



September 20, 2018

Virginia Barker
Director, Brevard County Natural Resources Management Office
2725 Judge Fran Jamieson Way, Bldg. A
Viera, Florida 32940

**Scope of Work and Fees for the Countywide Investigation of PFOA (Perfluoro compounds)
in surface water, irrigation water, groundwater, and muck samples**

Task Order #271010-14-001-006

Dear Virginia,

Thank you for providing Applied Ecology, Inc. (AEI) the opportunity to assist the Brevard County Natural Resources Management Office with the referenced services. This scope of work focuses on the sampling for PFAS and reporting of results for 40 samples (plus one blank) of a variety of sources, including irrigation water, shallow groundwater monitoring wells, push-point wells, surface grabs, and muck samples. In addition, preparation and attendance of intergovernmental and community meetings, FDEP Correspondence and Site Investigation Supports are also included. There is an optional task offered to perform historical imagery review.

Please refer to Appendix A for a detailed description of level of effort and costs by subtask.

Task 1 – Field Sampling

Field sampling will include the appropriate coordination with the lab to obtain necessary sampling kits, chain of custody forms and the sampling for the following number and types of samples:

Type of Sample	# Samples	Proposed Locations
Surface Grabs	9	Grand Canal (3), IRL (3), BR (3)
Irrigation Wells	13	S. Patrick Shores (7), Snug Harbor (6)
Muck (soil with >90% water)	3	Grand Canal
Groundwater Wells	13	Titusville Sewer (3), Titusville Control (1), Suntree Sewer (3), Turkey Creek Sewer (3), Satellite Beach Sewer (3)
Push point groundwater	2	Spoil Site
Blanks	1	Trip field blank
Total	40	

Locations will be discussed with the County and the subcontractor and agreed upon prior to any sampling taking place.

For all proposed sample types and locations, the EPA 537 modified method, which provided the PFAS Full List of DoD 24 Analytes will be analyzed at a NELAC and DOD certified lab. Strict SOPs will be followed for the sampling of PFAS to reduce potential sources of contamination. However, cross-contamination from other sources of PFAS can be difficult to control when using private individual lawns and wells, with previously installed wells not controlled during construction for perfluoro compounds (i.e. use of O-rings), use of lawn chemical treatments, and others.

In addition, two (2) representative samples of a shallow irrigation wells will be tested for a suite of EPA priority pollutants, manganese, dioxins, and radionuclides. Irrigation well sampling is completely dependent on successful recruitment of homeowners who will provide access to their irrigation well water within the area of interest. The selection of this sample will be discussed with the County and include the following specific analytes and respective EPA methods:

- PPL Volatile Organics - SW846 8260B
- PPL Semivolatiles - SW846 8270D
- PPL Pesticides - SW846 8081B
- PCBs - SW846 8082A
- Cyanide, Total - EPA 335.4/SW 9012B
- Priority Pollutant Metals - SW846 6010/7000
- Manganese – EPA 200.5
- Tetra-Octa CDD/F(SGS-NC) (Dioxins) - EPA 8290
- Gross Alpha, radionuclides - EPA 900.0
- Gross Beta - EPA 900.0
- Radium 226 - EPA 903.1
- Radium 228 - EPA Ra-05

This task includes limited coordination with the homeowners (well sites), to request permission for testing additional samples for non-nutrient or bacterial analytes. No recruitment of homeowners for irrigation sampling is included under this task. No guarantees can be made that all current homeowners will grant permission to test for non-nutrient parameters.

Task 1 total labor costs are \$5,435 and expenses (laboratory costs, field supplies, equipment, mileage) \$15,982. *Total Task 1 Cost: \$21,417*

Task 2 – Reporting and Meeting Support

Task 2 includes the data entry and summary reporting of the field samples collected under Task 1. In addition, it includes the following effort:

- Participate in up to two intergovernmental coordination meetings with local governments in response to PFAS and/or South Patrick Shores potential dump area related concerns from the public. (subcontractor only)
- Correspond with Florida Department of Environmental Protection (FDEP) Waste Cleanup Program/Site Investigation Section (SIS) personnel regarding potential funding through FDEP to initiate actions to investigate the potential South Patrick Shores dump site area. (subcontractor only)
- Determine Sampling locations/methodology for sampling of surface water, and sediments (muck and background location sediments).
- Correspond with FDEP personnel regarding potential FDEP testing of fish/biota and potential issuance of advisories regarding consumption based upon the results. (subcontractor only)
- Prepare a presentation and present information on PFAS or potential S. Patrick Shores dump area at one community meeting, if needed.

Total Task 2 Cost: \$8,776 (all labor)

Optional Task

If requested, the subcontractor will conduct an initial desktop evaluation of historical aerial photographs (with geo-referencing to current aerial imagery) to provide some background information to support the investigation/request to FDEP.

The total effort for this *Optional task* is \$1,108.

Project Deliverables:

- Summary memo report which includes approximate sampling locations (private locations might not be able to be disclosed), the laboratory results, field quality assurance, and calibration logs, and summary discussion of results for all 37 samples.
- Attendance by the subcontractor at two intergovernmental meetings
- Copies of the correspondence with FDEP
- Presentation for the community meeting in PowerPoint or PDF format

The scheduled sampling event will take place by October 31st and results should be available within 3 weeks after sampling is complete (if no laboratory equipment failures occur). The Summary Memo will be delivered within one week after laboratory results are made available to Applied Ecology.

The total additional cost for the task effort (Tasks 1 and 2) is \$30,193, which includes additional field supplies, laboratory costs, and labor. The Optional Desktop Evaluation Task is not included in this total.

The subcontractor scope of work is included as an Attachment.

I look forward to working with you for these services. If you have any questions, please do not hesitate to contact me at 321.848.1272 or clistopad@appliedecologyinc.com.

Sincerely,



Claudia M. Listopad, Ph.D., GISP
Principal Scientist
Applied Ecology, Inc.



Appendix A. Tasks and subtasks with associated effort and cost for the Countywide Investigation of PFOA (Perfluoro compounds) in surface water, irrigation water, groundwater, and muck samples

Task	Subtask	Description	Principal Scientist	Senior Scientist	Env. Scientist I	Junior Tech	Total Hrs	Geosyntec Total Cost	Total Cost
			\$135.00	\$90.00	\$50.00	\$35.00			
Field Sampling	1	Lab coordination, homeowner coordination (no recruitment)	8	0	4	0	12	\$0	\$1,280
	2	Irrigation wells: 7 in S. Patrick Shores, 6 in S. Cocoa Beach	0	0	8.5	3	11.5	\$0	\$530
	3	Muck sampling & Surface Grabs Grand Canal	0	8	8	0	16	\$0	\$1,120
	4	Surface Grabs Banana River & IRL	0	0	8	8	16	\$0	\$680
	5	Well Sampling (Turkey Creek, Titusville, Viera/Suntree, Satellite Beach, and control (13 samples)	0	0	16	20	36	\$0	\$1,500
	6	Push point groundwater sampling spoil site (2 samples)	0	0	3	5	8	\$0	\$325
WELL INSTALLATION TASK TOTAL			8	8	47.5	36	99.5	\$0	\$5,435
Reporting and Meeting Support	1	Data entry, summary memo with results	8.5	0	17	0	25.5	0	\$1,998
	2	Intergovernmental meetings	0	0	0	0	0	2000	\$2,000
	3	FDEP SIS Coordination	0	0	0	0	0	500	\$500
	4	Sampling Location/Methodology Support	4	0	0	0	4	500	\$1,040
	5	FDEP Correspondence, Fish/Biota/Advisories	0	0	0	0	0	1072	\$1,072
	6	Prepare/Present at Community Meeting	4	0	0	0	4	1626	\$2,166
GW SAMPLING TASK TOTAL			16.5		17	0	33.5	\$5,698	\$8,776
Optional	1	Historical Imagery Review	1	0	0	0	0	\$973	\$1,108
REPORTING TASK TOTAL			1		0	0	0	\$973	\$1,108
Project Subtotal (Labor Only, Excludes Optional Task)									\$14,211
Expenses (Lab Costs, Field Equipment and Disposables, Travel Mileage)									\$15,982
Project Total with Expenses (Excludes Optional Task)									\$30,193

24 August 2018

Claudia Listopad, Ph.D.
Applied Ecology Inc.
Melbourne, FL 32937
Phone: (321) 848-1272

clistopad@appliedecologyinc.com

Subject: Proposal to Provide PFAS Related Support to Brevard County

Dear Dr. Listopad:

As we discussed, and based on recent dialogue with Virginia Barker, Brevard County Natural Resources Management Office, Geosyntec Consultants, Inc. (Geosyntec) has been asked to provide technical support to Brevard County as it pertains to per- and polyfluoroalkyl substances (PFAS), in addition to regulatory interface associated with the South Patrick Shores potential dump area. To support Brevard County, as a subcontractor to Applied Ecology, Inc., Geosyntec proposes the following tasks:

- **Task 1** - Participate in up to two intergovernmental coordination meetings with local governments in response to PFAS and/or South Patrick Shores potential dump area related concerns from the public.
- **Task 2** - Correspond with Florida Department of Environmental Protection (FDEP) Waste Cleanup Program/Site Investigation Section (SIS) personnel regarding potential funding through FDEP to initiate actions to investigate the potential South Patrick Shores dump site area.

Task 2 (Optional) – If requested, Geosyntec will conduct an initial desktop evaluation of historical aerial photographs (with geo-referencing to current aerial imagery) to provide some background information to support the investigation/request to FDEP.

- **Task 3** - Provide support regarding sampling locations/methodology for potential Applied Ecology, Inc. sampling of surface water, and sediments (muck and background location sediments).
- **Task 4** - Correspond with FDEP personnel regarding potential FDEP testing of fish/biota and potential issuance of advisories regarding consumption based upon the results.
- **Task 5** - Prepare a presentation and present information on PFAS or potential S. Patrick Shores dump area at one community meeting, if needed.

ESTIMATED COST

Table 1 includes a summary of the estimated costs as follows:

Table 1
Summary of Estimated Costs
Brevard County PFAS Related Support

Task	Task Description	Labor Hours	Labor
1	Intergovernmental Meetings	8	\$2,000
2	FDEP SIS Coordination	2	\$500
Optional 2	Historical Imagery Review	6	\$973
3	Sampling Location/Methodology Support	2	\$500
4	FDEP Correspondence, Fish/Biota/Advisories	6	\$1,072
5	Prepare/Present at Community Meeting	9	\$1,626
	Total Estimated Budget	33	\$6,671

Geosyntec estimates that the time and materials cost for the services described in the scope of work presented above to be \$6,671. Geosyntec will proceed with the scope of work described upon execution of the Professional Services Agreement (**Attachment A**) and return of the signed authorization to proceed below.

Claudia Listopad, Ph.D.
24 August 2018
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CLOSURE

Geosyntec appreciates the opportunity to submit this budget cost estimate and we look forward to working with you on this project. Please do not hesitate to contact the undersigned with questions you may have as you review this fee proposal.

Sincerely,



Jim Langenbach, P.E.(FL), BCEE
Senior Principal / Florida Branch Manager

Attachment A: Professional Services Agreement

By its signature below and/or authorizing Geosyntec to proceed in accordance with this Proposal, Applied Ecology, Inc. accepts and agrees to the Services, Schedule and Compensation described above and the attached terms and conditions.

Signature/Date

CCR18029.DOC