 0.006   | <0.0005 | 0.0026  | <0.0005 | 0.0015  | 0.0016  | 0.0009  | 0.0005  |
|                             | µg/L | 0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  |
|                             | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0006  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                             | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                             | µg/L | 0.0005 | <0.0005 | 0.0013  | 0.0012  | 0.0008  | <0.0005 | 0.0012  | 0.0014  | 0.0029  | <0.0005 | 0.0011  | 0.0028  | 0.0014  | 0.0005  |
|                             | µg/L | 0.0005 | <0.0005 | 0.0042  | 0.0018  | 0.0053  | 0.0015  | 0.0099  | 0.0088  | 0.0202  | 0.0008  | 0.0027  | 0.0113  | 0.0096  | 0.0005  |
|                             | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0015  | <0.0005 | <0.0005 |
| PFOS)                       | µg/L | 0.0003 | 0.0455  | 0.18    | 0.388   | 0.27    | 0.0171  | 0.61    | 0.0249  | 0.134   | 0.0114  | 0.4     | 0.96    | 0.0404  | 0.0005  |
| PFOS)                       | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0008  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| PFOS)                       | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                             | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                             | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
|                             | µg/L | 0.0003 | 0.0535  | 0.239   | 0.429   | 0.342   | 0.0267  | 0.768   | 0.0404  | 0.223   | 0.0148  | 0.448   | 1.04    | 0.0651  | 0.0005  |
| PFOS)                       | µg/L | 0.0003 | 0.053   | 0.234   | 0.426   | 0.336   | 0.0267  | 0.753   | 0.0398  | 0.213   | 0.0148  | 0.442   | 1.03    | 0.0621  | 0.0005  |



|                    |      |        |         |         |         |         |         |         |         |         |         |    |         |         |
|--------------------|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|---------|---------|
| amidoacetic acid   | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | <0.0005 |         |
| PFDS)              | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 19      | <0.0005 |
|                    | µg/L | 0.0005 | 0.0156  | <0.0005 | 0.0035  | 0.0008  | 0.0009  | 0.0011  | 0.0011  | 0.0024  | <0.0005 | 68 | 59      | <0.0005 |
| id                 | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 1       | <0.001  |
| l                  | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 0       | <0.001  |
| onamidoacetic acid | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 5       | <0.0005 |
| - Lab Calc         | µg/L | 0.0003 | 0.166   | 0.011   | 0.0557  | 0.0787  | 0.0396  | 0.0738  | 0.0843  | 0.0894  | 0.0894  | 68 | 68      | 0.011   |
|                    | µg/L | 0.0005 | 0.0032  | <0.0005 | <0.0005 | 0.0008  | 0.0006  | <0.0005 | <0.0005 | <0.0005 | 0.0009  | 68 | 55      | <0.0005 |
| PFHxS)             | µg/L | 0.0005 | 0.0823  | 0.0046  | 0.0301  | 0.0134  | 0.0163  | 0.0201  | 0.0062  | 0.0058  | 0.0274  | 68 | 68      | 0.0017  |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 41      | <0.0005 |
| l                  | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 13      | <0.001  |
| amide              | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 1       | <0.001  |
| amidoethanol       | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 1       | <0.001  |
| onamide            | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 0       | <0.001  |
| onamidoethanol     | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 1       | <0.001  |
| :2 FTS)            | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 68 | 19      | <0.001  |
|                    | µg/L | 0.0005 | 0.0011  | <0.0005 | 0.0008  | <0.0005 | 0.0008  | 0.0009  | 0.0008  | 0.0012  | 0.001   | 68 | 60      | <0.0005 |
|                    | µg/L | 0.0005 | 0.0039  | <0.0005 | 0.0009  | 0.0012  | 0.0011  | <0.0005 | 0.0006  | <0.0005 | 0.0016  | 68 | 56      | <0.0005 |
|                    | µg/L | 0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | 68 | 3       | <0.002  |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 17      | <0.0005 |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 1       | <0.0005 |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 51      | <0.0005 |
| )                  | µg/L | 0.0005 | 0.0039  | <0.0005 | 0.0016  | 0.0007  | 0.001   | 0.0009  | 0.0014  | 0.0034  | 0.0015  | 68 | 63      | <0.0005 |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 13      | <0.0005 |
| PFOS)              | µg/L | 0.0003 | 0.0838  | 0.0064  | 0.0256  | 0.0461  | 0.0624  | 0.0195  | 0.0676  | 0.0785  | 0.062   | 68 | 68      | 0.0064  |
| FOSA)              | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 27      | <0.0005 |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 0       | <0.0005 |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 0       | <0.0005 |
|                    | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 68 | 7       | <0.0005 |
|                    | µg/L | 0.0003 | 0.194   | 0.011   | 0.0625  | 0.063   | 0.0831  | 0.0425  | 0.0777  | 0.0923  | 0.0944  | 68 | 68      | 0.011   |
| st)                | µg/L | 0.0003 | 0.174   | 0.011   | 0.0581  | 0.061   | 0.0811  | 0.0414  | 0.076   | 0.0899  | 0.0928  | 68 | 68      | 0.011   |



|      |   |      |        |         |         |         | Exceedances | Exceedances<br>(Detects Only) |
|------|---|------|--------|---------|---------|---------|-------------|-------------------------------|
| PFAS | N-Ethyl perfluorooctane sulfonamidoacetic       | µg/L | 0.0005 | 0.00085 | 0.00025 | 0.0027  | 6           | 5                             |
|      | Perfluorodecanesulfonic acid (PFDS)             | µg/L | 0.0005 | 0.0089  | 0.00025 | .032    | 0           | 0                             |
|      | Perfluoroheptane sulfonic acid                  | µg/L | 0.0005 | 0.079   | 0.0077  | 0.27    | 59          | 59                            |
|      | 10:2 Fluorotelomer sulfonic acid                | µg/L | 0.001  | 0.00054 | 0.0005  | 0.00021 | 0           | 0                             |
|      | 4:2 Fluorotelomer sulfonic acid                 | µg/L | 0.001  | 0.00052 | 0.0005  | 0.0001  | 0           | 0                             |
|      | N-Methyl perfluorooctane sulfonamidoacetic acid | µg/L | 0.0005 | 0.0016  | 0.00025 | 0.0065  | 5           | 5                             |
|      | PFHxS and PFOS (Sum of Total) - Lab Calc        | µg/L | 0.0003 | 6       | 0.484   | 18      | 68          | 68                            |
|      | Perfluorobutane sulfonic acid                   | µg/L | 0.0005 | 0.016   | 0.0024  | 0.027   | 55          | 55                            |
|      | Perfluorohexane sulfonic acid (PFHxS)           | µg/L | 0.0005 | 0.53    | 0.0838  | 1.4     | 68          | 68                            |
|      | Perfluoropentanoic acid                         | µg/L | 0.0005 | 0.0057  | 0.0014  | 0.0099  | 42          | 41                            |
|      | 8:2 Fluorotelomer sulfonic acid                 | µg/L | 0.001  | 0.002   | 0.0005  | 0.0049  | 14          | 13                            |
|      | N-Ethyl perfluorooctane sulfonamide             | µg/L | 0.001  | 0.0006  | 0.0005  | 0.00042 | 4           | 1                             |
|      | N-Ethyl perfluorooctane sulfonamidoethanol      | µg/L | 0.001  | 0.00061 | 0.0005  | 0.00045 | 0           | 0                             |
|      | N-Methyl perfluorooctane sulfonamide            | µg/L | 0.001  | 0.00059 | 0.0005  | 0.00041 | 0           | 0                             |
|      | N-Methyl perfluorooctane sulfonamidoethanol     | µg/L | 0.001  | 0.00065 | 0.0005  | 0.00068 | 0           | 0                             |
|      | 6:2 Fluorotelomer Sulfonate (6:2 FTS)           | µg/L | 0.001  | 0.0024  | 0.0005  | 0.005   | 19          | 19                            |
|      | Perfluorooctanoic acid (PFOA)                   | µg/L | 0.0005 | 0.039   | 0.006   | 0.1     | 60          | 60                            |
|      | Perfluoropentane sulfonic acid                  | µg/L | 0.0005 | 0.028   | 0.00415 | 0.053   | 56          | 56                            |
|      | Perfluorobutanoic acid                          | µg/L | 0.002  | 0.0017  | 0.001   | 0.0033  | 0           | 0                             |
|      | Perfluorodecanoic acid                          | µg/L | 0.0005 | 0.003   | 0.00025 | 0.01    | 18          | 17                            |
|      | Perfluorododecanoic acid                        | µg/L | 0.0005 | 0.00031 | 0.00025 | 0.00025 | 0           | 0                             |
|      | Perfluoroheptanoic acid                         | µg/L | 0.0005 | 0.0059  | 0.0019  | 0.011   | 51          | 51                            |
|      | Perfluorohexanoic acid (PFHxA)                  | µg/L | 0.0005 | 0.042   | 0.01    | 0.067   | 63          | 63                            |
|      | Perfluorononanoic acid                          | µg/L | 0.0005 | 0.0015  | 0.00025 | 0.0045  | 0           | 0                             |
|      | Perfluorooctane sulfonic acid (PFOS)            | µg/L | 0.0003 | 5.4     | 0.374   | 17      | 68          | 68                            |
|      | Perfluorooctane sulfonamide (FOSA)              | µg/L | 0.0005 | 0.0089  | 0.00025 | 0.021   | 0           | 0                             |
|      | Perfluorotetradecanoic acid                     | µg/L | 0.0005 | 0.00035 | 0.00025 | 0.00047 | 0           | 0                             |
|      | Perfluorotridecanoic acid                       | µg/L | 0.0005 | 0.00028 | 0.00025 | 0.00016 | 0           | 0                             |
|      | Perfluoroundecanoic acid                        | µg/L | 0.0005 | 0.0011  | 0.00025 | 0.0045  | 0           | 0                             |
|      | PFAS (Sum of Total)                             | µg/L | 0.0003 | 6.2     | 0.6865  | 19      | 68          | 68                            |
|      | PFAS (Sum of Total)(WA DER List)                | µg/L | 0.0003 | 6.1     | 0.634   | 18      | 68          | 68                            |



|                     |      |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |    |    |
|---------------------|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|----|
| (PFDS)              | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 0  |
| d                   | µg/L | 0.0005 | 0.0316  | 0.0572  | 0.0076  | 0.0724  | 0.0211  | <0.0005 | 0.0049  | <0.0005 | 0.0179  | <0.0005 | 0.0026  | 0.0057  | 0.156   | <0.0005 | <0.0005 | <0.0005 | 15 | 10 |
| cid                 | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 0  |
| d                   | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 0  |
| fonamidoacetic acid | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 0  |
| l) - Lab Calc       | µg/L | 0.0003 | 2.68    | 4.96    | 0.392   | 3.03    | 0.971   | 0.0094  | 0.193   | 0.0041  | 0.526   | 0.0243  | 0.0835  | 0.214   | 2.76    | 0.0093  | 0.0004  | 0.0004  | 15 | 15 |
|                     | µg/L | 0.0005 | 0.343   | 0.358   | 0.0014  | 0.322   | 0.0283  | 0.156   | 0.0059  | <0.0005 | 0.03    | 0.0028  | 0.0032  | 0.0231  | 0.049   | 0.0009  | <0.0005 | <0.0005 | 15 | 13 |
| (PFHxS)             | µg/L | 0.0005 | 2.52    | 4.8     | 0.278   | 2.8     | 0.327   | 0.0064  | 0.108   | 0.0028  | 0.328   | 0.0231  | 0.0309  | 0.176   | 1.55    | 0.0062  | <0.0005 | <0.0005 | 15 | 14 |
|                     | µg/L | 0.0005 | 0.305   | 0.141   | <0.0005 | 0.0805  | 0.0116  | 0.0081  | 0.0019  | <0.0005 | 0.008   | <0.0005 | 0.0006  | 0.0049  | 0.0252  | <0.0005 | <0.0005 | <0.0005 | 15 | 10 |
| d                   | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 0  |
| namide              | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 0  |
| namidoethanol       | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 0  |
| fonamide            | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 0  |
| fonamidoethanol     | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 0  |
| 6:2 FTS)            | µg/L | 0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 0.003   | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  | 15 | 1  |
| l                   | µg/L | 0.0005 | 0.0516  | 0.0539  | 0.0048  | 0.0697  | 0.0152  | <0.0005 | 0.0026  | <0.0005 | 0.013   | <0.0005 | 0.0012  | 0.0031  | 0.105   | <0.0005 | <0.0005 | <0.0005 | 15 | 10 |
| d                   | µg/L | 0.0005 | 0.379   | 0.375   | 0.0035  | 0.486   | 0.0388  | 0.0611  | 0.0104  | <0.0005 | 0.0386  | 0.0048  | 0.0033  | 0.0277  | 0.145   | 0.0008  | <0.0005 | <0.0005 | 15 | 13 |
|                     | µg/L | 0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | <0.002  | 15 | 0  |
|                     | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0006  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 1  |
|                     | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 0  |
|                     | µg/L | 0.0005 | 0.0946  | 0.0345  | 0.0013  | 0.0395  | 0.0054  | <0.0005 | 0.0009  | <0.0005 | 0.0032  | <0.0005 | <0.0005 | 0.0023  | 0.0167  | <0.0005 | <0.0005 | <0.0005 | 15 | 9  |
| A)                  | µg/L | 0.0005 | 1       | 1.04    | <0.0005 | 0.524   | 0.0286  | 0.0278  | 0.0065  | <0.0005 | 0.0203  | <0.0005 | 0.0019  | 0.017   | 0.102   | <0.0005 | <0.0005 | <0.0005 | 15 | 10 |
|                     | µg/L | 0.0005 | 0.0042  | <0.0005 | <0.0005 | <0.0005 | 0.0007  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 2  |
| (PFOS)              | µg/L | 0.0003 | 0.162   | 0.159   | 0.114   | 0.227   | 0.644   | 0.003   | 0.0846  | 0.0013  | 0.198   | 0.0012  | 0.0526  | 0.0381  | 1.21    | 0.0031  | 0.0004  | 0.0004  | 15 | 15 |
| (FOSA)              | µg/L | 0.0005 | 0.0008  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 1  |
|                     | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 0  |
|                     | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 0  |
|                     | µg/L | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 15 | 0  |
|                     | µg/L | 0.0003 | 4.89    | 7.02    | 0.411   | 4.62    | 1.12    | 0.262   | 0.229   | 0.0041  | 0.657   | 0.0319  | 0.0963  | 0.298   | 3.36    | 0.011   | 0.0004  | 0.0004  | 15 | 15 |
| .ist)               | µg/L | 0.0003 | 4.48    | 6.59    | 0.4     | 4.06    | 1.06    | 0.201   | 0.213   | 0.0041  | 0.6     | 0.0271  | 0.0904  | 0.264   | 3.06    | 0.0102  | 0.0004  | 0.0004  | 15 | 15 |



|   |      |        |        |         |         |         |    |    |    |
|---|------|--------|--------|---------|---------|---------|----|----|----|
| Perfluorodecanesulfonic acid (PFDS)             | µg/L | 0.0005 | ND     | 0.00025 | 0.00025 | 0       | 0  | 0  | 0  |
| Perfluoroheptane sulfonic acid                  | µg/L | 0.0005 | 0.156  | 0.025   | 0.0057  | 0.042   | 10 | 10 | 10 |
| 10:2 Fluorotelomer sulfonic acid                | µg/L | 0.001  | ND     | 0.0005  | 0.0005  | 0       | 0  | 0  | 0  |
| 4:2 Fluorotelomer sulfonic acid                 | µg/L | 0.001  | ND     | 0.0005  | 0.0005  | 0       | 0  | 0  | 0  |
| N-Methyl perfluorooctane sulfonamidoacetic acid | µg/L | 0.0005 | ND     | 0.00025 | 0.00025 | 0       | 0  | 0  | 0  |
| PFHxS and PFOS (Sum of Total) - Lab Calc        | µg/L | 0.0003 | 4.96   | 1.1     | 0.214   | 1.5     | 15 | 15 | 15 |
| Perfluorobutane sulfonic acid                   | µg/L | 0.0005 | 0.358  | 0.088   | 0.0231  | 0.14    | 13 | 13 | 13 |
| Perfluorohexane sulfonic acid (PFHxS)           | µg/L | 0.0005 | 4.8    | 0.86    | 0.176   | 1.4     | 14 | 14 | 14 |
| Perfluoropentanoic acid                         | µg/L | 0.0005 | 0.305  | 0.039   | 0.0049  | 0.083   | 10 | 10 | 10 |
| 8:2 Fluorotelomer sulfonic acid                 | µg/L | 0.001  | ND     | 0.0005  | 0.0005  | 0       | 0  | 0  | 0  |
| N-Ethyl perfluorooctane sulfonamide             | µg/L | 0.001  | ND     | 0.0005  | 0.0005  | 0       | 0  | 0  | 0  |
| N-Ethyl perfluorooctane sulfonamidoethanol      | µg/L | 0.001  | ND     | 0.0005  | 0.0005  | 0       | 0  | 0  | 0  |
| N-Methyl perfluorooctane sulfonamide            | µg/L | 0.001  | ND     | 0.0005  | 0.0005  | 0       | 0  | 0  | 0  |
| N-Methyl perfluorooctane sulfonamidoethanol     | µg/L | 0.001  | ND     | 0.0005  | 0.0005  | 0       | 0  | 0  | 0  |
| 6:2 Fluorotelomer Sulfonate (6:2 FTS)           | µg/L | 0.001  | 0.003  | 0.00067 | 0.0005  | 0.00065 | 0  | 0  | 0  |
| Perfluorooctanoic acid (PFOA)                   | µg/L | 0.0005 | 0.105  | 0.021   | 0.0031  | 0.033   | 10 | 10 | 10 |
| Perfluoropentane sulfonic acid                  | µg/L | 0.0005 | 0.486  | 0.1     | 0.0277  | 0.17    | 13 | 13 | 13 |
| Perfluorobutanoic acid                          | µg/L | 0.002  | ND     | 0.001   | 0.001   | 0       | 0  | 0  | 0  |
| Perfluorodecanoic acid                          | µg/L | 0.0005 | 0.0006 | 0.00027 | 0.00025 | 0.00009 | 0  | 0  | 0  |
| Perfluorododecanoic acid                        | µg/L | 0.0005 | ND     | 0.00025 | 0.00025 | 0       | 0  | 0  | 0  |
| Perfluoroheptanoic acid                         | µg/L | 0.0005 | 0.0946 | 0.013   | 0.0013  | 0.026   | 9  | 9  | 9  |
| Perfluorohexanoic acid (PFHxA)                  | µg/L | 0.0005 | 1.04   | 0.18    | 0.017   | 0.36    | 10 | 10 | 10 |
| Perfluorononanoic acid                          | µg/L | 0.0005 | 0.0042 | 0.00054 | 0.00025 | 0.001   | 2  | 2  | 2  |
| Perfluorooctane sulfonic acid (PFOS)            | µg/L | 0.0003 | 1.21   | 0.19    | 0.0846  | 0.33    | 15 | 15 | 15 |
| Perfluorooctane sulfonamide (FOSA)              | µg/L | 0.0005 | 0.0008 | 0.00029 | 0.00025 | 0.00014 | 1  | 1  | 1  |
| Perfluorotetradecanoic acid                     | µg/L | 0.0005 | ND     | 0.00025 | 0.00025 | 0       | 0  | 0  | 0  |
| Perfluorotridecanoic acid                       | µg/L | 0.0005 | ND     | 0.00025 | 0.00025 | 0       | 0  | 0  | 0  |
| Perfluoroundecanoic acid                        | µg/L | 0.0005 | ND     | 0.00025 | 0.00025 | 0       | 0  | 0  | 0  |
| PFAS (Sum of Total)                             | µg/L | 0.0003 | 7.02   | 1.5     | 0.298   | 2.3     | 15 | 15 | 15 |
| PFAS (Sum of Total)(WA DER List)                | µg/L | 0.0003 | 6.59   | 1.4     | 0.264   | 2.1     | 15 | 15 | 15 |





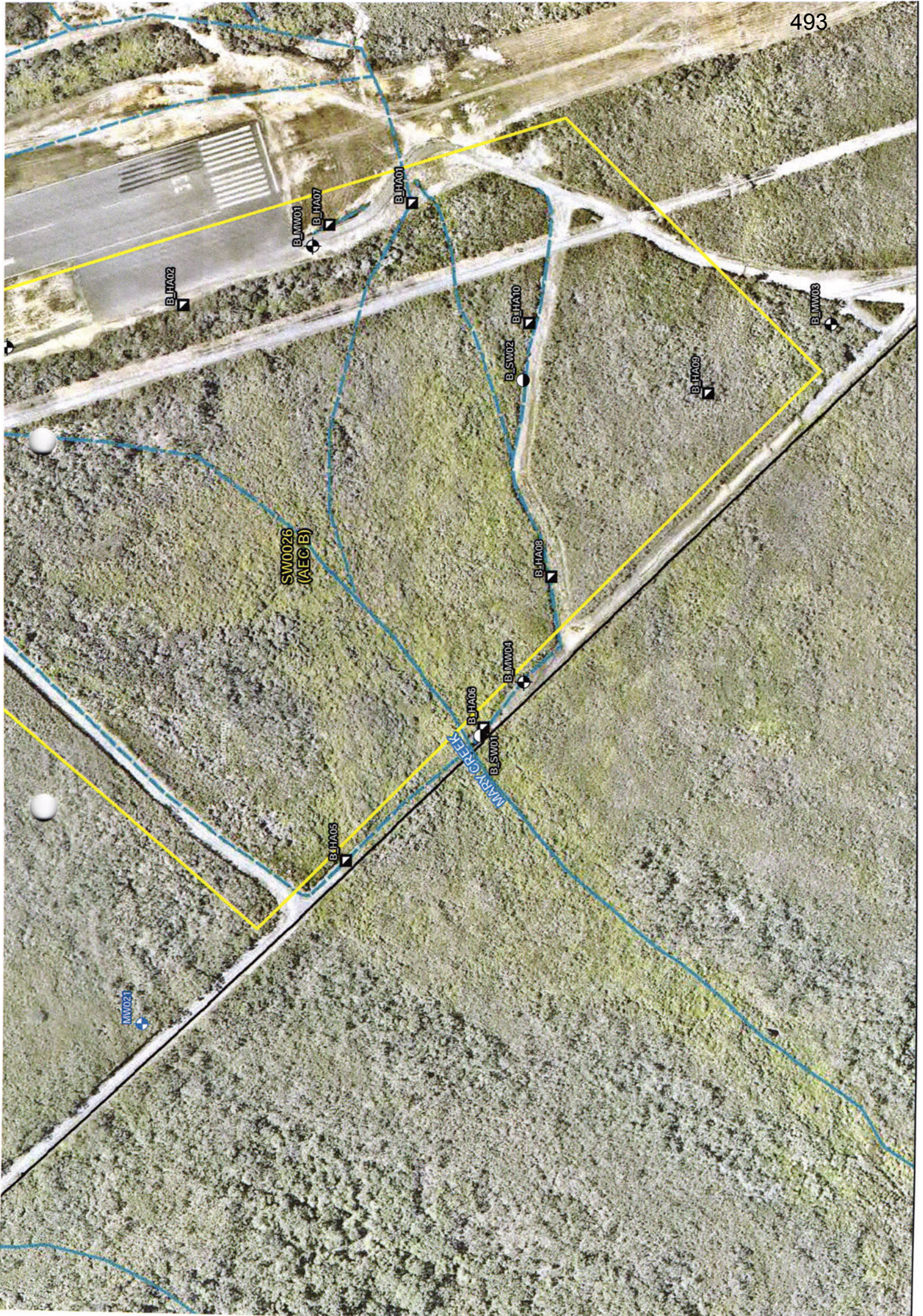
for additional 12 soil bores and 4 groundwater wells

LEGEND

- Jervis Bay Range Facility
- Areas of Environmental Concern - IRPE
- + Existing Groundwater Well (To Be Sampled)

*Handwritten notes at the bottom of the page, partially obscured.*

















CAPTAINS LAGOON

SW0226  
(AEC G)  
G\_SW04

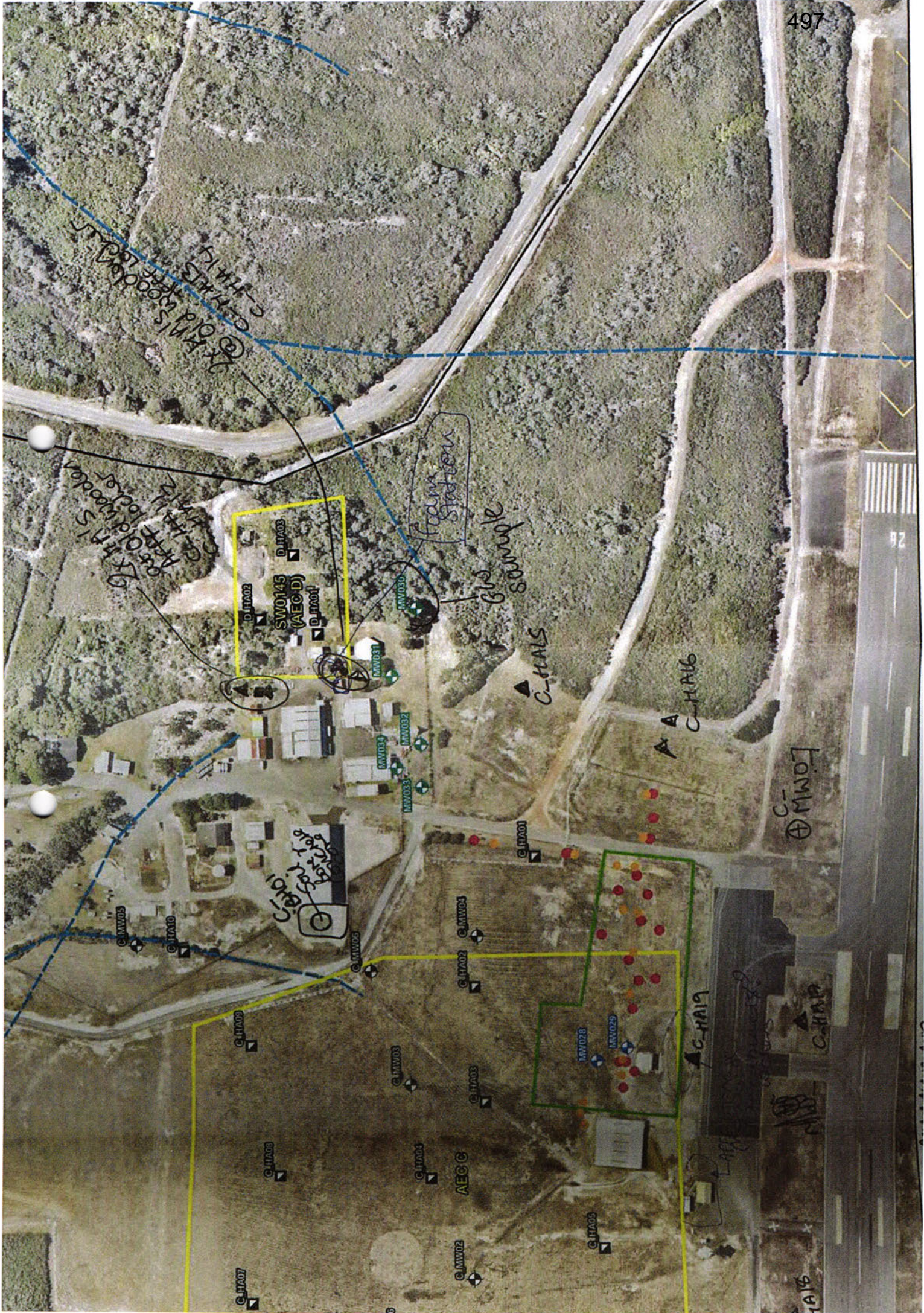
G\_SW03

SW0217  
(AEC G)

G\_SW02

G\_SW01





KTH's good water @ KTH #10  
 KTH #10  
 KTH #11  
 KTH #12  
 KTH #13  
 KTH #14  
 KTH #15  
 KTH #16  
 KTH #17  
 KTH #18  
 KTH #19  
 KTH #20

KTH's good water @ KTH #10  
 KTH #10  
 KTH #11  
 KTH #12  
 KTH #13  
 KTH #14  
 KTH #15  
 KTH #16  
 KTH #17  
 KTH #18  
 KTH #19  
 KTH #20

From Station

Grp Sample

D-HA02  
 SV0145 (AEC D)  
 D-HA03  
 D-HA01

C-HA15

C-HA16

C-HA17

C-HA18

C-HA19

C-HA20

C-HA07

C-HA08

C-HA09

C-HA10

C-HA11

C-HA12

C-HA13

C-HA14

C-HA01

C-HA02

C-HA03

C-HA04

C-HA05

C-HA06

C-HA07

C-HA08

C-HA09

C-HA10

C-HA11

C-HA12

C-HA13

C-HA14

C-HA15

C-HA16

C-HA17

C-HA18

C-HA19

C-HA20

MW001

MW002

MW003

MW004

MW005

MW006

MW007

MW008

MW009

MW010

MW011

MW012

MW013

MW014

MW015

MW016

MW017

MW018

MW019

MW020

MW021

MW022

MW023

MW024

MW025

MW026

MW027

MW028

MW029

MW030

MW031

MW032

MW033

MW034

MW035

MW036

AEC C

AEC D

AEC E

AEC F

AEC G

AEC H

AEC I

AEC J

AEC K

AEC L

AEC M

AEC N

AEC O

AEC P

AEC Q

AEC R

AEC S

AEC T

AEC U

AEC V





MW025

MW026

MW027

HLHA01

HLHA05

AECH

HLHA02

HLHA03

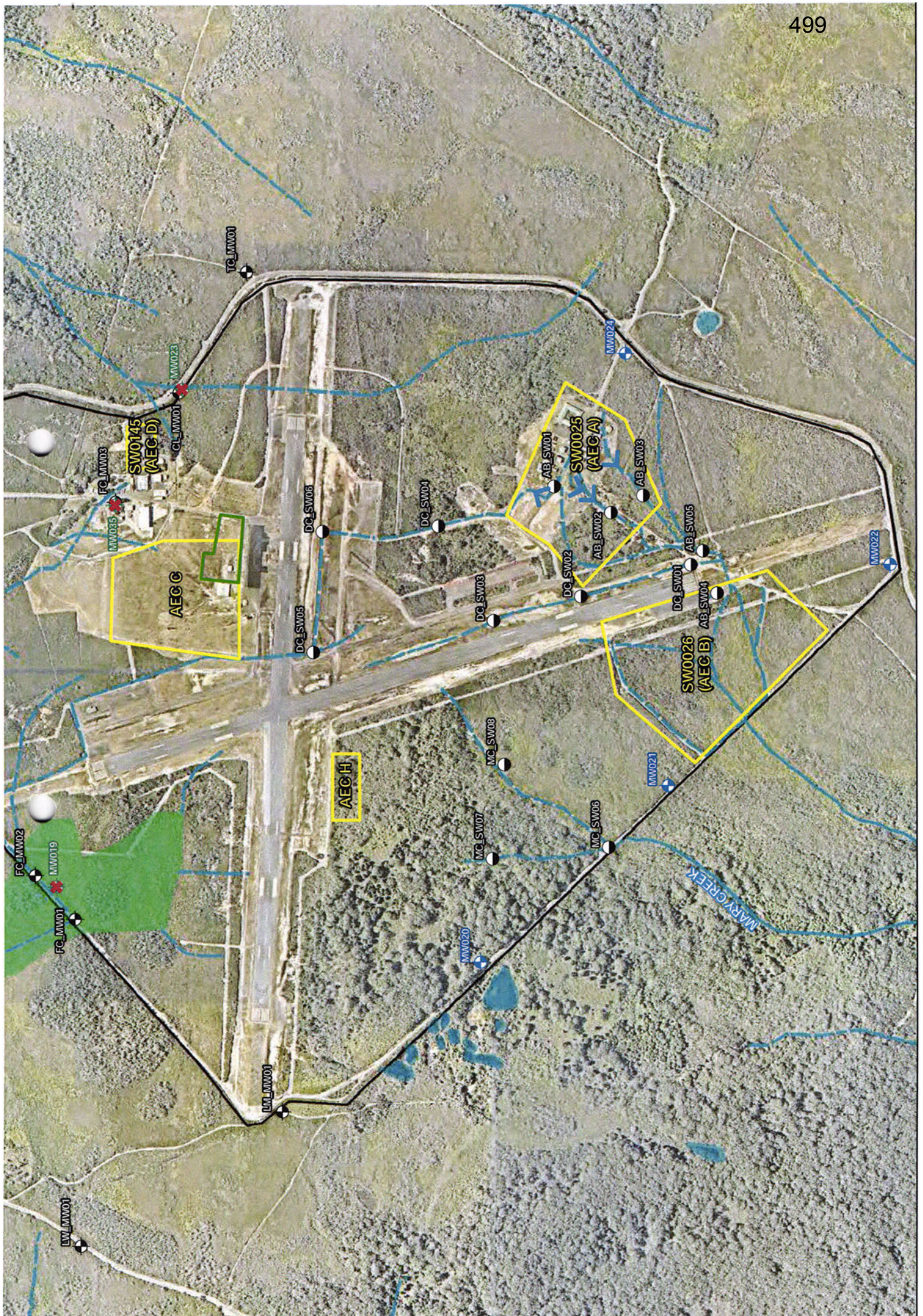
HLHA04

HL SW03

HL SW01

HL SW02







CAPTAINS LAGOON

SW0226  
(AEC G)

SW0217  
(AEC G)

SW0040  
(AEC F)

SW0035  
(AEC E)

SW0145  
(AEC D)

AEC C

AEC H

FC\_SW02

FC\_SW05

FC\_SW10

FC\_SW11

FC\_SW07

FC\_SW06

FC\_SW08

FC\_SW09









**White, Sarah-Jane (Health)**

---

**From:** Krsteski, Radomir (Health)  
**Sent:** Friday, 9 June 2017 12:03 AM  
**To:** Barr, Conrad (Health)  
**Subject:** FW: ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan [SEC=UNCLASSIFIED]

Hi Conrad,

Below is my response for clearance.

Hi David,

Sorry for the delay responding.

I can reference to 'treated water' is a reference to water we treat from Lake Windermere, which has continually been found clear, or water used by the leaseholds, which I understand to be tank water.

Initial tests on Kullindi reported low levels of PFAS below the enHealth interim PFAS guidelines, the follow-up test on Kullindi report PFAS below the limit of detection. No advice was issued to the leaseholder because the initial results was below the enHealth interim PFAS guidelines follow-up result was clear. ACT Health agrees that this would have change if further tests found PFAS. Please note that under the new enHealth PFAS Guidelines which adopts the FSANZ recommendation 0.07ug/L in drinking water is almost ten time less than the previous enHealth interim PFAS guidelines. Under the new guidelines the positive Kullindi result would still be compliant.

I can confirm that my reference to 'treated water' is a reference to water treated from Lake Windermere and not tank water. Raw water testing conducted by ACT Health on Lake Windermere found samples tested exceeded the new guideline by ten fold. ACT Health would still like to see treated water from Lake Windermere tested on a periodic basis to ensure that water treatment is effective. It would also be prudent to conduct periodic testing on bore samples due the potential for PFAS to migrate through the aquifer. The testing of proposed additional sites would precautionary and would ensure that the Defence testing project was inclusive of all stakeholders.

Cheers  
 Rad

---

**From:** Clapham, David  
**Sent:** Tuesday, 16 May 2017 4:05 PM  
**To:** Krsteski, Radomir (Health)  
**Cc:** Chester, Heath  
**Subject:** FW: ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan [SEC=UNCLASSIFIED]

Dear Rad

See below questions from [REDACTED] Are you please able to assist?

Best

David

---

**From:** [REDACTED] [mailto:[REDACTED]@infrastructure.gov.au]  
**Sent:** Tuesday, 16 May 2017 3:18 PM  
**To:** Clapham, David  
**Subject:** RE: ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only] [SEC=UNCLASSIFIED]



Hi David

Thanks for this. I have a couple of queries:

My understanding was that the test subsequent to the one that found low levels of PFAS at Kullindi was clear. Is this not the case? Note, because the level was so low at Kullindi, there was no advice issued to the leaseholder, but this may change if it is confirmed that subsequent tests found PFAS.

I would also like clarified whether the reference to 'treated water' is a reference to water we treat from Lake Windermere, which has continually been found clear, or water used by the leaseholds, which I understand to be tank water.

Cheers

**From:** Clapham, David [mailto:David.Clapham@act.gov.au]

**Sent:** Tuesday, 16 May 2017 2:53 PM

**To:** [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au

**Cc:** [REDACTED]@infrastructure.gov.au; Chester, Heath <Heath.Chester@act.gov.au>;

Krsteski, Radomir (Health) <Radomir.Krsteski@act.gov.au>; Rutledge, Geoffrey <Geoffrey.Rutledge@act.gov.au>

**Subject:** ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan  
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Dear [REDACTED]

Thank you for the opportunity to provide feedback on *Department of Defence Jervis Bay Range Facility & HMAS Creswell Preliminary Site Investigation & Sampling, Analysis and Quality Plan*.

- The ACT has concerns that the investigation area is not inclusive of the whole of the Bherwerre Peninsula. While we are pleased that the proposed sampling plan captures Lake Windermere and the Wreck Bay community, it excludes some of the approved lease sites within Booderee National Park, such as the previously tested bore sites at Kullindi Homestead, Christian Minde, Bay of Plenty and Rail Bus Tram Union. GPS Coordinates for these sites are provided below.

| Site to be included in Sampling Plan | GPS Coordinates        |
|--------------------------------------|------------------------|
| Kullindi Homestead                   | -35.153589, 150.606301 |
| Christian Minde                      | -35.155933, 150.606437 |
| Bay of Plenty                        | -35.181367, 150.594771 |
| Rail Bus Tram Union                  | -35.179548, 150.594398 |

- It is also not clear if treated drinking water will be sampled. Considering the elevation mapping it would suggest that there is the potential for PFAS plumes to migrate into these bore sites. ACT would like to see these excluded sites included in the proposed investigation by the Department of Defence.

Please do not hesitate to contact me with any issues or questions.

Kind Regards

David

**David Clapham** | Senior Policy Officer - Intergovernmental Relations | **Policy & Cabinet Division**  
☎ 02 6205 7261 | **Chief Minister, Treasury & Economic Development Directorate** | ACT Government  
Level 4, Canberra Nara Centre | GPO Box 158 Canberra ACT 2601 | [www.act.gov.au](http://www.act.gov.au)



---

This email, and any attachments, may be confidential and also privileged. If you are not the intended recipient, please notify the sender and delete all copies of this transmission along with any attachments immediately. You should not copy or use it for any purpose, nor disclose its contents to any other person.

---

---

#### Disclaimer

This message has been issued by the Department of Infrastructure and Regional Development. The information transmitted is for the use of the intended recipient only and may contain confidential and/or legally privileged material.

Any review, re-transmission, disclosure, dissemination or other use of, or taking of any action in reliance upon, this information by persons

or entities other than the intended recipient is prohibited and may result in severe penalties.

If you have received this e-mail in error, please notify the Department on (02) 6274-7111 and delete all copies of this transmission together with any attachments.

---







you should not copy it or use it for any purpose or disclose its contents to any other person. GHD and its affiliates reserve the right to monitor and modify all email communications through their networks.

---







|  |  |
|--|--|
|  |  |
| <b>Agenda</b>                                      |  |
| Introductions                                      |  |
| Investigation Progress<br>(DSI scope and schedule) | <ul style="list-style-type: none"> <li>- Detailed Site Investigation (DSI)</li> <li>- SAQP &amp; Conceptual Site Model (CSM)</li> <li>- Factual memorandums</li> </ul> |
| Future Stages<br>(schedule)                        | <ul style="list-style-type: none"> <li>- Human Health and Ecological Risk Assessment (HHERA)</li> </ul>  |
| Site Auditor                                       | <ul style="list-style-type: none"> <li>- Update from site auditor</li> </ul>   |
| Stakeholder<br>Engagement                          | <ul style="list-style-type: none"> <li>- Meetings and briefs</li> <li>- Fact Sheet</li> <li>- Community Info Sessions</li> <li>- Community enquiries</li> </ul>        |
| Risks and Issues                                   |  |
| Other Business                                     |  |
| Close  |  |



**Stedman, Andrew (Health)**

---

**From:** [REDACTED]@ghd.com>  
**Sent:** Tuesday, 20 June 2017 11:10 AM  
**To:** 'charles.huxtable@defence.gov.au'; nyree.cornelius@defence.gov.au;  
[REDACTED];  
[REDACTED];  
'David.Clapham@act.gov.au'; Chester, Heath; 'radomir.krsteski@act.gov.au';  
[REDACTED];  
Stedman, Andrew (Health)  
**Cc:** PFASIM Jervis Bay  
**Subject:** JBRF PFAS Investigation Monthly report May 2017  
**Attachments:** May Monthly PCG Report.pdf

Dear JBRF PCG,

Please find attached monthly activity report for May 2017

Regards,

[REDACTED]

**GHD**

[REDACTED]ghd.com  
Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>  
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

---

CONFIDENTIALITY NOTICE: This email, including any attachments, is confidential and may be privileged. If you are not the intended recipient please notify the sender immediately, and please delete it; you should not copy it or use it for any purpose or disclose its contents to any other person. GHD and its affiliates reserve the right to monitor and modify all email communications through their networks.

---





**Australian Government**  
**Department of Defence**  
**Estate and Infrastructure Group**

**PFAS Investigation and Management**  
**Monthly Report- Jervis Bay Range Facility**

14 06 2017

BP3-02-B091

26 Brindabella Circuit  
 Brindabella Business Park  
 PO Box 7925 Canberra BC 2610

**Re: Jervis Bay Range Facility Environmental Investigation – Progress Report May 2017**

## **1.0 Introduction**

The following progress report has been prepared by GHD Pty Ltd to provide a summary of activities for the Comprehensive Investigation of PFC Site Conditions at Jervis Bay Range facility, HMAS Creswell and surrounds for the period between 30 April 2017 and 30 May 2017

## **2.0 Critical items**

### **2.1 New items**

- The Detailed Site Investigation (DSI) Sampling Analysis Quality Plan (SAQP) Rev 1, issued to Defence, site auditor and Agencies for comment. Comments received and recorded from ACT Government, Spotless and NSW EPA.
- Project team identified SAQP will be updated to include agency comments (where required) on receipt of any comment received from WBACC.
- WBACC board requested copies of the historical reports associated with contamination investigations conducted in and around JBRF. Copies of the reports listed below were provided to Mr Malcolm Hanson (WBACC CEO).
  - a) Coffey Partners International Pty Ltd, Mary. Creek Headwaters, Soil and Water Quality Assessment Volumes 1 to 3- Site Assessment, 17 July 1996, (Coffey, 1996)
  - b) Coffey Partners International Pty Ltd, Round 2, Surface Water and Groundwater Quality Monitoring, JBRF, Jervis Bay, April 1997 (Coffey, 1997)
  - c) PPK Environment and Infrastructure Pty Ltd, Jervis Bay Range Facility Mary Creek Headwaters Remediation Project - Environmental Site Assessment, September 2001, (PPK, 2001) .
  - d) Parsons Brinckerhoff, Jervis Bay Range Facility Mary Creek and Headwater Remediation project - Environmental Site. Assessment - Wreck Bay Community . Land, November 2002 (PB, 2002).
  - e) Parsons Brinckerhoff, JBRF Mary Creek Headwaters. Remediation Project Remedial Action Plan, March 2004 (PB, 2004)
  - f) GHD Pty Ltd, JBRF Stage One Contamination Assessment, June 2005 (GHD, 2005a)



- g) AECOM, Stage 2 Environmental Investigations Shoalhaven Region, Jervis Bay Range Facilities, Part A - Stage 2 Environmental Investigation Report, August 2006 (AECOM, 2006b)
  - h) Parsons Brinkerhoff, Mary Creek Headwaters Remediation Project Baseline Sampling and Drum Disposal Validation Report, June 2006 (PB, 2006d) and
  - i) GHD Pty Ltd, PFAS Environmental Management Preliminary Sampling Program; September 2016 (GHD 2016a)
- The Board of Wreck Bay Aboriginal Community Council (WBACC) agreed to allow water use survey interviews to be conducted. Water use survey interviews commenced 19 June 2017.
  - The On-Site sampling has been completed, with factual reports of On-Site sampling provided as received to the PCG.

## 2.2 Previously raised items to be addressed

- Variation No.1 submitted to Defence to identify costs associated with additional sampling effort. In principal agreement received from Defence to allow development of SAQP Rev 1.
- The Board of Wreck Bay Aboriginal Community Council (WBACC) was briefed on 11 Apr 2017 to seek agreement to access aboriginal lands for the PFAS investigation. The Board stated that no access to aboriginal lands will be granted, prior to appointment of independent expert to advise WBACC. This directly impacts the DSI works for the '403 land' and the Booderee National Park.
- As a result of the delay associated with accessing aboriginal land (expected to be 3 months or greater) the Detailed Site Investigation (DSI) has at this time been undertaken on Defence land only. The DSI for non-Defence land will commence when approval from WBACC is provided and will likely require an update of the SAQP to incorporate feedback received from water use survey and other information provided by the community.

## 3.0 Project progress

- The project schedule is presented in the enclosed project schedule, dated 11 May 2017

### 3.1 Project impacts

- Identification of WBACC independent adviser and approval to conduct investigation on aboriginal lands.
- Identification of the requirement to conduct the Groundwater numerical modelling and Human Health risk Assessment (HHRA)

### 3.2 Project meetings

Project meetings held this reporting period are presented in Table 1.

**Table 1: Summary of meetings held during the March and April reporting period**

| Meeting date          | Meeting title   | Participants                                    | Minutes circulated |
|-----------------------|-----------------|---|--------------------|
| 16 May 2017           | PCG No 3        | PCG members                                     | Yes                |
| Recurring Wednesday's | Weekly meetings | JBRF project team – Defence, GHD & Site auditor | Yes                |

### 3.3 Project deliverables submitted this period

Project deliverables submitted during this reporting period are presented in Table 2.



**Table 2: Project deliverables submitted during the May reporting period**

| Document status | Title   | Date submitted |
|-----------------|---|----------------|
| Final           | Factual Memorandum of JBRF sampling results No. 1 | 12 May 2017    |
| Final           | Factual Memorandum of JBRF sampling results No. 2 | 24 May 2017    |

### 3.4 Project Milestones

The following project milestone was achieved in the May reporting period:

- PFAS Source testing areas A-H (On Base) 100%.

### 4.0 Project Forecast

The project schedule is presented in the enclosed project schedule, dated 11 May 2017

#### 4.1 Schedule tracking forecast

- The development and finalisation of the SAQP has been impacted by access to the Wreck Bay community and land and therefore has been delayed. It is envisaged that an update to the SAQP will be required when access is provided.
- SAQP (Rev 1) does not include reference to Biota sampling given the requirement for community input and initial results from off-base results. A standalone SAQP for Biota sampling will be developed and issued when appropriate.
- Negotiation with WBACC to facilitate community water use surveys is ongoing with access to community expected early June 2017.

#### 4.2 Project deliverables expected next period

- Access granted by WBACC Board for offsite sampling.

#### 4.3 Technical Advisor forecast

The Technical Advisor's achievements and planned activities are presented in Table 3.

**Table 3: Technical Advisor achievements and key activities during the March and April reporting period**

| Scope item | Achieved to date | Planned for next month |
|------------|------------------|------------------------|
|            |                  |                        |
|            |                  |                        |
|            |                  |                        |

### 5.0 Community enquiries

In this reporting period:

- 1 community enquiries in total were received via the Community Hotline (1800 987 618) and email (Jervisbay@ghd.com.au)
- There are 0 outstanding stakeholder enquires
- Recent enquiries received during this reporting period include the following themes:
  1. General enquiries relating to the community information for HMAS Albatross

### 6.0 Interaction with Government

Meetings and communications with Government stakeholders are summarised in Table 4.



Additional Reporting and project management to incorporate scope above

**Table 4: Summary of interactions with Government during the March and April reporting period**

| Meeting date | Meeting title | Participants       | Minutes circulated |
|--------------|---------------|--------------------|--------------------|
| 16 May 2017  | PCG No 3      | NSW & ACT Agencies | Yes                |

### 9.0 Requests for information from Defence

- All relevant historical reports associated with JBRF environmental assessments and contamination investigations have been provided to GHD by Defence.

### 10.0 Other Matters

- Nil
- 

Yours sincerely

[REDACTED]

CC:

**Enclosures:** Project Milestones - Dated 11/05/2017



**Table 1 - JBRF Environmental Investigation Key Milestone summary**

| Item  | Start             | Finish            |                                    |
|---|-------------------|-------------------|------------------------------------|
| <b>SAQP</b>   | <b>30/03/2017</b> | <b>15/09/2017</b> |                                    |
| Defence, Auditor and Agency review of SAQP Rev 1  | 04/05/2017        | 18/05/2017        | Defence/Auditor/ACT & NSW Agencies |
| Finalise SAQP Rev 1   | 19/05/2017        | 26/05/2017        | GHD                                |
| WBACC Adviser review of SAQP Rev 1  | 11/07/1017        | 25/07/2017        | WBACC                              |
| Update of SAQP to incorporate water use survey results and independent adviser comments (If Required) | 26/07/2017        | 08/08/2017        | GHD                                |
| Defence, Auditor and Agency review of SAQP Rev 2 (If Required)  | 08/08/2017        | 22/08/2017        | Defence/Auditor/ACT & NSW Agencies |
| Finalise SAQP   | 22/08/2017        | 22/08/2017        | GHD                                |
| Biota SAQP  | 25/07/2017        | 22/08/2017        | GHD                                |
| Defence, Auditor and Agency review of Biota SAQP  | 22/08/2017        | 05/09/2017        | Defence/Auditor/ACT & NSW Agencies |
| Finalise Biota SAQP   | 05/09/2017        | 15/09/2017        | GHD                                |
| <b>Off Site Access</b>  | <b>10/07/2017</b> | <b>17/09/2017</b> | WBACC/Booderee                     |
| Approval to conduct Water use survey  | 19/06/2017        | 07/07/2017        | WBACC                              |
| Appointment of WBACC independent Adviser  | 11/04/2017        | 11/07/1017        | WBACC                              |
| Approval to conduct Off-Site Groundwater Bore Installation, Soil, Sediment and surface water sampling | 11/07/1017        | 17/07/1017        | WBACC                              |
| <b>DSI</b>  | <b>5/04/2017</b>  | <b>28/08/2017</b> | GHD                                |
| On-Site Groundwater Bore Installation, Soil, Sediment and surface water sampling (Round 1).           | 5/04/2017         | 09/05/2017        | GHD                                |
| On-Site Groundwater Bore Installation, Soil, Sediment and surface water sampling (Round 2).           | TBA               | TBA               | GHD                                |
| Factual report of On-Site sampling results  | 09/05/2017        | 11/05/2017        | GHD                                |



| Item  | Start             | Finish            |                                    |
|---|-------------------|-------------------|------------------------------------|
| Off-Site Groundwater Bore Installation, Soil, Sediment and surface water sampling (Round 1) | 11/07/2017        | 11/08/2017        | GHD                                |
| Off-Site Groundwater Bore Installation, Soil, Sediment and surface water sampling (Round 2) | TBA               | TBA               | GHD                                |
| Factual report of Off Site sampling results   | 15/08/2017        | 28/08/2017        | GHD                                |
| <b>DSI Reporting</b>  | <b>11/05/2017</b> | <b>14/02/2018</b> |                                    |
| Defence and Auditor review of Draft DSI Report  | 16/11/2017        | 26/11/2017        | Defence/Auditor                    |
| Update of Draft DSI Report  | 26/11/2017        | 28/11/2017        | GHD                                |
| ACT & NSW State Agency review of draft DSI Report   | 28/11/2017        | 22/12/2017        | Defence/Auditor/ACT & NSW Agencies |
| Finalise DSI Report   | 10/01/2018        | 14/01/2018        | GHD                                |
| Final DSI Report approved   | 15/01/2018        | 15/01/2018        | Defence                            |
| Community Information Session   | 18/01/2018        | 14/02/2018        | GHD/Defence/Agency                 |
| <b>Human health and ecological risk assessment</b>  | <b>24/08/2017</b> | <b>25/05/2018</b> |                                    |
| HHERA Methodology preparation   | 24/08/2017        | 06/09/2017        | GHD                                |
| Review of Draft HHERA Methodology   | 07/09/2017        | 20/09/2017        | Defence/Auditor/ACT & NSW Agencies |
| Implementation  | 21/09/2017        | 21/12/2017        | GHD                                |
| Draft Reporting   | 05/01/2018        | 15/03/2018        | GHD                                |
| ACT & NSW State Agency review of draft HHERA  | 16/03/2018        | 26/04/2018        | Defence/Auditor/ACT & NSW Agencies |
| Finalise HHERA Report   | 27/04/2018        | 27/04/2018        | GHD                                |
| Final HHERA report approved   | 27/04/2018        | 27/04/2018        | Defence                            |
| Community Information Session   | 30/04/2018        | 25/05/2018        | GHD/Defence/Agency                 |



**Moroney, Rebecca (Health)**

---

**From:** Krsteski, Radomir (Health)  
**Sent:** Tuesday, 20 June 2017 1:55 PM  
**To:** Clapham, David  
**Cc:** Barr, Conrad (Health)  
**Subject:** FW: ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan [SEC=UNCLASSIFIED]

Hi David,

Sorry for the delay responding.

In response to the issues raised by [REDACTED] I can clarify that what I meant by treated water was treated water from Lake Windermere only and not tank water. Initial tests on Kullindi reported low levels of PFAS below the enHealth interim PFAS guidelines, the follow-up test on Kullindi reported PFAS below the limit of detection. No advice was issued to the leaseholder because the initial result was below the enHealth interim PFAS guidelines and the follow-up result was clear. ACT Health agrees that this would have change if the follow-up test found PFAS. Please note that under the new enHealth PFAS Guidelines which adopt the FSANZ recommendation 0.07ug/L in drinking water is almost ten time less than the previous enHealth interim PFAS guidelines. Under the new guidelines the positive Kullindi result would still be compliant. It would be prudent to conduct periodic testing on bore samples due the potential for PFAS to migrate through the aquifer, which was demonstrated by previous testing.

Raw water testing conducted by ACT Health on Lake Windermere found samples that exceeded the new guideline by ten fold. ACT Health would still like to see treated water from Lake Windermere tested on a periodic basis to ensure that water treatment is effective. The testing of proposed additional sites would precautionary and would ensure that the Defence testing project was inclusive of all stakeholders, who may potentially be affected by PFAS from the Defence sites.

Cheers  
 Rad

---

**From:** Clapham, David  
**Sent:** Tuesday, 16 May 2017 4:05 PM  
**To:** Krsteski, Radomir (Health)  
**Cc:** Chester, Heath  
**Subject:** FW: ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan [SEC=UNCLASSIFIED]

Dear Rad

See below questions from [REDACTED] Are you please able to assist?

Best

David

---

**From:** [REDACTED] [REDACTED] [REDACTED]@infrastructure.gov.au]  
**Sent:** Tuesday, 16 May 2017 3:18 PM  
**To:** Clapham, David  
**Subject:** RE: ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only] [SEC=UNCLASSIFIED]



Hi David

Thanks for this. I have a couple of queries:

My understanding was that the test subsequent to the one that found low levels of PFAS at Kullindi was clear. Is this not the case? Note, because the level was so low at Kullindi, there was no advice issued to the leaseholder, but this may change if it is confirmed that subsequent tests found PFAS.

I would also like clarified whether the reference to 'treated water' is a reference to water we treat from Lake Windermere, which has continually been found clear, or water used by the leaseholds, which I understand to be tank water.

Cheers

**From:** Clapham, David [mailto:David.Clapham@act.gov.au]

**Sent:** Tuesday, 16 May 2017 2:53 PM

**To:** [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au

**Cc:** [REDACTED]@infrastructure.gov.au; Chester, Heath <Heath.Chester@act.gov.au>;

Krsteski, Radomir (Health) <Radomir.Krsteski@act.gov.au>; Rutledge, Geoffrey <Geoffrey.Rutledge@act.gov.au>

**Subject:** ACT Feedback on JBT Preliminary Site Investigation & Sampling, Analysis and Quality Plan

[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Dear [REDACTED]

Thank you for the opportunity to provide feedback on *Department of Defence Jervis Bay Range Facility & HMAS Creswell Preliminary Site Investigation & Sampling, Analysis and Quality Plan*.

- The ACT has concerns that the investigation area is not inclusive of the whole of the Bherwerre Peninsula. While we are pleased that the proposed sampling plan captures Lake Windermere and the Wreck Bay community, it excludes some of the approved lease sites within Booderee National Park, such as the previously tested bore sites at Kullindi Homestead, Christian Minde, Bay of Plenty and Rail Bus Tram Union. GPS Coordinates for these sites are provided below.

| Site to be included in Sampling Plan | GPS Coordinates        |
|--------------------------------------|------------------------|
| Kullindi Homestead                   | -35.153589, 150.606301 |
| Christian Minde                      | -35.155933, 150.606437 |
| Bay of Plenty                        | -35.181367, 150.594771 |
| Rail Bus Tram Union                  | -35.179548, 150.594398 |

- It is also not clear if treated drinking water will be sampled. Considering the elevation mapping it would suggest that there is the potential for PFAS plumes to migrate into these bore sites. ACT would like to see these excluded sites included in the proposed investigation by the Department of Defence.

Please do not hesitate to contact me with any issues or questions.

Kind Regards

David

**David Clapham** | Senior Policy Officer - Intergovernmental Relations | **Policy & Cabinet Division**

☎ 02 6205 7261 | **Chief Minister, Treasury & Economic Development Directorate** | ACT Government  
Level 4, Canberra Nara Centre | GPO Box 158 Canberra ACT 2601 | [www.act.gov.au](http://www.act.gov.au)



-----  
This email, and any attachments, may be confidential and also privileged. If you are not the intended recipient, please notify the sender and delete all copies of this transmission along with any attachments immediately. You should not copy or use it for any purpose, nor disclose its contents to any other person.  
-----

-----  
Disclaimer

This message has been issued by the Department of Infrastructure and Regional Development.  
The information transmitted is for the use of the intended recipient only and may contain confidential and/or legally privileged material.

Any review, re-transmission, disclosure, dissemination or other use of, or taking of any action in reliance upon, this information by persons

or entities other than the intended recipient is prohibited and may result in severe penalties.

If you have received this e-mail in error, please notify the Department on (02) 6274-7111 and delete all copies of this transmission together with any attachments.  
-----



**Stedman, Andrew (Health)**

---

**From:** [REDACTED] 1@defence.gov.au> on behalf of PFASIM Jervis Bay  
<pfasim.jervisbay@defence.gov.au>  
**Sent:** Thursday, 22 June 2017 10:40 AM  
**To:** Clapham, David  
**Cc:** PFASIM Jervis Bay; Krsteski, Radomir (Health); Chester, Heath; Stedman, Andrew (Health)  
**Subject:** RE: ACT Feedback on JBT Preliminary PFAS Site Investigation & Sampling, Analysis and Quality Plan [SEC=UNCLASSIFIED]  
**Categories:** Red Category

UNCLASSIFIED

Dear David,

Thank you for your comments on SAQP Revision 1 for the Detailed Site Investigation for the presence of PFAS at Defence Establishments Jervis Bay Territory.

We have discussed your proposal with GHD (our lead consultant) for Defence to test bore sites located throughout the western lease areas of Bherwerre Peninsula for the presence of PFAS. In the first instance, the bores for the western leases are well outside the draft investigation area and they are unlikely to be impacted by PFAS emanating from the Jervis Bay Range Facility. However, it has been determined that GHD will consider additional sample locations to the west of Lakes Windermere and McKenzie to ascertain any instance of watershed in the pathway direction from JBRF to the Lakes and beyond in a westerly direction towards the western lease sites. This testing, as with all other off defence site sample sites will also determine any presence of PFAS.

These next steps will follow the 'inwards out' methodology of testing for PFAS migration from defence sites out into non defence locations which would follow the Source-Pathway-Receptor principle.

Another consideration for the western lease area is any historical use of fire fighting foam by the Shoalhaven Rural Fire Service (Christians Minde Volunteer Brigade). A consideration is what potential exists that 3M Lightwater AFFF may have been used in at least some minor training activity or storage spillage in the vicinity of the RFS shed at Christians Minde in the past until that foam was replaced by 3M Fire-Brake Bushfire Fighting Foam in the early 2000's.

Defence will continue to work with JBTA and ACT Government to understand the extent of PFAS migration off its defence establishments located on Jervis Bay Territory. Additional investigation planning would occur should it be discovered that PFAS is migrating in a westerly direction from JBRF, past the lakes and towards the western lease areas.

I am happy to take any questions you may have with this advice.

Regards,

[REDACTED]  
 (Contractor to Defence)  
 Defence Project Manager - Environmental Investigations  
 PFAS Investigation and Management Branch  
 Department of Defence

T: [REDACTED]  
 E: [REDACTED]@defence.gov.au  
 A: BP8-1, 8 Brindabella Circuit, Brindabella Business Park  
 PO Box 7925, Canberra BC 2610



**IMPORTANT:** This email remains the property of the Department of Defence and is subject to the jurisdiction of section 70 of the Crimes Act 1914. If you have received this email in error, you are requested to contact the sender and delete the email.



**Stedman, Andrew (Health)**

From: [REDACTED]@ghd.com>  
 Sent: Friday, 23 June 2017 12:10 PM  
 To: [REDACTED];  
 [REDACTED];  
 [REDACTED];  
 [REDACTED]; Clapham,  
 David; Chester, Heath; Krsteski, Radomir (Health);  
 [REDACTED]; Stedman, Andrew (Health)  
 Cc: PFASIM Jervis Bay; [REDACTED]  
 Subject: JBRF Factual Memo 4  
 Attachments: 212617102\_MEM4\_Rev1\_21.06.17.pdf

Dear PCG

Please find attached a summary of the final factual report for this phase of the investigation for samples collected during the onsite investigations.

The data has been issued for factual information purposes only.

GHD will conduct a full assessment of the data upon completion of site investigations, and will screen the data against the published criteria presented in Section 5 of the GHD, Preliminary Site Investigation & Sampling, Analysis and Quality Plan (Rev1), April 2017.

Kind Regards

[REDACTED]  
 [REDACTED]  
 [REDACTED]



**Please note I am available in the office on Tuesdays, Wednesdays, Thursdays and Fridays**

**GHD**  
 [REDACTED] M: [REDACTED] E: [REDACTED]@ghd.com  
 Level 15 133 Castlereagh St Sydney NSW 2000 Australia | <http://www.ghd.com>

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

Please consider our environment before printing this email

**CONFIDENTIALITY NOTICE:** This email, including any attachments, is confidential and may be privileged. If you are not the intended recipient please notify the sender immediately, and please delete it; you should not copy it or use it for any purpose or disclose its contents to any other person. GHD and its affiliates reserve the right to monitor and modify all email communications through their networks.





# Memorandum

21 June 2017

To Department of Defence

---

Copy to File

---

From [REDACTED] Tel [REDACTED]

---

Subject Factual data - on site investigations – Issue 4 Job no. 212617102

---

Dear [REDACTED]

## Factual information – Issue 4

Please find attached a summary of the leachate analytical data received on 6 June 2017 for samples collected during the onsite investigations conducted on 20 and 21 April and 4 and 5 May 2017 and subsequent leachate results for selected soil and concrete samples.

The information relates to investigation locations referenced on the attached Figures 7B and 7D. GHD note that not all the investigation location listed on the attached figures have analytical results presented within this memo as the investigation is ongoing. The data summarised herein relates to investigations conducted at the locations listed in Table 1.

**Table 1 Summary of the investigation locations**

| Area of Environmental Concern (AEC)  | Leachate   |
|--|--|
| <b>Jervis Bay Range Facility (JBRF)</b>  |  |
| AEC A – Royal Australian Navy School of Survivability and Ship Safety (RAN SSSS) | A_MW02, A_BH06, A, BH07, A_BH09, A_BH10, A_BH12 to A_BH16 (concrete) |
| AEC C – Former fire training area  | C_HA11 to C_HA19 (soils)   |

No interpretation of the data has been made at this time, and the factual information should not be reviewed in isolation. The factual information present will be evaluated in context of the whole data set on completion of all field investigations. Table 2 provides a summary of the PFAS in leachate from soil and concrete results for the analytical results received on 6 June 2017.

**Table 2 Summary of the PFAS in leachate from soil and concrete results**

| Analyte (µg/L)                                 | Number of Samples analysed | Number of Detects | Minimum Concentration | Minimum Detect | Maximum Concentration | Maximum Detect |
|--|----------------------------|-------------------|-----------------------|----------------|-----------------------|----------------|
| N-Ethyl perfluorooctane sulfonamidoacetic acid | 21                         | 0                 | <0.002                | ND             | <0.01                 | ND             |
| Perfluorodecanesulfonic acid (PFDS)            | 21                         | 0                 | <0.002                | ND             | <0.01                 | ND             |
| Perfluoroheptane sulfonic acid                 | 21                         | 21                | 0.004                 | 0.004          | 1.57                  | 1.57           |





## Memorandum

| Analyte (µg/L)                                  | Number of Samples analysed | Number of Detects | Minimum Concentration | Minimum Detect | Maximum Concentration | Maximum Detect |
|---|----------------------------|-------------------|-----------------------|----------------|-----------------------|----------------|
| 10:2 Fluorotelomer sulfonic acid                | 21                         | 0                 | <0.005                | ND             | <0.01                 | ND             |
| 4:2 Fluorotelomer sulfonic acid                 | 21                         | 0                 | <0.005                | ND             | <0.01                 | ND             |
| N-Methyl perfluorooctane sulfonamidoacetic acid | 21                         | 0                 | <0.002                | ND             | <0.01                 | ND             |
| PFHxS and PFOS (Sum of Total) - Lab Calc        | 21                         | 21                | 0.309                 | 0.309          | 83.5                  | 83.5           |
| Perfluorobutane sulfonic acid                   | 21                         | 18                | <0.002                | 0.003          | 16.4                  | 16.4           |
| Perfluorohexane sulfonic acid (PFHxS)           | 21                         | 21                | 0.026                 | 0.026          | 74                    | 74             |
| Perfluoropentanoic acid                         | 21                         | 17                | <0.002                | 0.003          | 8.53                  | 8.53           |
| 8:2 Fluorotelomer sulfonic acid                 | 21                         | 0                 | <0.005                | ND             | <0.01                 | ND             |
| N-Ethyl perfluorooctane sulfonamide             | 21                         | 0                 | <0.005                | ND             | <0.025                | ND             |
| N-Ethyl perfluorooctane sulfonamidoethanol      | 21                         | 0                 | <0.005                | ND             | <0.025                | ND             |
| N-Methyl perfluorooctane sulfonamide            | 21                         | 0                 | <0.005                | ND             | <0.025                | ND             |
| N-Methyl perfluorooctane sulfonamidoethanol     | 21                         | 1                 | <0.005                | 0.025          | 0.025                 | 0.025          |
| 6:2 Fluorotelomer Sulfonate (6:2 FTS)           | 21                         | 1                 | <0.005                | 0.015          | 0.015                 | 0.015          |
| Perfluorooctanoic acid (PFOA)                   | 21                         | 21                | 0.008                 | 0.008          | 2.35                  | 2.35           |
| Perfluoropentane sulfonic acid                  | 21                         | 19                | <0.002                | 0.003          | 21.8                  | 21.8           |





## Memorandum

| Analyte (µg/L)                       | Number of Samples analysed | Number of Detects | Minimum Concentration | Minimum Detect | Maximum Concentration | Maximum Detect |
|--------------------------------------|----------------------------|-------------------|-----------------------|----------------|-----------------------|----------------|
| Perfluorobutanoic acid               | 21                         | 1                 | <0.01                 | 0.02           | 0.02                  | 0.02           |
| Perfluorodecanoic acid               | 21                         | 4                 | <0.002                | 0.003          | <0.01                 | 0.004          |
| Perfluorododecanoic acid             | 21                         | 0                 | <0.002                | ND             | <0.01                 | ND             |
| Perfluoroheptanoic acid              | 21                         | 18                | <0.002                | 0.004          | 7.63                  | 7.63           |
| Perfluorohexanoic acid (PFHxA)       | 21                         | 21                | 0.004                 | 0.004          | 60                    | 60             |
| Perfluorononanoic acid               | 21                         | 1                 | <0.002                | 0.003          | <0.01                 | 0.003          |
| Perfluorooctane sulfonic acid (PFOS) | 21                         | 21                | 0.068                 | 0.068          | 67.6                  | 67.6           |
| Perfluorooctane sulfonamide (FOSA)   | 21                         | 14                | <0.002                | 0.002          | 0.072                 | 0.072          |
| Perfluorotetradecanoic acid          | 21                         | 0                 | <0.005                | ND             | <0.025                | ND             |
| Perfluorotridecanoic acid            | 21                         | 0                 | <0.002                | ND             | <0.01                 | ND             |
| Perfluoroundecanoic acid             | 21                         | 0                 | <0.002                | ND             | <0.01                 | ND             |
| PFAS (Sum of Total)                  | 21                         | 21                | 0.38                  | 0.38           | 201                   | 201            |
| PFAS (Sum of Total)(WA DER List)     | 21                         | 21                | 0.044                 | 0.044          | 191                   | 191            |

Do not hesitate to contact the undersigned if you have any queries.

Kind Regards

[Redacted Signature]

Attachments: Summary Tables –leachate (PFAS only)

Figures 7B and 7D



