FINAL REPORT

PRELIMINARY EVALUATION OF THE FEASIBILITY TO ARTIFICIALLY RECHARGE THE AQUIFER AT THE MVD-4 AND MVD-5 WELL FIELD

MERRIMACK VILLAGE DISTRICT - MERRIMACK, NEW HAMPSHIRE



Presented to:
Mr. Ron Miner, Jr.
Merrimack Village District

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February 21, 2019

Mr. Ron Miner, Jr. Merrimack Village District 2 Greens Pond Road Merrimack, NH 03054

Dear Mr. Miner,

Please find enclosed a copy of Emery & Garrett Groundwater Investigations (EGGI), report entitled, "Final Report, Preliminary Evaluation of the Feasibility to Artificially Recharge the Aquifer at the MVD-4 and MVD-5 Well Field, located in Merrimack, New Hampshire.

Based upon the results of this investigation, we believe that the use of Artificial Recharge is a very favorable means to enhance groundwater production, lessen treatment costs, and improve water quality at the Well Field.

I hope you find the information contained herein responsive to your needs. If you have any questions, please do not hesitate to contact either one of us.

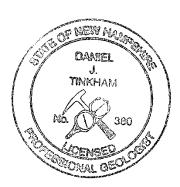
Sincerely,

Daniel J. Tinkham, P.G.

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James M. Emery, P.G.

Principal





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I. INTRODUCTION

Production Wells MVD-4 and MVD-5 are high-yielding sand and gravel wells owned and operated by the Merrimack Village District (MVD) and comprise the MVD-4/5 Well Field. They are located in the northeastern section of Merrimack, New Hampshire, adjacent to the Merrimack River, north of the Souhegan River, and east of Route 3 (Figure 1). Emery & Garrett Groundwater Investigations (EGGI), a Division of GZA, has evaluated the feasibility of utilizing local surface water sources to artificially recharge the Aquifer tapped by this well field, thereby increasing its overall withdrawal capacity.

As part of an investigation conducted in 2003, EGGI performed a long-term pumping test on both wells at a combined pumping rate of 876 gallons per minute (gpm) (1.26 million gallons per day (gpd)) (EGGI 2003). Results of the pumping test were used to define the Wellhead Protection Area (WHPA) and showed that natural recharge to this Aquifer cannot sustain long term pumping rates greater than 420 gpm (600,000 gpd) (Figure 2). Therefore, the MVD-4/5 Well Field would benefit from the addition of Artificial Recharge (AR), derived from a surface water source, to supplement natural groundwater recharge. The overall sustainable yield of the Aquifer could potentially be increased by applying Artificial Recharge to make up some (or all) of the difference between what the wells can pump (1.26 million gpd) and what the Aquifer can yield from natural recharge (600,000 gpd).

In March 2016, elevated levels of per- and polyfluoroalkyl substances (PFAS) were discovered in the groundwater produced by Wells MVD-4 and MVD-5. Both wells were subsequently taken off-line, removing a significant portion of MVD's total supply capacity. Currently, design work is underway to construct a carbon treatment system to remove PFAS from the water produced from this well field. Additional recharge added to the Aquifer would serve to dilute existing concentrations of PFAS and likely decrease the unit cost for treatment of the water. Due to the urgency of providing treatment to Wells MVD-4 and MVD-5, this

¹ Recharge that is available form annual precipitation.

² Estimated at approximately 16% of total available yield capacity.

artificial recharge investigation was conducted coincident with the preliminary design of the treatment plant.

This report contains the documentation and final results of our investigation and concludes that Artificial Recharge can be an important means of supplementing MVD's available groundwater supply capacity.

II. EVALUATION OF THE AQUIFER AT THE MVD-4/5 WELL FIELD

A. Design of Temporary Recharge Basins

1. Hydrogeologic Review and Siting of Potential Recharge Basins

EGGI reviewed published data and those collected during previous investigations to select areas that are likely to be hydrogeologically favorable for the infiltration of surface water into the subsurface via artificial recharge. Existing wells, distribution lines, and proposed locations for water treatment facilities restrict the available area within the site footprint. EGGI coordinated with the MVD and its engineers, Underwood Engineers of Concord, New Hampshire, to determine the areas on the property that are available for the installation and maintenance of artificial recharge basins.

Once the available space was considered and the hydrogeologic conceptual model updated with available data, ten test pit locations were identified in two primary areas: 1) in the abandoned sand & gravel pit south of MVD-5 (Test Pits TP-1, TP-1A, TP-1B, and TP-1C); and 2) on the terrace west of Production Well MVD-5 (Test Pits TP-2, TP-3, TP-3A, TP-3B, TP-4, and TP-5 (Figure 3). A backhoe was used to install the test pits, generally reaching a total depth of approximately six feet below grade. A Professional Geologist was on site to log each Test Pit and collect representative samples from selected intervals (Table I).

Test Pit TP-1 and subsequent adjacent pits (TP-1A through TP-1C) all encountered shallow groundwater or wet soils at depths ranging from approximately four feet to seven feet below grade. Of course, under normal pumping conditions, the groundwater table in this area would be depressed from its natural non-pumping condition. Test Pits TP-1 and TP-1C penetrated clean, well-sorted sandy material below a silty top layer. TP-1A and 1B encountered very poorly-sorted material with silt layers that are not favorable for AR.

The near-surface stratigraphy was similar in each of the test pits installed on the terrace above Wells MVD-4 & MVD-5. Generally, the logs indicate a fine to medium sand extending from the base of an organic soil layer to approximately 2.5 feet. Below 2.5 feet, the test pits encountered a medium to very coarse sand with some gravel (pebbles to cobbles).

The favorability of sediments for the installation of a recharge basin(s) was assessed by EGGI, particularly noting the grain-size distribution and degree of sorting of the intercepted material. This geologic assessment was further complemented with the in-situ testing of the near-surface sediment by conducting percolation tests (Perc tests) in the test pits.

2. Percolation Tests in Near-Surface Sediments

Percolation tests were conducted in TP-1, TP-2, TP-3, TP-4, and TP-5 (Figure 3 and Appendix A). Most of the Perc testing was completed at a depth of four feet below grade to avoid the need for shoring of the test pit walls to ensure the safety of the on-site geologist. Upon completion of the Perc testing, test pits were then deepened for continued sediment logging.

The Perc tests were conducted by pushing a bottomless 5-gallon bucket into the sand at the bottom of each pit to the one-gallon mark. Next, the buckets were filled with water and the cumulative time for each of three successive gallons of water to infiltrate into the subsurface was recorded (Table I). These data provide the basis for estimating infiltration rates below a future artificial recharge basin.

The ability of the subsurface material to accept water was estimated by calculating the Perc rate (infiltration rate) of the third gallon that infiltrated into the subsurface. During the infiltration of the first two gallons of water, the unsaturated soil beneath the Perc test is "wetting", therefore the rate of infiltration during the third gallon is considered more representative of conditions beneath an infiltration basin. Test Pit TP-1, where water infiltrated at a rate of 4.9 gpm per square foot, provided the fastest Perc rate of the five tests. The slowest Perc rate was 1.1 gpm per square foot, measured in Test Pit TP-3. These Perc rates are considered by EGGI to be very favorable.

3. Evaluation of Deeper Sediment Percolation Rates

Once the Perc testing was complete, three test boring locations, MER45-AR1, MER45-AR2, and MER45-AR3, were identified in the areas of the test pits to evaluate the deeper subsurface materials (Figure 3 and Appendix B). Test Borings MER45-AR1 and MER45-AR2 are located on the terrace west of MVD-5 and MER45-AR3 is within the former sand & gravel pit located south of MVD-5.

The three test borings were installed to depths of 73, 62, and 40 feet, respectively. Test Boring MER45-AR1 was the only one to intercept competent bedrock, but all three wells intercepted coarse-grained aquifer deposits both above and below the water table (Appendix A). During the installation of the test borings, a modified version of a percolation test was applied to test the relative permeability of the unsaturated material between the bottom of the recently-installed test pits and the saturated aquifer deposits. Artificial Recharge can only be feasible if the unsaturated zone allows the migration of artificially recharged water vertically downward so that it can recharge the underlying aquifer.

The modified percolation tests were conducted in Test Borings MER45-AR1 and MER45-AR2, at depths of 10 feet and 20 feet below grade in each boring. The testing consisted of advancing the four-inch-diameter steel casing, per the normal drilling process, and cleaning out the steel casing to the prescribed depth. A 1.25-inch-diameter drive point well was then attached to the well drilling rods and pushed or pounded into the gravel formation below the drilling depth. This allowed the drive point screen to be exposed to relatively undisturbed Aquifer formation material. An automated water level recorder was then installed in the well screen and water was added to the drill rods, thus creating a "falling head" permeability test (or

slug test). The rate at which the water in the drill rods was forced into the Aquifer formation material is a function of the permeability of that formation. The results of the permeability testing are expressed as hydraulic conductivity with the units of feet/day:

Test Boring	Interval	Hydraulic Conductivity
	(feet below ground surface)	(feet/day)
MER45-AR1	10 to 12	21.5
MER45-AR1	20 to 22	6.5
MER45-AR2	10 to 12	11.0
MER45-AR2	20 to 22	1.5

The values of hydraulic conductivity calculated during all four testing intervals fall into a range typical of clean fine to medium sands (Appendix B). It is likely that these conductivity results are biased towards lower readings than what are the actual conductivity of the Aquifer formation materials due to remnant silt that was present in the wash water inside each boring. This is inherent with any in-situ testing conducted during drilling. However, the results of the borehole permeability testing do suggest that the unsaturated formation is composed of very favorable material for the infiltration and migration of artificially-recharged water.

Permanent 3-inch-diameter, PVC monitoring wells were installed in each of the three borings. Subsequent to the installation of the three monitoring wells, each well was developed using a combination of surge blocks and pumping to evacuate finer-grained material from the well and surrounding formation. Short-term pumping tests conducted on all three wells (MER45-AR1, MER45-AR2, and MER45-AR3) results in specific capacity values of 135, 45, and 82 gallons per minute per foot of pumping-induced drawdown (gpm/ft), respectively. All of these values are very high for three-inch-diameter wells and are indicative of the highly transmissive aquifer deposits. Therefore, the deep subsurface in all three areas tested are considered very favorable for the infiltration and migration of groundwater beneath artificial recharge basins.

4. Recommended Infiltration Basin Design

The average Perc rate calculated during the permeability testing conducted in the shallow test pits was 2.9 gallons per minute per square foot, ranging from 1.1 to 4.9 gpm/ft². MVD would benefit greatly by having the ability to artificially recharge up to 700 gpm (just over one million gallons per day) into the MVD-4/5 Well Field. Assuming the lowest Perc rate of 1.1 gpm/ft², it would take an infiltration basin with a bottom area of 636 ft² (roughly a square basin of about 25 feet on each side) to allow that degree of infiltration. However, given seasonal variations in water temperature (which effects viscosity of the water), siltation of the basins, and some degree of biofouling, a safety margin of at least five should be built into the basin design. Therefore, a more realistic basin size to accomplish the infiltration of 700 gpm would be 3,200 ft² (a square of 56 feet on each side).

Provided the site layout constraints at the MVD-4/5 Well Field, EGGI recommends that two rectangular basins be designed on the terrace west of MVD-5 (Figure 4). Each of those basins could be constructed in the area just west of test Wells MER45-AR1 and MER45-AR2 and be approximately 35 feet wide and 100 feet long (3,500 ft²). That would allow either basin to be capable of infiltrating the desired volume of AR water. In addition, Wells MER45-AR1 and MER45-AR2 can be used as monitoring wells between the infiltration basins and MVD-5.

We would also strongly recommend that a third basin be installed in the former sand & gravel pit south of MVD-5 (Figure 4). This will provide redundancy for the other two and allow more flexibility for the use of AR and allows routine maintenance of the basins. The third basin should have roughly the same total area (3,500 square feet), but the configuration can be modified to better fit the layout of the site.

B. Geochemical Investigation of Aquifer

The geochemistry of the Aquifer tapped by Production Wells MVD-4 and MVD-5 was investigated through three primary sampling programs: 1) Long-term water quality testing performed by MVD, 2) A leaching test performed on solid samples collected from unsaturated Aquifer formation materials, and 3) Groundwater samples collected from each of the three new monitoring wells: MER45-AR1, MER45-AR2, and MER45-AR3.

1. Long-Term Records for Production Wells MVD-4 and MVD-5

The MVD has been collecting groundwater samples from Production Well MVD-4 and MVD-5 almost every quarter since 1992, providing a long-term record of transient changes to groundwater within the contributing area of the Well Field (these data are being prepared for submission to MVD in a different report). In general, the chemistry records reflect long-term stability and no systematic decline in any of the nine parameters that are regularly analyzed (turbidity, copper, lead, iron, manganese, sodium, chloride, nitrate, and pH). The only long-term trend of moderate concern is a subtle increase in sodium and chloride over the years from continued deicing practices in the area.

Likewise, the chemistry records from MVD-5 indicate similar chemical stability over the period of record and the same subtle increase in sodium chloride levels over the years. Recent years have shown salt levels in MVD-5 that are nearing the Secondary Drinking Water Level for chloride (250 mg/l). Sodium concentrations are significantly above levels that are a concern for people on sodium-restricted diets (20 mg/l).

2. Leaching Test

The leaching test included the collection of solid soil samples from the base of Test Pits TP-1 and TP-3. These solid formation samples are considered representative of the near surface, unsaturated materials overlying the water table. In addition, a raw unfiltered surface water sample was collected from the Merrimack River on the same day. Once those samples were collected, the leaching test consisted of mixing the Merrimack River sample with the solid samples (ratio of 20:1, water to solid) and tumbling them together for a period of 48 hours. Once the tumbling was completed, the resulting effluent from each sample was filtered with a 0.45-

micron filter to extract the sample. Further, an aqueous "tumble blank" was created by tumbling only the surface water collected from the Merrimack River for 48 hours and then drawing off a filtered (0.45-micron) sample.

Each of those four samples (raw Merrimack River, Tumble Blank, and two effluents) were tested for eight different parameters at Eastern Analytical, Inc., of Concord, New Hampshire (Table II and III, and Appendix C):

- Dissolved Organic Carbon (DOC)
- Total UVA at 254 nm (A measure of the absorbance of ultra-violet light at a wavelength of 254 nanometers; an indicator of carbon content)
- True Color
- pH
- Arsenic
- Calcium
- Iron
- Manganese
- PFAS (aqueous)

The two solid samples which were collected from Test Pits TP-1 and TP-3 were also analyzed for the presence of PFAS (Table III and Appendix C). Finally, a groundwater sample was collected from Monitoring Well MER45-AR2 on August 9, 2019, to test for the presence of PFAS.

The results of the leaching test can be summarized as follows:

- The raw Merrimack River water exhibited elevated color (20-25 color units or cu), iron, and manganese. The Tumbler Blank (Merrimack River water tumbled for 48 hours and then filtered) lost much of its color (5-10 cu), all of its manganese, and a significant amount of its iron.
- The dissolved organic carbon (DOC) increased slightly in the Tumbler Blank compared to raw Merrimack River water, but the UVA was reduced by nearly half.
- When the Tumbler Blank is compared to the effluent from the tumbled solid samples, there is a notable decrease in DOC, UVA, and color, all suggesting the solid formation material was helping to remove the natural organic compounds present in the Merrimack River water.
- Both effluent samples were absent for iron, but manganese, which was not present in the Tumbler Blank was apparently mobilized into solution. The calcium in the effluent sample from TP-3 had decreased slightly from 5.5 to 4.7 mg/l, suggesting some calcium may be coming out of solution and attaching to the sediment.
- Finally, arsenic, which was not detected in the raw Merrimack River water, the Tumbler Blank, or the effluent from TP-3, was present in the effluent from TP-1. However, the arsenic was detected at a very low level of 0.001 mg/l, which is equal to the laboratory method detection limit.

With regard to PFAS (Table III):

- Raw Merrimack River water contained very low concentrations of seven different PFAS compounds; the only regulated PFAS, PFOA and PFOS, were identified at concentrations of 3.31 and 1.44 nanograms per liter (ng/l or parts per trillion), for a combined total of 4.75 ng/l.
- The Tumbler Blank had no PFAS detections, which suggests that the low level PFAS in the River water was adsorbed onto suspended solids that would have been filtered out of the Tumbler Blank sample.
- Analysis of the solid formation material from Test Pit TP-1 shows all PFAS were absent; the solids from Test Pit TP-3 show barely detectable concentrations of two PFAS: PFHpA and PFOA.
- The effluent from the tumbled solid sample collected from TP-1 did show the low-level presence of four PFAS which necessarily came from the River water. In some cases, PFAS levels were slightly higher in the effluent than the raw River water. Since no PFAS were detected in the solids from TP-1, the increased concentrations are anticipated to be the result of laboratory errors in the analysis.

3. Groundwater Sampling

All three of the newly-installed monitoring wells were sampled after development of the well screens for a full suite of drinking water parameters (Table IV and Appendix D). Samples were submitted to National Testing Laboratories of Cleveland, Ohio. All the samples for analysis of metals were field filtered such that the results reflect dissolved metal concentrations.

The results of those samples show that the groundwater samples all have excellent groundwater quality, with no man-made or natural contaminants elevated above Primary Maximum Contaminant Levels (PMCL, or those levels in drinking water based on potential health effects). However, there is troubling evidence of elevated sodium chloride resulting from deicing products being applied in the contributing recharge area to Wells MVD-4 and MVD-5. Chloride levels in Wells MER45-AR1, MER45-AR2, and MER45-AR3 were measured at 370, 520, and 270 mg/l, respectively, all of which exceed the Secondary Maximum Contaminant Level (SMCL) for chloride. SMCL's are based on aesthetic characteristics, such as taste or odor, and are not based on potential health effects. The related sodium levels are high enough to be of concern for people on restricted sodium diets. The Artificial Recharge of River water, which is very low in sodium and chloride, will serve to lower the total sodium chloride concentrations by diluting existing concentrations. However, it is also recommended that the MVD takes steps to reduce the introduction of sodium and chloride into this Aquifer.

The groundwater sample collected from Monitoring Well MER45-AR2 (the only groundwater sample taken) contained six different PFAS compounds at levels between 5.26 ng/l (PFBA) and 38.9 ng/l (PFOA).

III. Evaluate Potential to use Water from Baboosic Brook and/or the Merrimack River for Artificial Recharge

In order to evaluate the feasibility of withdrawing water from local surface water bodies for infiltration into potential recharge basins, EGGI investigated three surface water bodies: Baboosic Brook, Souhegan River, and Merrimack River. Baboosic Brook is by far the smallest of the three watersheds, draining 49.11 square miles in portions of Merrimack and Bedford. However, it is attractive because of its elevation above the Well Field (reducing the need for pumping) and relative proximity (Figure 1). The confluence of the Souhegan and Merrimack Rivers is approximately 4,300 feet south of the Well Field. However, at this point the Souhegan River water is essentially the same as the Merrimack River, so it was eliminated as a potential source early in the process. The Merrimack River is a major regional drainage (3,184 square miles) for all of central New Hampshire and is located adjacent to the MVD-4/5 Well Field. Specific tasks performed include:

- Field inspections of Baboosic Brook (three locations), the Souhegan River (one location, and the Merrimack River (two locations) (Figure 1).
- Surface water samples were collected from both Baboosic Brook and the Merrimack River.
- Reconnaissance-level inspections of potential pipeline routes were completed.
- A search for historical water chemistry data from surface water bodies was attempted but was generally unsuccessful. The data that is available was of limited use for this investigation.

Field inspection of Baboosic Brook revealed that the source water is very tannic after its circuitous, low-gradient journey through the north end of Merrimack. The elevated color could be a significant concern from a natural filtration standpoint, if it was to be used to artificially recharge the aquifer. A sample of the surface water did not reveal any natural or man-made contaminants, but the chloride (51 mg/l) reflects abundant stormwater runoff from the suburban watershed (Appendix E). Of greatest concern is the relatively small size of the watershed (49.11 square miles). The summertime Q80 flow (flow that is exceeded 80% of the time) in Baboosic Brook is only 4.47 cubic feet per second (cfs) (2,000 gallons per minute or gpm). Therefore, under low flow conditions any withdrawal for AR could be a significant portion of the total stream flow. Therefore, withdrawals of water would likely be subject to limitations. Furthermore, construction of any pipeline from Baboosic Brook to the Well Field will involve multiple property owners, and road crossings which will significantly complicate this process.

The Merrimack River watershed upstream of the Well Field encompasses 3,184 square miles (65 times larger than the Baboosic Brook watershed). The Q80 flow of the Merrimack River during summer months is 960 cfs (430,000 gpm or approximately 620 times the proposed withdrawal of 700 gpm). Therefore, the size of the Merrimack River watershed is much more amenable for obtaining the water needed for year-round AR. The surface water sample collected from the River did not reveal any natural or man-made contaminants (Appendix E). Water withdrawals from the River will require a pump station and pipeline capable of conveying the water approximately 45 to 50 vertical feet to reach the upper AR basins west of MVD-5.

³ Except very low background levels of PFOA and PFAS.

Two different potential pipeline routes were considered from the Merrimack River to the Well Field. The shortest of these potential routes (Route Merrimack 1 on Figure 1) is approximately 1,380 feet long and follows existing woods roads much of the way. This route also requires crossing an active railroad track (Pan Am Railways of North Billerica, Massachusetts) and utilities along that right-of-way. Horizontal drilling of the pipeline would be necessary to penetrate sufficiently below those obstacles. However, the only way to avoid the railroad track/utilities crossing would be to extend the length of the pipeline to over 2,800 feet to take advantage of an existing drainageway that exists beneath the railroad tracks (Route Merrimack 2 on Figure 1). Even that route would likely require some kind of permission/permitting from Pan Am Railways). It is EGGI's opinion that the most direct and most cost-effective route for the potential pipeline is Route Merrimack 1 as shown on Figure 1.4

IV. EVALUATION OF PERMITTING REQUIREMENTS

Development of an Artificial Recharge program for the MVD-4 and MVD-5 Well Field will require the successful approval of a number of permits, including:

- Surface Water Withdrawal: Two primary types of permitting will be required to remove water from the Lower Merrimack River: 1) those necessary for installation of the intake structure and pipeline, and 2) the actual water withdrawal. This reach of the River is a "Designated River" according to the New Hampshire Department of Environmental Services (NHDES) and it will be subject to the requirements of the Shoreline Water Quality Protection Act. Disturbance of the river bank for installation of the intake structure will trigger a wetlands permit, which will require completion of a "401 Water Quality Certificate" through the NHDES Watershed Management and Wetlands Bureaus. This could impact both the construction of an intake structure in the River and the actual withdrawal of the water.
- Groundwater Discharge Permit: An application will need to be submitted to and approved by the NHDES for the infiltration of surface water into the subsurface. This permit application process will include a detailed testing plan to provide a "Proof of Concept" for removal of the surface water-related organisms (e.g., bacteria). This testing would include the benchmark testing of aquifer materials and a large-scale pumping test utilizing temporary infiltration basins and the existing Production Wells.
- Large Groundwater Withdrawal Permit is <u>NOT</u> required: Because existing Production Wells MVD-4 and MVD-5 were put online prior to the current NHDES Large Groundwater Withdrawal Regulations, so they are exempt from the need for a permit, even if the wells remove a volume greater than historical withdrawals.
- Crossing of the active railroad tracks owned and operated by Pan Am Railways will require permission from Pan Am and coordination with the railway requirements and procedures.

⁴ Pipeline Route Merrimack 1 will stay on MVD Property on the west side of the railroad tracks but will need to cross beneath the railroad tracks operated by Pam Am Railways and then run across a private parcel (Longa Parcel; Tax Map 005D-2, Lot 000009) where the intake structure will be located.

V. CONCLUSIONS/RECOMMENDATIONS

This preliminary investigation has shown that it is technically feasible and favorable to use Artificial Recharge to provide supplemental groundwater recharge to the Aquifer supplying groundwater to the Merrimack Village District Wells MVD-4 and MVD-5. The Merrimack River provides a very reliable source of surface water near the site, even under low flow conditions. The surficial deposits near the surface and deep within the Aquifer are composed of sand and gravel which would allow adequate infiltration of the surface water and deep migration of the groundwater towards the existing Production Wells while providing substantial natural filtration. Therefore, all the natural elements are in place for the use of Artificial Recharge basins to enhance infiltration of the surface water into the underlying Aquifer. In addition, the pumping capacity of Well MVD-5 is much greater than what the natural recharge can supply, so existing infrastructure can be better utilized to withdraw additional groundwater with few improvements.

In summary, the advantages of using Artificial Recharge at Wells MVD-4 and MVD-5 include the following:

- 1. It will enhance the overall yield of Wells MVD-4 and MVD-5 by as much as 660,000 gpd.
- 2. The addition of surface water from the Merrimack River will serve to dilute the continuously increasing concentrations of sodium and chloride in the Aquifer. Sodium and chloride are very expensive to remove from water (use of reverse osmosis) and the use of Artificial Recharge could be a reasonably inexpensive means to reduce these sodium and chloride levels.
- 3. The use of AR should reduce the concentration of PFAS compounds found in the water pumped from Wells MVD-4 and MVD-5 that had been identified during earlier studies of this Well Field. The reduction in PFAS compounds should also increase the length of time the carbon filters will last.
- 4. The MVD will be able to use the existing infrastructure (pump house) and pumping treatment facility to reduce the cost per gallon of water produced at this site.

A number of permits and/or permission will need to be approved for this AR project. This will include permits for: a) the installation of an intake structure in the Merrimack River; b) surface water withdrawals from the River; c) a pipeline crossing of the existing railroad tracks; and d) introduction of the surface water into the Aquifer via the AR basins. However, the substantial benefits of utilizing AR to supplement the available recharge to the existing Production Wells justify obtaining those permits/permissions.

EGGI recommends completion of the following work tasks so that increased groundwater withdrawals from this Well Field can be realized:

- Perform a small-scale pilot test of a temporary infiltration basin. Water from the MVD system could be used for the pilot test, if the temporary withdrawal and transport of surface water is too cumbersome and expensive.
- Perform a benchtop-scale filtration tests to ensure that surface water from the River is compatible with the Aquifer materials and that the Aquifer materials can provide the required filtration of the surface water. Due to the difficulty of disposing groundwater

pumped from the Production Wells with elevated PFAS levels and the difficulty of temporarily withdrawing/transporting the surface water across the railroad, it may be best that this benchtop testing be performed off-site. The Town of Merrimack's wastewater treatment plant, located adjacent to the Merrimack River, might be an excellent option for use as a testing location.

• Collect groundwater samples from representative monitoring wells around the Well Field to determine the current concentration and distribution of PFAS and sodium chloride contamination. This will help to further quantify the full benefit of diluting existing groundwater resources beneath the site.

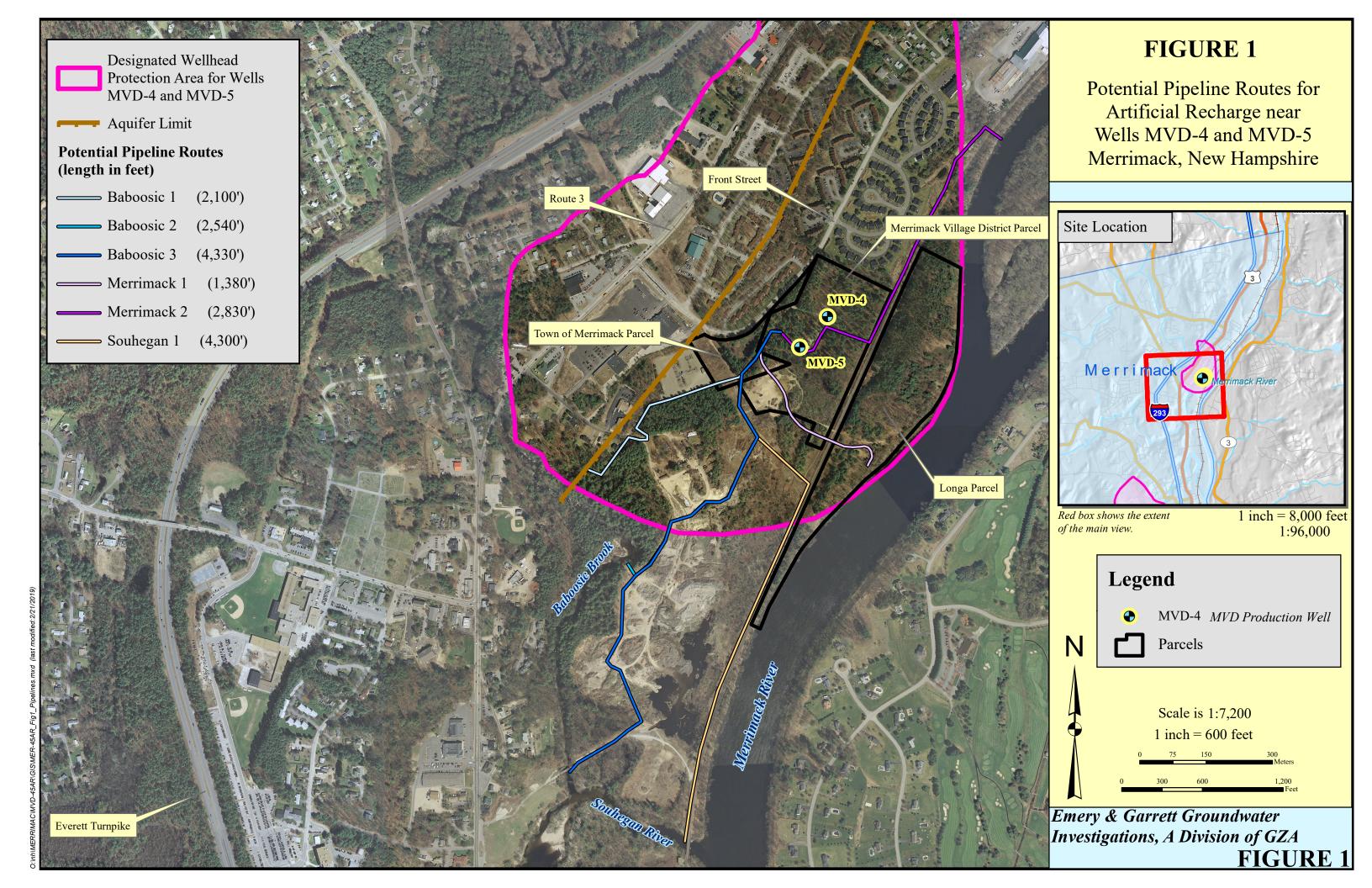
VI. LIMITATIONS

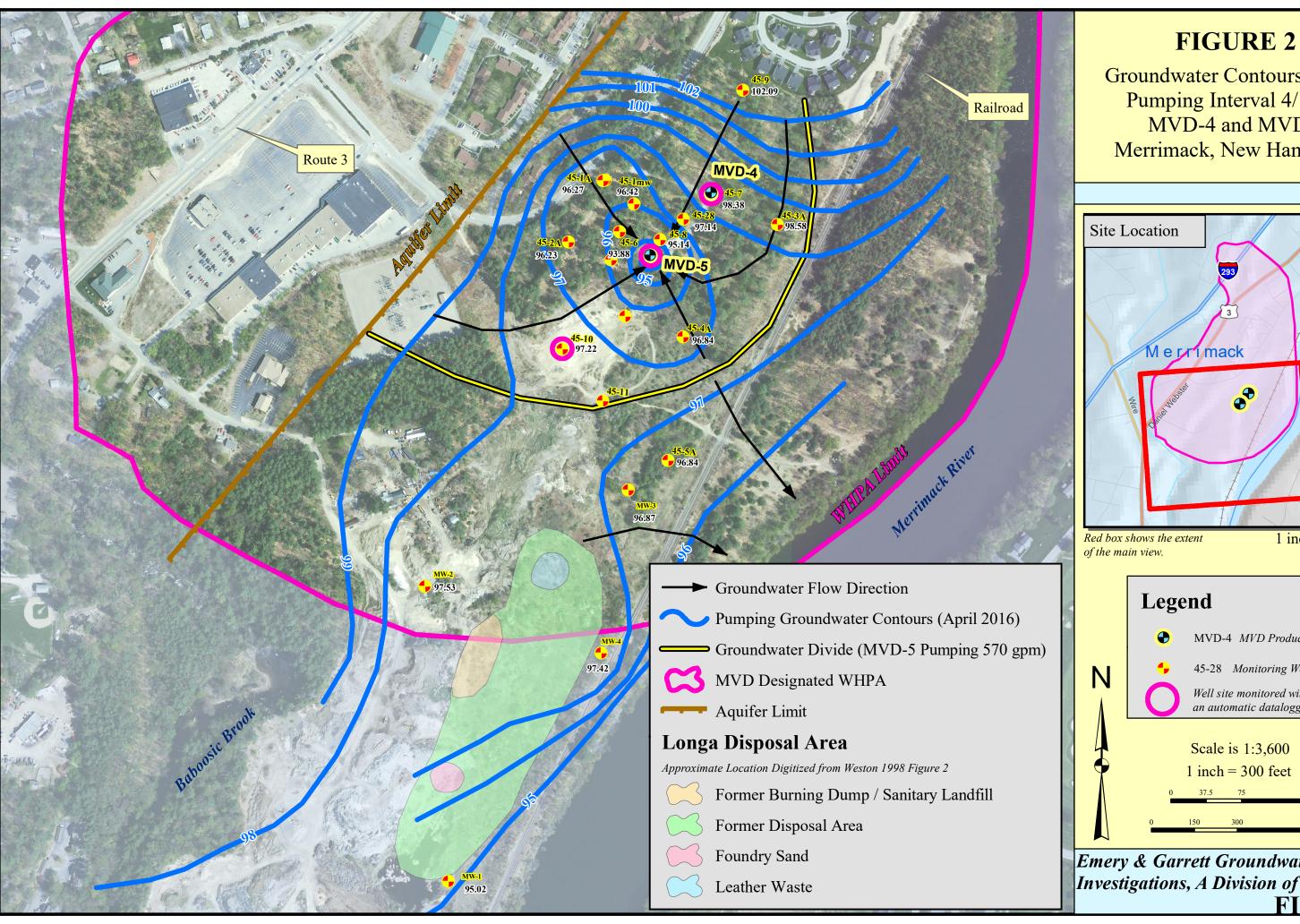
EGGI has collected and evaluated the available technical data according to professionally accepted scientific standards. The recommendations provided herein represent EGGI's professional opinion based upon the hydrogeologic data collected and do not constitute a warranty written or implied.

VII. REFERENCE

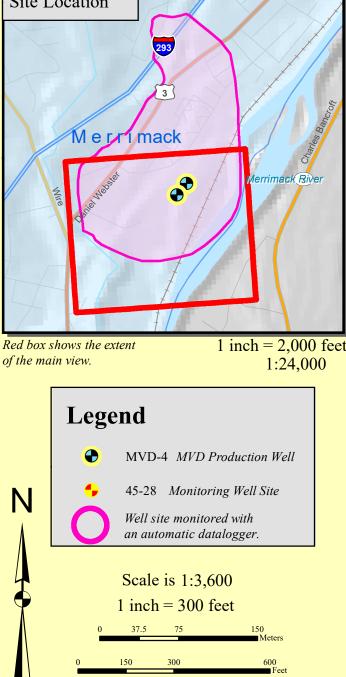
Emery & Garrett Groundwater, Inc. (EGGI), 2003, Establishment of the Source Water Protection Area, Merrimack Village District Wells MVD-4 and MVD-5, Merrimack, New Hampshire. Submitted to Merrimack Village District in December 2003.

FIGURES

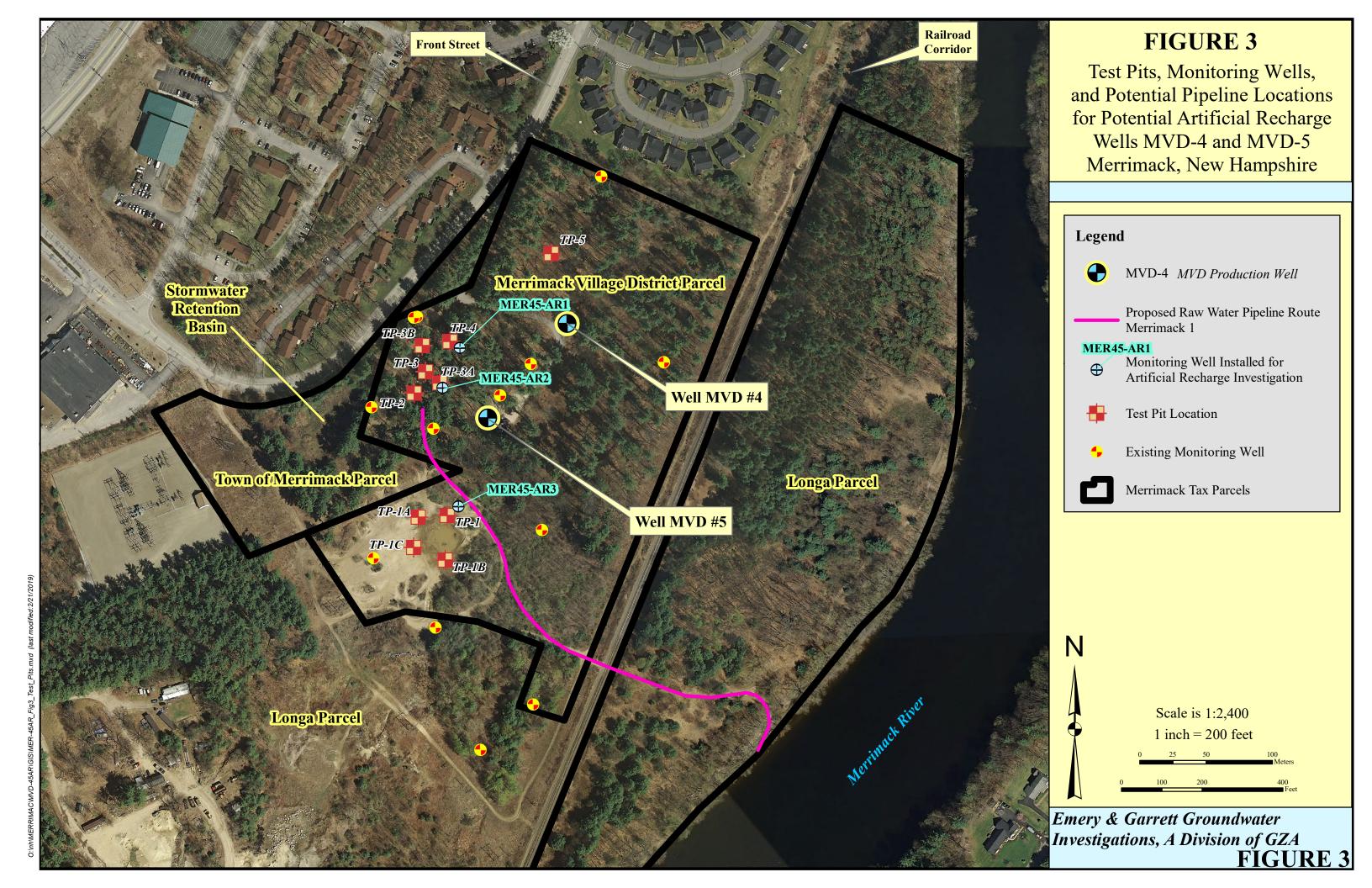


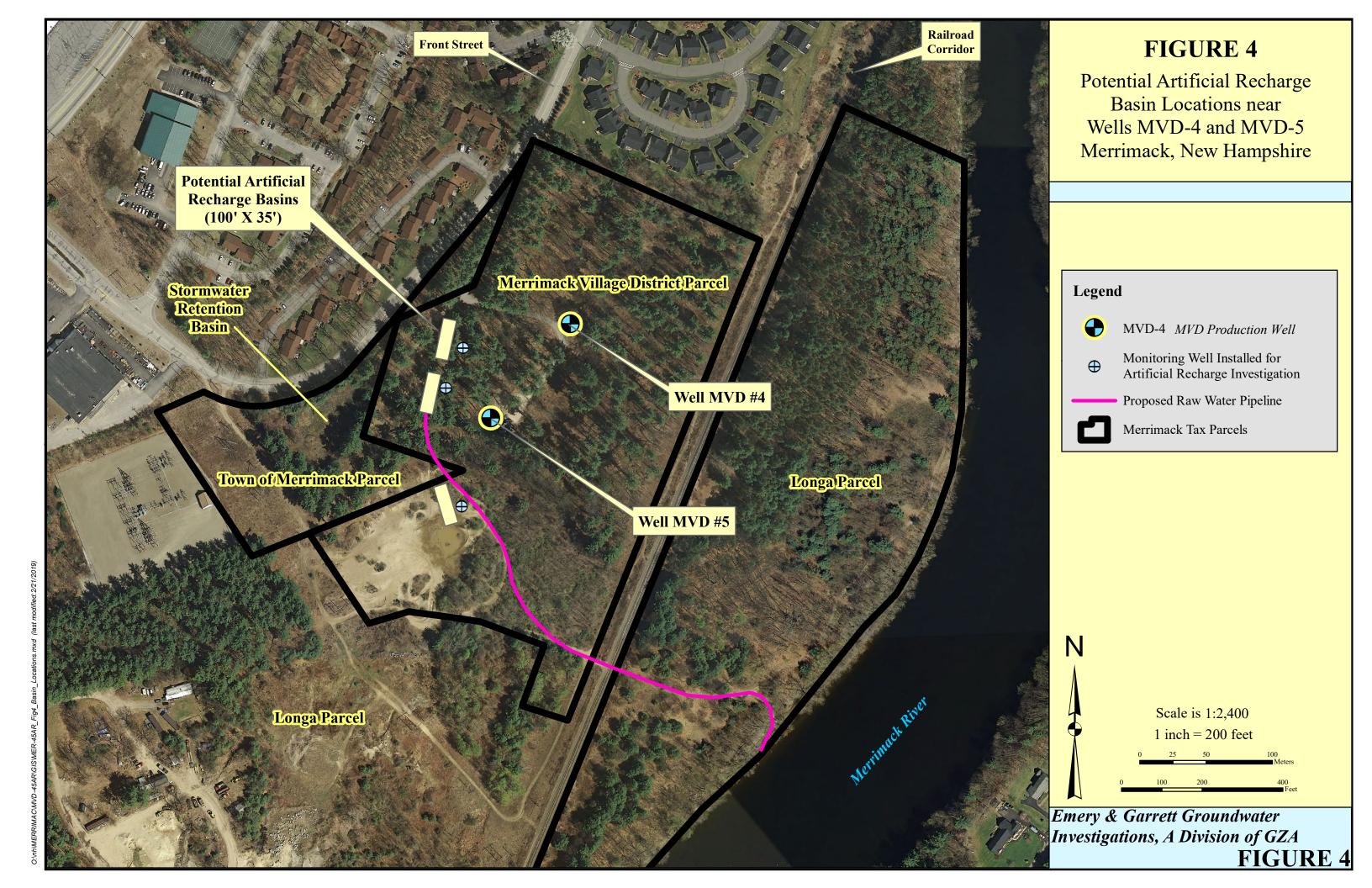


Groundwater Contours During Pumping Interval 4/12/16 MVD-4 and MVD-5 Merrimack, New Hampshire



Emery & Garrett Groundwater Investigations, A Division of GZA FIGURE 2





TABLES

TABLE I

Geologic Descriptions of Test Pits - June 7, 2018 Artificial Recharge Evaluation Merrimack Village District MVD-4 and MVD-5 Well Field

Merrimack, New Hampshire

					Perc Rate During	Perc Rate Per
			Perc Test	Cumulative Perc Time*	Third Gallon Infiltrated	Square Foot
Test Pit	Interval	Description	Gallons	Minutes:Seconds/Gallon	(GPM)	(GPM/FT^2)
Test Pit TP-1	0 to 1.25'	Silty sand with some pebbles and cobbles.	1	00:08.6		
	1.25 to 6'	Layers of tan, well-sorted, medium to coarse sand; groundwater intercepted.	2	00:24.9		
			3	00:47.6	2.6	4.9
Test Pit TP-1A	0 to 1'	Tan, silty sand.				
1030110111111	1 to 3'	Tan, medium to coarse sand with rusty layers and thin gay, silty layers.				
	3 to 4.5'	Very poorly-sorted, fine to very coarse sand, some pebbles, some silt, little cobbles; groundwater intercepted.				
Test Pit TP-1B	0 to 6'	Interlayered, tan to rusty fine to coarse sand with gray to rusty silty layers, trace cobbles.				
		Sand is generally silty except for occasional coarse layers.				
Test Pit TP-1C	0 to 0.5'	Silty fine to coarse sand.				
	0.5 to 2.5'	Tan to rusty, poorly-sorted fine to very coarse sand, some pebbles, little cobbles.				
	2.5 to 6'	Gray, well-sorted sand, some pebbles, little cobbles.				
Test Pit TP-2	0 to 0.7'	Brown, organic-rich soil.	1	00:28.7		
Test Fit 1F-2	0.7 to 2.5'	Tan, well-sorted, fine to medium sand, trace silt.	2	01:00.0		
	2.5 to 4'	Tan to gray, medium to very coarse sand, little granules.	3	01:41.0	1.5	2.7
	2.3 to 4	Tail to gray, median to very coarse sand, new granders.	3	01.41.0	1.3	2.1
Test Pit TP-3	0 to 0.5'	Dark brown, organic-rich soil.	1	00:48.0		
	0.5 to 2'	Tan, fine to medium sand, trace silt.	2	02:00.0		
	2 to 6.5'	Tan to gray, moderately-sorted, medium to very coarse sand, trace pebbles.	3	03:42.0	0.6	1.1
Test Pit TP-3A	0 to 0.7'	Organic-rich soil.				
	0.7 to 3.5'	Tan, fine to medium sand, trace silt.				
	3.5 to 6'	Medium to very coarse sand, some pebbles.				
Test Pit TP-3B	0 to 0.9'	Organic-rich soil.				
Test Fit 1F-3B	0.9 to 2.5'	Tan, fine to medium sand, trace pebbles.				
	2.5 to 4'	Tan, medium to very coarse sand, some pebbles.				
Test Pit TP-4	0 to 0.5'	Organic-rich soil.	1	00:27.0		
	0.5 to 1.5'	Tan, fine to medium sand.	2	00:58.0		
	1.5 to 6'	Coarse to very coarse sand, some gravel.	3	01:47.0	1.2	2.3
Test Pit TP-5	0 to 0.5'	Organic-rich soil.	1	00:15.0		
	0.5 to 2'	Tan, fine to medium sand, trace pebbles.	2	00:35.0		
	2 to 4'	Tan to gray, fine to very coarse sand, trace pebbles.	3	01:07.0	1.9	3.5
	4 to 5.5'	Coarse to very coarse sand, trace gravel.				

^{*} Perc Time = The time required for subsequent gallons of water to flow vertically out of an open-ended five-gallon bucket into the formation.

Four gallons of water are added to the bucket and the time is recorded for each of the first three gallons to infiltrate through a known area.

TABLE II

Results of Laboratory Analyses of Water Quality Samples
Leaching Tests near the MVD-4/5 Well Field
Merrimack Village District, Merrimack, New Hampshire

Sample Name	Dissolved Organic Carbon (mg/l)	Total UVA at 254 nm cm-1	ColorTrue PtCo	pН	Arsenic (mg/l)	Calcium (mg/l)	Iron (mg/l)	Manganese (mg/l)
MCL:				6.5-8.5	0.01		0.3	0.05
Effluent TP-1	2.8	0.060	<5	7.02	0.001	5.6	< 0.05	0.029
Effluent TP-2	1.8	0.013	<5	6.77	<0.001	4.7	< 0.05	0.093
Tumble Blank	3.2	0.077	5-10	6.99	< 0.001	5.5	0.15	< 0.005
Raw Merrimack River	3.0	0.130	20-25	6.93	<0.001	5.7	0.83	0.041

MCL = Maximum Contaminant Levels

Values in **bold** exceed Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCL) and may require treatment.

ND = not detected

TABLE III

Results of Sampling for Per- and Polyfluorinated Alkyl Substances (PFAS)

Sample Locations near the MVD-4/5 Well Field

Merrimack Village District, Merrimack, New Hampshire

	D	T1-1-	Effluent	0.11.1	T-CCI4	C.P.1	M '4 ' XX7-11
A 14 -	Raw	Tumble		Solid	Effluent TD 2	Solid	Monitoring Well
Analyte	Merrimack River	Blank	TP-1	TP-1	TP-3	TP-3	MER45-AR2
PFBA	1.31	ND	1.28	ND	3.38	ND	5.26
PFPeA	1.61	ND	2.07	ND	6.79	ND	9.44
PFBS	1.88	ND	ND	ND	ND	ND	10.6
PFHxA	ND	ND	ND	ND	ND	ND	13.5
PFHpA	1.16	ND	2.61	ND	10.7	0.370	8.56
PFHxS	2.70	ND	ND	ND	1.44	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	NT
PFOA	3.31	ND	1.50	ND	48.6	0.616	38.9
PFHpS	ND	ND	ND	ND	ND	ND	NT
PFNA	ND	ND	ND	ND	ND	ND	ND
PFOSA	ND	ND	ND	ND	ND	ND	NT
PFOS	1.44	ND	ND	ND	ND	ND	ND
PFDA	ND	ND	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	NT
MeFOSAA	ND	ND	ND	ND	ND	ND	ND
EtFOSAA	ND	ND	ND	ND	ND	ND	ND
PFUnA	ND	ND	ND	ND	ND	ND	ND
PFDS	ND	ND	ND	ND	ND	ND	NT
PFDoA	ND	ND	ND	ND	ND	ND	ND
MeFOSA	ND	ND	ND	ND	ND	ND	NT
PFTrDA	ND	ND	ND	ND	ND	ND	ND
PFTeDA	ND	ND	ND	ND	ND	ND	ND
EtFOSA	ND	ND	ND	ND	ND	ND	NT
PFHxDA	ND	ND	ND	ND	0.390	ND	NT
MeFOSE	ND	ND	ND	ND	ND	ND	NT
EtFOSE	ND	ND	ND	ND	ND	ND	NT

NT = not tested

ND = not detected

TABLE IV

Results of Laboratory Analyses of Water Quality Samples
Test Wells near the MVD-4 and MVD-5 Well Field
Merrimack Village District, Merrimack, New Hampshire

Well									Total Dissolved				Pesticides Herbicides
Name	Iron	Manganese	pН	Alkalinity	Chloride	Sodium*	Turbidity	Hardness	Solids	Sulfate	Nitrate	VOCs	PCBs
	(mg/l)	(mg/l)		(mg/l)	(mg/l)	(mg/l)	(ntu)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
MCL:	0.30	0.05	6.5-8.5		250		1		500	250	10		
AR1	ND	0.014	5.8	22	370	181	ND	110	640	12	1.5	ND	ND
AR2	ND	0.016	5.8	ND	520	263	ND	120	860	14	1.5	ND	ND
AR3	ND	ND	6.0	22	270	125	ND	100	480	11	1.7	ND	ND

MCL = Maximum Contaminant Levels

Values in bold exceed Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCL) and may require treatment.

ND = not detected

*Recommended level for people on a low sodium diet is 20 mg/l.

APPENDIX A HYDROGEOLOGIC LOGS

HYDROGEOLOGIC LOG FOR MONITORING WELL MER45-AR1 Merrimack Village District, Production Wells MVD-4 and MVD-5 Merrimack, New Hampshire

Project: MVD-4 / MVD-5 Artificial Recharge

Driller: Northern Test Boring

Total Depth of Well: 55.5'

Depth to Bedrock: 73'

Geologist: Dan Tinkham
Static Water Level: 42.13' below top of casing (8/9/18)
Date Drilled: July 2, 2018
Screen Interval (Slot Size): 49'-67' (0.020" slotted)

Drill Method: 4-inch Casing - Drive and Wash

				**Penetration
DEPTH	WELL	DRILL	SAMPLE	Blows
(feet)	CONSTRUCTION	LOG	DESCRIPTION	(Recovery)
	Locking, protective			
+2	monument —			
0	l Alh			
2				
4			0' - 25': Brown, well- to moderately-sorted, fine sand to granules.	
6			22 · Drown, went to moderately sorted, the said to grandes.	
8				
10				
12				
14				
16				
18			20'-22': Split-spoon; Gray-brown, moderately-sorted, fine sand to granules.	7-7-11-14
20				(9 inches)
22				
24				
26	25'-30': Bentonite ——		25'- 73': Brown, poorly-sorted, fine to very coarse sand with	
28			variable granules, pebbles to cobbles.	
30			30'-32': Split-spoon; Brown, poorly-sorted, medium sand to granules,	9-10-11-13
32			trace pebbles.	(7 inches)
34				
	3-inch PVC casing			
38 40	2.5' a.g.* to 49' b.g.*			
40	Static Water Level		40! 42!. Calif amoon Dysty harryn, moderatsky control fine to year.	13-12-12-17
44	Static water Level		40'-42': Split-spoon; Rusty-brown, moderately-sorted, fine to very coarse sand, trace silt, trace pebbles.	(10 inches)
46			coarse saild, trace siit, trace peoples.	(10 liiclies)
48				
50	Natural Fill		48' - 57.5': Brown, well-sorted, loose, fine sand, trace silt.	
52			50'-52': Split-spoon; Rusty brown to brown, poorly-sorted, fine sand	16-20-18-20
54			to granules, trace silt, trace pebbles.	(11 inches)
56				
58	49'-67': 3-inch PVC			
	0.020" slotted screen		60'-62': Split-spoon; Brown, moderately-sorted, fine sand to granules,	15-17-17-16
62			trace pebbles.	(12 inches)
64				
66				
68	67': Bottom of Well			
70				
72				
74			73': Refusal on bedrock.	

^{*}a.g. - Above Ground Surface; b.g. - Below Ground Surface

GEOLOGIC LOG LEGEND FOR TEST WELL MER45-AR1

Generally, well-sorted, medium to coarse sands, varying amounts of gravel (see log for details). Generally, poorly-sorted (well-graded), fine to coarse sands with pebbles to cobbles (see log). PERCENTAGES USED IN SAMPLE DESCRIPTIONS

Trace = 0-10% Little = 10-20%

^{**} Penetration blows with a 140 pound hammer falling 30 inches (per 6-inches over a 2 foot interval).

HYDROGEOLOGIC LOG FOR MONITORING WELL MER45-AR2 Merrimack Village District, Production Wells MVD-4 and MVD-5 Merrimack, New Hampshire

Project: MVD-4 / MVD-5 Artificial Recharge Total Depth of Well: 62'

Driller: Northern Test Boring **Depth to Till:** 73'

Geologist: Dan Tinkham
Static Water Level: 44.70' below top of casing (8/9/18)
Date Drilled: July 3, 2018
Screen Interval (Slot Size): 45'-60' (0.020" slotted)

Drill Method: 4-inch Casing - Drive and Wash

DIII 10	Tethou. 4-men casing -	Direc	und musii	**Penetration
DEPTH	WELL	DRILL	SAMPLE	Blows
(feet)	CONSTRUCTION	LOG	DESCRIPTION	(Recovery)
(ICCL)		LOG	DESCRI HON	(Recovery)
+2	Locking, protective monument			
	monument —			
0				
2			0' - 15': Brown, well-sorted, beds of fine to coarse sand	
4			with variable pebbles.	
6				
8				
10				
12				
14				
16			15'- 34': Brown-gray, poorly-sorted, fine sand to pebbles.	
18				
20	3-inch PVC casing		20'-22': Split-spoon; Rusty-brown, poorly-sorted, fine sand to pebbles,	9-11-15-10
22	2.5' a.g.* to 45' b.g.*		trace silt.	(9 inches)
24				
26				
28			201201 (1.1)	22 22 21 24
30	201 251 P		30'-32': Split-spoon; Brown-gray, poorly-sorted, compact, fine sand to	33-32-31-26
32	30'-35': Bentonite ——		pebbles (some weathered).	(10 inches)
34	RI R		241 501 D	
36			34' - 58': Brown-gray, well-sorted, beds of fine sand, to granules.	
38 40				
42	Static Water Level		40'-42': Split-spoon; 6" of Brown, well-sorted, medium to coarse sand;	31-20-17-19
44	Static water Level		4" as 30' to 32'.	(10 inches)
46			4 as 30 to 32.	(10 liiclies)
48				
50	Natural Fill 45'-60': 3-inch PVC 0.020" slotted screen			
52			50'-52': Split-spoon; Brown-gray, well-sorted, medium to very coarse sand;	18-18-16-18
54	45'-60': 3-inch PVC		One 2" bed had little granules.	(10 inches)
56	0.020" slotted screen		one 2 oed ma nuo grandes.	(10 menes)
58			58' - 62': Brown to Gray, poorly-sorted, silt to pebbles.	
60			60'-62': Split-spoon; Brown to gray, poorly-sorted, medium sand to pebbles,	31-30-27
62	60': Bottom of Well		trace fine sand to silt.	(14 inches)
64			62': Bottom of Boring in Till.	
66			· ·	
68				
70				
72				
74				

^{*}a.g. - Above Ground Surface; b.g. - Below Ground Surface

Generally, well-sorted, medium to coarse sands, varying amounts of gravel (see log for details). Generally, poorly-sorted (well-graded), fine to coarse sands with pebbles to cobbles (see log). Till - dense, tight, silty sand with layers and/or lenses of clay (see log for details). Trace = 0-10% Little = 10-20%

^{**} Penetration blows with a 140 pound hammer falling 30 inches (per 6-inches over a 2 foot interval).

HYDROGEOLOGIC LOG FOR MONITORING WELL MER45-AR3 Merrimack Village District, Production Wells MVD-4 and MVD-5 Merrimack, New Hampshire

Project: MVD-4 / MVD-5 Artificial Recharge

Total Depth of Well: 40'

Driller: Northern Test Boring

Depth to Till: Not Intercepted

Geologist: Dan Tinkham **Date Drilled:** July 3, 2018 **Static Water Level:** 8.06' below top of casing (8/9/18)

Screen Interval (Slot Size): 20'-40' (0.020" slotted)

Drill Method: 4-inch Casing - Drive and Wash

	Technolic Finen Casing			**Penetration
DEPTH	WELL	DRILL	SAMPLE	Blows
(feet)	CONSTRUCTION	LOG	DESCRIPTION	(Recovery)
	Locking, protective			
+2	monument —			
0	I Н Н			
2			0' - 40': Brown, poorly-sorted, fine sand to pebbles, trace to little silt.	
4			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
6	Static Water Level			
8				
10			10'-12': Split-spoon; 8" of Brown, well-sorted, coarse to very coarse, trace	5-6-3-3
	8'-13': Bentonite		granules. 2" Brown, poorly-sorted, fine sand to pebbles.	(10 inches)
14				
16 18	2 in als DVC assins			
	3-inch PVC casing 2.5' a.g.* to 20' b.g.*		20'-22': Split-spoon; Brown, poorly-sorted, medium sand to pebbles.	6-7-11-8
22	2.3 a.g. 10 20 b.g.		20-22. Spiit-spooli, Brown, poorty-sorted, inedium saild to peobles.	(8 inches)
24	Natural Fill — 📕			(o menes)
26				
28				
30	20'-40': 3-inch PVC			
	0.020" slotted screen			
34				
36				
38 40	40's Dottom of Well		401. Pottom of Poning	
40	40': Bottom of Well		40': Bottom of Boring.	
44				

^{*}a.g. - Above Ground Surface; b.g. - Below Ground Surface

GEOLOGIC LOG LEGEND FOR TEST WELL MER45-AR3

Generally, poorly-sorted (well-graded), fine to coarse sands with pebbles to cobbles (see log).

PERCENTAGES USED IN SAMPLE DESCRIPTIONS

Trace = 0-10% Little = 10-20% Some = 20-35% And = 35-50%

^{**} Penetration blows with a 140 pound hammer falling 30 inches (per 6-inches over a 2 foot interval).

APPENDIX B PERCOLATION TEST ANALYSES

Slug Test Analysis Report

Project: Merrimack MVD-4/5 Artificial Recharge

Number:

Client: Merrimack Village District

Location: Merrimack, New Hampshire

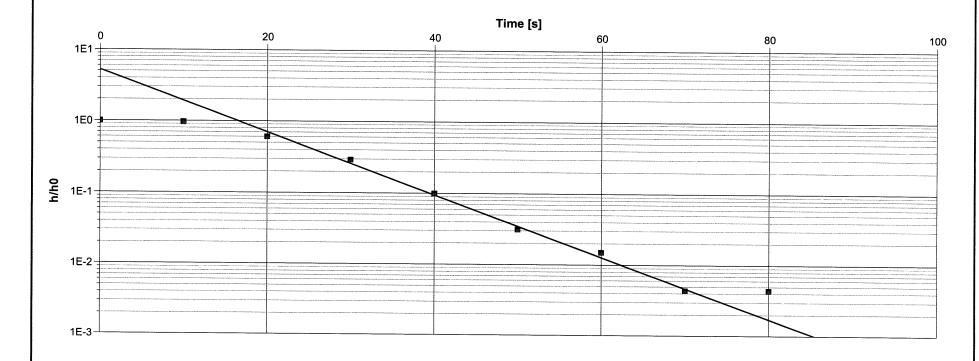
Slug Test: Slug Test AR-1 10 Feet

Test Well: MER45-AR1-10

Test Date: 7/2/2018

Analysis Performed by: djt MER-AR1 10 Feet Analysis Date: 1/21/2019

Aquifer Thickness: 30.00 ft



	T	
Observation Well	Hydraulic Conductivity	
	[ft/d]	
MER45-AR1-10	21.50	

Slug Test Analysis Report

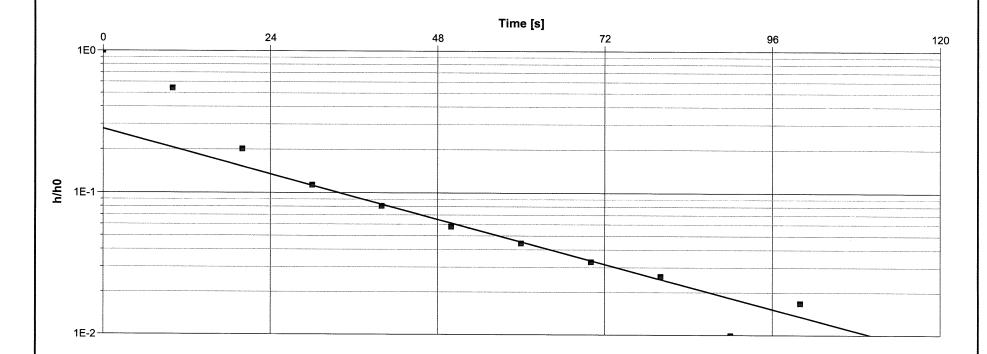
Project: Merrimack MVD-4/5 Artificial Recharge

Number:

Client: Merrimack Village District

Location: Merrimack, New Hampshire	Slug Test: Slug Test AR-1 20 Feet	Test Well: MER45-AR1-20
Test Conducted by: djt		Test Date: 7/2/2018
Analysis Performed by: djt	MER-AR1 20 Feet	Analysis Date: 1/21/2019

Aquifer Thickness: 30.00 ft



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity	
	[ft/d]	
MER45-AR1-20	6.50	

Slug Test Analysis Report

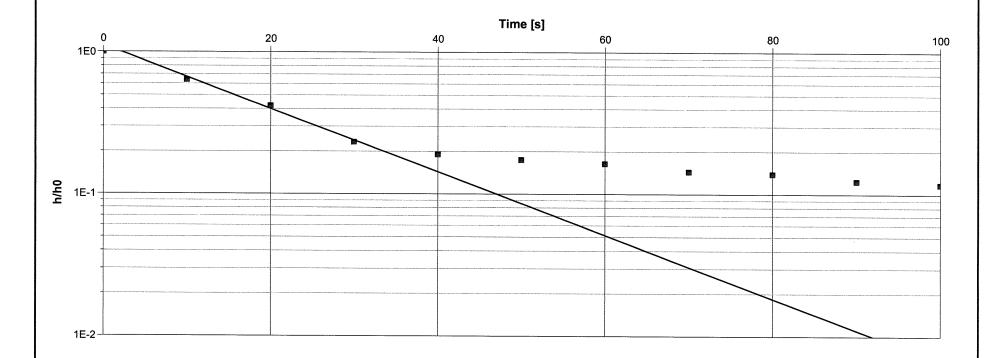
Project: Merrimack MVD-4/5 Artificial Recharge

Number:

Client: Merrimack Village District

Location: Merrimack, New Hampshire	Slug Test: Slug Test AR-2 10 Feet	Test Well: MER45-AR2-10
Test Conducted by: djt		Test Date: 7/2/2018
Analysis Performed by: djt	MER-AR2 10 Feet	Analysis Date: 1/21/2019

Aquifer Thickness: 30.00 ft



Calculation usir	na Hvorslev
------------------	-------------

Observation Well	Hydraulic Conductivity	
	[ft/d]	
MER45-AR2-10	11.00	

Slug Test Analysis Report

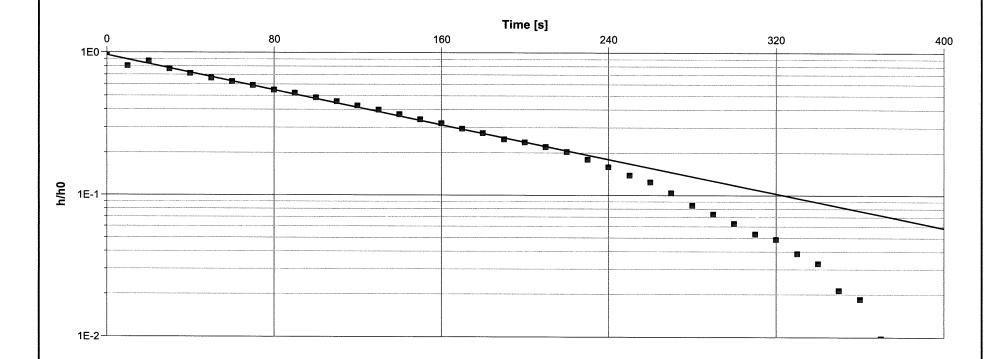
Project: Merrimack MVD-4/5 Artificial Recharge

Number:

Client: Merrimack Village District

Location: Merrimack, New Hampshire	Slug Test: Slug Test AR-2 20 Feet	Test Well: MER45-AR2-20	
Test Conducted by: djt		Test Date: 7/2/2018	
Analysis Performed by: djt	MER-AR2 20 Feet	Analysis Date: 1/21/2019	

Aquifer Thickness: 30.00 ft



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity	
	[ft/d]	
MER45-AR2-20	1.50	

APPENDIX C LEACHING TESTS

TUMBLE SAMPLES

Daniel Tinkham
Emery & Garrett Groundwater Investigations, LLC
56 Main Street
Meredith, NH 03253



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 182869

Client Identification: MER 4/5 AR | MER

Date Received: 6/7/2018

Dear Mr. Tinkham:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

> : "greater than" followed by the reporting limit

%R: % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

Date

38
of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE



EAI ID#: 182869

Client: Emery & Garrett Groundwater Investigations, LLC (NH)

Client Designation: MER 4/5 AR | MER

Temperature upon receipt (°C): 2.1

Received on ice or cold packs (Yes/No): Y

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
182869.01	TP-1	6/7/18	6/7/18	soil	Adheres to Sample Acceptance Policy
182869.02	TP-3	6/7/18	6/7/18	soil	Adheres to Sample Acceptance Policy
182869.03	Merrimack River	6/7/18	6/7/18	aqueous	Adheres to Sample Acceptance Policy
182869.04	PFAS Tumble Blank	6/7/18		aqueous	Adheres to Sample Acceptance Policy
182869.05	Blank	6/7/18	6/7/18	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater, 20th Edition, 1998 and 22nd Edition, 2012
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 2nd edition, 1992



LABORATORY REPORT

EAI ID#: 182869

Client: Emery & Garrett Groundwater Investigations, LLC (NH)

Client Designation: MER 4/5 AR | MER

Sample ID:	TP-1	TP-3	Blank					
Lab Sample ID:	182869.01	182869.02	182869.05					
Matrix:	soil	soil	aqueous					
Date Sampled:	6/7/18	6/7/18	6/7/18	Analytical		Date of		
Date Received:	6/7/18	6/7/18	6/7/18	Matrix	Units	Analysis	Method	Analyst
Dissolved Organic Carbon	2.8	1.8	3.2	SWLPsolid	mg/L	6/14/18	5310C-00	LO
Total UVA at 254 nm	0.060	0.013	0.077	SWLPsolid	cm-1	6/13/18	5910B-94	ATA
ColorTrue	< 5	< 5	5-10	SWLPsolid	PtCo	6/13/18	110.2	AMB
pН	7.02	6.77	6.99	SWLPsolid	SU	6/13/18	4500H+B	KL

Sample ID: Merrimack River

Lab Sample ID: 182869.03 Matrix: aqueous Analytical Date of **Date Sampled:** 6/7/18 Matrix **Analysis** Method Analyst Units **Date Received:** 6/7/18 AqDis mg/L 6/14/18 5310C-00 LO Dissolved Organic Carbon 3.0 6/8/18 5910B-94 ATA AqTot cm-1 Total UVA at 254 nm 0.13 AqTot PtCo 6/8/18 110.2 **AMB** 20-25 ColorTrue KL AqTot 6/7/18 4500H+B рΗ 6.93 SU

TP-1 & TP-3 SWLPsolid: Per client request, samples were tumbled for 48 hours in river water (Merrimack River) provided by the client. After tumble, samples were filtered through 0.45 um filters. A 1:20 ratio of solid to river water was used for the tumble.

Sample "Blank" is the Merrimack River sample that has been tumbled for 48 hours and then filtered through a 0.45 um filter.



LABORATORY REPORT

EAI ID#: 182869

Client: Emery & Garrett Groundwater Investigations, LLC (NH)

Client Designation: MER 4/5 AR | MER

TP-1	TP-3	Blank					
		2,2,					
182869.01	182869.02	182869.05					
soil	soil	aqueous					
6/7/18	6/7/18	6/7/18	Analytical		Date of		
6/7/18	6/7/18	6/7/18	Matrix	Units	Analysis	Method	Analys
0.001	< 0.001	< 0.001	SWLPsolid	mg/L	6/13/18	6020	DS
5.6	4.7	5.5	SWLPsolid	mg/L	6/13/18	6020	DS
< 0.05	< 0.05	0.15	SWLPsolid	mg/L	6/13/18	6020	DS
0.029	0.093	< 0.005	SWLPsolid	mg/L	6/13/18	6020	DS
	soil 6/7/18 6/7/18 0.001 5.6 < 0.05	soil soil 6/7/18 6/7/18 6/7/18 6/7/18 0.001 < 0.001	soil soil aqueous 6/7/18 6/7/18 6/7/18 6/7/18 6/7/18 6/7/18 0.001 < 0.001	soil soil aqueous 6/7/18 6/7/18 6/7/18 Analytical 6/7/18 6/7/18 Matrix 0.001 < 0.001	soil soil aqueous 6/7/18 6/7/18 6/7/18 Analytical 6/7/18 6/7/18 Matrix Units 0.001 < 0.001	soil soil aqueous 6/7/18 6/7/18 Analytical Date of 6/7/18 6/7/18 Matrix Units Analysis 0.001 < 0.001	soil soil aqueous 6/7/18 6/7/18 Analytical Date of 6/7/18 6/7/18 Matrix Units Analysis Method 0.001 < 0.001

Sample ID:	Merrimack River				
Lab Sample ID:	182869.03				
Matrix:	aqueous				
Date Sampled:	6/7/18	Analytical	Date of		
Date Received:	6/7/18	Matrix Un	nits Analysis	Method	Analyst
Arsenic	< 0.001	AqTot mg	g/L 6/13/18	200.8	DS
Calcium	5.7	AqTot mg	g/L 6/13/18	200.8	DS
Iron	0.83	AqTot mg	g/L 6/13/18	200.8	DS
Manganese	0.041	AqTot mg	g/L 6/13/18	200.8	DS

TP-1 & TP-3 SWLPsolid: Per client request, samples were tumbled for 48 hours in river water (Merrimack River) provided by the client. After tumble, samples were filtered through 0.45 um filters. A 1:20 ratio of solid to river water was used for the tumble.

Sample "Blank" is the Merrimack River sample that has been tumbled for 48 hours and then filtered through a 0.45 um filter.



July 30, 2018

Vista Work Order No. 1801266

Ms. Jennifer Laramie Eastern Analytical, Inc. 25 Chennell Drive Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 14, 2018. This sample set was analyzed on a standard turn-around time, under your Project Name '182869 NH 3191'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier

Laboratory Director

Mayllo Maier



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Vista Work Order No. 1801266 Case Narrative

Sample Condition on Receipt:

Four aqueous samples and two soil samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

As directed, the aqueous extracts of samples "TP-1" and "TP-3" were filtered prior to extraction.

Sample "Merrimack River" contained particulate and was centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method. This method is listed on Vista's NELAP certificate as Modifed EPA Method 537. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

VAL-PFAS

The samples were extracted and analyzed for a selected list of PFAS using VAL Method PFAS. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

Work Order 1801266 Page 2 of 32

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the Reporting Limit (RL). The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1801266-02	PFAS Tumble Blank	PFAS Isotope Dilution Method	d3-MeFOSA	Н	9.70
1801266-03	TP-1	PFAS Isotope Dilution Method	d3-MeFOSA	Н	5.90
1801266-03	TP-1	PFAS Isotope Dilution Method	d5-EtFOSA	Н	6.70
1801266-04	TP-1	VAL - PFAS	d3-MeFOSA	Н	5.40
1801266-04	TP-1	VAL - PFAS	d5-EtFOSA	Н	4.30
1801266-05	TP-3	PFAS Isotope Dilution Method	d3-MeFOSA	Н	4.30
1801266-05	TP-3	PFAS Isotope Dilution Method	d5-EtFOSA	Н	5.30
B8F0149-BLK1	B8F0149-BLK1	PFAS Isotope Dilution Method	d3-MeFOSA	Н	4.70
B8F0149-BLK1	B8F0149-BLK1	PFAS Isotope Dilution Method	d5-EtFOSA	Н	5.50
B8F0149-BS1	B8F0149-BS1	PFAS Isotope Dilution Method	d3-MeFOSA	Н	6.60
B8F0149-BS1	B8F0149-BS1	PFAS Isotope Dilution Method	d5-EtFOSA	Н	8.10
B8F0179-BLK1	B8F0179-BLK1	VAL - PFAS	d3-MeFOSAA	Н	29.1
B8F0179-BLK1	B8F0179-BLK1	VAL - PFAS	d5-EtFOSAA	Н	30.7
B8F0179-BLK1	B8F0179-BLK1	VAL - PFAS	13C2-PFUnA	Н	42.3
B8F0179-BLK1	B8F0179-BLK1	VAL - PFAS	d3-MeFOSA	Н	6.40
B8F0179-BLK1	B8F0179-BLK1	VAL - PFAS	d5-EtFOSA	Н	5.90

H = Recovery was outside laboratory acceptance criteria.

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Certifications	28
Sample Receipt	29

Sample Inventory Report

Vista Project: 1801266 Client Project: 182869 NH 3191

ANALYTICAL RESULTS



Sample ID: Method Blank	Iethod Blank								PFAS Isot	PFAS Isotope Dilution Method	1ethod
Client Data Name:	Eastern Analytical, Inc.		Matrix:	Aqueous	Labo Lab S	Laboratory Data Lab Sample:	B8F0149-BLK1	IK1	Column:	BEH C18	
Analyte		CAS Number	Conc. (ng/L)	MDL	RI -	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		375-22-4	ND	0.729	4 00	And the second s	B8F0149	21-Jun-18	0 125 1	ġ	
PFPeA		2706-90-3	ND	1.28	4.00	CONTRACTOR OF THE CONTRACTOR O	B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
PFBS		375-73-5	¥	1.79	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	-
PFHxA		307-24-4	ND	2.18	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
PFHpA		375-85-9	3	0.591	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
PFHxS	kier ranniha dichlamet ik vor nadbaton. 18 sol ad oviški sam druha sist sist	355-46-4	ND	0.947	4.00	e trade liabilitate for each trade to decimal from the control of	B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
6:2 FTS		27619-97-2	A	2.00	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09)—
PFOA		335-67-1	ND	0.651	4.00	is an enclosured and an encode and definition and an encode and	B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	_
PFHpS		375-92-8	Ġ	0.937	4.00		B8F0149	21-Jun-18	0.125L	08-Jul-18 10:09	
PFNA		375-95-1	i ND	0.810	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
PFOSA		754-91-6) N	1.77	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
PFOS		1763-23-1	0.901	0.807	4.00	J	B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	-
8:2 FTS		39108-34-4	3 8	206	4.00		R8F0149	21-Jun-18	0,125 L	08-Jul-18 10:09	- 12 - 12 - 13
MeFOSAA		2355-31-9	J	1.65	4,00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
EtFOSAA	adversaling or a designation of the teath ordered and adversarial account.	2991-50-6	ND	1.37	4.00		B8F0149	21-Jun-18	$0.125\mathrm{L}$	08-Jul-18 10:09	_
PFUnA		2058-94-8	A)	1.05	4.00		B8F0149	21-Jun-18	0,125 L	08-Jul-18 10:09)
PFDS		335-77-3	Í N	1.23	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
PFDOA Maeos A		31506 33 8	i N	0.792	200		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
PET-DA MELOSA		72620-52-6	38	0 707	0.07		B8F0149	21-Jun-18	1 221.0 T 571.0	08-Jul-18 10:09	-
PFTeDA	a volumento e andreido Como de Vando Valdo volumento de destante d	376-06-7	ND	0.755	4.00		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
EtFOSA		4151-50-2	Ŧ	5.11	20,0		B8F0149	21-Jun-18		08-Jul-18 10:09	<u> </u>
PFHxDA		67905-19-5	Ŋ	0.294	4.00		B8F0149	21-Jun-18		08-Jul-18 10:09	-
MeFOSE		24448-09-7	ND	6.07	20.0		B8F0149	21-Jun-18	0,125 L	08-Jul-18 10:09	5—4
EtFOSE		1691-99-2	ND	9.44	20.0		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
Labeled Standards	rds	Type	% Recovery		Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		SI	103		60 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	_
13C3-PFPeA		SI	98.4 2.2		60 - 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
13C3-PKBS		IS IS	127				B8F0149	21-Jun-18	0,125 L	08-Jul-18 10:09	
13C4-FFFIXA 13C4 BEU-A	one (1) in the control of the contro	D. CI	COI	P SOCIAL CONTRACTOR OF CONTRAC		College Andreas College Colleg	B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
1802-PFHxS		IS	95.1		60 - 130		B8F0149	21-Jun-18	0.123.17	08-Jul-18 10:09	-
13C2-6:2 FTS		IS	122				B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	<u></u>
13C2-PFOA		IS	105				B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	_
13C5-PFNA		IS	93.5		50 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
13C8-PFOSA		T 17	33.5				B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
L3C8-PFOS		Ь	1 ,46		60 - 150		<u> В8</u> Н0149	21-Jun-18	0.125 L	08-Jul-18 10:09	



								Analytical autoratory	abordiory
Sample ID: Method Blank	ak						PFAS Isot	PFAS Isotope Dilution Method	Tethod
Client Data				Laboratory Data					
Name: Eastern An	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	B8F0149-BLK1	EK1	Column:	BEH C18	
Project: 182869 NH 3191	13191								
Labeled Standards	Туре	% Recovery	Limits	Qualifiers	Batch	Extracted Samp Size	Samp Size	Analyzed	Dilution
13C2-PFDA	SI	76.0	60 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
13C2-8:2 FTS	S	127	40 - 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	–
d3-MeFOSAA	Z	85,1	50 - 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
d5-EtFOSAA	IS	91.5	50 - 150		B8F0149	21-Jun-18	$0.125\mathrm{L}$	08-Jul-18 10:09	_
13C2-PFUnA	\mathbf{IS}	76,9	60 - 130		B8F0149 21-Jun-18	21-Jun-18	0.125 L	08-Jul-18 10:09	
13C2-PFDoA	IS	72.9	30 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	_
d3-MeFOSA	5	4.70	10 - 130	Ŧ	B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	-
13C2-PFTeDA	IS	109	20 - 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	, .
d5-EtFOSA	IS	5.50	10 - 150	П	B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	
13C2-PFHxDA	IS	119	20 - 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 10:09	1
d7-MeFOSE	SI	30.3	10-150		B8F0149	B8F0149 21-Jun-18	$0.125\mathrm{L}$	08-Jul-18 10:09	-
d9-EtFOSE	IS	29.7	10 - 150		B8F0149	21-Jun-18	$0.125\mathrm{L}$	08-Jul-18 10:09	1
MDL - Method Detection Limit	RL - Reporting limit	Results reported to MDL	MDL.	When rep	orted, PFHxS, I	FOA, PFOS, M	FOSAA and EtF	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both	



Client Data						La	Laboratory Data				
Name: Project:	Eastern Analytical, Inc 182869 NH 3191	c.	Matrix:	Aqueous		Le	Lab Sample:	B8F0149-BS1	BS1	Column:	BEH C18
Analyte		CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed Dilution
PFBA		375-22-4	83.0	80.0	104	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFPeA	den de 1. No en 20 en 19en en delden en bene et en mendelen beste 19 mil 10 de 18en 18en 18en 18en 18en 18en 1	2706-90-3	82.5	80.0	103	70 - 130	a Villa Villa de Colonia de Colon	B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFBS		375-73-5	80.2	80.0	100	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFHxA		307-24-4	87.7	80.0	110	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
РЕНрА		375-85-9	79.2	80.0	99,0	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFHxS		355-46-4	86.5	80.0	108	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
6:2 FTS		27619-97-2	80.4	80.0	100	60 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFOA		335-67-1	85.5	80.0	107	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFHpS		375-92-8	83.5	80.0	104	60 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFNA		375-95-1	82.7	80.0	103	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFOSA		754-91-6	73.9	80.0	92.4	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFOS	The Address of the Ad	1763-23-1	84.7	80.0	106	70 - 130	the street and street	B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFDA		335-76-2	79.9	80.0	99.9	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
8:2 FTS		39108-34-4	96.4	80.0	120	60 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
MeFOSAA		2355-31-9	84.5	80.0	106	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
EtFOSAA		2991-50-6	84.0	80.0	105	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFUnA		2058-94-8	79.7	80.0	99.6	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFDS		335-77-3	94.3	80.0	118	60 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFDoA		307-55-1	74.6	80.0	93.2	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
MeFOSA		31506-32-8	445	400	111	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFTrDA		72629-94-8	88,0	80.0	110	60 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFTeDA		376-06-7	77.7	80.0	97.2	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
EtFOSA		4151-50-2	501	400	125	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
PFHxDA		67905-19-5	83.2	80.0	104	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
MeFOSE		24448-09-7	470	400	117	70 - 130		B8F0149	21-Jun-18	$0.125{ m L}$	08-Jul-18 09:58
EtFOSE		1691-99-2	476	400	119	70 - 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
Labeled Standards	ards		Туре		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed Dilution
13C3-PFBA	Control Colonia Coloni		SI		102	60- 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
13C3-PFPeA			SI		98.8	60- 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
13C3-PFBS			IS	100	125	60- 150		B8F0149	21-Jun-18	$0.125\mathrm{L}$	08-Jul-18 09:58
13C2-PFHxA			IS		93.5	70- 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
13C4-PFHpA			SI		106	60- 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
1802-PFHxS			IS		95.6	60- 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
13C2-6:2 FTS			SĪ		109	40- 150		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58
13C2-PFOA	A		IS		95.5	60- 130		B8F0149	21-Jun-18	0.125 L	08-Jul-18 09:58



Sample ID: OPR	PR								PFAS Isot	PFAS Isotope Dilution Method	Method
Client Data					Lab	oratory Data					
Name: Project:	Eastern Analytical, Inc. 182869 NH 3191		Matrix:	Aqueous	Lat	Lab Sample:	B8F0149-BS1	51	Column:	BEH C18	
Labeled Standards	ds		Type	% Rec	Limits	Qualifiers	Batch F	Extracted Samp Size	amp Size	Analyzed I	Dilution
13C5-PFNA			IS	92,0	50 130		B8F0149 2	21-Jun-18	0.12 5 L C	08-Jul-18 09:58	-
13C8-PFOSA		Comments constructed to the comments of the co	IS	33.7	20- 150		B8F0149 2	21-Jun-18	$0.125\mathrm{L}$	08-Jul-18 09:58	_
13C8-PFOS			SI	108	60- 130		B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	
13C2-PFDA			IS	77.9	60- 130		B8F0149 2	21-Jun-18	0.125 L C	08-Jul-18 09:58	н
13C2-8:2 FTS			SI	119	40- 150		B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	
d3-MeFOSAA			IS	79.7	50- 150		B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	н
d5-EtFOSAA			IS.	82.1	50- 150		B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	
13C2-PFUnA			IS	75.7	60- 130		B8F0149 2	21-Jun-18	$0.125\mathrm{L}$	08-Jul-18 09:58	_
13C2-PFDoA			S	73.3	30- 130		B8F0149 2		0.125 L (08-Jul-18 09:58	H
d3-MeFOSA			IS	6.60	10- 130	Н	B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	_
13C2-PFTeDA			IS	104	20- 150		B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	_
d5-EtFOSA			IS	8.10	10- 150	Н	B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	1
13C2-PFHxDA			B	110	20- 150		B8F0149 21-Jun-18		0.125 L (08-Jul-18 09:58	+
d7-MeFOSE			IS	28.6	10- 150		B8F0149 2	21-Jun-18	0.125 L (08-Jul-18 09:58	1
d9-EtFOSE			ıs	28.7	10- 150	150 150 160 160 160	B8F0149 21-Jun-18		$0.125\mathrm{L}$	08-Jul-18 09:58	,



šample ID: M	Sample ID: Merrimack River							PFAS Isoto	PFAS Isotope Dilution Method	1ethod
Client Data	Factorn Analytical Inc		Matrix.	Agricons	Laboratory Data			-		
Project:	Eastern Analyticat, Inc. 182869 NH 3191		Date Collected:	Aqueous cted: 07-Jun-18 15:20	Date Received:	1801266-01 14-Jun-18 10:18	10:18	Column:	BEH C18	
Analyte		CAS Number	Conc. (ng/L)	MDL	RL Qualifiers	iers Batch	Extracted S	Samp Size	Analyzed	Dilution
PFBA		375-22-4	131	0,761	4.18	B8F0149	21-J _{un} -18	0.120 L 0	08-Jul-18 10:19	1
PFPeA	The second secon	2706-90-3	1.61	1.34	4.18 J	B8F0149	21-Jun-18		08-Jul-18 10:19	1
PFBS		375-73-5	1,88	1,87	4.18 J	B8F0149	21-Jun-18		08-Jul-18 10:19	
PFHxA		307-24-4	Y	2.28		B8F0149	21-Jun-18	0.120 L 0	08-Jul-18 10:19	
PFHpA		375-85-9	1.16	0.617	4.18	. 14.17 14.17 14.17	21-Jun-18	100	08-Jul-18 10:19	• •
6.9 ETS	children's underchambered and condition and hands the beaution startism in	333-40-4 37610-07-3	ZD.	0.989		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:19	-
PFOA	der te des Arches d'en des Arches de la Color Carlo de Color de Co	335-67-1	3.31	0.680	4.18 J	B8F0149	21-Jun-18	1	08-Jul-18 10:19	-
PFHpS		375-92-8	Ā	0.978	4.18	B8F0149	21-Jun-18		08-Jul-18 10:19	
PFNA	Administration of the community of the contract of the contrac	375-95-1	ND	0.846	4.18	B8F0149	21-Jun-18		08-Jul-18 10:19	—
PFOSA		754-91-6	Z	1,85	4,18	B8F0149	21-Jun-18	$0.120\mathrm{L}$ 0	08-Jul-18 10:19)
PFOS		1763-23-1	1.44	0.842	4.18 J	B8F0149	21-Jun-18	0.120 L 0	08-Jul-18 10:19	-
PFDA		335-76-2	í	1.56	4.18	B8F0149	21-Jun-18		08-Jul-18 10:19	
MeFOSAA		2355-31-9	Dě	172	X 18	R8F0149	21-Jun-18	0.120 L 0	08-7m1-18 10:19	-
EtFOSAA		2991-50-6	ND	1.43	4.18	B8F0149	21-Jun-18		08-Jul-18 10:19	1
PFUnA		2058-94-8	Ð	1.10	4.18	B8F0149	21-Jun-18	0.120 L 0	08-Jul-18 10:19	, —
PFDS		335-77-3	H AB	1.28	4.18	B8F0149	21-Jun-18		08-Jul-18 10:19	-
PEDOA Maros A		21506 22 6		0.82/	4,18	B8F0149	21-Jun-18	163 163	08-Jul-18 10:19	
PETIDA Merosa		72629-94-8	7	4.00 0 \$16	70.9	Б8F0149 В8F0149	21-Jun-18	0.1201	08-Jul-18 10:19 08-Jul-18 10:19	
PFTeDA	As a constitution of the Asia Decide of Control Constitution on the Control Constitution of the Asia Decide of the Constitution of the Asia Decide of the Constitution	376-06-7	Ð	0.788	4.18	B8F0149	21-Jun-18	7. 6.563	08-Jul-18 10:19	1
EtFOSA		4151-50-2	ð	ပုန သ	20,9	B8F0149	21-Jun-18		08-Jul-18 10:19	
PFHxDA		67905-19-5	'ND	0.307	4.18	B8F0149			08-Jul-18 10:19	1
Merose Eteose		24448-09-7		0,34 0.85	20.9	B8F0149	21-Jun-18	0.120 L 0	08-Jul-18 10:19	- 1
Labeled Standards	rds	Туре	% Recovery	Limits			- 1	6	- 1	Dilution
13C3-PFBA		IS	102	60 - 130	130	B8F0149):19	
13C3-PFPeA		IS	97.7	- 00		B8F0149	21-Jun-18			_
13C3-PFBS		13	116			B8F0149	21-Jun-18			
13CA-PEUNA	and Variable subtained united for hander AC (1000 to 100 t	DI OT	30./	in 1907 (1905) is the control of the		B8F0149	01 Tue 18		08-Jul-18 10:19	-
1802-PFHxS		IS	102		130	B8F0149	21-Jun-18	0.120 L (08-Jul-18 10:19	- 1
13C2-6:2 FTS		SI	123		150	B8F0149	21-Jun-18		08-Jul-18 10:19	,_
13C2-PFOA	A CONTROL OF THE CONT	IS	98.3		130	B8F0149	21-Jun-18		08-Jul-18 10:19	1
13C8-PFOSA	and the second s	SI	64.9	20 -	150	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:19 08-Jul-18 10:19	-
					and a second constitution of the Wilder Constitution and the Second constitution of the	CONTRACTOR AND CONTRACTOR CONTRACTOR				



Client Data				Laboratory Data				
Name: Eastern Analytical, Inc. Project: 182869 NH 3191	·	Matrix: Date Collected:	Matrix: Aqueous Date Collected: 07-Jun-18 15:20	Lab Sample: Date Received:	1801266-01 14-Jun-18 10:18	Column:	BEH C18	
Labeled Standards	Туре	% Recovery	Limits	Qualifiers	Batch Extracted	Samp Size	Analyzed I	Dilution
I3C2-PFDA	SI	94.4	60 - 130		B8F0149 21-Jun-18	0.120 L	08-Jul-18 10:19	1
l3C2-8:2 FTS	IS	114	40 - 150		B8F0149 21-Jun-18	0.120 L	08-Jul-18 10:19	_
d3-MeFOSAA	IS.	103	50 - 150		B8F0149 21-Jun-18	0.120 L	08-Jul-18 10:19	-
d5-EtFOSAA	$_{ m IS}$	108	50 - 150		B8F0149 21-Jun-18	0.120 L	08-Jul-18 10:19	_
3C2-PFUnA	IS	83,3	60 - 130		B8F0149 21-Jun-18	0,120 L	08-Jul-18 10:19	Ħ
l3C2-PFDoA	IS	91.1	30 - 130		B8F0149 21-Jun-18	0.120 L	08-Jul-18 10:19	_
d3-MeFOSA	IS	100	10- 130		B8F0149 21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:19	
3C2-PFTeDA	IS	122	20 - 150		B8F0149 21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:19	_
d5-EtFOSA	IS	12,5	10 - 150		B8F0149 21-Jun-18	0.120 L	08-Jul-18 10:19	-
l3C2-PFHxDA	IS	114	20 - 150		B8F0149 21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:19	_
d7-MeFOSE	IS	64.5	10 - 150		B8F0149 21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:19	Н.
d9-EtFOSE	IS	64.9	10 - 150		B8F0149 21-Jun-18	$0.120~\mathrm{L}$	08-Jul-18 10:19	<u>, </u>



Sample ID: Pl	Sample ID: FFAS Tumple Blank				-			1 1 1 NO 190 KG	THE REPORT TO SECTION ASSESSMENT	100000
Client Data Name: Project:	Eastern Analytical, Inc 182869 NH 3191	•	Matrix: Date Collected:	Aqueous scted: 07-Jun-18 00:00	Laboratory Data Lab Sample: Date Received:	ta 1801266-02 14-Jun-18 10:18	2	Column:	вен С18	
Analyte		CAS Number	Conc. (ng/L)	MDL	RL Qualifiers	ers Batch	Extracted	Samp Size	Analyzed I	Dilution
PFBA		375-22-4	ND	0.760	4.17	B8F0149	- 5		08-Jul-18 10:30	4
PFPeA	Colonia manuscriti del control	2706-90-3	ND	1.33	4.17	B8F0149	21-Jun-18	E .	08-Jul-18 10:30	1
PFBS		375-73-5	Ţ.	1.87	417	B8F0149	21-Jun-18		08-Jul-18 10:30	
PFHxA		307-24-4	ď	2.27		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	_
PFHpA		375-85-9	N	0.616	417	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	### ###
PFHxS		355-46-4	ND	0.987	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	Т.
6:2 FTS		27619-97-2	Ä	2.08	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	-
PFOA	the state of the s	335-67-1	ND	0.678	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	1
PFHpS		375-92-8	ď	0.976		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	L
PFNA		375-95-1	ND	0.844	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	1
PFOSA		754-91-6	Ŋ	1.84	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	
PFOS		1763-23-1	J N	0.841	4.17	B8F0149	21-Jun-18	X d	08-Jul-18 10:30	1
PFDA		335-76-2	. D	1.55	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	
8:2 F1S	The second of th	39108-34-4	Z Z Z	2.15		B8F0149	21-Jun-18		08-Jul-18 10:30	_
EtFOSAA		2991-50-6		1 43	4 17	B8F0149	21-Trim-18	0.120 L	08-Jml-18 10:30	- !-
PFUnA		2058-94-8	ä	1.09	4.17	B8F0149	21-Jun-18		08-Jul-18 10:30	
PFDS		335-77-3	JU	1.28	4.17	B8F0149	21-Jun-18		08-Jul-18 10:30	1
PFDoA		307-55-1	Ā	0.825	4.17	B8F0149	21-Jun-18		08-Jul-18 10:30	-
MeFOSA		31506-32-8	ND	3.99	20.8	B8F0149	21-Jun-18		08-Jul-18 10:30	1
PFTrDA		72629-94-8	B	0.515	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	
PFTeDA	an canne dimmeranian contrib Commercians, conserves dimmers or	376-06-7	ND	0.787	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	_
EtFOSA		4151-50-2	ð	5,32	20.8	B8F0149	21-Jun-18	0,120 L	08-Jul-18 10:30	
PFHxDA	ale calabade e catandamantamantama tadhada da cata	67905-19-5	ND	0.306	4.17	B8F0149	21-Jun-18		08-Jul-18 10:30	_
MeFOSE		24448-09-7		0.33	20,8	B8F0149	21-Jun-18		08-Jul-18 10:30	ـــاً ــ
Labeled Standards	ds	Type	% Recovery		Limits Oualifiers		Extracted	Samp Size	Analyzed I	Dilution
13C3-PFBA		IS	100	60	0				30	
13C3-PFPeA		IS	91.8	- 00	- 150	B8F0149	21-Jun-18		08-Jul-18 10:30	-
13C3-PFBS		S	<u> </u>	60	60 - 150	B8F0149	21-Jun-18		08-Jul-18 10:30	
13C2-PFHxA	And American's Waster Vander introduction (2007) VAL 60 or funds.	IS	97.3	70 -		B8F0149	21-Jun-18		08-Jul-18 10:30	,
13C4-PFHpA		IS	106	- 60	- 150	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	
1802-PFHxS	F. C.	SI	101	- 09	- 130	B8F0149	21-Jun-18		08-Jul-18 10:30	1
13C2-6:2 F1S		Σ.	93.9 80 1	40 -	130	B&F0149	21-Jun-18	0,120 L	08-Jul-18 10:30	- 5
I3C5-PFNA		5	81.5	50		B8F0149	21-Jun-18		08-Jul-18 10:30	
13C8-PFOSA		IS	46.0	20-	- 150	B8F0149	21-Jun-18		08-Jul-18 10:30	_
	The second secon	the second secon				The second of the second of the second				



Client Data					Laboratory Data					
Name: E:	Eastern Analytical, Inc.		Matrix:	Aqueous	Lab Sample:	1801266-02		Column:	BEH C18	
Project: 1:	182869 NH 3191		Date Collected:	07-Jun-18 00:00	Date Received:	14-Jun-18 10:18	0:18	Condition.	BEH CI8	
Labeled Standards		Туре	% Recovery	Limits	Onalifiers	Ratch	Extracted Samp Size	Somn Size		
12/3_0年0 /		TC	70.5	,						рицион
1303 0.3 175		10	730	00-130		В 8Н0149	21-Jun-18	0.120 L	08-Jul-18 10:30	_
13C2-8:2 F1S	to the first of th	5	111	40 - 150	A TOTAL I DECORATE & Most among seriodicingtes of the PROPERTY OF CHARGES CHARGES	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	_
d3-MeFOSAA		IS	103	50 - 150		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	-
d5-EtFOSAA		SI	95.1	50 - 150		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:30	_
13C2-PEUnA		IS	76,2	60 - 130		B8F0149	1800	0.120 L (08-Jul-18 10:30	+
I3C2-PFD0A	Control of the Contro	SI	77.8	30 - 130		B8F0149		`	08-Jul-18 10:30	_
d3-MeFOSA		IS	9,70	10 - 130		B8F0149		$0.120\mathrm{L}$	08-Jul-18 10:30	1
13C2-PF1eDA	Contained to the second of the	SI	84.6	20 - 150	and the second of the second control of the second of the	B8F0149			08-Jul-18 10:30	-
d5-EtFOSA		ī. SI	13	10 - 150		B8F0149	21-Jun-18	0.120 L (08-Jul-18 10:30	-
I3C2-PFHxDA	MANAGEMENT STREET, STR	SI	98.7	20 - 150	and the based on the Base and the strategical and the base statements.	B8F0149	21-Jun-18	0.120 L (08-Jul-18 10:30	_
d/-MeFOSE		IS	37.7	10 - 150		B8F0149 21-Jun-18		$0.120\mathrm{L}$	08-Jul-18 10:30	,
d9-EtFOSE		IS	37.1	10 - 150		B8F0149	21-Jun-18	0.120 L (08-Jul-18 10:30	_



Date Eastern Analytical, Inc. Laboratory Data Laboratory D	Sample ID: IF-I	r-1							T PAS ISO	r ray isotope bilation tricinoa	Temor
Eastern Analytical, Inc. Marrix: Aqueous Lab Sample: 180266-03 Date Collected: 07-Jun-18 00.155 Date Received: 14-Jun-18 10.18 Lab Sample: 1801266-03 Lab Sample: 1801266-03 Lab Sample: L	Client Data					Laboratory Data					
e CAS Number Conc. (ng/L) MDL RL Qualifiers Batch Extracted 375-22-4 1.28 0.775 4.24 J B870.49 21-jun-18 375-78-5 ND 1.05 4.24 J B870.49 21-jun-18 375-78-5 ND 1.0 4.24 J B870.49 21-jun-18 375-78-5 ND 1.0 4.24 J B870.49 21-jun-18 375-97-2 ND 1.0 4.24 J B870.49 21-jun-18 8 375-97-2 ND 1.0 4.24 J B870.49 21-jun-18 8 375-97-2 ND 0.993 4.24 J B870.49 21-jun-18 8 375-97-2 ND 0.885 4.24 J B870.49 21-jun-18 8 375-97-2 ND 0.885 4.24 J B870.49 21-jun-18 8 375-97-2 ND 0.885 4.24	Name: Project:	Eastern Analytical, Inc. 182869 NH 3191		Matrix: Date Coll		Lab S Date	1801266-0 14-Jun-18	3 10:18	Column:	BEH C18	
	Analyte		CAS Number	Conc. (ng/L)	MDL		Batch	Extracted	Samp Size	Analyzed	Dilution
2706-90-33 207 1.36 4.24 1 B8F0149 21-lun-18 307-2244 ND 2.31 4.24 4.24 B8F0149 21-lun-18 307-2244 ND 2.31 4.24 B8F0149 21-lun-18 307-2244 ND 2.31 4.24 B8F0149 21-lun-18 307-2244 ND 1.00 4.24 B8F0149 21-lun-18 307-2244 ND 1.00 6.690 4.24 B8F0149 21-lun-18 307-29-54 ND 0.993 4.24 B8F0149 21-lun-18 307-29-54 ND 0.898 4.24 B8F0149 21-lun-18 307-29-54 ND 0.888 4.24 B8F0149 21-lun-18 307-29-54 ND 0.885 4.24 B8F0149 21-lun-18 307-29-54 ND 1.75 4.24 B8F0149 21-lun-18 307-29-54 ND 1.75 4.24 B8F0149 21-lun-18 307-29-54 ND 1.75 4.24 B8F0149 21-lun-18 307-29-54 ND 0.839 4.24 B8F0149 21-lun-18 307-29-54 ND 0.253 4.24 B8F0149 21-lun-18 307-29-29 ND 0.253 4.24 B8F0149	PFBA	Commence Control to the Commence of Section and Labelland Section (Section 2017)	375-22-4	1.28	0.773	4.24 J	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	
ND 1.90	PFPeA	a shadd 1995 a dan ee camaat San Waa San Waa ind an oo	2706-90-3	2.07	1.36	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	1
ND 231 4.24 B8F0149 21-lm-18 375-85-9 2.61 0.625 4.24 B8F0149 21-lm-18 276-95-72 ND 1.00 4.24 B8F0149 21-lm-18 276-95-72 ND 1.00 4.24 B8F0149 21-lm-18 276-95-72 ND 2.12 2.12 B8F0149 21-lm-18 275-92-8 ND 0.993 4.24 B8F0149 21-lm-18 275-92-8 ND 0.898 4.24 B8F0149 21-lm-18 275-92-8 ND 0.888 4.24 B8F0149 21-lm-18 275-92-8 ND 0.888 4.24 B8F0149 21-lm-18 275-92-1 ND 0.888 4.24 B8F0149 21-lm-18 275-92-1 ND 0.855 4.24 B8F0149 21-lm-18 275-92-1 ND 0.855 4.24 B8F0149 21-lm-18 275-92-1 ND 1.15 4.24 B8F0149 21-lm-18 21-lm	PFBS		375-73-5	¥	1.90	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	
175-85-9 2.61 0.026 4.24 1 B810149 21-lun-18 335-46-1 1.00 0.090 4.24 B810149 21-lun-18 335-67-1 1.50 0.090 4.24 B810149 21-lun-18 335-67-1 1.50 0.090 4.24 B810149 21-lun-18 335-67-2 ND 0.093 4.24 B810149 21-lun-18 335-76-2 ND 0.858 4.24 B810149 21-lun-18 335-76-2 ND 0.858 4.24 B810149 21-lun-18 4.24 B	PFHxA	C Total District Manager Country Country and Country of the Countr	307-24-4	N	2.31	4.24	B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	_
1.10	РҒНрА		375-85-9	2,61	0.626		B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	
MD 27619-972 ND 2.12 4.24 B870149 21-lun-18	PFHxS		355-46-4	ND	1.00	4.24	B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	1
	6:2 FTS		27619-97-2	ð	2.12	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	
ND	PFOA	orionnemican kionimannemicanemia mascate kommuteatu na kum	335-67-1	1.50	0.690	4.24 J	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	_
NI	PFHpS		375-92-8	ið	0.993	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	
No. 1784-y1-6 ND 1.88 4.24 1887-y1-9 ND 0.855 4.24 1887-y1-9 21-Jun-18 S. 335-76-2 ND 0.855 4.24 1887-y1-9 21-Jun-18 S. 335-76-2 ND 1.58 4.24 1887-y1-9 21-Jun-18 S. 335-76-2 ND 1.75 4.24 1887-y1-9 21-Jun-18 S. 4.24	PFNA	The second secon	375-95-1	ND	0.858	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	-
ND 1763-22-1 ND 1.58 4.24 B8F0149 21-Jun-18 53AA 2355-31-9 ND 1.58 4.24 B8F0149 21-Jun-18 53AA 2355-31-9 ND 1.75 4.24 B8F0149 21-Jun-18 53AA 2391-30-6 ND 1.75 4.24 B8F0149 21-Jun-18 4.24 B8F0149	PFOSA		754-91-6	ND	1.88	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	
S 303-70-Z ND 1.38 4.24 BSR0149 21-Jun-18 SAA 2355-31-9 ND 1.15 4.24 BER0149 21-Jun-18 AA 2355-31-9 ND 1.15 4.24 BER0149 21-Jun-18 AA 2991-50-6 ND 1.15 4.24 BER0149 21-Jun-18 AA 2058-94-8 ND 1.30 4.24 BER0149 21-Jun-18 SA 307-55-1 ND 0.839 42.4 BER0149 21-Jun-18 SA 405-60-2-8 ND 0.839 42.4 BER0149 21-Jun-18 SA 705-06-7 ND 0.800 4.24 BER0149 21-Jun-18 A 715-50-9-2 ND 0.523 4.24 BER0149 21-Jun-18 SE 1691-99-2 ND 6.43 21.2 BER0149 21-Jun-18 SE 1691-99-2 ND 10.0 21.2 BER0149 21-Jun-18 PEDA <	PFOS	For subfact of the control of the forest of the control of the con	1763-23-1	j	0.855	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	¥. —
SAA 2355-31-9 ND 1.75 4.24 B8F0149 21-m-18 IAA 2991-50-6 ND 1.45 4.24 B8F0149 21-m-18 IAA 2991-50-6 ND 1.45 4.24 B8F0149 21-m-18 A 2058-94-8 ND 1.30 4.24 B8F0149 21-m-18 A 307-55-1 ND 0.839 4.24 B8F0149 21-m-18 SA 31506-32-8 ND 4.06 21.2 B8F0149 21-m-18 SA 77625-94-8 ND 0.523 4.24 B8F0149 21-m-18 SA 77625-94-8 ND 0.523 4.24 B8F0149 21-m-18 SA 4151-50-2 ND 0.523 4.24 B8F0149 21-m-18 DA 4205-19-5 ND 0.312 4.24 B8F0149 21-m-18 DA 424 21-m-18 B8F0149 21-m-18 B8F0149 21-m-18 DA 12-m-18 <td>SO ETC</td> <td></td> <td>30108-3<i>1-1</i></td> <td></td> <td>7 18</td> <td>4 24</td> <td>B8F0149</td> <td>21-Jun-18</td> <td>0.1181</td> <td>08-Jul-18 10:40</td> <td>-</td>	SO ETC		30108-3 <i>1-1</i>		7 18	4 24	B8F0149	21-Jun-18	0.1181	08-Jul-18 10:40	-
AA 2991-50-6 ND 1.45 4.24 B8F0149 21-Inn-18 A 2008-94-8 ND 1.11 4.24 B8F0149 21-Inn-18 A 2008-94-8 ND 1.11 4.24 B8F0149 21-Inn-18 A 307-55-1 ND 0.839 4.24 B8F0149 21-Inn-18 SA 31506-32-8 ND 0.839 4.24 B8F0149 21-Inn-18 SA 72629-94-8 ND 0.523 4.24 B8F0149 21-Inn-18 SA 7060-19-5 ND 0.800 4.24 B8F0149 21-Inn-18 SA 4051-50-2 ND 0.312 4.24 B8F0149 21-Inn-18 SE 2148-09-7 ND 0.312 4.24 B8F0149 21-Inn-18 SE 2448-09-7 ND 0.312 4.24 B8F0149 21-Inn-18 BE 15 ND 10.0 10.0 21.2 B8F0149 21-Inn-18 B	MeFOSAA		2355-31-9	ð	1.75	424	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	,
A 2058-94-8 ND 1.11 4.24 B870149 21-Jun-18 A 335-77-3 ND 0.839 4.24 B870149 21-Jun-18 A 3150-32-8 ND 0.839 4.24 B870149 21-Jun-18 SA 3150-32-8 ND 4.06 21.2 B870149 21-Jun-18 AA 72629-94-8 ND 0.523 4.24 B870149 21-Jun-18 AA 376-66-7 ND 0.800 4.24 B870149 21-Jun-18 AA 4151-50-2 ND 0.312 4.24 B870149 21-Jun-18 DA 67905-19-5 ND 0.312 4.24 B870149 21-Jun-18 SE 21448-09-7 ND 0.43 21.2 B870149 21-Jun-18 SE 1691-99-2 ND 10.0 21.2 B870149 21-Jun-18 PFBA IS 90.6 60 - 130 B870149 21-Jun-18 BFF0149 12-Jun-18 <td>EtFOSAA</td> <td>C</td> <td>2991-50-6</td> <td>ND</td> <td>1.45</td> <td>4.24</td> <td>B8F0149</td> <td>21-Jun-18</td> <td>$0.118\mathrm{L}$</td> <td>08-Jul-18 10:40</td> <td>_</td>	EtFOSAA	C	2991-50-6	ND	1.45	4.24	B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	_
A 335-77-3 NID 1.30 4.24 B8F0149 21-Iun-18 SA 3150-32-8 NID 0.839 4.24 B8F0149 21-Iun-18 AA 72629-94-8 NID 0.839 4.24 B8F0149 21-Iun-18 AA 72629-94-8 NID 0.800 4.24 B8F0149 21-Iun-18 AA 376-06-7 NID 0.800 4.24 B8F0149 21-Iun-18 DA 467905-19-5 NID 5.41 21.2 B8F0149 21-Iun-18 BSE 1691-99-2 NID 6.43 21.2 B8F0149 21-Iun-18 PFBA 1S 100 60 - 130 B8F0149 21-Iun-18 PFBA IS 90.6 60 - 130 B8F0149 21-Iun-18 PFBA IS 90.6 60 - 150 B8F0149 21-Iun-18 PFBA IS 94.4 70 - 130 B8F0149 21-Iun-18 PFBA IS 94.0 60 - 130 B8F	PFUnA		2058-94-8	A	:	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	1
A 307-52-1 1006-32-8 ND ND 0.839 0.839 4.24 4.24 B8F0149 B8F0149 21-1un-18 21-1un-18 B8F0149 Extracted 21-1un-18 B8F0149 21-1un-18 21-1un-18 B8F0149 B8F0149 21-1un-18 B8F0149 21-1un-18 21-1un-18 B8F0149 B8F0149 21-1un-18 B8F0149 21-1un-18 21-1un-18 B8F0149 B8F0149 21-1un-18 B8F0149 B8F0149 21-1un-18 B8F0149 21-1un-18 F0A 15 94 40-150 B8F0149 21-1un-18 21-1un-18 21-1un-18<	PFDS		335-77-3	I N	1.30	4.24	B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	- -
No. 1,000-32-8 ND 1,000 21.2 EBF0149 21-Jun-18 27-629-94-8 ND 0.523 4.24 EBF0149 21-Jun-18 27-6-6-7 ND 0.800 4.24 EBF0149 21-Jun-18 27-6-6-7 ND 0.800 4.24 EBF0149 21-Jun-18 27-6-6-7 ND 0.312 4.24 EBF0149 21-Jun-18 27-6-6-7 ND 0.312 4.24 EBF0149 21-Jun-18 27-6-6-7 ND 0.312 4.24 EBF0149 21-Jun-18 27-6-6-7 ND 1.00 27-2 EBF0149 21-Jun-18 27-2 EBF0149	PHD0A		307-55-1	Í	0.839	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	•
10025-94-6 ND 10.00 14.24 B8F0149 21-Jun-18 15.000 12.	MerOSA		31300-32-8	1	4.00	7.17	Б810149	91-Tub-12	0.118 L	08-JUI-18 10:40	# -
A151-50-2 ND 5.41 21.2 B8F0149 21-Jun-18 67905-19-5 ND 0.312 4.24 B8F0149 21-Jun-18 1691-99-7 ND 10.0 21.2 B8F0149 21-Jun-18 Standards Type ND 10.0 21.2 B8F0149 21-Jun-18 PeA IS 100 60-130 B8F0149 21-Jun-18 BS IS 90.6 60-150 B8F0149 21-Jun-18 BS IS 135 60-150 B8F0149 21-Jun-18 HXA IS 104 70-130 B8F0149 21-Jun-18 HPA IS 103 60-150 B8F0149 21-Jun-18 HYS IS 104 60-150 B8F0149 21-Jun-18 HPA IS 103 60-130 B8F0149 21-Jun-18 HYS 15 16 15 B8F0149 21-Jun-18 HYS 15 16 15 B8F0149	PFTeDA	and a high district and in the constant	376-06-7	N i	0.800	4.24	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	_
67905-19-5 NID 0.312 4.24 B8F0149 21-Jun-18 24448-09-7 ND 6.43 21.2 B8F0149 21-Jun-18 85 mandards Type % Recovery Limits Qualifiers Batch Extracted BA IS 100 60 - 130 B8F0149 21-Jun-18 PeA IS 90.6 60 - 150 B8F0149 21-Jun-18 BS IS 94.4 70 - 130 B8F0149 21-Jun-18 HXA IS 94.4 70 - 130 B8F0149 21-Jun-18 HBA IS 94.4 70 - 130 B8F0149 21-Jun-18 HXA IS 94.4 70 - 130 B8F0149 21-Jun-18 HBA IS 95.0 60 - 130 B8F0149 21-Jun-18 HBA IS 95.0 60 - 130 B8F0149 21-Jun-18 HBA IS 95.0 60 - 130 B8F0149 21-Jun-18 HBA B8F0149 21-Jun-18 <td>EtFOSA</td> <td></td> <td>4151-50-2</td> <td>Ŧ</td> <td>5,41</td> <td>21.2</td> <td>B8F0149</td> <td>21-Jun-18</td> <td>0.118L</td> <td>08-Jul-18 10:40</td> <td></td>	EtFOSA		4151-50-2	Ŧ	5,41	21.2	B8F0149	21-Jun-18	0.118L	08-Jul-18 10:40	
2/448/09-7 ND 6.43 21.2 B8f0149 21.5m-18 1691-99-2 ND 10.0 21.2 B8f0149 21-Jun-18 Standards Type % Recovery Limits Qualifiers Batch Extracted BA IS 100 60 - 130 B8F0149 21-Jun-18 PEA IS 90.6 60 - 150 B8F0149 21-Jun-18 BS IS 94.4 70 - 130 B8F0149 21-Jun-18 HyA IS 104 60 - 150 B8F0149 21-Jun-18 HYAS IS 103 60 - 150 B8F0149 21-Jun-18 PFIS IS 103 60 - 130 B8F0149 21-Jun-18 OA IS 129 40 - 150 B8F0149 21-Jun-18 OA IS 150 B8F0149 21-Jun-18 OSA 15 95.0 60 - 130 B8F0149 21-Jun-18 OSA 15 95.0 60 - 130 B8F014	PFHxDA		67905-19-5	ND	0.312	4.24	B8F0149	21-Jun-18	0.118L	08-Jul-18 10:40	_
IStandards Type % Recovery Limits Qualifiers Barch Extracted PBA IS 100 60 - 130 60 - 130 Barch Extracted PBS IS 90.6 60 - 150 Barch 21-Jun-18 PBS IS 94.4 70 - 130 Barch 21-Jun-18 THXA IS 94.4 70 - 130 Barch 49 21-Jun-18 PHAS IS 104 60 - 150 Barch 49 21-Jun-18 PHXA IS 103 60 - 130 Barch 49 21-Jun-18 PHXA IS 103 60 - 130 Barch 49 21-Jun-18 PHXA IS 103 60 - 130 Barch 49 21-Jun-18 PHXB IS 103 60 - 130 Barch 49 21-Jun-18 PHXB IS 129 40 - 150 Barch 49 21-Jun-18 PHXB IS 95.0 60 - 130 Barch 49 21-Jun-18 PHXB IS 95.0 60 - 130 Barch 49	MeFOSE		24448-09-7	Ā	6,43	21.2	B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	
ndards Type % Recovery Limits Qualifiers Batch Extracted IS 1000 60 - 130 88F0149 21-Jum-18 IS 90.6 60 - 150 88F0149 21-Jum-18 IS 135 60 - 150 88F0149 21-Jum-18 IS 104 70 - 130 88F0149 21-Jum-18 IS 103 60 - 130 88F0149 21-Jum-18 IS 129 40 - 150 88F0149 21-Jum-18 IS 95.0 60 - 130 88F0149 21-Jum-18 M 11S 89.9 50 - 130 88F0149 21-Jum-18 M 11S 89.9 50 - 130 88F0149 21-Jum-18 M 11S 89.9 50 - 130 88F0149 21-Jum-18 M 11S 20 - 150 88F0149 21-Jum-18	EtFOSE		1691-99-2	ND	10.0	21.2	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	ļ.
IS 100 60 - 130 B8F0149 21-Jun-18 135 90.6 60 - 150 B8F0149 21-Jun-18 135 601 150 B8F0149 21-Jun-18 135 135 601 150 B8F0149 21-Jun-18 135 120 60 - 130 B8F0149 21-Jun-18 135 129 40 - 150 B8F0149 21-Jun-18 135 129 40 - 150 B8F0149 21-Jun-18 135 95.0 60 - 130 B8F0149 21-Jun-18 135 95.0 60 - 130 B8F0149 21-Jun-18 135 89.9 50 - 130 B8F0149 21-Jun-18 135 89.9 135	Labeled Standards	rds	Туре	% Recovery	Lin		Batch	Extracted	Samp Size	Analyzed]	Dilution
IS 90.6 60 - 150 B8F0149 21-Jun-18 IS 135 60 150 B8F0149 21-Jun-18 IS 94.4 70 - 130 B8F0149 21-Jun-18 IS 104 70 - 130 B8F0149 21-Jun-18 IS 103 60 - 130 B8F0149 21-Jun-18 IS 129 40 - 150 B8F0149 21-Jun-18 IS 95.0 60 - 130 B8F0149 21-Jun-18 IS 89.9 50 - 130 B8F0149 21-Jun-18 IS 89.9 50 - 130 B8F0149 21-Jun-18 A B8F0149 21-Jun-18	13C3-PFBA		IS	100	60	- 130	B8F0149	21-Jun-18	0.118L	08-Jul-18 10:40	
IS 135 60 - 150 B8F0149 21-Jun-18 A IS 94.4 70 - 130 B8F0149 21-Jun-18 A IS 104 60 - 150 B8F0149 21-Jun-18 B IS 103 60 - 130 B8F0149 21-Jun-18 B IS 95.0 60 - 130 B8F0149 21-Jun-18 B 1S 95.0 60 - 130 B8F0149 21-Jun-18 B 89.9 50 - 130 B8F0149 21-Jun-18	13C3-PFPeA		IS	90.6	60 -		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	_
A IS 94.4 70 - 130 B8F0149 21-Jun-18 A IS 104 60 - 150 B8F0149 21-Jun-18 S IS 103 60 - 130 B8F0149 21-Jun-18 S 129 40 - 150 B8F0149 21-Jun-18 B 95.0 60 - 130 B8F0149 21-Jun-18 B 89.9 50 130 B8F0149 21-Jun-18 A 1S 46.0 20 - 150 B8F0149 21-Jun-18	13C3-PFBS		S	135	60.		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	
X IS 104 60 - 150 B8F0149 21-Jun-18 S IS 103 60 - 130 B8F0149 21-Jun-18 S IS 129 40 - 150 B8F0149 21-Jun-18 IS 95 0 60 - 130 B8F0149 21-Jun-18 A IS 89.9 50 - 130 B8F0149 21-Jun-18 A IS 46.0 20 - 150 B8F0149 21-Jun-18	13C2-PFH _x A		IS	94,4	70 -	- 130	B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	1
S IS 103 60 - 130 B8F0149 21-Jun-18 S 129 40 - 150 B8F0149 21-Jun-18 IS 95.0 60 - 130 B8F0149 21-Jun-18 IS 95.0 60 - 130 B8F0149 21-Jun-18 S 95.0 50 - 130 B8F0149 21-Jun-18 A IS 89.9 20 - 150 B8F0149 21-Jun-18 A 15 20 - 150 B8F0149 21-Jun-18	13C4-PFHpA		ß	104	60	150	B8F0149	21-Jun-18	0.118L	08-Jul-18 10:40	
S 129 40 - 150 B8F0149 21-Jun-18 IS 95.0 60 - 130 B8F0149 21-Jun-18 B8F0149 21-Jun-18 S9.9 50 130 B8F0149 21-Jun-18 S9.9 20 - 150 B8F0149 21-Jun-18 A IS 46.0 20 - 150 B8F0149 21-Jun-18	1802-PFHxS	alkaniniaaninintotata taana ka innaanintotat antachidusekan leht sant	SI	103	• 09		B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	1
IS 95.0 60-130 B8F0149 21-Jun-18 89.9 50 - 130 B8F0149 21-Jun-18 46.0 20 - 150 B8F0149 21-Jun-18	3C2-6:2 FTS		IS	129	40.		B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	<u>, , , , , , , , , , , , , , , , , , , </u>
18 46.0 20 - 150 B8F0149 21-Jun-18	13C2-PFOA		SI	95.0	.09		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	_
nder de de la comparte del la comparte de la comparte del la comparte de la comparte del la comparte de la comparte de la comparte del la comparte	13C3-PFNA		75 G	89,9 46.0	.0c	150	B&F0149	21-Jun-18	0.11 0 L	08-Jul-18 10:40	1
(C) (S)	13C8_PEOS		7 :	943	50		R8F0149	71_T18	0 11 8 T	00 T-1 10 10:70	100 400 100 100 100 100 100 100 100 100



Sample ID: TP-1							PFAS Isot	PFAS Isotope Dilution Method	Method
Client Data				Laboratory Data					
H	nc.	Matrix:	Aqueous	Lab Sample:	1801266-03		Column:	BEH C18	
••		Date Collected:	07-Jun-18 09:15	Date Received:	14-Jun-18 10:18	10:18			
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFDA	IS	80.6	60 - 130		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	,
13C2-8:2 FTS	IS	149	40 - 150		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	
d3-MeFOSAA	IS	110	50 - 150		B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40)
d5-EtFOSAA	IS	119	50 - 150		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	_
13C2-PFUnA	SI	87.5	60 - 130		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	-
13C2-PFDoA	IS	91.8	30 - 130		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	_
d3-MeFOSA	IS	5,90	10 - 130	Ħ	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	_
13C2-PFTeDA	IS	117	20 - 150		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	_
d5-EtFOSA	S	6.70	10 - 150	П	B8F0149	21-Jun-18	0.118 L	08-Jul-18 10:40	_
13C2-PFHxDA	SI	142	20 - 150		B8F0149	21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	
d7-MeFOSE	IS	53.7	10-150		B8F0149 21-Jun-18	21-Jun-18	0.118 L	08-Jul-18 10:40	-
d9-EtFOSE	IS	48.3	10 - 150		B8F0149	B8F0149 21-Jun-18	$0.118\mathrm{L}$	08-Jul-18 10:40	1
MDL - Method Detection Limit RL	RL - Reporting limit	Results reported to MDL	ADL.	When rej	orted, PFHxS, P	FOA, PFOS, M	FOSAA and EtF	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both	

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.



Sample ID: TP-3	P-3							PFAS Isoto	PFAS Isotope Dilution Method	lethod
Client Data					Laboratory Data					
Name: Project:	Eastern Analytical, Inc. 182869 NH 3191	·	Matrix: Date Collected:	Aqueous ted: 07-Jun-18 12:45	Lab Sample: Date Received:	1801266-05 14-Jun-18 10:18	0:18	Column:	BEH C18	
Analyte		CAS Number	Conc. (ng/L)	MDL	RL Qualifiers	Batch	Extracted S	Samp Size	Analyzed I	Dilution
PFBA		375-22-4	3.38	0.760	4.17	B8F0149	21-Jun-18		51	
PFPeA	unimid to the and the months of the section of the	2706-90-3	6.79	1.33	4.17	B8F0149	21-Jun-18	1000	08-Jul-18 10:51	—
PFBS		375-73-5	ð	187	4.17	B8F0149	21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:51	-
PFH_XA		307-24-4	ND	2.27	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	_
PFHpA		375-85-9	10,7	0.616	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
PFHxS	λολεκλού διάλου πελοκλού κλημολολού κλολού γλαλοκλού βρολεκλου είναι ότι το Χ.Α.Α.Ολόλου το	355-46-4	1.44	0.987	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	1
6:2 FTS	the State of the S	27619-97-2	ð	2.09	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
PFOA	ratarida ta tan intensituanaliana no mintananten mintan afron	335-67-1	48.6	0.679	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	1
PFHpS		375-92-8	ď	0.977	4.17	B8F0149	21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:51	
PFNA		375-95-1	ND	0.845	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	_
PFOSA		754-91-6	Ä	1.85	4.17	B8F0149	21-Jun-18		08-Jul-18 10:51	-
PFOS		1763-23-1	ND	0.841	4.17	B8F0149	21-Jun-18		08-Jul-18 10:51	_
PFDA		335-76-2	j	155	4.17	B8F0149	21-Jun-18	0.120L	08-Jul-18 10:51	
8:2 FTS		39108-34-4	ND	2.15	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	_
MeFOSAA		2355-31-9	Ä	1.72	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
EtFOSAA	Confidential and the second control of the s	2991-50-6	ND	1.43	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	_
PFUnA		2058-94-8	ND	1.09	4.17	B8F0149	21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:51	1
PFDS		335-77-3	ND	1.28		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	_
PFDoA		307-55-1	J	0.826	4.17	B8F0149	21-Jun-18		08-Jul-18 10:51	
MeFOSA		31506-32-8	ď	3.99	20.9	B8F0149	21-Jun-18		08-Jul-18 10:51	_
PFTrDA		72629-94-8	Ŋ	0.515	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	1
PFTeDA	month of the first	376-06-7	ND	0.787	4.17	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	_
EtFOSA		4151-50-2	Ä	5,33	20.9	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
PFHxDA		67905-19-5	0.390	0.307	4.17 J	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	1
MeFOSE		24448-09-7	Ŋ	6.33	20.9	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
EtFOSE		1691-99-2	ND	9.84	20.9	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	1
Labeled Standards	ds .	Type	% Recovery	Limits	Qualifiers	Batch	Extracted :	Samp Size	Analyzed J	Dilution
13C3-PFBA		SI	103	60 - 130	0	B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	-
13C3-PFPeA		IS	95.2	60 - 150		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
13C3-PFBS		IS	133	60 - 150		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
13C2-PFHxA	i kan turkin in na Khambadi Misamoni isha na Kabada ka kabada kabada kabada kabada kabada kabada kabada kabada	SI	98.4	70 - 130	O .	B8F0149	21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:51	1
13C4-PFHpA		IS		60 - 150		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
1802-PFHxS	ilon ilinnandilakannanna malam en malamanlad di mis more m	IS	99.8	60 - 130	0	B8F0149	21-Jun-18	$0.120\mathrm{L}$	08-Jul-18 10:51	1
13C2-6:2 FTS		IS	132	40 - 150		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
13C2-PFOA	of the control of the	SI	102	60 - 130		B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
13C5-PFNA		5	97,8			B8F0149	21-Jun-18	0.120 L	08-Jul-18 10:51	
I3Co-PFOSA		OT.	0.70	051 - 07 001 - 07		Boro149	21 T 10	0.120 L	08-JUI-18 10:51	- -
1200-1100				ŧ						



	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both	FOSAA and EtF	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include b	ported, PFHxS,	When re	DL.	Results reported to MDL.	RL - Reporting limit	MDL - Method Detection Limit
1	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149		10 - 150	47.0	IS	19-EtFOSE
	08-Jul-18 10:51	$0.120\mathrm{L}$	B8F0149 21-Jun-18	B8F0149		10 - 150	46.1	2	d7-MeFOSE
_	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149		20 - 150	130	SI	13C2-PFHxDA
	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149		10 - 150	5,30	IS	d5-EtFOSA
,_	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149	and the state of t	20 - 150	111	SI	3C2-PFTeDA
	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149	a	10 - 130	4.30	IS	d3-MeFOSA
_	08-Jul-18 10:51	$0.120\mathrm{L}$	21-Jun-18	B8F0149	and distributions are an area of the feature of the	30 - 130	84.1	SI	13C2-PFDoA
	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149		60 - 130	83,1	${ m IS}$	13C2-PFUnA
<u>,</u>	08-Jul-18 10:51	$0.120\mathrm{L}$	21-Jun-18	B8F0149		50 - 150	108	SI	d5-EtFOSAA
1	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149		50 - 150	104	IS	d3-MeFOSAA
<u>_</u>	08-Jul-18 10:51	$0.120\mathrm{L}$	21-Jun-18	B8F0149		40 - 150	136	IS	13C2-8:2 FTS
	08-Jul-18 10:51	0.120 L	21-Jun-18	B8F0149		60 - 130	92.6	S	I3C2-PFDA
Dilution	Analyzed D	Samp Size	Extracted	Batch	Qualifiers	Limits	% Recovery	Type	Labeled Standards
	BEH C18	Column:)5 10:18	1801266-05 14-Jun-18 10:18	Lab Sample: Date Received:	Aqueous 07-Jun-18 12:45	Matrix: Date Collected:	tical, Inc. 191	Name: Eastern Analytical, Inc. Project: 182869 NH 3191
					Laboratory Data				Client Data
ethod	PFAS Isotope Dilution Method	PFAS Isot							Sample ID: TP-3
John Markey &	A to the first and material sections for the								



Sample ID: Method Blank	ethod Blank									VAL	VAL - PFAS
Client Data	Fortom Application Inc.			2 1	Labo	boratory Data					
Project:	182869 NH 3191		Mairix:	Solid	Lat	Lab Sample:	B8F0179-BLK1	3LK1	Column:	BEH C18	
Analyte		CAS Number	Conc. (ng/g)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	And the second of the second o	375-22-4	ND	0.140	2.00	Company of the compan	B8F0179	22-hin-18	100 0	04_1.1.18 10.18	
PFPeA	and the first of t	2706-90-3	ND	0.202	2.00		B8F0179	22-Jun-18	1.00 g	04-Inl-18 19:18	1
PFBS		375-73-5	Ā	0.363	2,00		B8F0179	22-Jun-18	1 00 g	04-Int-18 19:18	- → •
PFHxA		307-24-4	ND	0.203	2.00	Consider the second state of the second seco	B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	
PFHpA		375-85-9	ď	0.205	2.00		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	
PFHxS	d volt det determinent Consequents i solden 2. determinents i utsantost. 3. determinents det su	355-46-4	ND	0.310	2.00	3 4 4	B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	<u> </u>
6:2 FTS		27619-97-2	Ä	0.229	2.00		B8F0179	22-Jun-18	1.00 €	04-Jul-18 19:18	
PFOA	emi'umun maddamaaaaaaaaaaaaaaaaaaa laa la maan	335-67-1	ND	0.236	2.00	Charles and Charle	B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	_
PFHpS		375-92-8	Ä	0.170	2.00		B8F0179	22-Jun-18	1.00 ₪	04-Jul-18 19:18	
PFNA	the control and of the control and the control	375-95-1	Ŋ	0.178	2.00		B8F0179	22-Jun-18	1.00 €	04-Jul-18 19:18	-
PFOSA		754-91-6	ð	0.227	2,00		B8F0179	22-Jun-18		04-Jul-18 19:18	
PFOS	en ender en en en beskelet in de en ken en en en de endere en	1763-23-1	ND	0.845	2.00		B8F0179	22-Jun-18		04-Jul-18 19:18	_
PFDA		335-76-2	ð	0.256	2,00		B8F0179	22-Jun-18	1.00 €	04-Jul-18 19:18	
8:2 FTS		39108-34-4	ND	0.285	2.00		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	_
MeFOSAA		2355-31-9	N	0.302	2,00		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	-
EUFOSAA DEULS A		2991-50-6	NE NE	0.321	2.00	erron errollera in den i de samme errollera	B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	_
PFDS		335-77-3		0.524	2.00		B8F01/9	22-Jun-18	1.00 g	04-Jul-18 19:18	
PFDoA		307-55-1	ND :	0.276	2.00		B8F0179	22-Jun-10 22-Tun-18	1.00 g	04-Jul-18 19:18 04-Jul-18 19:18	-
MeFOSA		31506-32-8	ND	0.943	10.0		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19·18	-
PFTrDA		72629-94-8	Ŋ	0.122	2,00	3 () () () () () () () () () (B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	<u> </u>
PFTeDA	The second state of the second state of the second	376-06-7	ND.	0.198	2.00		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	1
EtFOSA		4151-50-2	ŊD	1.34	10,0		B8F0179	22-Jun-18		04-Jul-18 19:18	-
PFH _x DA	i direconde cercalida de desembro, crimo escicio em	67905-19-5	ND	0.0349	2.00		B8F0179	22-Jun-18		04-Jul-18 19:18	-
MeFOSE		24448-09-7	Ð	1.95	10,0		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	
EtFOSE		1691-99-2	ND	1.01	10.0		B8F0179	22-Jun-18	$1.00\mathrm{g}$	04-Jul-18 19:18	1
Labeled Standards	ls	Туре	% Recovery		Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS	82.9		60 - 130		B8F0179	22-Jun-18	1.00 g	:18	_
13C3-PFPeA		IS	80.6		60 - 150		B8F0179	22-Jun-18		04-Jul-18 19:18	1
13C3-PFBS		IS	85.0		60 - 150		B8F0179	22-Jun-18		04-Jul-18 19:18	1
13C2-PFHxA	the design of the declaration of the first o	IS	82.8	to thems returns the decreased by the teachers of the state of the sta	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:18	_
13C4-PFHpA		IS	84,6		60 - 150		B8F0179	22-Jun-18		04-Jul-18 19;18	-
1802-PFHxS	de some definition de la company de la compa	SI	73.8		60 - 130	ofere to discussion on animal landstated lighted	B8F0179	22-Jun-18	$1.00~\mathrm{g}$	04-Jul-18 19:18	_
13C2-6:2 F1S		IS	76.8		40 - 150		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:18	-
I3CZ-PFOA		SI	81.5	The second secon	60 - 130		B8F0179	22-Jun-18		04-Jul-18 19:18	_
13C3-PFNA		5 IS	74.7		144.4		B8F0179	22-Jun-18		04-Jul-18 19:18	
13C8-PFOSA		5 57	37.4				B8F0179	22-Jun-18		04-Jul-18 19:18	_
LOCO-FFOO		5	2,08		60 - 130		B8F0179) Tell Tell	30.	04 1-1 10 10.10	_



	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EfFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other	FOSAA and EtFoar isomer is repo	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EfFOSAA include by linear and branched isomers. Only the linear isomer is reported for all other	ported, PFHxS, id branched ison	When r linear a		ıt. əight.	The results are reported in dry weight. The sample size is reported in wet weight.	The results are reported in The sample size is reported.		RL - Reporting limit	RL - Repo	tion Limit	MDL - Method Detection Limit
1	04-Jul-18 19:18	$1.00\mathrm{g}$	22-Jun-18	B8F0179			10 - 150		21.0	2	IS			d9-EtFOSE
L	04-Jul-18-19:18	1.00 g	B8F0179 22-Jun-18	B8F0179			10 - 150		9,1		IS			d7-MeFOSE
_	04-Jul-18 19:18	$1.00~\mathrm{g}$	22-Jun-18	B8F0179			20 - 150		77.1	7	IS			3C2-PFHxDA
	04-Jul-18 19:18	1.00 g	22-Jun-18	B8F0179	H		10 - 150		3,90	4.1	SI			d5-EtFOSA
_	04-Jul-18 19:18	$1.00~\mathrm{g}$	22-Jun-18	B8F0179			20 - 150		i3.8	6	SI			13C2-PFTeDA
	04-Jul-18 19:18	1.00 g	22-Jun-18	B8F0179	=		10 - 130		3,40	ć	SI			3-MeFOSA
1	04-Jul-18 19:18	$1.00~\mathrm{g}$	22-Jun-18	B8F0179			30 - 130		3.6	(L)	$_{ m IS}$			3C2-PFDoA
	04-Jul-18 19:18	1.00 g	22-Jun-18	B8F0179	Н		60 - 130		42,3	4	IS			13C2-PFUnA
1	04-Jul-18 19:18	1.00 g	22-Jun-18	B8F0179	H	0.00	50 - 150		30.7	(J)	SI			5-EtFOSAA
	04-Jul-18 19:18	1.00 g	22-Jun-18	B8F0179	Ħ		50 - 150		29,1	2	S			d3-McFOSAA
_	04-Jul-18 19:18	$1.00~\mathrm{g}$	22-Jun-18	B8F0179	the state of the s		40 - 150		72.3	3	IS			3C2-8:2 FTS
Ä	04-J _u l-18 19:18	1.00 g	22-Jun-18	B8F0179			60 - 130		60.9	6	IS			3C2-PFDA
Dilution	Analyzed I	Samp Size	Extracted	Batch	Qualifiers		Limits		% Recovery	% R	Type		ls	Labeled Standards
	ВЕН С18	Column:	BLK1	B8F0179-BLK1	Laboratory Data Lab Sample:	Laboi Lab Si		Solid	Matrix:			ytical, Inc. 3191	Eastern Analytical, Inc. 182869 NH 3191	Client Data Name: Project:
VAL - PFAS	VAL-											*	ethod Blanl	Sample ID: Method Blank



Sample ID: OPR	PR										VAL - PFAS	PFAS
Client Data						Labo	oratory Data					
Name: Project:	Eastern Analytical, Inc. 182869 NH 3191		Matrix:	Solid		Lab S	Lab Sample:	B8F0179-BS1	BS1	Column:	BEH C18	
Analyte	C.	CAS Number	Amt Found (ng/g)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed Di	Dilution
РЕВА		375-22-4	10.8	10.0	108	70 - 130		B8F0179			80:	
PFPeA	2	2706-90-3	10.7	10.0	107	70 - 130	Section 2000 and a section of the se	B8F0179	22-Jun-18		04-Jul-18 19:08	
PFBS		375-73-5	11.0	10.0	110	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	.
PFHxA		307-24-4	10.7	10.0	107	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	_
PFHpA		375-85-9	10.8	10.0	108	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	-
PFHxS		355-46-4	11.3	10.0	113	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	_
6:2 FTS	2	27619-97-2	115	10.0	115	60 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	,
PFOA		335-67-1	11.4	10.0	114	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	_
PFHpS		375-92-8	10.2	10.0	102	60 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	₩.
PFNA		375-95-1	9.56	10.0	95.6	70 - 130		B8F0179	22-Jun-18	İ	04-Jul-18 19:08	
PFOSA		754-91-6	11,9	10.0	119	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	-
PFOS		1763-23-1	12.2	10.0	122	70 - 130	Change of the Control of the Million	B8F0179	22-Jun-18	a Araba ana	04-Jul-18 19:08	1
PEDA		335-76-2	11.2	10.0	112	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	
8:2 FTS	3:	39108-34-4	10.1	10.0	101	60 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	1
MeFOSAA		2355-31-9	9.76	10.0	97.6	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	
EtFOSAA	2	2991-50-6	10.3	10.0	103	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	
PFUnA	N	2058-94-8	9.62	10.0	96.2	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	-
PFDS	r in mitternia confloas, addeon cataono condicativo fran a medicina na ponte um.	335-77-3	10.7	10.0	107	60 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	1
PFDoA		307-55-1	10.8	10.0	108	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	
MeFOSA	3	31506-32-8	60.1	50.0	120	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	-
PFTrDA		72629-94-8	11.2	10.0	112	60 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	
PFTeDA		376-06-7	11.8	10.0	118	70 - 130		B8F0179	22-Jun-18	200	04-Jul-18 19:08	1
EtFOSA	4	4151-50-2	53.2	50.0	106	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	
PFHxDA	6	67905-19-5	10.2	10.0	102	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	_
MeFOSE	2	24448-09-7	63.2	50.0	126	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	
EtFOSE		1691-99-2	59.0	50.0	118	70 - 130		B8F0179	22-Jun-18		04-Jul-18 19:08	_
Labeled Standards	ds .		Туре		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed Di	Dilution
13C3-PFBA			SI		79.5	60130	27.00	B8F0179			:08	
13C3-PFPeA			IS		81.3	60- 150	:	B8F0179	22-Jun-18	į	04-Jul-18 19:08	_
13C3-PFBS			SI		75.8	60- 150		B8F0179	22-Jun-18		04-Jul-18 19:08	
13C2-PFHxA	THE THE TRANSPORT OF TH		IS		86.2	70- 130		B8F0179	22-Jun-18		04-Jul-18 19:08	1
13C4-PFHpA			IS		86.9	60- 150		B8F0179	22-Jun-18		04-Jul-18 19:08	-
1802-PFHxS	mannyaha olahihakandan mandan misin besid lami manun mil kasara	novemien der ideoockaander Tabbiedam	IS	4	75.4	60- 130		B8F0179	22-Jun-18		04-Jul-18 19:08	1
13C2-6:2 FTS			IS		92.6			B8F0179	22-Jun-18		04-Jul-18 19:08	1
13C2-PFOA	A A 1001766		IS		87.0	60- 130		B8F0179	22-Jun-18	1.00 g (04-Jul-18 19:08	1
	roer XIII /bb											

Work Order 1801266

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Sample ID: OPR Client Data	OPR					Labor	Laboratory Data				VAL	VAL - PFAS
Name: Project:	Eastern Analytical, Inc. 182869 NH 3191	٠	Matrix:	Solid		Lab Si	Lab Sample:	B8F0179-BS1	§S1	Column:	ВЕН С18	
Labeled Standards	dards		Туре		% Rec	Limits	Qualifiers	Batch	Extracted Samp Size	Samp Size	Analyzed	Dilution
13C5-PFNA			IS		79.1	50- 130		B8F0179 22-Jun-18	22-Jun-18	1.00 g	8	_
13C8-PFOSA			IS		51.4	20- 150		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:08	1
13C8-PFOS			SI			60- 130		B8F0179 22-Jun-18	22-Jun-18	1.00 g	04-Jul-18 19:08	-
13C2-PFDA	nitrami neijanitynitinini i ni milika neikinanitain mathanininini	THE REPORT OF THE PERSON OF TH	IS			60- 130		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:08	1
13C2-8:2 FTS			S			40 150		B8F0179 22-Jun-18	22-Jun-18	1,00 g	04-Jul-18 19:08	-
d3-MeFOSAA	r un traitetride terrationalaterat stad featachterat Chiterraty des consequences	A TANAN AND AND AND AND AND AND AND AND AND	IS			50- 150		B8F0179	22-Jun-18	$1.00~\mathrm{g}$	04-Jul-18 19:08	_
d5-EtFOSAA			S		52.4	50 150		B8F0179	22-Jun-18	1,00 g	04-Jul-18 19:08	-
13C2-PFUnA			IS	-		60-130		B8F0179	22-Jun-18	1.00 g	04-Jul-18 19:08	_
13C2-PFDoA			IS			30- 130		B8F0179	22-Jun-18	1,00 g	04-Jul-18 19:08	
d3-MeFOSA	The state of the s		IS	and interest commentation of the action control and the action of the ac	:	10- 130		B8F0179	22-Jun-18	$1.00~\mathrm{g}$	04-Jul-18 19:08	<u>—</u>
13C2-PFTeDA			SI			20- 150		B8F0179 22-Jun-18	22-Jun-18	1.00 g	04-Jul-18 19;08	_
d5-EtFOSA	makes stand translational train comments are seen in reduce countries on memory and	Survivororine reflere Pelisman Company	IS			10- 150		B8F0179	22-Jun-18	$1.00~\mathrm{g}$	04-Jul-18 19:08	1
13C2-PFHxDA			S			20- 150		B8F0179 22-Jun-18	22-Jun-18	1.00 g	04-Jul-18 19:08	-
d7-MeFOSE			IS	AND THE PERSON OF THE PERSON O		10- 150		B8F0179	22-Jun-18	$1.00~\mathrm{g}$	04-Jul-18 19:08	_
d9-EtFOSE			Z		43.2	10-150		R8F0179 22-1m-18	ວວ_T ₁₁₁₁ _1 ຂ	1 00 o	04-111-18 19:08	



Date Collected:												
Date Collected: 07-Jun-18 09:15 Date Received: 91.38 Date Received: 91.41 Halunt 81 01.88 Schials: 91.25 Schials:	T COVER OF THE LA	1 10 5	20 1 10	101010					100	TO	The second secon	13CO DEOGA
CAS Number Come. (ng/g) MDL RL Coulifier Halum 18 Data Received: Data Received: Halum 18 Data	04_111-18 10:20 1	1 18 G	22_hm_18	B8F0179					707	7		13C5-PFNA
CAS Number Collected: O7-Jun-18 09.15 MOL RL Cquilifers Batch Extracted Samp Size Analyzed Dill	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179					81.8	IS		13C2-PFOA
CAS Number Come. (ng/g) MDL Received. 14 Jun-18 10:18	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179					83.6	IS		13C2-6:2 FTS
CAS Number Cone. (ng/g) MDL Received. 14 Jun-18 10:18	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179					85.2	IS	omendation of a conscious constant and and anti-constant and anti-constant and a constant	1802-PFH _x S
CAS Number Conc. (ug/g) MDL R. R. Conc. (ug/g) MDL R. R. R. R. R. R. R. R	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179					85.7	13		13C4-PFHpA
Date Collected: 07-Jun-18 09:15 Date Received: 14-Jun-18 10:18 CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed Dill 375-224 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 2706-90-3 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-5 ND 0.189 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-5 ND 0.199 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-7 ND 0.219 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.219 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.158 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.129 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.129 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.224 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.238 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.224 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.256 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.256 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.124 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.125 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.124 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.124 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.124 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.184 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.124 0.128 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.124 0.128 B8F0179 22-Jun-18 1.18 g 04-	04-Jul-18 19:29 1	$1.18\mathrm{g}$	22-Jun-18	B8F0179	debundan bur hen in dabbad dasi maken se	in a sign or a constant about the decision.		Additional content of the Content of	89.5	IS	oning Vinkons and one on inventors for each time and one endind between every survivers of	13C2-PFHxA
CAS Number Conc (ng/g) MDL RU Qualifiers H-lum-18 10:18 H-lum-18 10:18 2776-224 ND 0.130 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 375-72-3 ND 0.137 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 377-24-4 ND 0.187 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 377-24-4 ND 0.189 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 377-24-4 ND 0.189 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 377-24-6 ND 0.213 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 378-52-1 ND 0.218 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 378-52-1 ND 0.165 1.86 B8E0179 22-Jun-18 1.18g O4-Jul-18 19:29 378-52-1 ND 0.288 1		1.18 g	22-Jun-18	B8F0179		200	60 - 150		85,8	Z		13C3-PFBS
CAS Number Conc. (ng/g) MDL Et Qualifice 14-Jun-18 10:18	1	1.18 g	22-Jun-18	B8F0179			60 - 150		86.6	IS		13C3-PFPeA
CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed Dilnit 375-5224 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.190 1.28 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.158 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.158 1.2706 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.158 1.2706 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.238 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.244 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.298 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-3 ND 0.298 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.256 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.159 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.127 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.124 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.124 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.124 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.124 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.124 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-4 ND 0.124 1.286 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19-29 1.2706-90-	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179			60 - 130		86:2	IS		13C3-PFBA
Date Collected: 07-Jun-18 09-15 Date Received: 14-Jun-18 10-18		Samp Size	Extracted	Batch	Qualifiers		Limits		% Recovery	Туре	ards	Labeled Standards
Date Collected: 07-Jun-18 09:15 Date Received: 14-Jun-18 10:18 Part Collected: 07-Jun-18 09:15 Part Collected: 07-Jun-18 09:15 Part Collected: 07-Jun-18 09:15 Part Collected: 07-Jun-18 10:18 Part	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		9.28		0.937	ND	1691-99-2		EtFOSE
CAS Number Conc (ng/g) MDL R Date Collected: 07-Jun-18 09:15 Date Received: 91.3 14-Jun-18 10:18 Extracted Samp Size Analyzed 275-22-4 ND 0.139 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-72-5 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.288 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.163 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.163 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.163 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		9.28		1.81	A	24448-09-7		MeFOSE
CAS Number Cont. (ng/g) MDL Received: 14-Jun-18 10:18 Samp Size Analyzed Samp Size	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86	and the factor and	0.0324	ND	67905-19-5	on and the chartest that the constraint and constraint the constraint of the	PFHxDA
CAS Number Conc. (rg/g) MIDL Received: 14-Jun-18 10:18 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids: 91.3 Solids:	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		9,28		1.24	ð	4151-50-2		EtFOSA
CAS Number Conc. (ng/g) MDL R Qualifiers Batch Date Received: 14-Jun-18 10:18 Lym-18 10:18 Analyzed CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed 2705-90-3 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-27-4 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.28 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.216 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.24 1.86 B8F0179 22-Jun-18 1.18 g 04-Ju	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.184	ND	376-06-7		PFTeDA
CAS Number Conc. (ng/g) MDL Received: 14-Jun-18 10:18 21-Jun-18 10:18 Analyzed 375-22-24 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.189 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.219 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.165 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 376-95-1 ND 0.228 </td <td>04-Jul-18 19:29 1</td> <td>1.18 g</td> <td>22-Jun-18</td> <td>B8F0179</td> <td></td> <td>1.86</td> <td></td> <td>0.113</td> <td>Э</td> <td>72629-94-8</td> <td></td> <td>PFTrDA</td>	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.113	Э	72629-94-8		PFTrDA
CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed 2765-29-4 ND 0.130 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-22-4 ND 0.130 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.337 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.213 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.213 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.165 1.86 B8F0179 22-Jum-18 1.18 g 04-Jul-18 19:29 375-92-8	04-Jul-18 19:29 1	$1.18\mathrm{g}$	22-Jun-18	B8F0179		9.28	Address from the contract from the	0.875	ND	31506-32-8	and a contraction of the second of the secon	MeFOSA
CAS Number Conc. (ng/g) MDL R. Conider. H. Qualifiers Batch Extracted Samp Size Analyzed	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.256	Ð	307-55-1		PFDoA
CAS Number Conc. (ng/g) MDL R. Conids: 91.3 Extracted Samp Size Analyzed 375-22-4 ND 0.130 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.288 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-97-2 ND 0.213 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.158 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.158 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.158 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.165 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.211 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.238 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.238 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.238 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.238 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.238 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.238 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.244 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.244 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.244 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.244 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.258 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.258 1.86 B8F0179 22-Jm18 1.18 g 04-Jul-18 19:29 375-92-1 ND 0.258 1.86	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.187	ND	335-77-3	dan salah sakadal dahan sebasah dan sakan sakan sakan salah salah salah sakan sakan sakan sakan sakan sakan sa	PFDS
CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed 375-22-4 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-93-5 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-93-5 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 335-67-1 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.158 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.329	ð	2058-94-8		PFUnA
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CAS Number Conc. (ng/g) MDL RL Qualiffers Batch Extracted Samp Size Analyzed 27706-90-3 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 355-46-4 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 335-92-8 ND 0.288 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 335-92-8 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.215 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.280	B	2355-31-9		MeFOSAA
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Date Collected: 07-Jum-18 09:15 Date Received: 14-Jum-18 10:18	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.238	ð	335-76-2		PFDA
CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed 375-22-4 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.180 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179	mand of the first community and the first community an	1.86		0.784	ND	1763-23-1		PFOS
CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed 2706-90-3 NID 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 NID 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 NID 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 NID 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 NID 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 NID 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-95-1 NID 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 NID 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8		1.18g	22-Jun-18	B8F0179		1.86		0.211	ND.	754-91-6		PFOSA
CAS Number Conc. (ng/g) MDL RECEIVED Valualifiers Batch Extracted Samp Size Analyzed 375-22-4 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.180 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-92-8	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.165	ND	375-95-1	denny desirangen enderformer (1977) de company (1977). Talenda (1978) de la company de la company (1971) de la	PFNA
CAS Number Conc. (ng/g) MDL RL Qualifiers B8F0179 22-Jun-18 118 g 04-Jul-18 19:29 2706-90-3 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 307-24-4 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 307-85-9 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.288 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.288 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 376-9-2 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 376-9-2	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.158	Ŋ	375-92-8		PFHpS
CAS Number Conc. (ng/g) MDL RL Qualifiers B8F0179 22-Jun-18 118 g 04-Jul-18 19:29 2706-90-3 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 307-24-4 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 307-85-9 ND 0.38 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 355-46-4 ND 0.288 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 27619-97-2 ND 0.213 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179	om mac malkačnostikihmenskichmi	1.86	desirables a district term mercen con-	0.219	ND	335-67-1	indicentalification factors of the section of the control of the c	PFOA
CAS Number Conc. (ng/g) MDL RL Qualifiers B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 2706-90-3 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.388 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 355-46-4 ND 0.288 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.213	ð	27619-97-2		6:2 FTS
CAS Number Conc. (ng/g) MDL RL Qualifiers Barch 179 22-Jun-18 1.18 g 04-Jul-18 19:29 2706-90-3 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-85-9 ND 0.190 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179	such and the material than the field of the fact of a deciman.	1.86	Commercial Control And Annies (All Control and Astron	0.288	ND	355-46-4	odnicioskilina i filmilik i jet ispano mjetnos me kantini kinnamo ka kit ji ko iskoniskili.	PFHxS
CAS Number Conc. (ng/g) MDL RL Qualifiers B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 2706-90-3 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 307-24-4 ND 0.188 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.190	ä	375-85-9		PFHpA
CAS Number Conc. (ng/g) MDL RL Qualifiers B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-72-5 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 375-73-5 ND 0.337 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.188	A	307-24-4		PFHxA
CAS Number Conc. (ng/g) MDL RL Qualifiers B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29 2706-90-3 ND 0.187 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.337	₹	375-73-5		PFBS
CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed 1.86 375-22-4 ND 0.130 1.86 B8F0179 22-Jun-18 1.18 g 04-Jul-18 19:29	04-Jul-18 19:29 1	$1.18\mathrm{g}$	22-Jun-18	B8F0179		1.86		0.187	N	2706-90-3	nde addience and takada de and suidebre dad bannelomenteur estana man-	PFPeA
Date Collected: 07-Jun-18 09:15 Date Received: 14-Jun-18 10:18 % Solids: 91.3 CAS Number Conc. (ng/g) MDL RL Qualifiers Batch Extracted Samp Size Analyzed	04-Jul-18 19:29 1	1.18 g	22-Jun-18	B8F0179		1.86		0.130	ND	375-22-4		PFBA
Date Collected: 07-Jun-18 09:15 Date Received: 14-Jun-18 10:18 % Solids: 91.3		Samp Size	Extracted	Batch	Qualifiers	RL		MDL	Conc. (ng/g)	'AS Number	С	Analyte
Date Collected: 07-Jun-18 09:15 Date Received: 14-Jun-18 10:18				91.3	lids:	% So						
			10:18	14-Jun-18	Received:	Date	-18 09:15		Date Collec		182869 NH 3191	Project:
. Matrix: Soil Lab Sample: 1801266-04 Column:	BEH C18	Column:)4	1801266-0	sample:	Lab S			Matrix:		Eastern Analytical, Inc.	Name:
Laboratory Data					ratory Data	Labo						Client Data



	ed for all other	ır isomer is report	linear and branched isomers. Only the linear isomer is reported for all other analytes	1 branched isom	linear and		The sample size is reported in wet weight. Results reported to MDL.	The sample size is report Results reported to MDL.					
	SAA include both	OSAA and EtFO	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both	orted, PFHxS, F	When rep		ted in dry weight.	The results are reported in dry weight.		ting limit	RL - Reporting limit	MDL - Method Detection Limit	M
_	04-Jul-18 19:29	$1.18\mathrm{g}$	22-Jun-18	B8F0179			10 - 150	5.1	36.1	IS		d9-EtFOSE	d9-E
,	04-Jul-18 19:29	1.18 g	B8F0179 22-Jun-18	B8F0179			10 - 150	39	35	IS		d7-MeFOSE	d7-M
_	04-Jul-18 19:29		22-Jun-18	B8F0179			20 - 150	1.0	71	IS		13C2-PFHxDA	13C2
	04-Jul-18 19:29		22-Jun-18	B8F0179 22-Jun-18	T		10 - 150	30	4	IS		d5-EtFOSA	d5-E
1	04-Jul-18 19:29		22-Jun-18	B8F0179		and distance to the same of th	20 - 150	1.7	74	IS		I3C2-PFTeDA	13C2
_	04-Jul-18 19:29		22-Jun-18	B8F0179	н		10 - 130	40	Ņ	IS		d3-MeFOSA	d3-\v
<u> </u>	04-Jul-18 19:29	1.18 g	22-Jun-18	B8F0179			30 - 130	3.8	86	IS	attention of the state of the s	13C2-PFDoA	13C2
	04-Jul-18 19:29		22-Jun-18	B8F0179			60 - 130	5	64.5	IS		13C2-PFUnA	13C2
_	04-Jul-18 19:29		22-Jun-18	B8F0179			50 - 150	13	52	IS		d5-EtFOSAA	d5-E
	04-Jul-18 19:29		22-Jun-18	B8F0179			50 - 150),4	50	SI		d3-MeFOSAA	d3-1V
_	04-Jul-18 19:29		22-Jun-18	B8F0179			40 - 150).0	89.0	IS		[3C2-8:2 FTS	13C2
1	04-Jul-18 19:29	1.18 g	22-Jun-18	B8F0179			60 - 130	38	68.8	SI		3C2-PFDA	13C2
Dilution	Analyzed Dil	Samp Size	Extracted 5	Batch	Qualifiers		Limits	% Recovery	% Re	Туре	. 7	Labeled Standards	Lab
				91.3	ids:	% Solids:							
			10:18	14-Jun-18 10:18	Date Received:	Date 1	07-Jun-18 09:15	Date Collected:			182869 NH 3191	Project: 182869	Proj
	BEH C18	Column:	4	1801266-04	Lab Sample:	Lab S	Soil	Matrix:			Eastern Analytical, Inc.	Name: Eastern	Nan
					ratory Data	Labora						Client Data	Clie
FAS	VAL - PFAS											Sample ID: TP-1	San
	the same of the sa												



Sumpre and an e									
Client Data					Laboratory Data				
Name: Project:	Eastern Analytical, Inc 182869 NH 3191		Matrix: Date Collected:	Soil xed: 07-Jun-18 12:45	Lab Sample: Date Received:	1801266-06 14-Jun-18 10:18	Column:	BEH C18	
					% So	83.0			
Analyte		CAS Number	Conc. (ng/g)	MDL	RL Qualifiers	Batch Extracted	ed Samp Size	Analyzed Dil	Dilution
PFBA		375-22-4	N	0.135	1.93	B8F0179 22-Jun-18	1 25 р	04-Jul-18 19:39	
PFPeA	t sand) a transité dissilabilité à se let sur les températions de sandésidés de desides	2706-90-3	ND	0.195	1.93		1.25 g	04-Jul-18 19:39	_
PFBS		375-73-5	Ā	0.350	1.93		1,25 g	04-Jul-18 19:39	_
PFHxA		307-24-4	ND	0.196			1.25 g	04-Jul-18 19:39	_
PFHpA		375-85-9	0.370	0.198	1.93 J		1.25 g	04-Jul-18 19:39	
PFHxS		355-46-4	ND	0.299			1.25 g	04-Jul-18 19:39	_
6:2 FTS		27619-97-2	a	0.221	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	-
PFOA		335-67-1	0.616	0.227	1.93 J	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	<u>, </u>
PFHpS		375-92-8	M	0.164	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	
PFNA		375-95-1	ND	0.172	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	_
PFOSA		754-91-6	3	0.219	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	
PFOS	The section of the se	1763-23-1	ND	0.814	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	<u>-</u>
PFDA		335-76-2	A	0.247	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	1
8:2 FTS		39108-34-4	AD	0.275	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	1
MeFOSAA		2355-31-9	Íð	0.291	193	4	1.25 g	04-Jul-18 19:39	٠ -
PETINA		2058-94-8		0.307	1.73	32-Jun-18 32-Jun-18	1 35 6	04-Jul-10 19.39 04-Jul-18 10:30	
PFDS		335-77-3	Ä	0.194	1.93	É	1.25 g	04-Jul-18 19:39	– ,
PFDoA		307-55-1	ND	0.266	1.93		1.25 g	04-Jul-18 19:39	H
MeFOSA		31506-32-8	ND	0.909	9.64		1.25 g	04-Jul-18 19:39	_
PFTrDA		72629-94-8	B	0.118	1.93	B8F0179 22-Jun-18	1,25 g	04-Jul-18 19:39	-
PFTeDA	er ede in	376-06-7	ND	0.191	1.93	B8F0179 22-Jun-18	$1.25~\mathrm{g}$	04-Jul-18 19:39	_
EtFOSA		4151-50-2	ND	1.29	9,64	B8F0179 22-Jun-18	1,25 g	04-Jul-18 19:39	-
PFHxDA		67905-19-5	N	0.0336	1.93	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	_
MeFOSE		24448-09-7	Ā	1.88	9.64	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	-
EtFOSE		1691-99-2	ND	0.973	9.64	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	-
Labeled Standards	ds	Туре	% Recovery	Limits	its Qualifiers	Batch Extracted	ed Samp Size	Analyzed Dil	Dilution
l3C3-PFBA		SI	90.1	60 - 130	130	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	,_
13C3-PFPeA		SI	89.2	- 00	150	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	-
13C3-PFBS		Z	89.2	60 - 150	150	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	4
13C2-PFHxA	de Vanderende en stadt Marke en de Vilsion en 1980 i Vandske bedaamt Prode Visionen en	IS	88.7	70 -	130	B8F0179 22-Jun-18	$1.25~\mathrm{g}$	04-Jul-18 19:39	_
13C4-PFHpA		IS	89.8	- 00	150	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	μ,
1802-PFHxS	imbolomatie maidemaa nikranitaa libus itamboomit trans	IS	92.6	- 00	130	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	_
13C2-6:2 FTS		IS	97.8	40=	150	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	<u></u>
13C2-PFOA		IS	77.5	- 09		B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	1
I3C5-PFNA		IS	73.3	50 -	130	B8F0179 22-Jun-18	1.25 g	04-Jul-18 19:39	\vdash
13C8-PFOSA		SI	55.3	20 -		ì	1.25 g	04-Jul-18 19:39	1
130×10円02		70	00 Q	3		D0E0170 33 T. 10		2 4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	



Sample ID: TP-3								VAL - PFAS	PFAS
Client Data				I ahoratow Data					
Name: Factern	Analytical Inc	Matrix:	e e :	Tob Comple.	1901766 0	n	2		
	182869 NH 3191	Date Collected:	Date Collected: 07-Jun-18 12:45	Date Received:	14-Jun-18 10:18	10:18	Column:	BEH C18	
				% Solids:	83.0				
Labeled Standards	Туре	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed D	Dilution
13C2-PFDA	SI	68.4	60 - 130		R&F0179 22-1-m-18	10.00		30	
13C2-8:2 FTS	IS	76.7	40 - 150		B8F0179	22-Jun-18		04-Jul-18 19:39	-
d3-MeFOSAA	\mathbf{R}	62.7	50 - 150			22-Jun-18	1.25 g	04-Jul-18 19:39	
d5-EtFOSAA	SI	61.9	50 - 150		B8F0179	22-Jun-18	1.25 g	04-Jul-18 19:39	_
13C2-PFUnA	IS	71.7	60 - I30		B8F0179	22-Jun-18	1.25 g	04-Jul-18 19:39	
13C2-PFDoA	IS	67.9	30 - 130		B8F0179	22-Jun-18	$1.25~\mathrm{g}$	04-Jul-18 19:39	
d3-MeFOSA	SI	14.6	10 - 130		B8F0179	22-Jun-18	1.25 g	04-Jul-18 19:39	1
13C2-PFTeDA	IS	73.5	20 - 150		B8F0179	22-Jun-18	1.25 g	04-Jul-18 19:39	_
d5-EtFOSA	IS	14,4	10 - 150		B8F0179	22-Jun-18	1.25 g	04-Jul-18 19:39	
13C2-PFHxDA		86.0	20 - 150		B8F0179	22-Jun-18	$1.25~\mathrm{g}$	04-Jul-18 19:39	_
d7-MeFOSE	IS	41.1	10 - 150		B8F0179	22-Jun-18	1.25 g	04-Jul-18 19:39	
d9-EtFOSE	IS	44.9	10 - 150		B8F0179	22-Jun-18	1.25 g	04-Jul-18 19:39	_
MDL - Method Detection Limit	RL - Reporting limit	The results are reported in dry weight. The sample size is reported in wet wei	The results are reported in dry weight. The sample size is reported in wet weight.	When rep linear and	orted, PFHxS, P branched isome	FOA, PFOS, Mers. Only the line	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include be linear and branched isomers. Only the linear isomer is reported for all other	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EFFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other	
		Results reported to MDL.	ADL.	analytes.		,	,		

DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of

the instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

Q Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Work Order 1801266 Page 27 of 32

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

CHAIN-OF-CUSTODY RECORD



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Page 1

Sample ID	Date Sampled Matrix	d Matrix	aParameters	1801246 Sample Notes 1.3°C
Merrimack River	6/7/2018 115:20	aqueous	aqueous Subcontract - Perfluorinated Compounds EPA Method 537	
PFAS Tumble Blank		aqueous	aqueous Subcontract - Perfluorinated Compounds EPA Method 537	
TP-1	6/7/2018 09:15	Soil	Subcontract - Perfluorinated Compounds EPA Method 537 — (-Tumble extract provided
TP-1	6/7/2018	soii	Subcontract - Perfluorinated Compounds EPA Method 537	

Phone #	Account #	Address	Address	Company		EAI ID# 182869
Phone # (916) 673-1520		El Dorado Hills, CA 95762	1104 Windfield Way	Vista Analytical Laboratory	Project ID: 3191	32869 Project State: NH

Results Needed: Preferred Date: Standard			
RUSH Due Date:	PO#.48215	EAI ID# 782869	
☑ A ☐ A± ☐ B ☐ B± ☐ C ☐ MA MCB	If RUSH charges w	If RUSH charges will be applied, please call prior to	ll prior to
Notes about project:	analyzing.		•
Email login confirmation, pdf of results and			
invoice to customerservice@easternanalytical.com.	Samples Collected by:	W.	
FTP-1, TP-3, PFAS Tumble Blank and Blank tumbled for		10 20 10 10 10 10 10 10 10 10 10 10 10 10 10	で ちつ
48 hours in river water provided by client. PFAS samples to be filtered with 0.7 um filter at the sub lab. TP-1 & TP	Relinquished by	Date/Time Recei	Received by
-3 will also be analyzed for total PFAS in soil. PFAS 26	ZZ	6/14/10 1109 Mull	heller
REPAS-free water & extracted and held based on Majuits.	Relinquished by	Date/Time (Received by	ived by

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301 Phone: (603)228-0525 1-800-287-0525

customerservice@easternanalytical.com

As a subcontract tab to EAL you will defend, indemnify and hold Eastern Analytical, inc., its officers, employees; and agents harmless from and against any and all liability, loss, expense or claims for injury or damages arising out of the performance against this chain of custody but only in proportion to and to the extent such liability, loss, expense, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of you as a subcontract lab, your officers, agents or employees Work Order 1801266

CHAIN-OF-CUSTODY RECORD



				/ FAI ID# 182869	800	Page 2
Sample ID	Date Sampled Matrix	Matrix	aParameters	1001266	Sample Notes	
TP-3	6/7/2018	SOII	Subcontract - Perfluorinated Compounds EPA Method 537	- Tumble exhaut provided	provided	
TP-3	6/7/2018	soil	Subcontract - Perflugrinated Compounds EPA Method 537			

Results Needed: Preferred Date: Standard RUSH Due Date: QC Deliverables Notes about project C MA MCP
PO #: 48215 If RUSH charges will analyzing. Samples Collected by: Relinquished by
3. 1

Phone: (603)228-0525 1-800-287-0525 customerservice@easternanalytical.com

As a subcontract lab to EAI, you will defend, indemnify and hold Eastern Analytical, Inc., its officers, employees, and agents harmless from and against any and all liability, loss, expense or claims for injury or damages are caused by or result from the negligent or intentional acts or omissigns of Youlds 18010206 and your officers, agents or employees

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301



Sample Log-in Checklist

TAT HSTOL KE OG/14/18 801266 Vista Work Order #: Date/Time Initials: Location: Samples 1018 SPL Arrival: Shelf/Rack: Date/Time Location: UR-2 Initials: Logged In: 491 Shelf/Rack: 136 Hand UPS Delivered By: FedEx On Trac GSO DHL Other Delivered Preservation: Ice Blue Ice Dry Ice None 1106 Temp °C: 1.6 (uncorrected) Time: Thermometer ID: IR-3 1.3 Probe used: Yes□ NoIX Temp °C: (corrected)

					YES	NO	NA
Adequate Sample Volume Re	ceived?				KE		
Holding Time Acceptable?					84		
Shipping Container(s) Intact?					SV.		
Shipping Custody Seals Intac	t?						SPE
Shipping Documentation Pres	ent?				SP_		
Airbill Trk#	12 ×46	599 01 99	529 181	38	82		
Sample Container Intact?					Le		
Sample Custody Seals Intact).						Ke
Chain of Custody / Sample Documentation Present?						· - —	
COC Anomaly/Sample Acceptance Form completed?							W
If Chlorinated or Drinking Wat	er Samples, A	cceptable Prese	rvation?				W
Preservation Documented:	Na ₂ S ₂ O ₃	Trizma	None		Yes	No (NA
Shipping Container	Vista	Client	Retain	Re	turn	Disp	ose

LE OF 14/18

ADDITIONAL

ADDIT

COC: MERIMACK RIVER
PFASTUMBLE BLANK
TP-1
TP-1
TP-3

SAMPLE 10: MBRRIMACK X 2 (125mL)
PFAS TUMBLE BLANK XZ (125mL)
TP-1 XZ (125ml)
TP-1 XZ (602)
TP-3 XZ (125ml)
TP-3 XZ (602)

NOT USTED ON COC.
Work Order 1801266

Rev No.: 0

Rev Date: 05/18/2017 BLANK x 2 (125)m |

Chain of Custody Anomaly/Sample Acceptance Form



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Client: Contact: Email: Phone:	Eastern Analytical, Inc. Jennifer Laramie JenniferL@eailabs.com (603) 410-3881		Workorder Number: Date Received: Documented by/date:	1801266 14-Jun-18 10:18 K. Elric 06/14/18
	view the following information and comp tion before proceeding with sample analy		on section. To comply	with NELAC regulations, we must receive
Thank yo	u,			
Martha M mmaier@ 916-673-	vista-analytical.com			
The follow	ring information or item is needed to p	roceed with analysis:		
	Complete Chain-of-Custody	Preservative		Collector's Name
	Test Method Requested	Sample Identification		Sample Type
	Analyte List Requested	Sample Collection Date	and/or Time	Sample Location
X	Other: See Comments	_		
	wing anomalies were noted. Authoriz Temperature outside < 6°C Range	ation is needed to proceed	·	
	Temperature°C	Ice Present? Yes	No Melted	
:	Sample ID Discrepancy	Insuf	fficient Sample Size	
	Sample Holding Time Missed	Samı	ole Container(s) Broken	•
	Custody Seals Broken	Incor	rrect Container Type	
Sample no	ts: 7 samples, COC lists 6 samples. ot listed on COC: D# 182869.05 Blank			

Client Authorization	^	
Proceed with Analysis: YES		
Client Comments/Instructions _	Per Jenn Laramie, do not analyze	
extra blank received w/ sample.		

Work Order 1801266 Page 32 of 32

Eastern Analytical, Inc. professional laboratory and drilling services

25 CHENELL DRIVE CONCORD, NH 03301 Tel: 603.228.0525 1.800.287.0525 E-Mail: CustomerService@EasternAnalytical.com www.EasternAnalytical.com

GREEN: PROJECT MANAGER)

(WHITE: ORIGINAL

CHAIN-OF-CUSTODY RECORD

189-8691	
----------	--

37

Cor	Date/Time Composites need start					2043
Sample IDs an	and stop dates/times	Matrix	Parameters and Sample Notes		# of c	# of containers
TP-1		soil	SolTotDry/PFCsSubVAL	IIODMoto do Os Eo Mo		
*		Grab or Comp				
Sampler confirms ID and parameters are accurate	ا D and parameters	are accurate	Circle preservative/s: HCL HNO, H,SO, NaOH MEOH Na	Na,S,O, ICE	Dissolved Sample Field Filtered	red
TP-3		soil	SolTotDry/PFCsSubVAL			
*		Grab or Comp	SPLPsolidmod/P+CsSubVAL/DOC/TUVA/pH/ColorTrue/ICPMets.As.Ca.Fe.Mn	/ICPMets.As.Ca.Fe.Mn		
Sampler confirms ID and parameters are accurate	D and parameters	are accurate	Circle preservative/s: HCL HNO ₃ H ₂ SO ₄ NaOH MEOH Na	Na ₂ S ₂ O ₃ ICE	Dissolved Sample Field Filtered	red
Merrimack River		aqueous	A/pH/ColorTrue/ICPMets.As.Ca.Fe.Mn/PF	>		
*		Grab or Comp	AqDis/DOC			
Sampler confirms ID and parameters are accurate	D and parameters	are accurate	Circle preservative/s: HCL_HNO3_H2SO4_NaOH_MEOH_Na	Na ₂ S ₂ O ₃ ICE	Dissolved Sample Field Filtered	red
PFAS Tumble Blank		soil Grab or Comp	SPLPsolid/PFCsSubVAL			
Sampler confirms ID and parameters are accurate	ا D and parameters	are accurate	Circle preservative/s: HCL HNO, H,SO, NaOH MEOH Na	Na,S,O, ICE	Dissolved Sample Field Filtered	red
* Samples Aralyzed	Vorthiv					
* Blank Sample	e - Analy sis	SAME AS	ol and of			
<i>Please ensu</i> EAI Project ID	re this auto COC	is accurate,	Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary. $\ell_{\mathcal{N}} = c_0 r_2 / c_0 r_2 / c_0 r_2 / c_0 r_2 / c_0 r_2 r_2 r_2 r_2 r_2 r_2 r_2 r_2 r_2 r_2$	this sampling event, and r	nodify as necessary.	
	MER 4/5 AR MER			☑ HC ☑ EDD PDF	□ NO FAX PO# □ Partial FAX Quote#:	PO# verbal Quote#: 1014671
Client (Pro Mgr) Daniel Tinkham	Tinkham		_	PDF prelim, NO FAX	☐ EQUIS Tomo 2.1	ိ ဂ
Customer Emery	Emery & Garrett Groundwater	water	0.45 um tilter and analyzed for DOC, I UVA, pH, ColorTrue, As.Ca.Fe.Mn. PFAS samples will be filtered with 0.7 um filter	☑ e-mail Login Confirmation	ice YK	
Address 56 Ma	56 Main Street		at the sub lab. TP-1 & TP-3 will also be analyzed for total	Samples Collected by:		,
City Mered	City Meredith NH 03253		PFAS tumble blank will be tumbled with river water and	ĵø.	7	なって
Phone 279-4425	Fax 279-8717	17	PFAS-free water and extracted and held based on results. OC deliverables	Relinquished by	Date/Time // Received by	t by
Email: djtinkham@eggi.com	i.com		NA □A+ □B □B+ □C □MAN	Relinquished by	Date/Time Received by	d by

Direct 279-4425

Eastern Analytical, Inc.

www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

182869

Sof 3 Quotation 1014671

Jeffrey Marts

Emery & Garrett Groundwater Investigations, LLC

56 Main Street

Meredith, NH 03253

Quotation Date: 7/5/2017

PATRIE

Project ID: PFAS Leachability Project

Revised 6/5/2018 JLL

EAI Project ID:

Dear Mr. Marts:

Thank you for the opportunity to provide this quotation.

Qty. Description

- 2 SPLP (1312) Prep (modified tumble water & specs
- 3 DOC (Aqueous)
- 3 UV Absorption
- 3 pH
- 3 Color (True)
- 3 Filter Fee (Inorganic), 0.45 μm filter
- 3 Subcontract PFCs/PFAS EPA Method 537 26 Cmpd
- 2 Subcontract PFAS Filter Fee
- 1 Overnight Shipping to Subcontract Lab (est. 15 lbs -
- 3 Metals Aqueous Prep
- 3 Calcium
- 3 Iron
- 3 Manganese
- 3 Arsenic
- 2 Subcontract PFCs/PFAS EPA Method 537 26 Cmpd
- 0 Subcontract PFAS Centrifuging (if necessary)

AR2 PFAS MONITORING WELL MER 45-AR2



Daniel Tinkham

Emery & Garrett Groundwater Investigations,
56 Main Street

Meredith , NH 03253



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 185312

Client Identification: MER-45
Date Received: 8/9/2018

Dear Mr. Tinkham:

Enclosed please find the report of analysis for the above identified project. As discussed, analyses were subcontracted and are listed as follows:

Analysis: Subcontract - Perfluorinated Compounds EPA Method

537 Vista

Subcontractor Lab: Vista Analytical Laboratory

A complete copy of the report is attached. This report may not be reproduced except in full, without the written approval of the laboratory.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

9.7.18

Date

of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 185312

Client: Emery & Garrett Groundwater Investigations, LLC (NH)

Client Designation: MER-45

Temperature upon receipt (°C): 1.7

Received on ice or cold packs (Yes/No): Y

Acceptable temperature range (°C): 0-6

Lab ID

Date Date Sample % Dry

Received Sampled Matrix Weight Exceptions/Comments (other than thermal preservation)

Sample ID 185312.01 MER-45-AR2

8/9/18 8/9/18 Adheres to Sample Acceptance Policy aqueous

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis. Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

recommended 15 minute hold time.

- 2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 4th edition, 1992



September 05, 2018

Vista Work Order No. 1802440

Ms. Jennifer Laramie Eastern Analytical, Inc. 25 Chennell Drive Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on August 14, 2018 under your Project Name '185312 NH'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier

Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Vista Work Order No. 1802440 Case Narrative

Sample Condition on Receipt:

One aqueous sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The sample was extracted and analyzed for a selected list of PFAS using Modified EPA Method 537. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The recoveries of all internal standards in the QC and field samples were within the acceptance criteria.

Work Order 1802440 Page 2 o 312

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Qualifiers	9
Certifications	10
Sample Receipt	11

Sample Inventory Report

Vista Sample ID

1802440-01

Client Sample ID

MER-45-AR2

Sampled

09-Aug-18 10:05

Received

14-Aug-18 10:47

Components/Containers

HDPE Bottle, 125 mL HDPE Bottle, 125 mL

Vista Project: 1802440 Client Project: 185312 NH

Work Order 1802440 Page 4 of 12

ANALYTICAL RESULTS

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Client Data Name: Project:	Eastern Analytical, Inc. 185312 NH		Matrix:	Aqueous	Laboratory Data Lab Sample:	B8H0116-BLK1	JK1	Column:	BEH C18	
Analyte		CAS Number	Conc. (ng/L)		RL Qualifiers	Batch H	Extracted S	Samp Size	Analyzed	Dilution
PFBA		375-22-4	ND	A Comment of the Comm	4.00	6			23-Aug-18 10:07	0.00
PFPeA	0.000	2706-90-3	N		4.00	- 1	16-Aug-18	1	23-Ang-18 10:07	- 9
PFBS		375-73-5	ð		4.00		16-Aug-18		23-Aug-18 10:07	
PFH_XA		307-24-4	ND	mente de la completa	4.00		16-Aug-18		23-Aug-18 10:07	_
PFHpA		375-85-9	dN.		4.00		16-Aug-18		23-Aug-18 10:07	
PFHxS	agili na nashir i Markha di sa Marki Na Minana i 2000 ka na na di dhanadha	355-46-4	AN		4.00		16-Aug-18		23-Aug-18 10:07	
PFOA		335-67-1	ਰ		4.00	B8H0116 1	16-Aug-18		23-Aug-18 10:07	
PFNA	annuminations on refine one cultured a horozona of schools of schools of leasest to	375-95-1	AN				16-Aug-18	-	23-Aug-18 10:07	1
PFOS		1763-23-1	ā		4.00	В8Н0116 1	16-Aug-18		23-Aug-18 10:07	
PFDA	A CONTRACTOR OF THE CONTRACTOR	335-76-2	ND	remains from the contract of t	4.00	B8H0116 1	16-Aug-18		23-Aug-18 10:07	_
MeFOSAA		2355-31-9	ð		4.00	B8H0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	<u>.</u>
EtFOSAA		2991-50-6	A		4.00	B8H0116 1	16-Aug-18		23-Aug-18 10:07	
PFUnA		2058-94-8	A		4.00		16-Aug-18		23-Aug-18 10:07	
PFDoA	the decrease to the second of	307-55-1	ND .	bottadajin di romon emmente un minomatikatikanamaavaaanamaa	4.00		16-Aug-18		23-Aug-18 10:07	-
PFTrDA		72629-94-8	Ð		4,00	B8H0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	-
I abeled Standards	rids	3/6-06-/	% Recovery	I imits	4.00	6	١	1	23-Aug-18 10:07	
	Land of the control o						TAKE HERE	Camp Dize	Zilalyzeu	Diamon
3C3-PFBA 3C3-PFBA		S. SI	93.2 on s	60 - 13 0			16-Aug-18		23-Aug-18 10:07	<u>.</u>
13C3_PFBS		72 5			The state of the s		16 Y - 2 10		23-Aug-16 10.07	
13C2-PFHxA		SI	87.1	70 - 130	**************************************	B8H0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	-
13C4-PFHpA		IS	90.9				16-Aug-18		23-Aug-18 10:07	
1802-PFHxS	tiller (Mrt. Mant. 15 18 Millioner als as Mr. annel is sonis Spatials and Millioner as	IS	82.2	60 - 130			16-Aug-18		23-Aug-18 10:07	_
13C2-PFOA		IS	89.6				16-Aug-18		23-Aug-18 10:07	H
13C5-PFNA	reduction from a random first families and the designed to the control of the con	IS	77.1	50 - 130	Mandandrandrandrandrandrandrandrandrandra	B8H0116 1	16-Aug-18		23-Aug-18 10:07	_
13C8-PFOS		IS	84.7	60 - 130		В8Н0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	.
13C2-PFDA	in and led fried in an antimaterial interpretation for transference to the second in	IS	69.5	60 - 130	definementation of the factor of the property of the confident and the factor of the f	B8H0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	
d3-MeFOSAA		SI	58,9	50 - 150		B8H0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	
		IS	59.4	50 - 150		B8H0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	
d5-EtFOSAA		IS	61,0	60-130		B8H0116 1	16-Aug-18		23-Aug-18 10:07	.
15-EtFOSAA 13C2-PFUnA	post for Lodd - strings to before 100s (2) in the cold	SI	61.7	30 - 130		B8H0116 1	16-Aug-18		23-Aug-18 10:07	
15-EtFOSAA 13C2-PFUnA 13C2-PFDoA		SI	65.9	20 - 150		B8H0116 1	16-Aug-18	0.250 L	23-Aug-18 10:07	-



8

Sample ID: OPR	PR									PFAS Is	PFAS Isotope Dilution Method	Tethod
Client Data						Labo	boratory Data					
Name: Project:	Eastern Analytical, Inc 185312 NH		Matrix:	Aqueous		Lab	ıb Sample։	B8H0116-BS1	-BS1	Column:	BEH C18	
Analyte		CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Anglyzed	Dilution
PFBA		375-22-4	40.7	40.0	102	70 - 130		B8H0116		0.250 L	9:56	
PFPeA		2706-90-3	41.7	40.0	104	70 - 130	and distribution when the property of the	B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	-
PHBS		375-73-5	44,0	40.0	110	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
PFHxA		307-24-4	43.1	40.0	108	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	1
РЕНрА		375-85-9	41.7	40,0	104	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
PFHxS	The contradiction of the fraction of the first of the contradiction of t	355-46-4	44.4	40.0	111	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	-
PFOA		335-67-1	43.6	40.0	109	70 - 130		B8H0116	16-Aug-18	$0.250\mathrm{L}$	23-Aug-18 09:56	
PFNA		375-95-1	34.2	40.0	85.5	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	-
PFOS		1763-23-1	42.9	40,0	107	70 - 130		В8Н0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
PFDA	er enselbat traditationale come mans comes comme tant anno tant tant tant tant tan	335-76-2	40.8	40.0	102	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	1
MeFOSAA		2355-31-9	42,4	40.0	106	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	3-1
EtFOSAA		2991-50-6	43.2	40.0	108	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	_
PFUnA		2058-94-8	41.1	40.0	103	70 - 130		В8Н0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
PFDoA	anno No man Sonia Allano no demensión materia a altitual les	307-55-1	40.5	40.0	101	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	-
PFTrDA		72629-94-8	45.2	40.0	113	60 - 130		B8H0116	16-Aug-18	$0.250\mathrm{L}$	23-Aug-18 09:56	
PFTeDA		376-06-7	38.7	40.0	96.7	70 - 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
Labeled Standards	rds		Type		% Rec	Limits	Qualifiers	Batch		Samp Size		Dilution
13C3-PFBA			IIS		89.7	60- 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
13C3-PFPeA	e Programme Versionales in Contraction Con	And the first of the second statement of the second statement of the second statement of the second statement of the second seco	IS	entranstation of the Samuel Control of the S	90.9	60- 150	en oder der Gannise verbreite für V. dass filteri den selfen	B8H0116	16-Aug-18	$0.250\mathrm{L}$	23-Aug-18 09:56	_
13C3-PFBS			18		89.2	60- 150		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
13C2-PFHXA			S		88.6	70- 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	-
13C4-PFHpA			18		88,4			B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
13C2 PFHXS	The second secon	The second annual region pairs or the second property of the second seco	IS		84.1		morrondes followers on our history	B8H0116	16-Aug-18	$0.250\mathrm{L}$	23-Aug-18 09:56	_
13CZ-PFUA			IS		85.5			B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
13C3-PFNA	The second secon	The second secon	SI		74.5	50- 130		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	-
13C3 PED 4			S		87.2			B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
13 CZ-PFDA			SI		67.2			B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	_
d3-MerOSAA			18		53.5	50- 150		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	
do-EthOSAA			SI		56.6	50- 150		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	1
13C2-PFUnA			IS		65.5	60- 130		B8H0116	16-Aug-18	$0.250\mathrm{L}$	23-Aug-18 09:56	
13C2-FFD0A			SI	The second secon	58.9	-1	The state of the s	B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	_
13C2-PF1eDA			JS		77.8	20- 150		B8H0116	16-Aug-18	0.250 L	23-Aug-18 09:56	

Work Order 1802440 Page 7 of 12





	OSAA and EtFO	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both	ported, PFHxS, F	When rej	•	Results reported to RL	Reporting limit	RL-F	
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116		20 - 150	79.9	IS		13C2-PFTeDA
23-Aug-18 11:10 1	$0.122\mathrm{L}$ 2	16-Aug-18	В8Н0116	 Interdebiation of Continue Comment in the continue 	30 - 130	C'II.	IS.		13C2-PFD0A
23-Aug-18 11:10 1		16-Aug-18	9110H8B			.0.1	15		13CZ-PFUDA
23-Aug-18 11:10 1		16-Aug-18	B8H0116			79.7	5		do-EthOSAA
23-Aug-18 11:10 1		16-Aug-18	В8Н0116			75.2	5		d3-MeFUSAA
_		16-Aug-18	B8H0116	A COLUMN TO THE REAL PROPERTY OF THE PROPERTY		68.5	IS		13C2-PFDA
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116		177	96.4	SI		13C8-PFOS
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116	ada shiateesta koomi toomi dhekamaa teenahaata		78.3	SI	Who may be to take a color of the color of t	13C5-PFNA
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116		60 - 130	84.8	IS		13C2-PFOA
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116	in the first chart of the first one of the majority of the first of th	60 - 130	90.0	SI	particles of burners and if latter instance and the danter of	1802-PFHxS
23-Aug-18 11:10 1	0,122 L 2	16-Aug-18	B8H0116		60 - 150	89,7	IS		13C4-PFHpA
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116		70 - 130	90.4	SI		13C2-PFHxA
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116		60 - 150	107	SI		13C3-PFBS
23-Aug-18 11:10 1	į	16-Aug-18	B8H0116	ina) selatan nasamban melalah menasahan dikili sikuannan	60 - 150	92.8	IS	and a state of the	13C3-PFPeA
23-Aug-18 11:10 1	$0.122\mathrm{L}$	16-Aug-18	B8H0116		60 - 130	92.3	S		13C3-PFBA
Analyzed Dilution	Samp Size	l	Batch	Qualifiers	Limits	% Recovery	Type	dards	Labeled Standards
1	0.122 L 2	16-Aug-18	B8H0116	4.10		ND	376-06-7		PFTeDA
23-Aug-18 11:10 1	$0.122\mathrm{L}$ 2	16-Aug-18	B8H0116	4.10		ND	72629-94-8		PFTrDA
1		16-Aug-18	B8H0116	4.10	of the Note for an V. Parish, at the P.P. Bakes and consistent and propriet of the Co.	ND	307-55-1	no majo transmito na diamandamina de majo majo meneral de majorana.	PFDoA
23-Aug-18 11:10 1		16-Aug-18	B8H0116	4.10		Ð	2058-94-8		PFUnA
23-Aug-18 11:10 1		16-Aug-18	B8H0116	4.10		ND	2991-50-6		EtFOSAA
23-Aug-18 11:10 1		16-Aug-18	B8H0116	4.10		Ŋ	2355-31-9		MeFOSAA
		16-Aug-18	B8H0116	4.10		ND	335-76-2		PFDA
23-Aug-18 11:10 1		16-Aug-18	В8Н0116	4.10		<u>d</u> Ni	1763-23-1		PFOS
23-Aug-18 11:10 1		16-Aug-18	B8H0116	4.10		ND	375-95-1		PFNA
23-Aug-18 11:10 1	0.122 L 2	16-Aug-18	B8H0116	4.10		38.0	335-67-1		PFOA
23-Aug-18 11:10 1		16-Aug-18	B8H0116			ND	355-46-4	e mande e desarble e de das communes e constitue de conflicio das de conserva de conserva de conserva de conserva de	PFHxS
23-Aug-18 11:10 1		16-Aug-18	B8H0116			8.56	375-85-9		PFHpA
23-Aug-18 11:10 1		16-Aug-18	B8H0116	4.10		13.5	307-24-4		PFHxA
23-Aug-18 11:10 1		16-Aug-18	B8H0116	4,10		10.6	375-73-5		PFBS
23-Aug-18 11:10 1		16-Aug-18	B8H0116	4.10		9.44	2706-90-3		PFPeA
23-Aug-18 11;10 1	0.122 L 2	16-Aug-18	B8H0116	4.10		5,26	375-22-4		PFBA
Analyzed Dilution	Samp Size	Extracted S	Batch	RL Qualifiers		Conc. (ng/L)	CAS Number		Analyte
BEH C18	Column:	10:47	1802440-01 14-Aug-18 10:47	Laboratory Data Lab Sample: Date Received:	Aqueous 09-Aug-18 10:05	Matrix: Date Collected:	·	Eastern Analytical, Inc. 185312 NH	Name: Project:
))
PFAS Isotope Dilution Method	PFAS Isoto							Sample ID: MER-45-AR2	Sample ID:

linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of

the instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

Q Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

CHAIN-OF-CUSTODY RECORD



professional laboratory and drilling services

Sample ID

Date Sampled Matrix

aParameters

1802440 0.6° EAIID# 185312

Sample Notes

Page 1

MER-45-AR2 Account# Company EAIID# 185312 Address Address Phone # (916) 6 1104 M Vista A El Dore 10:05 8/9/2018 aqueous | Subcontract - Perfluorinated Compounds EPA Method 537

73-1520	ado Hills, CA 95762 PFAs 16 compound list		nalytical Laboratory Notes about project:	Project ID: QC Deliverables	Project State: NH RUSH Due Date: Standard
	е@еазипапагупсат.сот.	, pdf of results and			
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Date/Time Received by Date/Time Received by Date/Time	Samples Collected by: Soo US	Call prior to analyzing, if RUSH charges will be applied.	NH EMD EQUIS ME EGAD	ircle)	EAI ID# 185312
Received by	R	ill be applied.			2

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301

acts or omissions of you as a subcontract lab, your officers, agents or employees

Work Order 1802440

Phone: (603)228-0525

customerservice@easternanalytical.com



Sample Log-in Checklist

Vista Work Orde	r#:		3024	40	·		TAT_	810	<u></u>	
Samples	Date/Time			Initials:	*****	Loca	tion:	WR	-2	
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Temp °C: ტ.() (corrected	P	robe use	ed: Yes□	No₫	ineri	nome	ter ID:	IK-4	
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Chain of Custody	/ Sample Doc	umen	tation Pr	esent?				BUB		
COC Anomaly/Sa	mple Accepta	nce F	orm com	pleted?					阳和	ZUЩ
If Chlorinated or D	Orinking Water	Samp	oles, Acc	eptable Pre	eserva	lion?				Raw
Preservation Docu			S ₂ O ₃	Trizma		Vone) (Yes) No	NA
Shipping Containe	er	"Vi	ista	Client	Ri	etain	Re	turn	Disp	ose

Comments:

ID.: LR - SLC

Rev No.: 0

Rev Date: 05/18/2017

Page: 1 of 1

CHAIN-OF-CUSTODY RECORD

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BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS

	FIFID READINGS:	RECEIVED RV-	RFC	ŢŅĘ.	DATE		E5 25√.	BEINOMISHED BY	77					
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													a_NaOH· M_MFOH	PRESERVATIVE: H-HCI: N-HNO: S-H-SO: No-NoOH: M-MEOH
											TER;	(ING W	; SW-SURFACE WATER; DW-DRIN	MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; W/W-Maste water
V											9		8/4/18 MADES	MER-45-ARZ
# of Containers MEOH Vial #	REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT GENTIABILITY TOTAL COLIFORM E. COLI FECAL COLIFORM ENTEROCOCCI HETEROTROPHIC PLATE COUNT PFAS 16 Company	BOD CBOD T. ALK. TKN NH3 T. PHOS. O. PHOS pH T. RES. CHLORINE COD PHENOLS TOC DOC TOTAL CYANIDE TOTAL SULFIDE	TS TSS TDS SPEC. CON. BR CI F SO ₄ NO ₂ NO ₃ NO ₃ NO ₂	DISSOLVED METALS (LIST BELOW) TOTAL METALS (LIST BELOW)	OIL & GREASE 1664 TPH 1664 TCLP 1311 ABN METALS VOC PEST HERB	8015 DRO MAEPH PEST 608 PCB 608 PEST 8081 PCB 8082	TPH8100 LI L2	8015 GRO MAVPH 8270 625 SYTICS EDB DBCP ABN A BN PAH	8021 BTEX HALOS	524.2 524.2 BTEX 524.2 MTBE ONLY 8260 624 VTICS 1, 4 DIOXANE	GRAB/*COMPOSITI	MATRIX (SEE BELOW	SAMPLING DATE / TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE / TIME	SAMPLE I.D.
	MICRO OTHER	NORGANICS		TCLP METALS	TCL	6	V V		0		E)		
		TIMALIBIS.				E A G P					1			

M Eastern Analytical, Inc. professional laboratory and drilling services

25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | E-MAIL: CUSTOMERSERVICE@EASTERNANALYTICAL.COM | WWW.EASTERNANALYTICAL.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)

APPENDIX D WATER QUALITY RESULTS FROM TEST WELLS

Informational Water Quality Report

Watercheck w/PO

Client:			

Ordered By:

Emery & Garrett Groundwater Investigations,

LLC

56 Main Street Meredith, NH 03253

ATTN: Emery & Garrett Groundwater Inc.



6571 Wilson Mills Rd Cleveland, Ohio 44143 1-800-458-3330

Sample Number: 887711

Location: MER-45-AR1

Type of Water: Well Water

Collection Date and Time: 8/9/2018 12:15 PM
Received Date and Time: 8/10/2018 10:05 AM

Date Completed: 8/28/2018

Metals filtered 0.5 hr test

Definition and Legend

This informational water quality report compares the actual test result to national standards as defined in the EPA's Primary and Secondary Drinking Water Regulations.

Primary Standards: Are expressed as the maximum contaminant level (MCL) which is the highest level of contaminant that

is allowed in drinking water. MCLs are enforceable standards.

Secondary standards: Are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin

or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. Individual

states may choose to adopt them as enforceable standards.

Action levels: Are defined in treatment techniques which are required processes intended to reduce the level of a

contaminant in drinking water.

mg/L (ppm): Unless otherwise indicated, results and standards are expressed as an amount in milligrams per liter or

parts per million.

Minimum Detection

Level (MDL):

The lowest level that the laboratory can detect a contaminant.

ND: The contaminant was not detected above the minimum detection level.

NA: The contaminant was not analyzed.

 \checkmark

The contaminant was not detected in the sample above the minimum detection level.



The contaminant was detected at or above the minimum detection level, but not above the referenced standard.



The contaminant was detected above the standard, which is not an EPA enforceable MCL.



The contaminant was detected above the EPA enforceable MCL.



These results may be invalid.

Status	Contaminant	Results	Units	National Standa	ards N	lin. Detection Level		
		Microbiologicals						
	Total Coliform by P/A	No bacteria	sample was s	submitted.				
			Inorganic An	alytes - Metals				
✓	Aluminum	ND	mg/L	0.2	EPA Secondary	0.1		
√	Arsenic	ND	mg/L	0.010	EPA Primary	0.005		
√	Barium	ND	mg/L	2	EPA Primary	0.30		
√	Cadmium	ND	mg/L	0.005	EPA Primary	0.002		
	Calcium	36.4	mg/L			2.0		
√	Chromium	ND	mg/L	0.1	EPA Primary	0.010		
√	Copper	ND	mg/L	1.3	EPA Action Level	0.004		
1	Iron	ND	mg/L	0.3	EPA Secondary	0.020		
√	Lead	ND	mg/L	0.015	EPA Action Level	0.002		
	Lithium	0.005	mg/L			0.001		
	Magnesium	5.29	mg/L			0.10		
	Manganese	0.014	mg/L	0.05	EPA Secondary	0.004		
√	Mercury	ND	mg/L	0.002	EPA Primary	0.001		
√	Nickel	ND	mg/L			0.020		
	Potassium	4.2	mg/L			1.0		
√	Selenium	ND	mg/L	0.05	EPA Primary	0.020		
	Silica	16.4	mg/L			0.1		
1	Silver	ND	mg/L	0.100	EPA Secondary	0.002		
	Sodium	181	mg/L			1		
	Strontium	0.348	mg/L			0.001		
1	Uranium	ND	mg/L	0.030	EPA Primary	0.001		
	Zinc	0.076	mg/L	5	EPA Secondary	0.004		
			Physica	al Factors				
	Alkalinity (Total as CaCO3)	22	mg/L			20		
	Hardness	110	mg/L	100	NTL Internal	10		

Page 2 of 6 8/28/2018 2:20:12 PM Product: Watercheck w/PO Sample: 887711

Status	Contaminant	Results	Units	National Standa	ards N	Min. Detection Level			
	рН	5.8	pH Units	6.5 to 8.5	EPA Secondary				
	Total Dissolved Solids	640	mg/L	500	EPA Secondary	20			
1	Turbidity	ND	NTU	1.0	EPA Action Leve	I 0.1			
			Inorganic A	nalytes - Other					
✓	Bromide	ND	mg/L			0.5			
	Chloride	370.0	mg/L	250	EPA Secondary	5.0			
√	Fluoride	ND	mg/L	4.0	EPA Primary	0.5			
	Nitrate as N	1.5	mg/L	10	EPA Primary	0.5			
√	Nitrite as N	ND	mg/L	1	EPA Primary	0.5			
✓	Ortho Phosphate	ND	mg/L			2.0			
	Sulfate	12.0	mg/L	250	EPA Secondary	5.0			
	Organic Analytes - Trihalomethanes								
\checkmark	Bromodichloromethane	ND	mg/L			0.002			
1	Bromoform	ND	mg/L			0.004			
1	Chloroform	ND	mg/L			0.002			
✓	Dibromochloromethane	ND	mg/L			0.004			
✓	Total THMs	ND	mg/L	0.080	EPA Primary	0.002			
			Organic Ana	lytes - Volatiles					
✓	1,1,1,2-Tetrachloroethane	ND	mg/L			0.002			
√	1,1,1-Trichloroethane	ND	mg/L	0.2	EPA Primary	0.001			
√	1,1,2,2-Tetrachloroethane	ND	mg/L			0.002			
√	1,1,2-Trichloroethane	ND	mg/L	0.005	EPA Primary	0.002			
1	1,1-Dichloroethane	ND	mg/L			0.002			
1	1,1-Dichloroethene	ND	mg/L	0.007	EPA Primary	0.001			
1	1,1-Dichloropropene	ND	mg/L			0.002			
1	1,2,3-Trichlorobenzene	ND	mg/L			0.002			
1	1,2,3-Trichloropropane	ND	mg/L			0.002			
1	1,2,4-Trichlorobenzene	ND	mg/L	0.07	EPA Primary	0.002			

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Status	Contaminant	Results	Units	National Star	ndards	Min. Detection Level
√	1,2-Dichlorobenzene	ND	mg/L	0.6	EPA Primary	0.001
√	1,2-Dichloroethane	ND	mg/L	0.005	EPA Primary	0.001
√	1,2-Dichloropropane	ND	mg/L	0.005	EPA Primary	0.002
√	1,3-Dichlorobenzene	ND	mg/L			0.001
√	1,3-Dichloropropane	ND	mg/L			0.002
√	1,4-Dichlorobenzene	ND	mg/L	0.075	EPA Primary	0.001
√	2,2-Dichloropropane	ND	mg/L			0.002
√	2-Chlorotoluene	ND	mg/L			0.001
√	4-Chlorotoluene	ND	mg/L			0.001
1	Acetone	ND	mg/L			0.01
√	Benzene	ND	mg/L	0.005	EPA Primary	0.001
√	Bromobenzene	ND	mg/L			0.002
√	Bromomethane	ND	mg/L			0.002
√	Carbon Tetrachloride	ND	mg/L	0.005	EPA Primary	0.001
√	Chlorobenzene	ND	mg/L	0.1	EPA Primary	0.001
√	Chloroethane	ND	mg/L			0.002
√	Chloromethane	ND	mg/L			0.002
√	cis-1,2-Dichloroethene	ND	mg/L	0.07	EPA Primary	0.002
√	cis-1,3-Dichloropropene	ND	mg/L			0.002
✓	DBCP	ND	mg/L			0.001
√	Dibromomethane	ND	mg/L			0.002
√	Dichlorodifluoromethane	ND	mg/L			0.002
√	Dichloromethane	ND	mg/L	0.005	EPA Primary	0.002
√	EDB	ND	mg/L			0.001
√	Ethylbenzene	ND	mg/L	0.7	EPA Primary	0.001
1	Methyl Tert Butyl Ether	ND	mg/L			0.004
1	Methyl-Ethyl Ketone	ND	mg/L			0.01
1	Styrene	ND	mg/L	0.1	EPA Primary	0.001
Page 4	of 6 8/28/2018 2:20:12 P	M		Pro	duct: Watercheck w/PO	Sample: 887711

Status	Contaminant	Results	Units	National Standa	rds	Min. Detection Level
1	Tetrachloroethene	ND	mg/L	0.005	EPA Primary	0.002
1	Tetrahydrofuran	ND	mg/L			0.01
✓	Toluene	ND	mg/L	1	EPA Primary	0.001
✓	trans-1,2-Dichloroethene	ND	mg/L	0.1	EPA Primary	0.002
1	trans-1,3-Dichloropropene	ND	mg/L			0.002
1	Trichloroethene	ND	mg/L	0.005	EPA Primary	0.001
1	Trichlorofluoromethane	ND	mg/L			0.002
✓	Vinyl Chloride	ND	mg/L	0.002	EPA Primary	0.001
✓	Xylenes (Total)	ND	mg/L	10	EPA Primary	0.001
			Organic Ana	lytes - Others		
✓	2,4-D	ND	mg/L	0.07	EPA Primary	0.010
✓	Alachlor	ND	mg/L	0.002	EPA Primary	0.001
1	Aldrin	ND	mg/L			0.002
1	Atrazine	ND	mg/L	0.003	EPA Primary	0.002
✓	Chlordane	ND	mg/L	0.002	EPA Primary	0.001
1	Dichloran	ND	mg/L			0.002
1	Dieldrin	ND	mg/L			0.001
✓	Endrin	ND	mg/L	0.002	EPA Primary	0.0001
✓	Heptachlor	ND	mg/L	0.0004	EPA Primary	0.0004
✓	Heptachlor Epoxide	ND	mg/L	0.0002	EPA Primary	0.0001
✓	Hexachlorobenzene	ND	mg/L	0.001	EPA Primary	0.0005
1	Hexachlorocyclopentadiene	ND	mg/L	0.05	EPA Primary	0.001
✓	Lindane	ND	mg/L	0.0002	EPA Primary	0.0002
✓	Methoxychlor	ND	mg/L	0.04	EPA Primary	0.002
1	Pentachloronitrobenzene	ND	mg/L			0.002
1	Silvex 2,4,5-TP	ND	mg/L	0.05	EPA Primary	0.005
1	Simazine	ND	mg/L	0.004	EPA Primary	0.002
√	Total PCBs	ND	mg/L	0.0005	EPA Primary	0.0005

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Status	Contaminant	Results	Units	National Standards		Min. Detection Level
1	Toxaphene	ND	mg/L	0.003	EPA Primary	0.001
1	Trifluralin	ND	mg/L			0.002

We certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency or variations of these EPA methods.

These test results are intended to be used for informational purposes only and may not be used for regulatory compliance.

National Testing Laboratories, Ltd.

NATIONAL TESTING LABORATORIES, LTD

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Informational Water Quality Report

Watercheck w/PO

Client:			

Ordered By:

Emery & Garrett Groundwater Investigations,

LLC

56 Main Street Meredith, NH 03253

ATTN: Emery & Garrett Groundwater Inc.



6571 Wilson Mills Rd Cleveland, Ohio 44143 1-800-458-3330

Sample Number: 887712

Location: MER-45-AR2

Type of Water: Well Water

Collection Date and Time: 8/9/2018 10:05 AM Received Date and Time: 8/10/2018 10:05 AM

Date Completed: 8/28/2018

Metals Filtered 0.5 hr ptest

Definition and Legend

This informational water quality report compares the actual test result to national standards as defined in the EPA's Primary and Secondary Drinking Water Regulations.

Primary Standards: Are expressed as the maximum contaminant level (MCL) which is the highest level of contaminant that

is allowed in drinking water. MCLs are enforceable standards.

Secondary standards: Are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin

or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. Individual

states may choose to adopt them as enforceable standards.

Action levels: Are defined in treatment techniques which are required processes intended to reduce the level of a

contaminant in drinking water.

mg/L (ppm): Unless otherwise indicated, results and standards are expressed as an amount in milligrams per liter or

parts per million.

Minimum Detection

Level (MDL):

The lowest level that the laboratory can detect a contaminant.

ND: The contaminant was not detected above the minimum detection level.

NA: The contaminant was not analyzed.

1

The contaminant was not detected in the sample above the minimum detection level.



The contaminant was detected at or above the minimum detection level, but not above the referenced standard.



The contaminant was detected above the standard, which is not an EPA enforceable MCL.



The contaminant was detected above the EPA enforceable MCL.



These results may be invalid.

Status	Contaminant	Results	Units	National Standa	ards M	in. Detection Level			
			Microb	iologicals					
	Total Coliform by P/A	No bacteria	sample was s	ubmitted.					
		Inorganic Analytes - Metals							
√	Aluminum	ND	mg/L	0.2	EPA Secondary	0.1			
√	Arsenic	ND	mg/L	0.010	EPA Primary	0.005			
<u> </u>	Barium	ND	mg/L	2	EPA Primary	0.30			
√	Cadmium	ND	mg/L	0.005	EPA Primary	0.002			
	Calcium	40.1	mg/L			2.0			
/	Chromium	ND	mg/L	0.1	EPA Primary	0.010			
/	Copper	ND	mg/L	1.3	EPA Action Level	0.004			
/	Iron	ND	mg/L	0.3	EPA Secondary	0.020			
/	Lead	ND	mg/L	0.015	EPA Action Level	0.002			
	Lithium	0.004	mg/L			0.001			
	Magnesium	4.67	mg/L			0.10			
	Manganese	0.016	mg/L	0.05	EPA Secondary	0.004			
/	Mercury	ND	mg/L	0.002	EPA Primary	0.001			
/	Nickel	ND	mg/L			0.020			
	Potassium	5.2	mg/L			1.0			
1	Selenium	ND	mg/L	0.05	EPA Primary	0.020			
	Silica	11.9	mg/L			0.1			
1	Silver	ND	mg/L	0.100	EPA Secondary	0.002			
	Sodium	263	mg/L			1			
	Strontium	0.470	mg/L			0.001			
1	Uranium	ND	mg/L	0.030	EPA Primary	0.001			
	Zinc	0.118	mg/L	5	EPA Secondary	0.004			
			Physica	al Factors					
/	Alkalinity (Total as CaCO3)	ND	mg/L			20			
	Hardness	120	mg/L	100	NTL Internal	10			

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Status	Contaminant	Results	Units	National Stand	ards N	Min. Detection Level			
	рН	5.8	pH Units	6.5 to 8.5	EPA Secondary				
	Total Dissolved Solids	860	mg/L	500	EPA Secondary	20			
1	Turbidity	ND	NTU	1.0	EPA Action Leve	I 0.1			
			Inorganic A	nalytes - Other					
	Bromide	0.9	mg/L			0.5			
	Chloride	520.0	mg/L	250	EPA Secondary	5.0			
√	Fluoride	ND	mg/L	4.0	EPA Primary	0.5			
	Nitrate as N	1.5	mg/L	10	EPA Primary	0.5			
√	Nitrite as N	ND	mg/L	1	EPA Primary	0.5			
✓	Ortho Phosphate	ND	mg/L			2.0			
	Sulfate	14.0	mg/L	250	EPA Secondary	5.0			
	Organic Analytes - Trihalomethanes								
\checkmark	Bromodichloromethane	ND	mg/L			0.002			
1	Bromoform	ND	mg/L			0.004			
1	Chloroform	ND	mg/L			0.002			
✓	Dibromochloromethane	ND	mg/L			0.004			
✓	Total THMs	ND	mg/L	0.080	EPA Primary	0.002			
			Organic Ana	lytes - Volatiles					
√	1,1,1,2-Tetrachloroethane	ND	mg/L			0.002			
√	1,1,1-Trichloroethane	ND	mg/L	0.2	EPA Primary	0.001			
√	1,1,2,2-Tetrachloroethane	ND	mg/L			0.002			
√	1,1,2-Trichloroethane	ND	mg/L	0.005	EPA Primary	0.002			
✓	1,1-Dichloroethane	ND	mg/L			0.002			
✓	1,1-Dichloroethene	ND	mg/L	0.007	EPA Primary	0.001			
1	1,1-Dichloropropene	ND	mg/L			0.002			
1	1,2,3-Trichlorobenzene	ND	mg/L			0.002			
1	1,2,3-Trichloropropane	ND	mg/L			0.002			
1	1,2,4-Trichlorobenzene	ND	mg/L	0.07	EPA Primary	0.002			

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Status	Contaminant	Results	Units	National Star	ndards	Min. Detection Level
1	1,2-Dichlorobenzene	ND	mg/L	0.6	EPA Primary	0.001
1	1,2-Dichloroethane	ND	mg/L	0.005	EPA Primary	0.001
1	1,2-Dichloropropane	ND	mg/L	0.005	EPA Primary	0.002
✓	1,3-Dichlorobenzene	ND	mg/L			0.001
1	1,3-Dichloropropane	ND	mg/L			0.002
1	1,4-Dichlorobenzene	ND	mg/L	0.075	EPA Primary	0.001
✓	2,2-Dichloropropane	ND	mg/L			0.002
✓	2-Chlorotoluene	ND	mg/L			0.001
✓	4-Chlorotoluene	ND	mg/L			0.001
1	Acetone	ND	mg/L			0.01
1	Benzene	ND	mg/L	0.005	EPA Primary	0.001
1	Bromobenzene	ND	mg/L			0.002
✓	Bromomethane	ND	mg/L			0.002
✓	Carbon Tetrachloride	ND	mg/L	0.005	EPA Primary	0.001
1	Chlorobenzene	ND	mg/L	0.1	EPA Primary	0.001
1	Chloroethane	ND	mg/L			0.002
1	Chloromethane	ND	mg/L			0.002
✓	cis-1,2-Dichloroethene	ND	mg/L	0.07	EPA Primary	0.002
✓	cis-1,3-Dichloropropene	ND	mg/L			0.002
1	DBCP	ND	mg/L			0.001
1	Dibromomethane	ND	mg/L			0.002
✓	Dichlorodifluoromethane	ND	mg/L			0.002
1	Dichloromethane	ND	mg/L	0.005	EPA Primary	0.002
1	EDB	ND	mg/L			0.001
1	Ethylbenzene	ND	mg/L	0.7	EPA Primary	0.001
1	Methyl Tert Butyl Ether	ND	mg/L			0.004
1	Methyl-Ethyl Ketone	ND	mg/L			0.01
1	Styrene	ND	mg/L	0.1	EPA Primary	0.001
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Status	Contaminant	Results	Units	National Standa	rds	Min. Detection Level
1	Tetrachloroethene	ND	mg/L	0.005	EPA Primary	0.002
1	Tetrahydrofuran	ND	mg/L			0.01
✓	Toluene	ND	mg/L	1	EPA Primary	0.001
✓	trans-1,2-Dichloroethene	ND	mg/L	0.1	EPA Primary	0.002
1	trans-1,3-Dichloropropene	ND	mg/L			0.002
1	Trichloroethene	ND	mg/L	0.005	EPA Primary	0.001
1	Trichlorofluoromethane	ND	mg/L			0.002
✓	Vinyl Chloride	ND	mg/L	0.002	EPA Primary	0.001
✓	Xylenes (Total)	ND	mg/L	10	EPA Primary	0.001
			Organic Ana	lytes - Others		
✓	2,4-D	ND	mg/L	0.07	EPA Primary	0.010
✓	Alachlor	ND	mg/L	0.002	EPA Primary	0.001
1	Aldrin	ND	mg/L			0.002
1	Atrazine	ND	mg/L	0.003	EPA Primary	0.002
✓	Chlordane	ND	mg/L	0.002	EPA Primary	0.001
1	Dichloran	ND	mg/L			0.002
1	Dieldrin	ND	mg/L			0.001
✓	Endrin	ND	mg/L	0.002	EPA Primary	0.0001
✓	Heptachlor	ND	mg/L	0.0004	EPA Primary	0.0004
✓	Heptachlor Epoxide	ND	mg/L	0.0002	EPA Primary	0.0001
✓	Hexachlorobenzene	ND	mg/L	0.001	EPA Primary	0.0005
1	Hexachlorocyclopentadiene	ND	mg/L	0.05	EPA Primary	0.001
✓	Lindane	ND	mg/L	0.0002	EPA Primary	0.0002
✓	Methoxychlor	ND	mg/L	0.04	EPA Primary	0.002
1	Pentachloronitrobenzene	ND	mg/L			0.002
1	Silvex 2,4,5-TP	ND	mg/L	0.05	EPA Primary	0.005
1	Simazine	ND	mg/L	0.004	EPA Primary	0.002
√	Total PCBs	ND	mg/L	0.0005	EPA Primary	0.0005

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Status	Contaminant	Results	Units	National Standards		Min. Detection Level
1	Toxaphene	ND	mg/L	0.003	EPA Primary	0.001
1	Trifluralin	ND	mg/L			0.002

We certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency or variations of these EPA methods.

These test results are intended to be used for informational purposes only and may not be used for regulatory compliance.

National Testing Laboratories, Ltd.

NATIONAL TESTING LABORATORIES, LTD

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LLC

56 Main Street Meredith, NH 03253

ATTN: Emery & Garrett Groundwater Inc.



6571 Wilson Mills Rd Cleveland, Ohio 44143 1-800-458-3330

Sample Number: 887710

Location: MER-45-AR3

Type of Water: Well Water

Collection Date and Time: 8/9/2018 2:20 PM
Received Date and Time: 8/10/2018 10:05 AM

Date Completed: 8/28/2018

Metals Filtered 0.5hr ptest

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Minimum Detection

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The contaminant was detected above the EPA enforceable MCL.



These results may be invalid.

Status	Contaminant	Results	Units	National Standards		lin. Detection Level	
		Microbiologicals					
	Total Coliform by P/A No bacteria sample was submitted.						
	Inorganic Analytes - Metals						
√	Aluminum	ND	mg/L	0.2	EPA Secondary	0.1	
✓	Arsenic	ND	mg/L	0.010	EPA Primary	0.005	
<u> </u>	Barium	ND	mg/L	2	EPA Primary	0.30	
✓	Cadmium	ND	mg/L	0.005	EPA Primary	0.002	
	Calcium	31.4	mg/L			2.0	
✓	Chromium	ND	mg/L	0.1	EPA Primary	0.010	
/	Copper	ND	mg/L	1.3	EPA Action Level	0.004	
1	Iron	ND	mg/L	0.3	EPA Secondary	0.020	
/	Lead	ND	mg/L	0.015	EPA Action Level	0.002	
	Lithium	0.006	mg/L			0.001	
	Magnesium	5.89	mg/L			0.10	
/	Manganese	ND	mg/L	0.05	EPA Secondary	0.004	
/	Mercury	ND	mg/L	0.002	EPA Primary	0.001	
/	Nickel	ND	mg/L			0.020	
	Potassium	3.4	mg/L			1.0	
/	Selenium	ND	mg/L	0.05	EPA Primary	0.020	
	Silica	17.5	mg/L			0.1	
✓	Silver	ND	mg/L	0.100	EPA Secondary	0.002	
	Sodium	125	mg/L			1	
	Strontium	0.302	mg/L			0.001	
√	Uranium	ND	mg/L	0.030	EPA Primary	0.001	
	Zinc	0.058	mg/L	5	EPA Secondary	0.004	
	Physical Factors						
	Alkalinity (Total as CaCO3)	22	mg/L			20	
	Hardness	100	mg/L	100	NTL Internal	10	

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Status	Contaminant	Results	Units	National Standa	ards N	Min. Detection Level		
	рН	6.0	pH Units	6.5 to 8.5	EPA Secondary			
	Total Dissolved Solids	480	mg/L	500	EPA Secondary	20		
1	Turbidity	ND	NTU	1.0	EPA Action Leve	I 0.1		
	Inorganic Analytes - Other							
✓	Bromide	ND	mg/L			0.5		
	Chloride	270.0	mg/L	250	EPA Secondary	5.0		
√	Fluoride	ND	mg/L	4.0	EPA Primary	0.5		
	Nitrate as N	1.7	mg/L	10	EPA Primary	0.5		
√	Nitrite as N	ND	mg/L	1	EPA Primary	0.5		
1	Ortho Phosphate	ND	mg/L			2.0		
	Sulfate	11.0	mg/L	250	EPA Secondary	5.0		
		Org	ganic Analytes	s - Trihalometha	nes			
\checkmark	Bromodichloromethane	ND	mg/L			0.002		
1	Bromoform	ND	mg/L			0.004		
1	Chloroform	ND	mg/L			0.002		
✓	Dibromochloromethane	ND	mg/L			0.004		
√	Total THMs	ND	mg/L	0.080	EPA Primary	0.002		
	Organic Analytes - Volatiles							
✓	1,1,1,2-Tetrachloroethane	ND	mg/L			0.002		
✓	1,1,1-Trichloroethane	ND	mg/L	0.2	EPA Primary	0.001		
√	1,1,2,2-Tetrachloroethane	ND	mg/L			0.002		
√	1,1,2-Trichloroethane	ND	mg/L	0.005	EPA Primary	0.002		
✓	1,1-Dichloroethane	ND	mg/L			0.002		
✓	1,1-Dichloroethene	ND	mg/L	0.007	EPA Primary	0.001		
1	1,1-Dichloropropene	ND	mg/L			0.002		
1	1,2,3-Trichlorobenzene	ND	mg/L			0.002		
1	1,2,3-Trichloropropane	ND	mg/L			0.002		
1	1,2,4-Trichlorobenzene	ND	mg/L	0.07	EPA Primary	0.002		

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Status	Contaminant	Results	Units	National Standards		Min. Detection Level
√	1,2-Dichlorobenzene	ND	mg/L	0.6	EPA Primary	0.001
√	1,2-Dichloroethane	ND	mg/L	0.005	EPA Primary	0.001
√	1,2-Dichloropropane	ND	mg/L	0.005	EPA Primary	0.002
√	1,3-Dichlorobenzene	ND	mg/L			0.001
√	1,3-Dichloropropane	ND	mg/L			0.002
√	1,4-Dichlorobenzene	ND	mg/L	0.075	EPA Primary	0.001
√	2,2-Dichloropropane	ND	mg/L			0.002
√	2-Chlorotoluene	ND	mg/L			0.001
√	4-Chlorotoluene	ND	mg/L			0.001
√	Acetone	ND	mg/L			0.01
√	Benzene	ND	mg/L	0.005	EPA Primary	0.001
√	Bromobenzene	ND	mg/L			0.002
√	Bromomethane	ND	mg/L			0.002
\	Carbon Tetrachloride	ND	mg/L	0.005	EPA Primary	0.001
√	Chlorobenzene	ND	mg/L	0.1	EPA Primary	0.001
√	Chloroethane	ND	mg/L			0.002
√	Chloromethane	ND	mg/L			0.002
√	cis-1,2-Dichloroethene	ND	mg/L	0.07	EPA Primary	0.002
√	cis-1,3-Dichloropropene	ND	mg/L			0.002
√	DBCP	ND	mg/L			0.001
√	Dibromomethane	ND	mg/L			0.002
1	Dichlorodifluoromethane	ND	mg/L			0.002
√	Dichloromethane	ND	mg/L	0.005	EPA Primary	0.002
√	EDB	ND	mg/L			0.001
√	Ethylbenzene	ND	mg/L	0.7	EPA Primary	0.001
√	Methyl Tert Butyl Ether	ND	mg/L			0.004
√	Methyl-Ethyl Ketone	ND	mg/L			0.01
√	Styrene	ND	mg/L	0.1	EPA Primary	0.001
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Status	Contaminant	Results	Units	National Standa	rds	Min. Detection Level
1	Tetrachloroethene	ND	mg/L	0.005	EPA Primary	0.002
1	Tetrahydrofuran	ND	mg/L			0.01
✓	Toluene	ND	mg/L	1	EPA Primary	0.001
✓	trans-1,2-Dichloroethene	ND	mg/L	0.1	EPA Primary	0.002
1	trans-1,3-Dichloropropene	ND	mg/L			0.002
1	Trichloroethene	ND	mg/L	0.005	EPA Primary	0.001
1	Trichlorofluoromethane	ND	mg/L			0.002
✓	Vinyl Chloride	ND	mg/L	0.002	EPA Primary	0.001
✓	Xylenes (Total)	ND	mg/L	10	EPA Primary	0.001
			Organic Ana	lytes - Others		
✓	2,4-D	ND	mg/L	0.07	EPA Primary	0.010
✓	Alachlor	ND	mg/L	0.002	EPA Primary	0.001
1	Aldrin	ND	mg/L			0.002
1	Atrazine	ND	mg/L	0.003	EPA Primary	0.002
✓	Chlordane	ND	mg/L	0.002	EPA Primary	0.001
1	Dichloran	ND	mg/L			0.002
1	Dieldrin	ND	mg/L			0.001
✓	Endrin	ND	mg/L	0.002	EPA Primary	0.0001
✓	Heptachlor	ND	mg/L	0.0004	EPA Primary	0.0004
✓	Heptachlor Epoxide	ND	mg/L	0.0002	EPA Primary	0.0001
✓	Hexachlorobenzene	ND	mg/L	0.001	EPA Primary	0.0005
1	Hexachlorocyclopentadiene	ND	mg/L	0.05	EPA Primary	0.001
✓	Lindane	ND	mg/L	0.0002	EPA Primary	0.0002
✓	Methoxychlor	ND	mg/L	0.04	EPA Primary	0.002
1	Pentachloronitrobenzene	ND	mg/L			0.002
1	Silvex 2,4,5-TP	ND	mg/L	0.05	EPA Primary	0.005
1	Simazine	ND	mg/L	0.004	EPA Primary	0.002
√	Total PCBs	ND	mg/L	0.0005	EPA Primary	0.0005

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Status	Contaminant	Results	Units	National Standards		Min. Detection Level
1	Toxaphene	ND	mg/L	0.003	EPA Primary	0.001
1	Trifluralin	ND	mg/L			0.002

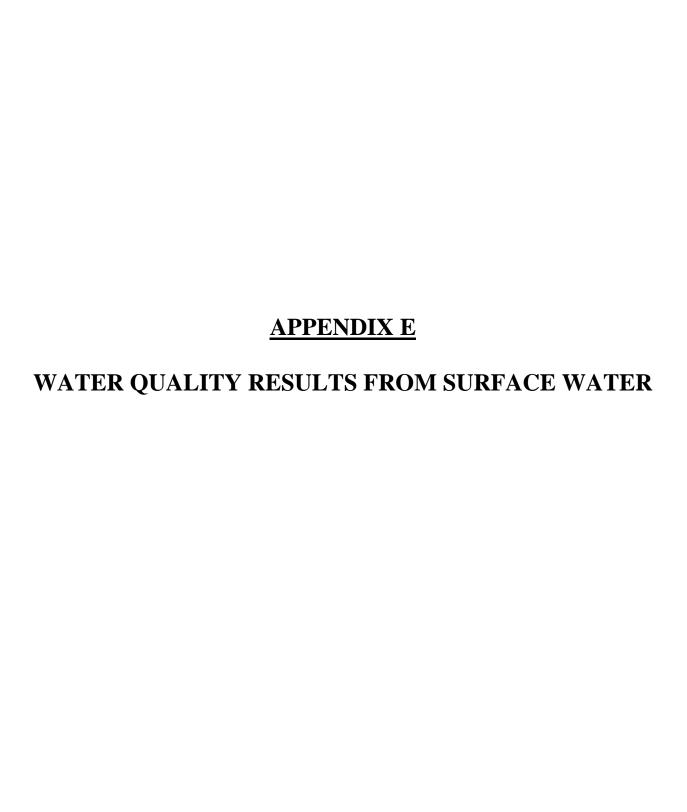
We certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency or variations of these EPA methods.

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National Testing Laboratories, Ltd.

NATIONAL TESTING LABORATORIES, LTD

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Emery & Garrett Groundwater Investigations, A Division of GZA

Informational Water Quality Report

Watercheck w/PO

Client:		
MVD- 4&5 AR		

Ordered By:

Emery & Garrett Groundwater Investigations,

LLC

56 Main Street PO Box 1578 Meredith, NH 03253



6571 Wilson Mills Rd Cleveland, Ohio 44143 1-800-458-3330

Sample Number: 884662

Location: Merrimack River

Type of Water: Other

Collection Date and Time: 5/7/2018 1:30 PM
Received Date and Time: 5/10/2018 11:50 AM

Date Completed: 5/18/2018

Metals Not Filtered High Flow

Definition and Legend

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These results may be invalid.

Status	Contaminant	Results	Units	National Standards		lin. Detection Level
			Micro	biologicals		
	Total Coliform by P/A	No bacteria	a sample was	submitted.		
			Inorganic A	Analytes - Metal	S	
	Aluminum	0.3	mg/L	0.2	EPA Secondary	0.1
	Arsenic	ND	mg/L	0.010	EPA Primary	0.005
	Barium	ND	mg/L	2	EPA Primary	0.30
	Cadmium	ND	mg/L	0.005	EPA Primary	0.002
	Calcium	2.8	mg/L			2.0
	Chromium	ND	mg/L	0.1	EPA Primary	0.010
	Copper	ND	mg/L	1.3	EPA Action Level	0.004
	Iron	0.521	mg/L	0.3	EPA Secondary	0.020
	Lead	ND	mg/L	0.015	EPA Action Level	0.002
	Lithium	0.001	mg/L			0.001
	Magnesium	0.57	mg/L			0.10
	Manganese	0.089	mg/L	0.05	EPA Secondary	0.004
	Mercury	ND	mg/L	0.002	EPA Primary	0.001
	Nickel	ND	mg/L			0.020
	Potassium	ND	mg/L			1.0
	Selenium	ND	mg/L	0.05	EPA Primary	0.020
	Silica	5.1	mg/L			0.1
	Silver	ND	mg/L	0.100	EPA Secondary	0.002
	Sodium	9	mg/L			1
	Strontium	0.022	mg/L			0.001
	Uranium	ND	mg/L	0.030	EPA Primary	0.001
	Zinc	0.006	mg/L	5	EPA Secondary	0.004
			Physi	cal Factors		
	Alkalinity (Total as CaCO3)	ND	mg/L			20
	Hardness	ND	mg/L	100	NTL Internal	10

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Status	Contaminant	Results	Units	National Standa	ards N	lin. Detection Level
	рН	6.3	pH Units	6.5 to 8.5	EPA Secondary	
	Total Dissolved Solids	30	mg/L	500	EPA Secondary	20
	Turbidity	1.5	NTU	1.0	EPA Action Leve	0.1
			Inorganic A	nalytes - Other		
✓	Bromide	ND	mg/L			0.5
	Chloride	12.0	mg/L	250	EPA Secondary	5.0
√	Fluoride	ND	mg/L	4.0	EPA Primary	0.5
√	Nitrate as N	ND	mg/L	10	EPA Primary	0.5
✓	Nitrite as N	ND	mg/L	1	EPA Primary	0.5
✓	Ortho Phosphate	ND	mg/L			2.0
1	Sulfate	ND	mg/L	250	EPA Secondary	5.0
		Or	ganic Analytes	s - Trihalometha	nes	
✓	Bromodichloromethane	ND	mg/L			0.002
1	Bromoform	ND	mg/L			0.004
1	Chloroform	ND	mg/L			0.002
1	Dibromochloromethane	ND	mg/L			0.004
1	Total THMs	ND	mg/L	0.080	EPA Primary	0.002
			Organic Ana	llytes - Volatiles		
1	1,1,1,2-Tetrachloroethane	ND	mg/L			0.002
√	1,1,1-Trichloroethane	ND	mg/L	0.2	EPA Primary	0.001
1	1,1,2,2-Tetrachloroethane	ND	mg/L			0.002
√	1,1,2-Trichloroethane	ND	mg/L	0.005	EPA Primary	0.002
✓	1,1-Dichloroethane	ND	mg/L			0.002
1	1,1-Dichloroethene	ND	mg/L	0.007	EPA Primary	0.001
1	1,1-Dichloropropene	ND	mg/L			0.002
1	1,2,3-Trichlorobenzene	ND	mg/L			0.002
1	1,2,3-Trichloropropane	ND	mg/L			0.002
1	1,2,4-Trichlorobenzene	ND	mg/L	0.07	EPA Primary	0.002

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Status	Contaminant	Results	Units	National Star	ndards	Min. Detection Level
√	1,2-Dichlorobenzene	ND	mg/L	0.6	EPA Primary	0.001
√	1,2-Dichloroethane	ND	mg/L	0.005	EPA Primary	0.001
√	1,2-Dichloropropane	ND	mg/L	0.005	EPA Primary	0.002
√	1,3-Dichlorobenzene	ND	mg/L			0.001
√	1,3-Dichloropropane	ND	mg/L			0.002
√	1,4-Dichlorobenzene	ND	mg/L	0.075	EPA Primary	0.001
√	2,2-Dichloropropane	ND	mg/L			0.002
√	2-Chlorotoluene	ND	mg/L			0.001
√	4-Chlorotoluene	ND	mg/L			0.001
√	Acetone	ND	mg/L			0.01
√	Benzene	ND	mg/L	0.005	EPA Primary	0.001
√	Bromobenzene	ND	mg/L			0.002
√	Bromomethane	ND	mg/L			0.002
√	Carbon Tetrachloride	ND	mg/L	0.005	EPA Primary	0.001
√	Chlorobenzene	ND	mg/L	0.1	EPA Primary	0.001
√	Chloroethane	ND	mg/L			0.002
√	Chloromethane	ND	mg/L			0.002
√	cis-1,2-Dichloroethene	ND	mg/L	0.07	EPA Primary	0.002
√	cis-1,3-Dichloropropene	ND	mg/L			0.002
√	DBCP	ND	mg/L			0.001
√	Dibromomethane	ND	mg/L			0.002
√	Dichlorodifluoromethane	ND	mg/L			0.002
√	Dichloromethane	ND	mg/L	0.005	EPA Primary	0.002
√	EDB	ND	mg/L			0.001
√	Ethylbenzene	ND	mg/L	0.7	EPA Primary	0.001
√	Methyl Tert Butyl Ether	ND	mg/L			0.004
√	Methyl-Ethyl Ketone	ND	mg/L			0.01
1	Styrene	ND	mg/L	0.1	EPA Primary	0.001
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Status	Contaminant	Results	Units	National Standa	ırds	Min. Detection Level
1	Tetrachloroethene	ND	mg/L	0.005	EPA Primary	0.002
✓	Tetrahydrofuran	ND	mg/L			0.01
1	Toluene	ND	mg/L	1	EPA Primary	0.001
1	trans-1,2-Dichloroethene	ND	mg/L	0.1	EPA Primary	0.002
1	trans-1,3-Dichloropropene	ND	mg/L			0.002
1	Trichloroethene	ND	mg/L	0.005	EPA Primary	0.001
1	Trichlorofluoromethane	ND	mg/L			0.002
1	Vinyl Chloride	ND	mg/L	0.002	EPA Primary	0.001
1	Xylenes (Total)	ND	mg/L	10	EPA Primary	0.001
			Organic Ana	llytes - Others		
✓	2,4-D	ND	mg/L	0.07	EPA Primary	0.010
✓	Alachlor	ND	mg/L	0.002	EPA Primary	0.001
√	Aldrin	ND	mg/L			0.002
✓	Atrazine	ND	mg/L	0.003	EPA Primary	0.002
✓	Chlordane	ND	mg/L	0.002	EPA Primary	0.001
✓	Dichloran	ND	mg/L			0.002
1	Dieldrin	ND	mg/L			0.001
1	Endrin	ND	mg/L	0.002	EPA Primary	0.0001
1	Heptachlor	ND	mg/L	0.0004	EPA Primary	0.0004
1	Heptachlor Epoxide	ND	mg/L	0.0002	EPA Primary	0.0001
1	Hexachlorobenzene	ND	mg/L	0.001	EPA Primary	0.0005
1	Hexachlorocyclopentadiene	ND	mg/L	0.05	EPA Primary	0.001
1	Lindane	ND	mg/L	0.0002	EPA Primary	0.0002
1	Methoxychlor	ND	mg/L	0.04	EPA Primary	0.002
1	Pentachloronitrobenzene	ND	mg/L			0.002
1	Silvex 2,4,5-TP	ND	mg/L	0.05	EPA Primary	0.005
1	Simazine	ND	mg/L	0.004	EPA Primary	0.002
1	Total PCBs	ND	mg/L	0.0005	EPA Primary	0.0005

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Status	Contaminant	Results	Units	National Standards		Min. Detection Level
1	Toxaphene	ND	mg/L	0.003	EPA Primary	0.001
1	Trifluralin	ND	mg/L			0.002

We certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency or variations of these EPA methods.

These test results are intended to be used for informational purposes only and may not be used for regulatory compliance.

National Testing Laboratories, Ltd.

NATIONAL TESTING LABORATORIES, LTD

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Informational Water Quality Report

Watercheck w/PO

Client:		
MVD- 4&5 AR		

Ordered By:

Emery & Garrett Groundwater Investigations,

LLC

56 Main Street PO Box 1578 Meredith, NH 03253



6571 Wilson Mills Rd Cleveland, Ohio 44143 1-800-458-3330

Sample Number: 884663

Location: Baboosic Brook

Type of Water: Other

Collection Date and Time: 5/7/2018 3:00 PM
Received Date and Time: 5/10/2018 11:50 AM

Date Completed: 5/18/2018

Metals Not Filtered High Flow

Definition and Legend

This informational water quality report compares the actual test result to national standards as defined in the EPA's Primary and Secondary Drinking Water Regulations.

Primary Standards: Are expressed as the maximum contaminant level (MCL) which is the highest level of contaminant that

is allowed in drinking water. MCLs are enforceable standards.

Secondary standards: Are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin

or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. Individual

states may choose to adopt them as enforceable standards.

Action levels: Are defined in treatment techniques which are required processes intended to reduce the level of a

contaminant in drinking water.

mg/L (ppm): Unless otherwise indicated, results and standards are expressed as an amount in milligrams per liter or

parts per million.

Minimum Detection

Level (MDL):

The lowest level that the laboratory can detect a contaminant.

ND: The contaminant was not detected above the minimum detection level.

NA: The contaminant was not analyzed.

✓

The contaminant was not detected in the sample above the minimum detection level.



The contaminant was detected at or above the minimum detection level, but not above the referenced standard.



The contaminant was detected above the standard, which is not an EPA enforceable MCL.



The contaminant was detected above the EPA enforceable MCL.



These results may be invalid.

status	Contaminant	Results	Units	National Standards		lin. Detection Level
			Micro	biologicals		
	Total Coliform by P/A	No bacteria	a sample was	submitted.		
			Inorganic A	Analytes - Metal	S	
	Aluminum	ND	mg/L	0.2	EPA Secondary	0.1
	Arsenic	ND	mg/L	0.010	EPA Primary	0.005
	Barium	ND	mg/L	2	EPA Primary	0.30
	Cadmium	ND	mg/L	0.005	EPA Primary	0.002
	Calcium	8.3	mg/L			2.0
	Chromium	ND	mg/L	0.1	EPA Primary	0.010
	Copper	ND	mg/L	1.3	EPA Action Level	0.004
	Iron	0.801	mg/L	0.3	EPA Secondary	0.020
	Lead	ND	mg/L	0.015	EPA Action Level	0.002
	Lithium	ND	mg/L			0.001
	Magnesium	1.80	mg/L			0.10
	Manganese	0.121	mg/L	0.05	EPA Secondary	0.004
	Mercury	ND	mg/L	0.002	EPA Primary	0.001
	Nickel	ND	mg/L			0.020
	Potassium	1.5	mg/L			1.0
	Selenium	ND	mg/L	0.05	EPA Primary	0.020
	Silica	3.3	mg/L			0.1
	Silver	ND	mg/L	0.100	EPA Secondary	0.002
	Sodium	32	mg/L			1
	Strontium	0.082	mg/L			0.001
	Uranium	ND	mg/L	0.030	EPA Primary	0.001
	Zinc	ND	mg/L	5	EPA Secondary	0.004
			Physi	ical Factors		
	Alkalinity (Total as CaCO3)	ND	mg/L			20
	Hardness	28	mg/L	100	NTL Internal	10

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Status	Contaminant	Results	Units	National Standa	ards N	/lin. Detection Level
1	рН	7.6	pH Units	6.5 to 8.5	EPA Secondary	
	Total Dissolved Solids	99	mg/L	500	EPA Secondary	20
	Turbidity	0.7	NTU	1.0	EPA Action Leve	0.1
			Inorganic A	nalytes - Other		
✓	Bromide	ND	mg/L			0.5
	Chloride	51.0	mg/L	250	EPA Secondary	5.0
1	Fluoride	ND	mg/L	4.0	EPA Primary	0.5
1	Nitrate as N	ND	mg/L	10	EPA Primary	0.5
1	Nitrite as N	ND	mg/L	1	EPA Primary	0.5
✓	Ortho Phosphate	ND	mg/L			2.0
1	Sulfate	ND	mg/L	250	EPA Secondary	5.0
		Or	ganic Analytes	s - Trihalometha	nes	
✓	Bromodichloromethane	ND	mg/L			0.002
1	Bromoform	ND	mg/L			0.004
1	Chloroform	ND	mg/L			0.002
1	Dibromochloromethane	ND	mg/L			0.004
1	Total THMs	ND	mg/L	0.080	EPA Primary	0.002
			Organic Ana	llytes - Volatiles		
√	1,1,1,2-Tetrachloroethane	ND	mg/L			0.002
1	1,1,1-Trichloroethane	ND	mg/L	0.2	EPA Primary	0.001
1	1,1,2,2-Tetrachloroethane	ND	mg/L			0.002
1	1,1,2-Trichloroethane	ND	mg/L	0.005	EPA Primary	0.002
1	1,1-Dichloroethane	ND	mg/L			0.002
1	1,1-Dichloroethene	ND	mg/L	0.007	EPA Primary	0.001
1	1,1-Dichloropropene	ND	mg/L			0.002
1	1,2,3-Trichlorobenzene	ND	mg/L			0.002
1	1,2,3-Trichloropropane	ND	mg/L			0.002
1	1,2,4-Trichlorobenzene	ND	mg/L	0.07	EPA Primary	0.002

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Status	Contaminant	Results	Units	National Star	ndards	Min. Detection Level
√	1,2-Dichlorobenzene	ND	mg/L	0.6	EPA Primary	0.001
√	1,2-Dichloroethane	ND	mg/L	0.005	EPA Primary	0.001
√	1,2-Dichloropropane	ND	mg/L	0.005	EPA Primary	0.002
√	1,3-Dichlorobenzene	ND	mg/L			0.001
√	1,3-Dichloropropane	ND	mg/L			0.002
√	1,4-Dichlorobenzene	ND	mg/L	0.075	EPA Primary	0.001
√	2,2-Dichloropropane	ND	mg/L			0.002
√	2-Chlorotoluene	ND	mg/L			0.001
✓	4-Chlorotoluene	ND	mg/L			0.001
√	Acetone	ND	mg/L			0.01
√	Benzene	ND	mg/L	0.005	EPA Primary	0.001
√	Bromobenzene	ND	mg/L			0.002
√	Bromomethane	ND	mg/L			0.002
√	Carbon Tetrachloride	ND	mg/L	0.005	EPA Primary	0.001
√	Chlorobenzene	ND	mg/L	0.1	EPA Primary	0.001
√	Chloroethane	ND	mg/L			0.002
√	Chloromethane	ND	mg/L			0.002
√	cis-1,2-Dichloroethene	ND	mg/L	0.07	EPA Primary	0.002
√	cis-1,3-Dichloropropene	ND	mg/L			0.002
√	DBCP	ND	mg/L			0.001
√	Dibromomethane	ND	mg/L			0.002
√	Dichlorodifluoromethane	ND	mg/L			0.002
1	Dichloromethane	ND	mg/L	0.005	EPA Primary	0.002
1	EDB	ND	mg/L			0.001
√	Ethylbenzene	ND	mg/L	0.7	EPA Primary	0.001
√	Methyl Tert Butyl Ether	ND	mg/L			0.004
√	Methyl-Ethyl Ketone	ND	mg/L			0.01
1	Styrene	ND	mg/L	0.1	EPA Primary	0.001
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Status	Contaminant	Results	Units	National Standards		Min. Detection Level			
1	Tetrachloroethene	ND	mg/L	0.005	EPA Primary	0.002			
✓	Tetrahydrofuran	ND	mg/L			0.01			
1	Toluene	ND	mg/L	1	EPA Primary	0.001			
✓	trans-1,2-Dichloroethene	ND	mg/L	0.1	EPA Primary	0.002			
1	trans-1,3-Dichloropropene	ND	mg/L			0.002			
1	Trichloroethene	ND	mg/L	0.005	EPA Primary	0.001			
1	Trichlorofluoromethane	ND	mg/L			0.002			
1	Vinyl Chloride	ND	mg/L	0.002	EPA Primary	0.001			
1	Xylenes (Total)	ND	mg/L	10	EPA Primary	0.001			
	Organic Analytes - Others								
✓	2,4-D	ND	mg/L	0.07	EPA Primary	0.010			
√	Alachlor	ND	mg/L	0.002	EPA Primary	0.001			
√	Aldrin	ND	mg/L			0.002			
√	Atrazine	ND	mg/L	0.003	EPA Primary	0.002			
✓	Chlordane	ND	mg/L	0.002	EPA Primary	0.001			
✓	Dichloran	ND	mg/L			0.002			
1	Dieldrin	ND	mg/L			0.001			
1	Endrin	ND	mg/L	0.002	EPA Primary	0.0001			
✓	Heptachlor	ND	mg/L	0.0004	EPA Primary	0.0004			
✓	Heptachlor Epoxide	ND	mg/L	0.0002	EPA Primary	0.0001			
1	Hexachlorobenzene	ND	mg/L	0.001	EPA Primary	0.0005			
1	Hexachlorocyclopentadiene	ND	mg/L	0.05	EPA Primary	0.001			
1	Lindane	ND	mg/L	0.0002	EPA Primary	0.0002			
1	Methoxychlor	ND	mg/L	0.04	EPA Primary	0.002			
1	Pentachloronitrobenzene	ND	mg/L			0.002			
1	Silvex 2,4,5-TP	ND	mg/L	0.05	EPA Primary	0.005			
1	Simazine	ND	mg/L	0.004	EPA Primary	0.002			
1	Total PCBs	ND	mg/L	0.0005	EPA Primary	0.0005			

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Status	Contaminant	Results	Units	National Standards		Min. Detection Level
1	Toxaphene	ND	mg/L	0.003	EPA Primary	0.001
1	Trifluralin	ND	mg/L			0.002

We certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency or variations of these EPA methods.

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National Testing Laboratories, Ltd.

NATIONAL TESTING LABORATORIES, LTD

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