1. **Overview**

Task groups are broken down by major analytical area (metals, nutrients, general, organic, and microbiologic) and into program projects (water projects). The primary sample matrix will be surface water, ground water, and wastewater.

The IDEM/OWQ has several long-term projects underway. IDEM/OWQ expects some form of price adjustment for volume sample delivery. Contractors must work with IDEM/OWQ to meet IDEM/OWQ sampling schedules. Contractors should only bid on the project specific Tasks that they have the capacity and ability to perform. Contractors unwilling to meet required project sampling schedules should not bid on the project.

Tasks contain conditions in addition to requirements specified in the RFP and in Lieu of RFP requirements. Contractors are cautioned to note the specifications of each Task they bid. There are twelve Task Lists and three bid groups. The Task Lists are as follows:

**Task 1A, 1B** Metals;

**Task 2A** Generals and Cyanide**;**

**Task 2B** Nutrients

**Task 2C** Other Generals, Nutrients, and BODs

**Task 3A** Volatile Organics;

**Task 3B** Semi volatile Organics;

**Task 3C** PCBs and Pesticides;

**Task 3D** Pesticides and Semi-volatile Organics(Method 525.3);

**Task 4** Sediments Project;

**Task 5** Microbiologic Identification, Enumeration & Cyanotoxin Analysis;

**SAS** Special Analytical Services.

The Tasks are collected into three bid groups. Contractors must bid on Bid Group I and Bid Group II, which consists of full sample analyses of all parameters, for each Task listed in a Bid Group and its associated methods.

The Bid Groups including the tasks that are included in that bid group are listed as follows:

Bid Group I = Tasks (1A, 1B, 2A, 2B, 2C, 3A, 3B, 3C, 3D);

Bid Group II = Task (4);

Bid Group III = Task (5);

Task 5 and Special Analytical Services Task (SAS): SAS Extended Capabilities. Contractors are encouraged to submit pricing for these SAS projects. However, these bids will not be used in the evaluation process. **Method Updates**

Methods listed in the Tasks represent general updates. Contractors should be implementing newer, faster, more sensitive, and more cost effective methodologies, as they are implemented and acceptable to the USEPA.

Proposals to substitute USEPA Methods for Standard Methods will be given consideration when the methods are comparable.

For all other Bid Groups, older methods, while still applicable for compliance monitoring, will not generally be approved as substitutes in this RFP.

1. **General Requirements**

Sample volumes and descriptions, listed in individual Tasks, are for information purposes only and do not constitute a commitment or a Contract for sample volume, services, or length of an awarded Contract. This is a formal process; any conditions will be specified in an actual Award.

IDEM/OWQ has introduced numerous projects with mandatory and desired conditions and services. Contractors should provide their best pricing for both requests.

Contractors must provide pricing in accordance with the structures outlined in the RFP, the appendices, and attachments; however, Contractors may suggest alternative solutions to meet IDEM/OWQ needs. Alternative solutions will be assessed as additional considerations or in place of the specifications outlined in a Task. To be considered as a replacement to the specifications outlined in a Task, Contractors must provide pricing comparisons between the Task and the alternative solution and make a case as to why the alternative solution provides a better choice. IDEM/OWQ will be the sole judge of the suitability of alternative solutions.

Contractors desiring to bid on expanded service areas for projects with time or geographic limitations must meet all time restrictions, especially holding time requirements.

IDEM/OWQ reserves the right to accept an alternative solution in place of the primary specifications of a Task. Contractors have an equal opportunity to supply creative solutions to meeting IDEM/OWQ needs.

1. **Data Quality Assessment Level**

Data quality and reporting are expected to be at DQA Level 3, unless specified by the responsible IDEM/OWQ Quality Assurance Officer. Should there be a QA/QC failure or data problem that cannot be resolved and explained in the DQA Level 3 report, the contractor will be required to supply a DQA Level 4 report at no additional charge. Descriptions of DQA levels are listed in Attachment D3– *Quality Assurance/Quality Control Criteria*, Table 1.

1. **Mandatory Record Keeping, Reporting, and QA/QC Requirements**

Contractors must maintain dedicated original records of sample receiving and handling, bench sheets, instrumental or recorder output sheets and final reports for this project. Contractors must provide a minimum Data Quality Assessment Level 3 QC. Written reports must be converted to pdf format and transferred to a MSDOS formatted DVD or CD. The deliverables are not complete until both the written report and electronic deliverables have been received by IDEM/OWQ.

1. **Pricing**

Contractors are expected to provide aggressive itemized pricing, based on the estimated volume of samples. Due to the potential for a large volume of samples over the contract term IDEM/OWQ anticipates an overall lower group pricing.

1. **Other Lab Services**

Contractors are requested to provide a price for a pick up service and give geographical limitations regarding service area or radius for travel distance to pick up samples for each watershed. Pick up service is not mandatory for this Task and will not be utilized for Cost Comparison. Pick up service will be utilized in evaluation of Overall Management Judgment. Contractors willing to provide pick up services will be given extra consideration.

1. **Tasks**

**Task 1**

**Metals**

**Description**

Information enclosed is for descriptive purposes only and does not constitute a commitment or a Contract for sample volume, services, or length of Contract.

Analysis of groundwater, surface water or wastewater samples for Total Recoverable and/or Dissolved Metals. IDEM may request some or all of the following metals. This task is only for laboratory chemical analyses and does not include sampling.

QA/QC requirements and reporting must meet DQA Level 3.

**Mandatory Methods**

**IA. The following methods must be performed for Task 1.**

Methods with multiple listings may use any listing to meet the requirements. For example, Copper by 200.7 or 200.8. Contractors must indicate which method listing is to be utilized, that is either 200.7 or 200.8 or both. Where both 200.7 and 200.8 are specified, the method to be used will be the one that provides a significant measurable result with the least sample dilution. If no indication is made the assumption will be that any listed method may be requested by IDEM/OWQ.

Contractors are cautioned to review the required CRQLs and MDLs listed in Table 1.

The following metals will be required for most of the WAPB datasets

| **Metals** | **Methods** | **Total Recoverable** | **Dissolved** |
| --- | --- | --- | --- |
| Antimony | 200.7, 200.8 |  |  |
| Arsenic | 200.7, 200.8 |  |  |
| Cadmium | 200.7, 200.8 |  |  |
| Chromium (Total) | 200.7, 200.8 |  |  |
| Copper | 200.7, 200.8 |  |  |
| Lead | 200.7, 200.8 |  |  |
| Nickel | 200.7, 200.8 |  |  |
| Selenium | 200.7, 200.8 |  |  |
| Silver | 200.7, 200.8 |  |  |
| Zinc | 200.7, 200.8 |  |  |
| Aluminum | 200.7, 200.8 |  |  |
| Calcium | 200.7, 200.8 |  |  |
| Magnesium | 200.7, 200.8 |  |  |

**Estimated Sample Volume**

Approximately 500 samples per year will be generated.

**IB. Other Metals**

The following additional metals may be requested as needed for Office of Water Quality Projects. Metals requested may be total recoverable or dissolved.

|  |  |  |  |
| --- | --- | --- | --- |
| **Primary Pollutant Metals** | **Methods** | **Secondary Metals** | **Methods** |
| Beryllium | 200.7, 200.8 | Barium | 200.7, 200.8 |
|  |  | Manganese | 200.7, 200.8 |
| Mercury | 245.1, 245.2, 245.3 | Potassium | 200.7, 200.8 |
| Mercury | 1631E | Sodium | 200.7, 200.8 |
| Thallium | 200.7, 200.8 | Strontium | 200.7, 200.8 |
|  |  | Boron | 200.7, 200.8 |
|  |  | Cobalt | 200.7, 200.8 |
|  |  | Iron | 200.7, 200.8 |
|  |  | Molybdenum | 200.7, 200.8 |
|  |  | Titanium | 200.7, 200.8 |
|  |  | Vanadium | 200.7, 200.8 |

**Estimated Sample Volume**

Approximately 500 samples per year will be generated.

Contractors may utilize an Alternate Method if they demonstrate achievement of a Practical Quantitation Limit (PQL) at least equal to that of the Mandatory Method and with IDEM/OWQ approval. The calculation utilized to derive the PQL is PQL = 3.18 x MDL.

**Task 2A**

**General Chemistries, Cyanide**

**Description**

Information enclosed is for descriptive purposes only and does not constitute a commitment or a Contract for sample volume, services, or length of Contract.

Analysis of groundwater, surface water or wastewater samples for General chemistries, Nutrients, and Organics. This task is only for laboratory chemical analyses and does not include sampling.

QA/QC requirements and reporting must meet DQA Level 3.

**Mandatory Methods**

Methods with multiple listings may use any listing to meet the requirements. For example, total cyanide by 4500CN-E or -F can be determined by 4500CN-E or 4500CN-F. Contractors must indicate which method listing is to be utilized, that is either 4500CN-E or 4500CN-F or both. If no indication is made the assumption will be that any listed method may be requested by IDEM/OWQ.

Contractors are cautioned to review the required CRQLs and MDLs listed in Table 1.

**Estimated Sample Volume**

Approximately 500 samples per year will be generated for task 2A.

| **General Chemistries** | |
| --- | --- |
| **PARAMETERS** | **METHODS** |
| Alkalinity, including low level | 310.1 or SM 2320B |
| Chloride | 325.2 or 300.0 |
| Solids, Filterable Residue (TDS) | 160.1 or SM 2540C |
| Solids, Non‑filterable Residue (TSS) | 160.2 or SM 2540D |
| Solids, Total Residue (TS) | 160.3 or SM 2540B |
| Hardness (as CaCO3) | 130.1 or 130.2, SM 2340-B |
| Sulfate | 300.0 or 375.2 | |

| **Cyanide** | |
| --- | --- |
| **PARAMETERS** | **METHODS** |
| Cyanide, Total | 335.2, 335.3, 335.4 or  SM 4500CN-E or –F |
| Cyanide, Free (Weak Acid Dissociable) | SM 4500CN- I |

Contractors may utilize an Alternate Method if they demonstrate achievement of a Practical Quantitation Limit (PQL) at least equal to that of the Mandatory Method and with IDEM/OWQ approval. The calculation utilized to derive the PQL is PQL = 3.18 x MDL.

**Task 2B**

**Nutrients**

**Description**

Information enclosed is for descriptive purposes only and does not constitute a commitment or a Contract for sample volume, services, or length of Contract.

Analysis of groundwater, surface water or wastewater samples for General chemistries, Nutrients, and Organics. This task is only for laboratory chemical analyses and does not include sampling. These parameters will be requested for most WAPB Datasets. Some datasets will request task 2B (Nutrients) only.

QA/QC requirements and reporting must meet DQA Level 3.

**Mandatory Methods**

Methods with multiple listings may use any listing to meet the requirements. For example, Nitrogen, Nitrate+Nitrate by 353.1, 353.2, or 353.3. Contractors must indicate which method listing is to be utilized. If no indication is made the assumption will be that any listed method may be requested by IDEM/OWQ.

Contractors are cautioned to review the required CRQLs and MDLs listed in Table 1.

**Estimated Sample Volume**

Approximately 1500 samples per year will be generated.

| **Nutrients** | |
| --- | --- |
| **PARAMETERS** | **METHODS** |
| Chemical Oxygen Demand (COD) | 410.4 or SM 5220B |
| Nitrogen, Ammonia | 350.1 or SM 4500NH3-D or SM 4500NH3–F |
| Nitrogen, Kjeldahl (TKN) | 351.2 or  SM 4500N(org)-B or C |
| Nitrogen, Nitrate+Nitrite | 353.1, 353.2, or 353.3 |
| Phosphorous (Applicable to all forms) | 365.1, 365.2 or  4500P-E or 4500P-F |
| Total Organic Carbon (TOC) | 415.1 or SM 5310 |

Contractors may utilize an Alternate Method if they demonstrate achievement of a Practical Quantitation Limit (PQL) at least equal to that of the Mandatory Method and with IDEM/OWQ approval. The calculation utilized to derive the PQL is PQL = 3.18 x MDL.

**Task 2C**

**Other Methods (General Chemistry, Nutrients, BODs)**

The following methods must be performed for Task 2. These parameters may be requested as needed for Office of Water Quality projects.

QA/QC requirements and reporting must meet DQA Level 3.

**Estimated Sample Volume**

Approximately 50 samples per year will be generated.

| **General Chemistries** | |
| --- | --- |
| **PARAMETERS** | **METHODS** |
| Bromide | 300.0 |
| Chlorine, Free | SM 4500Cl-H |
| Chlorine, Free and Total | SM 4500Cl-D, -F, or –G |
| Chromium, Hexavalent | 218.4, 218.5, 218.6 |
| Fluoride | 340.2, 300.0, SM 4110B, SM 4500F-B, -C, -D, -E |
| Solids, Settleable Residue | 160.5 or SM 2540F |
| Solids, Total Volatile Residue | 160.4 or SM 2540E |
| Specific Conductance | 120.1 |
| Turbidity | 180.1 |
| Solids, Total Volatile Residue | 160.4 or SM 2540E |

| **Organics** | |
| --- | --- |
| **PARAMETERS** | **METHODS** |
| Biochemical Oxygen Demand, 5-day (BOD5) | 405.1 or SM 5210B |
| Biochemical Oxygen Demand, Ultimate | SM 5210C |

|  |  |
| --- | --- |
| **Nutrients** | |
| **PARAMETERS** | **METHODS** |
| Nitrogen, Nitrate | 300.1 or 352.1 |
| Nitrogen, Nitrite | 300.1 or 354.1 |
| Phosphorous, ortho (Total) | 300.0, 365.1, 365.2 |
| Phosphorous, ortho (Dissolved) | 365.1, 365.2 |
| Sulfide, Total | 376.1, 376.2 |
| Dissolved Organic Carbon | 415.1 or SM 5310 |

Phosphorous, ortho (Dissolved) must achieve a PQL of 0.003 mg/L

Contractors may utilize an Alternate Method if they demonstrate achievement of a Practical Quantitation Limit (PQL) at least equal to that of the Mandatory Method and with IDEM/OWQ approval. The calculation utilized to derive the PQL is PQL = 3.18 x MDL.

**Tasks 3A, 3B, 3C, 3D**

### Organics

### Task 3A Volatile Organics

**Mandatory Methods**

Task 3A requires the performance of method 624 or SW846 8260B.

Attachment D8– *Methods & Analytical Parameters*, Table 1, lists the parameters required for 624.

**Description**

Surface water analysis for Volatile Organics.

**Task 3B  
 PAHs, Phenols, and Semivolatile Organics**

**Mandatory Methods**

Task 3B requires the performance of methods 610, 625 or SW846 8270C.

**Description**

Surface water analysis for PAHs, Phenols, and Semivolatile Organics.

Attachment D8– *Methods & Analytical Parameters*, Table 1, lists the parameters required for 610, 625, and SW846 8270C.

**Task 3C   
PCBs and Pesticides**

**Mandatory Methods** Task 3C requires the performance of methods 608 and 525.3.

**Description**

Surface water analysis for PCBs and Pesticides.

Attachment D8– *Methods & Analytical Parameters*, Table 1, lists the parameters required for 608 and 525.3.

Contractors must meet all QA/QC requirements of the methods and the QA/QC requirements for mass spectrometry in 525.3. Contractors must choose suitable internal (IS) and surrogate (SS) standards. Mass and mass abundance data, for IS and SS, and the quantitation for each analyte must be provided.

Conditional approval may be given upon receipt and review of an MDL study with supporting calibration and QA/QC data.

**Task 3D  
Pesticides and Semi-volatile Organics (Method 525.3)**

**Description**

Information enclosed is for descriptive purposes only and does not constitute a commitment or a contract for sample volume, services, or length of contract.

This task provides confirmation and backup testing for IDEM/WAPB projects such as Fixed Station Monitoring, Watershed Characterization Studies, and Special Projects.

**Estimated Sample Volume**

Approximately 50 samples per year will be generated. Sampling is expected to occur during the months June – October.

Multiple awards may be given for a Watershed in any given year.

Adjustments may be made by adding or deleting parameters from any of the lists.

**Mandatory Methods & Analytes**

USEPA Method 525.3

Mandatory Parameters Acetochlor, Alachlor, Atrazine, Bromacil, Cyanazine, Diazinon, Endosulfan, Fenamiphos, Metalochlor, Metribuzin, Pendimethalin, Prometon, Propachlor, Simazine, Terbufos, and Trifluralin. A full listing of parameters expected is shown below

| **PARAMETERS** | **PARAMETERS** | **PARAMETERS** |
| --- | --- | --- |
| Acenaphthylene | Dibenzo(a,h)anthracene | MGK 264 |
| Acetochlor | Di-n-butylphthalate | MGK 326 |
| Alachlor | Diazinon | Malathion |
| Aldrin | Dichlobenil | Merphos |
| Ametryn | Dichlofenthion | Methoxychlor |
| Anilazine | Dichloran | 1-Methylnaphthalene |
| Anthracene | 2,3-Dichlorobiphenyl | 2-Methylnaphthalene |
| Aspon | Dichlorvos | Methyl paraoxon |
| Atraton | Dieldrin | Metolachlor |
| Atrazine | Di(2-ethylhexyl)adipate | Metribuzin |
| Azinphosa-methyl | Di(2-ethylhexyl)phthalate | Mevinphos |
| Benfluralin | Diethylphthalate | Molinate |
| Benzo(a)anthracene | Dimethoate | Naphthalene |
| Benzo(b)fluoranthene | Dimethylphthalate | Napropamide |
| Benzo(k)fluoranthene | 2,6-Dinitrotoluene | trans-Nonachlor |
| Benzo(g,h,I)perylene | Di-n-octylphthalate | 2,2’3,3’4,5’6,6’-Octachlorobiphenyl |
| Benzo(a)pyrene | Diphenamid | Oxadiazon |
| Alpha-BHC | Disulfoton | Pebulate |
| Beta-BHC | Disulfoton sulfone | Pendimethalin |
| Delta-BHC | Dyfonate | 2,2’,3’,4,6-Pentachlorobiphenyl |
| Gamma-BHC (Lindane) | EPTC | Pentachlorophenol |
| Bolstar | Endosulfan I | Cis-Permethrin |
| Bromacil | Endosulfan II | Trans-Permethrin |
| Butachlor | Endosulfan sulfate | Phenanthrene |
| Butylate | Endrin | Phorate |
| Butylbenzylphthalate | Endrin aldehyde | Profluralin |
| Carboxin | Ethalfluralin | Prometon |
| Alpha-Chlordane | Ethion | Prometryn |
| Gamma-Chlordane | Ethoprop | Pronamide |
| Chlorneb | Etridiazole | Propachlor |
| Chloronbenzilate | Famphur | Propanil |
| 2-Chlorobiphenyl | Fenamiphos | Propazine |
| Chloropropylate | Fenthion | Pyrene |
| Chlorothalonil | Fluazifop-butyl | Simazine |
| Chloropropham | Fluchloralin | Simetryn |
| Chlorpyrifos | Fluometuron | Stirofos |
| Chrysene | Fluoranthene | Terbacil |
| Clomazone | Fluorene | Terbufos |
| Coumaphos | Heptachlor | Terbutryn |
| Cyanazine | Heptachlor epoxide | 2,2’4,4’-Tetrachlorobiphenyl |
| Cycloate | 2,2’,3,’3,4,4’,6-Heptachlorobiphenyl | Thiobencarb |
| DCPA | Hexachlorobenzene | Triadimefon |
| 4,4’-DDD | 2,2’,4,4’,5,6’-Hexaclorobiphenyl | Tribufos |
| 4,4’-DDE | Hexachlorocyclopentadiene | 2,4,5’-Trichlorobiphenyl |
| 4,4’-DDT | Hexazinone | Trifluralin |
| Demeton | Indeno(1,2,3-cd)pyrene | Vernolate |
| Desethylatrazine | Isophorone |  |
| Desisopropylatrazine | Leptophos |  |

**Task 3D Mandatory Record Keeping, Reporting, and QA/QC Requirements**

Contractors must maintain dedicated original records of sample receiving and handling, bench sheets, instrumental or recorder output sheets and final reports for this project.

QA/QC requirements and reporting must meet DQA Level 3.

Extractions and/or analyses must be completed (not just started) within the holding time specified in the analytical method.

A batch consists of 20 analytical samples, excluding CCC, LFB, and LFM QA/QC samples. An initial five (5) point calibration must be determined at the same time and prior to the analysis of the first batch of samples for this project. Thereafter, at least a three (3) point calibration must be conducted before the analysis of a single batch or sequential set of batches. For example, an analytical batch sequence would be 3 point calibration, required QA/QC, 20 analytical (batch 1), required QA/QC, 20 analytical (batch 2), etc.

**Mandatory Batch Analyses**

The approximate load of 50 samples per year is anticipated to take 11 to 14 days for analysis by EPA Method 525.3.

Contractors must analyze samples for this project as discrete batches with no other samples or sample matrices.

Contractors willing to dedicate instrumentation for sequential batches will receive extra consideration**.**

**Dedicated Equipment and Supplies**

Contractors must provide dedicated chemicals for solvents and the preparation of stock standard solutions, surrogates, internal standards, reagent blanks, derivatives, etc. It is suggested that sufficient quantities of chemicals of the same lot number be purchased to conduct a full round of 50 samples.

Contractors willing to provide dedicated glassware will receive extra consideration.

**TASK 4**

**Sediments Project**

**Description**

Information enclosed is for descriptive purposes only and does not constitute a commitment or a Contact for sample volume services, or length of Contract.

Samples of sediment from Indiana lakes and streams will be submitted for analysis.

QA/QC requirements and reporting must meet DQA Level 3.

**Estimated Sample Volume**

Approximately 50 sediment samples per year will be submitted for analysis.

Multiple awards may be given for a Watershed in any given year.

Adjustments may be made by adding or deleting parameters from any of the lists.

The Contractor must provide transportation for samples from field to laboratory via next day delivery (FedEx) at Contractor’s expense upon IDEM/OWQ request. IDEM/OWQ staff currently delivers samples to laboratories in the Indianapolis area and when the laboratory is in close proximity to the field sampling area. IDEM staff normally does not travel out of state to deliver samples. The Contractor is also responsible for providing sampling containers, shipping containers (coolers), and refrigerant (blue ice) to keep samples at 4°C during shipment.

Bidders must include and will be evaluated on the method detection limit and practical quantification limit (reporting limit) for each parameter. Proposals which indicate reporting limits supported by method detection limits which are capable of quantifying target analytes in sediments, at both contaminated and background levels, will receive greater consideration.

**Mandatory Methods and Analytes**

Test methods for testing are listed in Attachment D8– *Methods & Analytical Parameters*, Table 1. The proposal should indicate which methods will be used, and why any substitutions have been proposed. The following test methods and parameters are listed below for Bid Group II. The bid for Bid Group II must include all the parameters in Task 4 listed below

**Task 4 (Continued)**

**Chemical-Physical Parameters**

|  |  |
| --- | --- |
| **PARAMETER** | **METHOD** |
| Total Solids | 160.3 |
| Total Volatile Solids | 160.3 |
| Sulfate | SW846 9036 |
| Chloride | SM4500Cl-E |
| Sulfide | 376.2 |
| Specific Gravity | SM2710F |
| Grain Size Analysis | ASTM D-422 |

**Acid Volatile Sulfide and   
Simultaneously Extracted Metals  
 (AVS & SEM)**

|  |  |
| --- | --- |
| **PARAMETER** | **METHOD** |
| Acid Volatile Sulfide | USEPA91 |
| Cadmium | USEPA91 |
| Copper | USEPA91 |
| Lead | USEPA91 |
| Nickel | USEPA91 |
| Mercury | USEPA91 |
| Zinc | USEPA91 |

**Priority Pollutant Metals**

**Sediment Parameters**

|  |  |
| --- | --- |
| **PARAMETER** | **METHOD** |
| Antimony | 200.8 |
| Arsenic | 200.8 |
| Beryllium | 200.7 |
| Cadmium | 200.8 |
| Chromium | 200.8 |
| Copper | 200.7 |
| Lead | 200.8 |
| Mercury | 245.1 |
| Nickel | 200.8 |
| Selenium | 200.8 |
| Silver | 200.8 |
| Thallium | 200.8 |
| Zinc | 200.7 |

**Secondary Metals Sediment Parameters**

|  |  |
| --- | --- |
| **PARAMETER** | **METHOD** |
| Aluminum | 200.7 |
| Barium | 200.7 |
| Beryllium | 200.7 |
| Calcium | 200.7 |
| Cobalt | 200.7 |
| Iron | 200.7 |
| Lead | 200.7 |
| Magnesium | 200.7 |
| Manganese | 200.7 |
| Potassium | 200.7 |
| Sodium | 200.7 |
| Vanadium | 200.7 |

**Nutrient Sediment Chemistry Parameters**

|  |  |
| --- | --- |
| **PARAMETER** | **METHOD** |
| Ammonia Nitrogen | 350.1 |
| Total Kjeldahl Nitrogen | 351.2 |
| Nitrate + Nitrite | 353.2 |
| Total Phosphorus | 365.1 |
| TOC | SM-5310 |
| COD | 410.4(Modified) |
| Cyanide (Total) | SW846 9010B |
| Cyanide (Free) | SM4500CN-I |

**Organic Sediment Chemistry Parameters**

|  |  |
| --- | --- |
| **PARAMETER** | **METHOD** |
| Base Neutral Fraction | SW846 8270C |
| Phenols | SW846 8270C |
| PAHs & SVOCs | SW846 8270C |
| Organochlorine Pesticides | SW846 8081A |
| PCBs | SW846 8082A |
| Volatile Organics | SW846 8260B |

**Task 4 (Continued)**

**Acid Volatile Sulfide with Simultaneously extracted metals.[[1]](#footnote-1)**

Total recoverable metals (200.7 or 200.8): arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc.

Choose an appropriate method for each metal. Provide your method detection limit calculations, proposed CRQLs, and proposed analytical method for each parameter.

**Grain size analysis (Particle size)** using the following ASTM sieve numbers: #4 (<4.75mm), #10 (<2.00mm), #20 (<850µm), #40 (<425µm), #60 (<250µm), #100 (<150µm), #140 (<106µm), #200 (<75µm). Report percent less than each sieve size.

**Aroclor PCBs:** Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1264(not mandatory).

**Bioaccumulating Pesticides**

The following pesticides/PCBs are currently on the IDEM/OWQ sediment target analyte list: Aldrin, alpha-BHC, Beta-BHC, delta-BHC, gamma-BHC, cis-chlordane, trans-chlordane, o,p’-DDD, p,p’DDD, o,p’-DDE, o,p’-DDT, p,p’-DDT, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, heptachlor, heptachlor epoxide, hexachlorobenzene, methoxychlor, cis-nonachlor, trans-nonachlor, oxychlordane, pentachloroanisole, toxaphene. This list is subject to review, and the Contractor is expected to be prepared to add or to remove periodically from this list target analytes.

Report all listed pesticide parameters in the method as target analytes. Optimize the analytical procedure for the parameters listed above. IDEM/OWQ desires results obtained by methods that provide the lowest reporting limits for the least cost. Include the test methods that will be used to analyze sediments for pesticides, method detection limit calculations, proposed CRQLs, and proposed analytical method for each parameter. Please include a copy of the test method for evaluation if the method is not listed above or in Attachment D8– *Methods & Analytical Parameters*, Table 1. Bidders who provide the largest numbers of target analytes with the lowest proposed CRQLs at the least cost will be given the greatest consideration.

**QA Requirements**

Perform all QA and QC steps described in each method.

**Task 4 (Continued)**

**Reporting**

Report all information listed in the Data Quality Assessment DQA Level 3 or Level 4. Report the results of all QC check samples listed in each method including duplicates, spikes, internal standards, external standards, surrogates, etc. Report details of equipment calibration results.

**Report results on a dry weight basis.**

**Pricing**

Provide the cost per sample for each requested parameter for inorganic and physical parameters and for each requested method, including all parameters, for organic methods in a table with columns for parameter or method and cost. Indicate the cost of cleanup of unusually contaminated or “dirty” sediment samples separately.

**Task 5**

**Microbiologic Identification and Enumeration**

**Analysis for Cyanotoxin, Odor and Taste Compounds**

**Description**

Information enclosed is for descriptive purposes only and does not constitute a commitment or a Contract for sample volume, services, or length of Contract.

Approximately 300 samples per year will be generated for the microbial examination and chemical analysis of surface water or finished drinking water. OWQ is executing a microbiological project over the next sampling season for microbiological identification and enumeration, cyanotoxin, odor, taste, and qPCR analysis. Project requirements will vary from identification and enumeration of cyanobacteria species to full microbiological identification and enumeration of algae, cyanobacteria, and other protists.

**Bidding and Subcontracting**

Task 5 may be subcontracted to meet bidding requirements. qPCR and ELISA samples are currently analyzed at State of Indiana facilities. Contractor bids will be for backup analysis support and will typically not result in a continuous supply of samples. Due to prior performance issues, IDEM/OWQ reserves the right to replace subcontractors with IDEM/OWQ subcontractors. Sample splits may be submitted to subcontractors for evaluation for suitability for performing microbiological identification and enumeration. Contractors should attach pricing and congener lists they perform in addition to those specified in Table 4.

**Mandatory Requirements**

Table 4 lists the parameters, methods and reporting limits currently used for this project. Microbial Identification and Enumeration, Genus/Species includes reporting all species, akinetes and heterocysts. Contractors should maintain updates to taxonomic references used for microbial identification. The ELISA method must be approved by OWQ. Contractors must specify any alternative method to be used for bidding purposes in Attachment D, Cost Proposal.

**Contractors must submit standard operating procedures, MDL study (if applicable) and reporting limits for alternative methods.**

Methods will be requested singularly and not all methods will be performed on all samples.

**Reporting Requirements**

Reporting and e-data reporting requirements are modified for Microbial Identification reporting. e-data may be reported as an excel file or as a pipe delimited text file. Due to the nature of microscopic sample preparation and evaluation, a full written report as specified in Attachment D4 – *Reporting Analytical Quality Assurance,* Reporting is not normally required; however, instances may arise when a written report is required. IDEM/OWQ will notify the Contractor of this need at the time. Contractors must list the taxonomy reference used either as part of the scientific name or separately (see e-data example below). IDEM/OWQ GWS normalizes naming and taxonomy references to AlgaeBase data ([www.algaebase.org](http://www.algaebase.org)). The required e-data fields are specified below. Reporting of slide or counting chamber specifications may be required depending on laboratory Standard Operating Procedures.

**e-data Fields**

The following is a list of e-data fields. Some labs may not record a ReportID, BatchID, Analytical Run or SampleType, all other e-data fields are required. IDEM/OWQ has a methodology for substituting this data if the Contractor does not utilize these fields. The Taxonomy Reference may be included in the Scientific Name. Biovolume determinations must additionally report slide dimensions, volume and calculations used.

Lab Project ID, Lab Sample ID, IDEM Sample ID, Date Time Sampled, Date Time Analyzed, Method, Taxon Name, SCIENTIFIC NAME, Taxonomy Reference, Group, units per ml, cells per ml, Percent Community of Group, Total Number of Units, Total Cells, Magnification, Field Area mm2, #FOV, SubSample A Vol, FAMILY, ORDER, CLASS, PHYLUM, AnalyticalRun, and SampleType, ReportID, BatchID, Comments

**e-data Example**

This example may be cut and pasted into Microsoft Excel and converted with text to columns. An empty line has been inserted into this example for readability purposes.

Lab Project ID|Lab Sample ID|IDEM Sample ID|Date Time Sampled|Date Time Analyzed|Method|Taxon Name|SCIENTIFIC NAME| Taxonomy Reference|Group|units per ml|cells per ml|Percent Community of Group|Total Number of Units|Total Cells|Magnification|Field Area mm2|#FOV|SubSample A Vol|FAMILY|ORDER|CLASS|PHYLUM|AnalyticalRun|SampleType|ReportID|BatchID|Comments

25|32534|DK34281|11/6/2019|1/9/20|Utermohl|Aphanizomenon sp. - AKINETE|Aphanizomenon||Blue-Green Algae|3.44|3.44|0.104931794|1|1|40|0.3025|30|20|Nostocaceae|Nostocales|Myxophyceae|Cyanophyta|20200109|Sample|20200116|20191104|

25|32422|DK34049|11/4/2019|1/7/20|Utermohl|Melosira spp.|Melosira||Diatom|1.65|1.65|2.116402116|4|4|40|0.3025|50|100|Melosiraceae|Melosirales|Bacillariophyceae|Bacillariophyta|20200107|Sample|20200116|20191104|

25|32534|DK34281|11/6/2019|1/9/20|Utermohl|Pseudanabaena limnetica|Pseudanabaena limnetica (Lemmermann) Komárek 1974|(Lemmermann) Komárek 1974|Blue-Green Algae|17.22|113.64|3.462749213|5|33|40|0.3025|30|20|Pseudanabaenaceae|Oscillatoriales|Myxophyceae|Cyanophyta|20200109|Sample|20200116|20191104|

25|30376|DK33015|4/4/2018|4/4/18|Utermohl|Planktothrix agardhii|Planktothrix agardhii (Gomont) Anagnostidis and Komárek 1988|(Gomont) Anagnostidis and Komárek 1988|Blue-Green Algae|1.10|9.92|1|2|18|400|0.237582744|50|75|Phormidiaceae|Oscillatoriales|Myxophyceae|Cyanophyta|20180404|Sample|20180608|20180608

Photographs of microbiological species taken for quality control and general reference must be made available to IDEM/OWQ at no additional charge. High quality photographs of microbiological species requested separate from routine identification activities are a chargeable item. Contractors must be clear when photo charges will apply. IDEM/OWQ retains all rights to any photograph of IDEM/OWQ samples.

| **Table 4: Task 5 Analytical Parameters and Procedures** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | **Analytical Method** | **CASRN** | **Type** | **Reference Reporting Limit** | **Unit** |
| Microbial Identification, Genus | Utermöhl |  |  |  |  |
| Microbial Identification & Enumeration, Genus/Species | Utermöhl |  |  |  |  |
| Microbial Identification, Enumeration, & Biovolume, Genus/Species | Utermöhl |  |  |  |  |
| Microbial Chargeable Photographs | Microscope |  |  |  |  |
| Total Microcystins | ELISA |  | Cyanotoxin | 0.050 | µg/L |
| Anatoxin-a | ELISA | 64285–06–9 | Cyanotoxin | 0.090 | µg/L |
| BMAA | ELISA | 15920-93-1 | Cyanotoxin | 6.000 | µg/L |
| Cylindrospermopsin | ELISA | 143545–90–8 | Cyanotoxin | 0.700 | µg/L |
| Saxitoxin | ELISA | 35523-89-8 | Cyanotoxin | 0.005 | µg/L |
| Anatoxin-a | EPA 545 | 64285–06–9 | Cyanotoxin | 0.02 | µg/L |
| Cylindrospermopsin | EPA 545 | 143545–90–8 | Cyanotoxin | 0.05 | µg/L |
| Total Cyanobacteria, 16s | qPCR, CyanoDTEC |  | Gene Sequence | 0.5 | Copies/uL |
| Microcystin, MycE | qPCR, CyanoDTEC |  | Gene Sequence | 0.5 | Copies/uL |
| Cylindrospermopsin, CyrA | qPCR, CyanoDTEC |  | Gene Sequence | 0.5 | Copies/uL |
| Saxitoxin, SxtA | qPCR, CyanoDTEC |  | Gene Sequence | 0.5 | Copies/uL |
| Microcystin-LA | EPA 544 | 96180–79–9 | Cyanotoxin | 0.1 | µg/L |
| Microcystin-LF | EPA 544 | 154037–70–4 | Cyanotoxin | 0.1 | µg/L |
| Microcystin-LR | EPA 544 | 101043–37–2 | Cyanotoxin | 0.1 | µg/L |
| Microcystin-LW | EPA 544 | 157622–02–1 | Cyanotoxin | 0.1 | µg/L |
| Microcystin-LY | EPA 544 | 123304–10–9 | Cyanotoxin | 0.1 | µg/L |
| Microcystin-YR | EPA 544 | 101064–48–6 | Cyanotoxin | 0.1 | µg/L |
| Microcystin-RR | EPA 544 | 111755–37–4 | Cyanotoxin | 0.1 | µg/L |
| Nodularian | EPA 544 | 118399–22–7 | Cyanotoxin | 0.1 | µg/L |
|  |  |  |  |  |  |
| 2,3,6-trichloroanisole (236-TCA) | **6040** | **50375-10-5** | Odor & Taste | 2.0 | ng/L |
| 2,4,6-Trichloroanisole (TCA) | **6040** | **87-40-1** | Odor & Taste | 2.0 | ng/L |
| 2-isobutyl-3-methoxypyrazine (IBMP) | 6040 | 24683-00-9 | Odor & Taste | 2.0 | ng/L |
| 2-isopropyl-3-methoxypyrazine (IPMP) | 6040 | 25773-40-4 | Odor & Taste | 2.0 | ng/L |
| 2-methylisoborneol (2-MIB) | 6040 | 2371-42-8 | Odor & Taste | 2.0 | ng/L |
| Geosmin | 6040 | 19700-21-1 | Odor & Taste | 2.0 | ng/L |

**SAS**

**Special Analytical Services for Extended Capabilities**

**Description**

Surface water, ground water, or finished water analysis for miscellaneous parameters. Special Analytical Services (SAS) are Tasks identified by IDEM/OWQ which may have a special utilization. OWQ may request additional nonanalytical services under this class; for example, field standards prep or purchase, sampling equipment or other special needs.

**Mandatory Requirements**

For Contractor(s) wishing to bid on other tasks, this Task cannot be utilized for compliance with the “one or more complete bid groups” requirements as specified in Attachment D1, Technical Specifications, Section C1 (“Bid groups”) of the RFP. This Task will not be utilized in the determination of an Award. Parameters listed are for the purposes of extended capabilities. Contractor(s) should supply contractual pricing for any parameter the Contractor is capable of performing. Task SAS requires the ability to determine a method’s parameters, as found in Attachment D8 – Method and Analytical Parameters, Table 2, at the specified data quality level, for any method listed in Table 9 that the Contractor wishes to perform. Methods will be requested singularly and not all methods will be performed on all samples.

**Methods**

The following methods must be performed for Task SAS.

**Table 9. Task SAS**

| **Method** | **Description** |
| --- | --- |
| 524.2 | Drinking Water Volatile Organics |
| 525.2 | Drinking Water Semi-Volatile Organics |
| 537.1 | Perfluoroalkyl and Polyfluoroalkyl Substances |
| 1630 (Draft) | Methyl Mercury in Water by Distillation, Aqueous Ethylation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry |
| 540 | Determination of Selected Organic Chemicals in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) – Neonicotinoid Pesticides |
| 370.1 | Silica |
| 376.2 | Sulfide |
| 8015 Modified | Petroleum Hydrocarbons |
| 418.1 | Petroleum Hydrocarbons, Total Recoverable |
| 420.4 | Phenolics, Total Recoverable |
| 900.0 | Alpha, total |
| 900.0 | Beta, total |
| 901.0 | Cesium-134 |
| 901.1 | Gamma and Photon Emitters |
| 901.1, 903.0, 904.0 | Radium-226 & 228 |
| 902.0 | Iodine-131 |
| 905.0 | Strontium-89 |
| 905.0 | Strontium-90 |
| 906.0 | Tritium |
| 913, Lucas Cell | Radon |
| 413.2 , 1664 | Oil & Grease |
| 9020B | Organic Halogens, Total |
| ASTM D3977-97 | Suspended Sediments Concentration (SSE) |
| 445.0, 445.0(Mod) or SM 10200H | Chlorophyll-a |
| 445.0, 445.0(Mod) or SM 10200H | Chlorophyll a - Periphyton (attached) |

**Task SAS -- Data Quality Assessment**

Data quality and reporting are to be at DQA Level 3, unless specified by the responsible IDEM/OWQ QC officer.

1. U.S. Environmental Protection Agency. 1991. Draft Analytical Methods for Determination of Acid Volatile Sulfide (AVS) in Sediment. Washington, DC: U.S. Environmental Protection Agency Office of Water Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C. *EPA/821/R-91/100*. [↑](#footnote-ref-1)