



2024 Blue River and Indian Creek Special Project Work Plan

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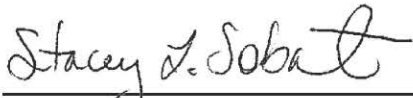
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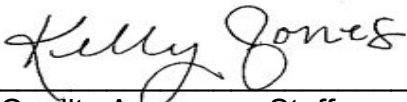


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The IDEM Quality Assurance (QA) Manager participated in the development of this Quality Assurance Project Plan (QAPP).



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Work Plan Organization

This work plan is an extension of the existing Indiana Department of Environmental Management (IDEM) Watershed Assessment and Planning Branch (WAPB), July 2023, Quality Assurance Project Plan (QAPP) for Indiana Surface Water Programs (Surface Water QAPP) (IDEM 2023a) and October 2020 QAPP for Biological Community and Habitat Measurements (IDEM 2020a); and serves as a link to the existing QAPP as well as an independent QAPP of the project. Per the United States Environmental Protection Agency (U.S. EPA) 2006 Guidance on Systematic Planning Using the Data Quality Objectives (DQO) Process (U.S. EPA 2006) and the U.S. EPA 2002 Guidance for Quality Assurance Project Plans (U.S. EPA 2002), this work plan establishes criteria and specifications, pertaining to a specific water quality monitoring project, usually described in the following four groups or sections of a QAPP per Guidance for Quality Assurance Project Plans (U.S. EPA 2002).

Group A. Project Management Planning

- A.1. Title and Approval Sheet
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- A.3. Distribution List
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List of Acronyms

AIMS	Assessment Information Management System
ASTM	American Society for Testing and Materials
AUID	Assessment Unit Identifiers
DO	Dissolved oxygen
DQA	Data Quality Assessment
DQO	Data Quality Objectives
GPS	Global Positioning System
HUC	Hydrologic Unit Code
IAC	Indiana Administrative Code
IBI	Index of Biotic Integrity
IDEM	Indiana Department of Environmental Management
$\mu\text{S/cm}$	Micro Siemens per Centimeter ($1 \mu\text{S/cm} = 1 \mu\text{mho/cm}$)
mg/L	Milligram per Liter
MHAB	Multihabitat
mL	Milliliter
NTU	Nephelometric Turbidity Unit(s)
OHEPA	Ohio Environmental Protection Agency
OWQ	Office of Water Quality
PPE	Personal Protective Equipment
QA/QC	Quality Assurance and Quality Control
QAPP	Quality Assurance Project Plan
QHEI	Qualitative Habitat Evaluation Index
S.U.	Standard Units
SM	Standard Methods
SOP	Standard Operating Procedures
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
U.S. EPA	United States Environmental Protection Agency
$\mu\text{g/L}$	Micrograms per Liter
WAPB	Watershed Assessment and Planning Branch

Definitions

Assessment Unit	<p>Individual segment of a stream or river (measured and reported in miles) used for assessing waters. Length of a stream AU can vary. A single AU may or may not represent the entire stream to which it is associated.</p> <p>Example: Large rivers are commonly broken into smaller, separate AUs. Smaller streams may be grouped together into a single, “catchment” AU based on hydrology and other factors which affect water quality.</p>
Elutriate	<p>To purify, separate, or remove lighter or finer particles by washing, decanting, and settling.</p>
15-minute pick	<p>A component of the multihabitat macroinvertebrate sampling method, used to maximize taxonomic diversity while in the field. The 1-minute kick sample and 50-meter sweep sample collected at a site are first combined and elutriated. Macroinvertebrates are then manually removed from the resulting sample for 15 minutes.</p>
50-meter sweep sample	<p>A component of the multihabitat macroinvertebrate sampling method in which approximately 50 meters of all available habitat in a stream or river is sampled with a standard 500 micrometer mesh width D-frame dip net by taking 20-25 individual “jab” or “sweep” samples, which are then composited.</p>
Macroinvertebrate	<p>Aquatic animals which lack a backbone, are visible without a microscope, and spend some period of their lives in or around water.</p>
1-minute kick sample	<p>A component of the multihabitat macroinvertebrate sampling method in which approximately 1 m² of riffle or run substrate habitat in a stream or river is sampled with a standard 500 µm mesh width D-frame dip net for approximately 1 minute.</p>
Pour point	<p>An outlet of a sub watershed or the common point where all the water flows out of any given sub watershed.</p>
Reach	<p>A segment of a stream used for sampling.</p>
Targeted site	<p>A sampling site intentionally selected based on specific monitoring objectives or decisions to be made.</p>

A. Project Management

A.1. Project Objective

IDEM selected targeted water quality sampling sites within the Blue River and Indian Creek watersheds for a watershed study in support of Purdue University's project proposal to the Natural Resources Conservation Service's (NRCS) Regional Conservation Partnership Program (RCPP), titled "Farmers Helping Hellbenders Initiative." The sampling sites are located within the following 10-digit HUCs: Mill Creek-Blue River (0514010407), Whiskey Run-Blue River (0514010408), Blue River (0514010409), South Fork-Blue River (0514010406), Upper Indian Creek (0514010403), Middle Indian Creek (0514010404), and Lower Indian Creek (0514010405) (Figure 1, Table 1). The main objective of the 2024 Blue River and Indian Creek Special Project is to support the RCPP project by providing physical, chemical, and biological data in the targeted watersheds. This study will also support IDEM's 2024 performance monitoring project to determine whether watershed restoration efforts resulted in water quality improvement, and subsequently, delisting of stream segments from the 303(d) List of Impaired Waters. This type of monitoring provides valuable data for the purposes of conserving habitat for the state-endangered eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), assessing water quality, supporting local watershed planning activities, and allowing for future evaluations of the water quality within the watersheds studied.

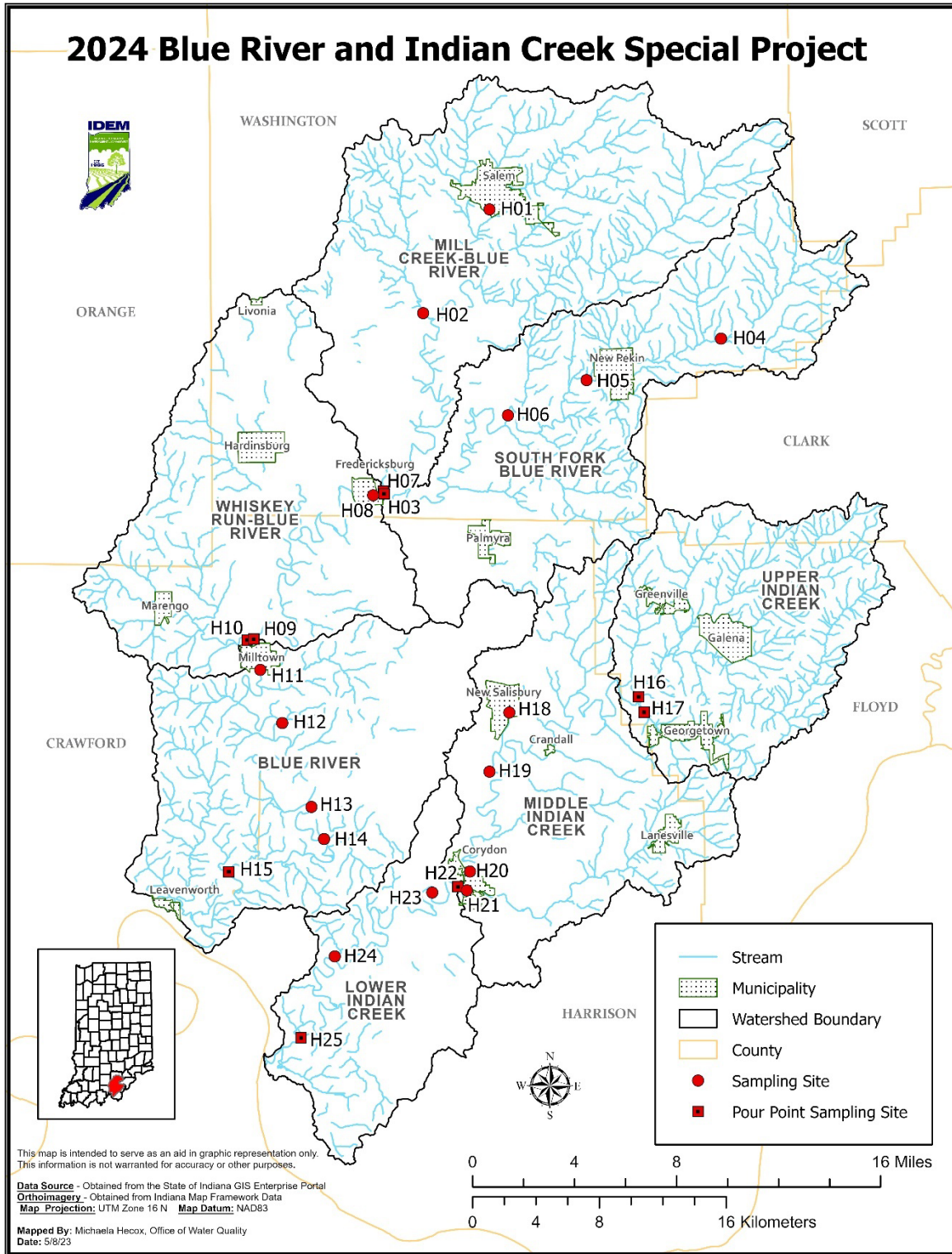
The water quality data generated from this monitoring effort is anticipated to provide information needed to characterize the targeted watersheds, to identify sources of impairment, to find improvements in water quality, and to enable RCPP project partners to make valid and informed watershed management decisions. By design, this project also adds new stream reaches, which allow for assessment of aquatic life use support and future comparisons to evaluate changes in water quality.

The 303(d) list submitted to the U.S. EPA (IDEM 2022a) identifies a total of 335.56 miles of Category 5 impaired streams in the Blue River and Indian Creek watersheds. The total number of miles per each impairment in the combined watersheds is reported in the following ways:

- *Escherichia coli* (*E. coli*), 216.04 miles
- PCBs in fish tissue, 123.22 miles
- Impaired biotic community (IBC), 91.45 miles
- Nutrients, 85.28 miles
- Dissolved oxygen, 6.75 miles

Multiple IDEM programs and projects have collected assessment data in this watershed.

Figure 1. Location of Sampling Sites in the Blue River and Indian Creek Special Project.



¹Map site numbers refer to Site # from Table 1.

Table 1. Sampling Locations for 2024 Blue River and Indiana Creek Special Project

Site # ¹	EPA Site ID ²	IDEM Station ID	Stream Name	Location	County	Latitude	Longitude	AUID
H01	23H-001	OBS-07-0024	West Fork Blue River	Joseph Street	Washington	38.5957	-86.1058	INN0473_02
H02	23H-002	OBS-07-0006	Mill Creek	Becks Mill Road	Washington	38.53707	-86.1545	INN0474_04
H03	24H-003	OBS-07-0015	Blue River	Fredericksburg Road	Washington	38.436	-86.1844	INN0476_02
H04	24H-004	OBS-06-0002	South Fork Blue River	Bowers Knob Road	Washington	38.52085	-85.9391	INN0461_04
H05	24H-005	OBS-06-0004	South Fork Blue River	Martinsburg Road	Washington	38.49807	-86.0368	INN0464_01
H06	24H-006	OBS-06-0008	South Fork Blue River	SR 135	Washington	38.47851	-86.0938	INN0464_03
H07	24H-007	OBS130-0002	South Fork Blue River	Fredericksburg Road	Washington	38.43457	-86.1839	INN0466_09
H08	24H-008	OBS140-0004	Blue River	US 150	Washington	38.43375	-86.1919	INN0485_02
H09	24H-009	OBS-08-0002	Whiskey Run	Milltown Road	Crawford	38.35205	-86.2837	INN0484_10
H10	24H-010	OBS-08-0003	Blue River	SR 64	Crawford	38.35263	-86.279	INN0485_10
H11	24H-011	OBS-09-0005	Blue River	Hill View Road	Harrison	38.33502	-86.2745	INN0491_03
H12	24H-012	OBS-09-0006	Blue River	Riparian Way	Harrison	38.30477	-86.2589	INN0493_02
H13	24H-013	OBS-09-0007	Blue River	Moberly Road	Harrison	38.257	-86.2383	INN0493_05
H14	24H-014	OBS150-0014	Harrison Spring	Harrison Spring Road	Harrison	38.23867	-86.2294	INN0492_01
H15	24H-015	OBS150-0008	Blue River	SR 62	Crawford	38.22041	-86.2983	INN0495_06
H16	24H-016	OBS080-0005	Indian Creek	Georgetown Greenville Road	Floyd	38.31779	-86.0016	INN0434_01
H17	24H-017	OBS-03-0003	Georgetown Creek	Malinee Ott Road	Floyd	38.30896	-85.9977	INN0434_T1013
H18	24H-018	OBS-04-0005	Tributary of Indian Creek	Spring Branch Road	Harrison	38.30959	-86.095	INN0443_T1003
H19	24H-019	OBS-04-0008	Indian Creek	SR 335	Harrison	38.275515	-86.106778	INN0443_02
H20	24H-020	OBS-04-0006	Indian Creek	Old North Bridge Road	Harrison	38.21938	-86.1244	INN0443_05
H21	24H-021	OBS-04-0007	Little Indian Creek	Poplar Street	Harrison	38.2087	-86.1268	INN0442_05
H22	24H-022	OBS100-0007	Indian Creek	Indian Creek Trail	Harrison	38.21088	-86.1333	INN0452_01
H23	24H-023	OBS-05-0004	Indian Creek	West Heidelberg Road	Harrison	38.20771	-86.1518	INN0452_02
H24	24H-024	OBS-05-0005	Indian Creek	Dixie Road	Harrison	38.1719	-86.2224	INN0452_05
H25	24H-025	OBS100-0006	Indian Creek	Lickford Bridge Road	Harrison	38.12575	-86.2472	INN0452_07

¹H## gray shading of the Site # denotes these are the selected pour points for this project (9 sites).

²Sites 24H-004 and 24H-006 serve as sites in the 2024 Performance Monitoring Project.

A.2. Project Organization and Schedule

Sampling of waterbodies in the target watersheds will occur between November 2023 and October 2024. Barring any hazardous weather conditions or unexpected physical barriers to access a site, sampling activities will be conducted for physical, chemical, and biological communities. Project laboratory processing and data analyses will continue through the spring of 2025.

Sampling activity timeframes include:

1. Site reconnaissance activities were completed in February and March 2023. Reconnaissance activities were conducted in the office and through physical site visits. Activities included visiting access sites at bridge crossings and seeking landowner approval to safely access the sampling location along the stream and determining the appropriate equipment.
2. Monthly water chemistry and pesticide sampling will occur at all watershed sites during the recreational season, April through October, as defined by Indiana Administrative Code (IAC) [327 IAC 2-1-6]. During the months of November through March, monthly water chemistry sampling will occur only at the pour point sites of each 10-digit HUC (nine sites). Pesticide sampling will not occur for the pour point sites outside the recreational season. The first sampling event will occur in November 2023; and the study concludes in October 2024. In-situ dissolved oxygen (DO), DO percent saturation, pH, temperature, specific conductance, and turbidity readings will be collected during sampling events using a data sonde.
3. Biological sampling activities will begin in the summer of 2024 according to the designated index period for macroinvertebrates. Macroinvertebrate community sampling will be conducted at all watershed sites via the observation, counting, and collection techniques described in section B.2. Sampling Methods and Sample Handling. Qualitative habitat assessments will also be assessed at all watershed sites.

A.3. Background and Project Description

This watershed study was instituted to support Purdue University's project proposal to the Natural Resources Conservation Service's (NRCS) Regional Conservation Partnership Program (RCP), titled "Farmers Helping Hellbenders Initiative." IDEM will share the watershed data set with Purdue University, local watershed groups, and other interested parties. The monitoring will provide baseline data of current watershed conditions to aid in watershed planning, conservation efforts, and future evaluations of changes within the basin.

The state of Indiana is tasked with restoring and maintaining the chemical, physical, and biological integrity of the waters of the state [327 IAC 2-1-1.5]. Data collected will be used to assess Indiana's surface water quality pursuant to the Clean Water Act Section 305(b).

A.4. Data Quality Objectives

The DQO process (U.S. EPA 2006) is a tool for planning data collection activities. The process provides a basis for balancing decision uncertainty with available resources. All significant data collection projects require the DQO process. The DQO process is a seven-step systematic planning process used to clarify study objectives; define the types of data needed to achieve the objectives; and establish decision criteria for evaluating data quality. The following seven sections document the results of the DQO seven step process for the 2024 Blue River and Indian Creek Special Project.

1. State the Problem

Indiana Administrative Code requires Indiana to assess all waters of the state to determine their designated use attainment status. Surface waters of the state are designated for full-body contact recreation; will be capable of supporting a well-balanced, warm water aquatic community; [\[327 IAC 2-1-3\]](#). This study gathers biological (macroinvertebrate), habitat, and in-situ chemistry data for the purpose of assessing the designated use attainment status of the AUID segments on waterbodies in the target watersheds. Purdue University is seeking a partner to collect water quality data in targeted watersheds that are identified as current or potential habitat for the state endangered eastern hellbender. This study will provide water quality baseline data in the Blue River and Indian Creek watersheds to aid in their conservation efforts of the eastern hellbender.

2. Identify the Goals of the Study

The goal of this study is to fully assess whether the surface waters in the watersheds are supporting or nonsupporting for aquatic life use. The intensive sampling of the Blue River and Indian Creek Watersheds Study also provides baseline data of the watersheds that will aid in conservation efforts for the eastern hellbender. The baseline data will also be shared with local stakeholders for watershed planning and restoration activities.

3. Identify Information Inputs

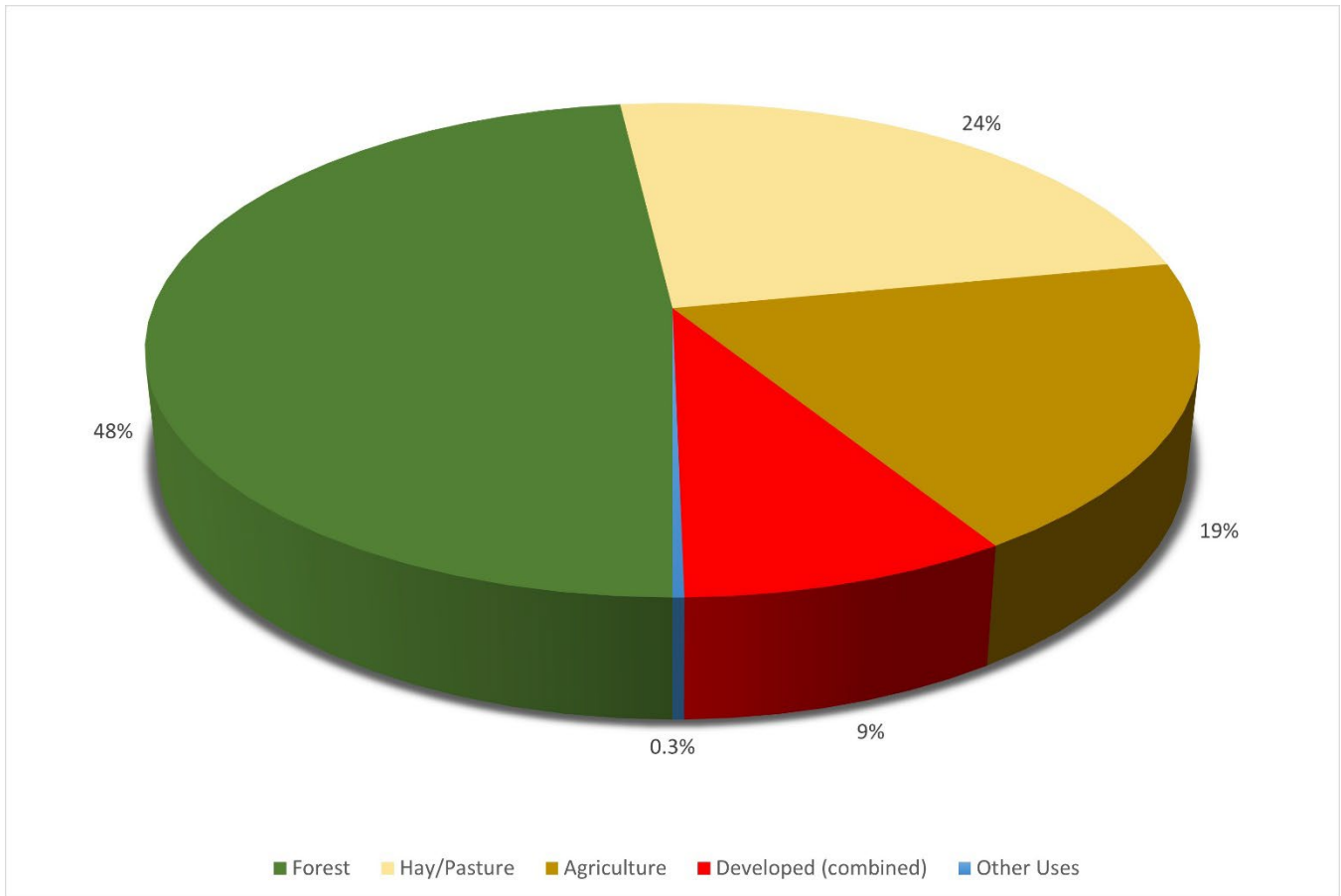
Collection of surface water quality grab samples will be collected from the sampling locations listed in Table 1. Parameters to be analyzed and field measurements can be found in Section B. Data Generation and Acquisition. Visual field observations will include weather conditions, stream conditions, and percent stream canopy at each sampling location. Pace Analytical Services will process and analyze water chemistry samples using the analytical methods found in Section B. Data Generation and Acquisition. The Office of Indiana State Chemist will process and analyze pesticides using the analytical methods found in Section B. Data Generation and Acquisition. A macroinvertebrate community sample and the habitat evaluation will be collected once at each site. Section B. Data Generation and Acquisition describes in detail the collection procedures for in-situ water chemistry measurements, biological, and habitat data.

4. Define the Boundaries of the Study

Figure 1 provides a spatial representation of the 2024 Blue River and Indian Creek Special Project. Table 1 lists the sampling locations in the study area. The target sample population for the study is defined as all perennial streams in the Blue River and Indian Creek watersheds that lie within the geographic boundaries of Indiana. The sample frame is comprised of all rivers, streams, canals, and ditches as indexed through the NHDPlus HR dataset (Moore et al. 2019).

The Blue River and Indian Creek watersheds collectively cover 779.16 square miles in Washington, Harrison, Crawford, and Floyd counties. The collective watersheds are approximately 48% forest, 24% hay or pasture, 19% agriculture, 9% developed land (combined types), less than 1% shrub or scrub, wetlands, and open water as illustrated in Figure 2.

Figure 2. Blue River and Indian Creek Special Project Land Use



¹ Data collected and calculated from USDA National Agricultural Statistics Service 2022 Cropland Data Layer

5. Develop the Analytical Approach

Samples will be collected for physical, chemical, and biological communities when the flow rate and level of the stream are safe for staff to enter. Considerations include times when water levels are at or above median base flow, when hazardous weather conditions like thunderstorms and heavy rain are in the vicinity, and when unexpected

physical barriers prevent access to the site. The field crew chief makes the final determination when the stream is safe to enter. Sample collections for biological communities may be postponed due to a high-water event which may cause the scouring of the stream substrate or instream cove, which may result in samples that are not representative.

For assessment purposes in the integrated report, aquatic life use support decisions will include independent evaluations of chemical and biological criteria as outlined in Indiana's 2022 Consolidated Assessment Listing Methodology (CALM) (IDEM 2022a). Macroinvertebrate multihabitat samples will be evaluated using a statewide macroinvertebrate index of biotic integrity (mIBI) developed for lowest practical taxonomic level identifications. Specifically, a site will be considered nonsupporting for aquatic life use when mIBI scores are less than 36.

General chemistry and nutrient parameters will be analyzed by Pace Analytical Services. The nutrient and general chemistry parameters and respective test methods can be found in Section B. Data Generation and Acquisition. Pesticide parameters will be analyzed by the Office of Indiana State Chemist. The pesticide parameters and respective test methods can be found in Section B. Data Generation and Acquisition. Field parameters (DO, pH, water temperature, specific conductance, and DO percent saturation) will be measured with a data sonde and turbidity will be measured with a Hach™ turbidity kit.

6. Specify Performance or Acceptance Criteria

Utilizing a comprehensive checklist of informational sources, evaluation of historical information, and a thorough watershed presurvey minimizes sampling design error. The sampling design is formulated to address data deficiencies and render the optimum amount of data needed to fill gaps in the decision process.

Good quality data are essential for minimizing decision error. Place more confidence in the conclusions drawn on the stressors and sources affecting the water quality by minimizing both sampling design error and measurement error for physical and biological parameters.

Site specific aquatic life use assessments include program specific controls to identify the introduction of errors. These controls include blanks and duplicates for water chemistry samples; biological site revisits or duplicates; and laboratory controls through verification of species identifications as described in field procedure manuals (IDEM 2023c, 2020a, 2020b, 2020c, 2023d, 2023a).

The quality assurance and quality control (QA/QC) process detects deficiencies in the data collection as set forth in the Surface Water QAPP (IDEM 2023a) and QAPP for Biological Community and Habitat Measurement (Biological and Habitat QAPP) (2020a). The QAPPs require all contract laboratories to adhere to rigorous standards during sample analyses and to provide good quality usable data. Laboratory accreditations are reviewed and verified before awarding the contract through the RFP process and before beginning the project. Performance studies are reviewed annually in

October. Chemists within the WAPB review the laboratory analytical results for quality assurance. The QA/QC for each data set is compared against acceptance limits specified in the laboratory methods, the laboratory's QA manual, the Surface Water QAPP Section D.3.2 Laboratory Quality Control Checks and Compliance, and the Surface Water QAPP Section D.3. Reconciliation with User Requirements. Data is validated based on the QA/QC review. Any data which is "rejected" due to analytical problems or errors for water quality assessment decisions is not used. Any data flagged as "estimated" is used on a case-by-case basis and noted in the QA/QC reports. The Surface Water QAPP, Tables 28 and 29: Data Qualifiers and Flags (IDEM 2023a p 106) and Biological and Habitat QAPP (IDEM 2020a pp 32–36) present criteria for acceptance or rejection of results as well as application of data quality flags. The Surface Water QAPP Table 3: Performance, Acceptance, Decision Criteria for this Study; and Table 14 Field Parameters showing method and IDEM quantification limit (IDEM 2023a, pp 37 and p 91) provide precision and accuracy goals with acceptance limits for applicable analytical methods.

Consistent "rejected" data is further investigated to determine the source of error and for corrective actions. Field techniques used during sample collection and preparation, along with laboratory procedures, are subject to evaluation by both the WAPB QA manager and project manager to troubleshoot error introduced throughout the entire data collection process. Corrective actions are implemented upon determination of the source of error per the Surface Water QAPP (IDEM 2023a) and Biological Community and Habitat QAPP (IDEM 2020a).

Evaluate sites as supporting or nonsupporting following the decision-making processes described in Indiana's 2022 Consolidated Assessment Listing Methodology (CALM) and based upon the water quality criteria shown in Table 1.

Aquatic life use support decisions will include independent evaluations of biological and chemical data. Evaluate macroinvertebrate multihabitat (MHAB) samples using a statewide Index of Biotic Integrity (IBI) developed for lowest practical taxonomic level identifications.

Indiana narrative biological criteria [\[327 IAC 2-1-3\]](#) states "(2) All waters, except [limited use waters] will be capable of supporting: (A) a well-balanced, warm water aquatic community." The water quality standard definition of a "well-balanced aquatic community" is "[\[327 IAC 2-1-9 \(59\)\]](#) An aquatic community which: (A) is diverse in species composition; (B) contains several different trophic levels; and (C) is not composed mainly of pollution tolerant species." An interpretation or translation of narrative biological criteria into numeric criteria would be as follows: A stream segment is nonsupporting for aquatic life use when the monitored macroinvertebrate community receives a mIBI score of less than 36 on a scale of 12-60, which is considered "poor" or "very poor" (IDEM 2022a).

In addition to chemical parameters, data for several nutrient parameters will be evaluated with the benchmarks listed below (IDEM 2022a). Assuming a minimum of

three sampling events, if two or more of the conditions below are met on the same date, the waterbody will be classified as nonsupporting due to excessive nutrients:

- Total phosphorus (TP):
 - One or more measurements greater than 0.3 mg/L
- Nitrogen (measured as Nitrate + Nitrite):
 - One or more measurements greater than 10.0 mg/L
- Dissolved oxygen (DO):
 - Any measurement less than 4.0 mg/L
 - Any measurements consistently at or close to the standard, in the range of 4.0-5.0 mg/L
 - Any dissolved oxygen percent saturation measurement greater than 120%
- pH:
 - One or more measurements greater than 9.0 SU
 - Measurements consistently at or close to the standard, in the range of 8.7-9.0 SU
- Algal conditions:
 - Visually observed as “excessive” by trained staff using best professional judgment.

Assessments of each site sampled will be reported to U.S. EPA in the 2026 update of [Indiana’s Integrated Water Monitoring and Assessment Report](#) (Integrated Report). Site-specific data is used to classify associated assessment units into one of five major categories in the State’s Consolidated 303(d) list. Category definitions are available in Indiana’s CALM (IDEM 2022c, pp G-33, G-34).

Table 2. Water Quality Criteria [\[327 IAC 2\]](#)

Parameters	Water Quality Criteria	Criterion
Total ammonia (NH ₃ -N)	Calculate based on pH and temperature	Calculate CAC
Nitrate+Nitrite-Nitrogen	≤10 mg/L	Human health point of drinking water intake
Sulfate	Calculate based on hardness and chloride	In all waters outside the mixing zone
Dissolved oxygen	At least 5.0 mg/L (warm waters)	Daily average
	Not less than 4.0 mg/L at any time	Single reading
pH	6.0 – 9.0 S.U. except for daily fluctuations which exceed 9.0 due to photosynthetic activity	Single reading
Temperature	Varies monthly	1% annual; maximum limits

Parameters	Water Quality Criteria	Criterion
Chloride	Calculate based on hardness and sulfate values	Calculate CAC
Dissolved solids	750 mg/L	Public water supply

CAC = Chronic Aquatic Criterion, S.U. = Standard Units

7. Develop the Plan for Obtaining Data

Site selection will be determined primarily on stakeholder interest. A work group comprised of interested stakeholders will be formed to determine where stakeholders would like to receive water quality data. Additional sites will be strategically placed at bridges nearest to the pour point of each 10-digit HUC in the watershed. Sample sites at road crossings allow for more efficient sampling of the watersheds.

A.5. Training and Staffing Requirements

Table 3. Project Roles, Experience, and Training

Role	Required Training or Experience	Responsibilities	Training References
Project manager	<ul style="list-style-type: none"> - Assessment Information Management System (AIMS) II database experience - Demonstrated experience in project management and QA/QC procedures 	<ul style="list-style-type: none"> - Establish project in the AIMS II database. - Oversee development of project work plan. - Oversee entry and QC of field data. - Query data from AIMS II to determine results not meeting water quality criteria. 	<ul style="list-style-type: none"> - IDEM 2023a, 2020a, 2020c, 2022c - U.S. EPA 2006
Field crew chief biological community sampling	<ul style="list-style-type: none"> - At least one year of experience in sampling methodology and taxonomy of aquatic communities in the region - Annually review relevant safety procedures. - Annually review relevant Standard Operating Procedure (SOP) documents for field operations. 	<ul style="list-style-type: none"> - Complete field data sheets. - Taxonomic accuracy. - Sampling efficiency and representation. - Voucher specimen tracking. - Overall operation of the field crew when remote from central office. - Adherence to safety and field SOP procedures by crew members. - Ensure multiprobe analyzers are calibrated weekly prior to field sampling activities. - Ensure field sampling equipment is functioning properly and loaded into field vehicles prior to field sampling activities. 	<ul style="list-style-type: none"> - IDEM 2008, 2010a, 2010b, 2023a, 2019b, 2020a, 2020c, 2022a, 2023b, 2023c, 2023d - IDEM 2019a and 2021b - Xylem Inc. 2017, 2018

Role	Required Training or Experience	Responsibilities	Training References
Field crew members biological community sampling	<ul style="list-style-type: none"> - Complete hands-on training for sampling methodology prior to participation in field sampling activities. - Review relevant safety procedures. - Review relevant SOP documents for field operations. 	<ul style="list-style-type: none"> - Follow all safety and SOP procedures while engaged in field sampling activities. - Follow direction of field crew chief while engaged in field sampling activities. 	<ul style="list-style-type: none"> - IDEM 2008, 2010a, 2010b, 2023a, 2019a, 2020a, 2020c, 2022a, 2023b, 2023c, 2023d - IDEM 2019a and 2021b - Xylem Inc. 2017, 2018
Field crew chief – water chemistry	<ul style="list-style-type: none"> - At least one year of experience in sampling methodology - Annually review relevant safety procedures. - Annually review relevant SOP documents for field operations. 	<ul style="list-style-type: none"> - Complete field data sheets. - Sampling efficiency and representation. - Overall operation of the field crew when remote from central office. - Adherence to safety and field SOP procedures by crew members. - Ensure multiprobe analyzers are calibrated weekly prior to field sampling activities. - Ensure field sampling equipment is functioning properly and loaded into field vehicles prior to field sampling activities. 	<ul style="list-style-type: none"> - IDEM 2008, 2010a, 2010b, 2023a, 2019a, 2020b 2020c, 2022a, 2023b - Xylem Inc. 2017, 2018
Field crew members – water chemistry sampling	<ul style="list-style-type: none"> - Complete hands-on training for sampling methodology prior to participation in field sampling activities. - Review relevant safety procedures. - Review relevant SOP documents for field operations. 	<ul style="list-style-type: none"> - Follow all safety and SOP procedures while engaged in field sampling activities. - Follow direction of field crew chief while engaged in field sampling activities. 	<ul style="list-style-type: none"> - IDEM 2008, 2010a, 2010b, 2023a, 2019a, 2020b, 2020c, 2022a, 2023b - Xylem Inc. 2017, 2018
Laboratory supervisor – biological community sample processing	<ul style="list-style-type: none"> - At least one year of experience in taxonomy of aquatic communities in the region - Annually review relevant safety procedures. - Annually review relevant SOP documents for laboratory operations. 	<ul style="list-style-type: none"> - Adherence to safety and SOP procedures by laboratory staff. - Identification of macroinvertebrate specimens collected during field sampling. - Completion of laboratory data sheets - Verify taxonomic accuracy of samples. - Voucher specimen tracking. 	<ul style="list-style-type: none"> - IDEM 2008, 2010a, 2010b, 2023a, 2019a, 2019b, 2020a, 2022c - IDEM 2019a and 2021b

Role	Required Training or Experience	Responsibilities	Training References
		<ul style="list-style-type: none"> - Ensure QC calculations on data sheets. -Check data for completeness. - Ensure data are entered into AIMS II database correctly. 	
Laboratory staff – biological community sample processing	<ul style="list-style-type: none"> - Complete hands-on training for laboratory sample processing methodology prior to laboratory sample processing activities. - Annually review relevant safety procedures - Annually review relevant SOP documents for laboratory operations. 	<ul style="list-style-type: none"> -Adherence to safety and SOP procedures by laboratory staff - Follow laboratory supervisor direction while processing samples. - Identify macroinvertebrate specimens. - Perform necessary calculations on data and enter field sheets. 	<ul style="list-style-type: none"> - IDEM 2008, 2010a, 2010b, 2023a, 2019a, 2019b, 2020a, 2022c - IDEM 2019a and 2021b
Laboratory supervisor – water chemistry sample processing	<ul style="list-style-type: none"> - Annually review relevant safety procedures. - Annually review relevant SOP documents for field operations. 	<ul style="list-style-type: none"> -Adherence to safety and SOP procedures by laboratory staff - Completion of laboratory data sheets. - Check data for completeness. - Perform all necessary calculations on the data. - Ensure data are entered into the AIMS II database. -Ensure that required QA/QC are performed on the data -Querying data from AIMS II to determine results not meeting water quality criteria 	<ul style="list-style-type: none"> - IDEM 2008, 2010a, 2010b, 2023a, 2019a, 2019b, 2020b, 2022c - IDEM 2019a and 2021b
Quality assurance officer	<ul style="list-style-type: none"> - Familiarity with QA/QC practices and methodologies - Familiarity with the Surface Water QAPP and data qualification methodologies 	<ul style="list-style-type: none"> - Ensure adherence to QA/QC requirements of Surface Water QAPP. - Evaluate data collected by sampling crews for adherence to project work plan. - Review data collected by field sampling crews for completeness and accuracy. 	<ul style="list-style-type: none"> - IDEM 2023a, 2020a, 2022c - U.S. EPA 2006

Role	Required Training or Experience	Responsibilities	Training References
		<ul style="list-style-type: none"> - Perform a data quality analysis of data generated by the project. - Assign data quality levels based on the data quality analysis. - Import data into the AIMS II database. - Ensure field sampling methodology audits are completed according to WAPB procedures. 	

B. Data Generation and Acquisition

B.1. Sampling Sites and Sampling Design

The Blue River and Indian Creek Watersheds study is designed to obtain spatial coverage of major tributaries to allow for comparison between the two watersheds, while also including sites of special interest by local stakeholders. Sites were selected at the pour points of 10-digit HUCs and a work group was comprised of interested stakeholders to determine additional targeted sites. This work group was comprised of IDEM staff, Purdue Extension wildlife specialists, and watershed specialists from The Nature Conservancy (TNC), Washington County Soil and Water Conservation District (SWCD), and the Natural Resource Conservation Service (NRCS).

Site reconnaissance activities were completed in February and March of 2023 through physical site visits. Activities included preparation and review of site maps and aerial photographs. Physical site visits included verification of accessibility, recording safety considerations, determining equipment needed to properly sample the site, and consultations with property owners, if required. All information was recorded on the IDEM Office of Water Quality (OWQ) Site Reconnaissance Form (Attachment 1) and entered into the AIMS II database. Precise coordinates were recorded for each site during the physical site visits. An agency approved handheld Global Positioning System (GPS) unit was used to verify horizontal precision within five meters or less (IDEM 2022b) and entered into the AIMS II database. Digital photos were taken upstream and downstream of the site and labeled with the site number and indication of whether the photo faces upstream or downstream. Digital photos are stored in the project folder on the shared drive.

Table 1 provides a list of the selected sampling sites with the stream name, Assessment Unit IDs (AUID), AIMS Site Number, county name, and the latitude and longitude of each site. Figure 1 gives a spatial overview of the site locations for this project.

B.2. Sampling Methods and Sample Handling

1. Water Chemistry Sampling

One team of two staff will collect water chemistry grab samples, record water chemistry field data measurements, and physical site descriptions on the IDEM OWQ Stream Sampling Field Data Sheet (Attachment 2). All water chemistry sampling will adhere to the Water Chemistry Field Sampling Procedures (IDEM 2020b). Water chemistry samples will be preserved as specified in Table 4 and follow all applicable holding times.

Table 4. Water Chemistry Sample Handling

Parameter	Preservative	Holding Times
Alkalinity (as CaCO ₃)	Ice	14 days
Solids, total residue (TS)	Ice	7 days
Solids, nonfilterable residue (TSS)	Ice	7 days
Solids, filterable residue (TDS)	Ice	7 days
Sulfate (dissolved)	Ice	28 days
Chloride	Ice	28 days
Hardness (as CaCO ₃)	HNO ₃	6 months
Nitrogen, as ammonia	H ₂ SO ₄	28 days
Nitrogen, Kjeldahl (TKN)	H ₂ SO ₄	28 days
Nitrogen, nitrate+nitrite	H ₂ SO ₄	28 days
Phosphorous (applicable to all)	H ₂ SO ₄	28 days
Total organic carbon (TOC)	H ₂ SO ₄	28 days
Chemical oxygen demand	H ₂ SO ₄	28 days
Calcium	HNO ₃	6 months
Magnesium	HNO ₃	6 months
2,4,5-T	None	48 hours
2,4,5-TP	None	48 hours
2,4-D	None	48 hours
2,4-DB	None	48 hours
2,4-DP	None	48 hours
Acetamiprid	None	48 hours
Acetochlor ESA	None	48 hours
Acetochlor OA	None	48 hours
Acifluorfen	None	48 hours
Afidopyropen	None	48 hours
Alachlor ESA	None	48 hours

Alachlor OA	None	48 hours
Aldicarb Sulfone	None	48 hours
Aldicarb Sulfoxide	None	48 hours
Aminopyralid	None	48 hours
Azoxystrobin	None	48 hours
Bensulfuron Methyl	None	48 hours
Bensulide	None	48 hours
Bentazon	None	48 hours
Bentazon AIBA	None	48 hours
Bicyclopyrone	None	48 hours
Bicyclopyrone SYN503780	None	48 hours
Bixafen	None	48 hours
Boscalid	None	48 hours
Bromacil	None	48 hours
Carbaryl	None	48 hours
Carbendazim	None	48 hours
Carbofuran	None	48 hours
Chloramben	None	48 hours
Chlorantraniliprole	None	48 hours
Chlorimuron Ethyl	None	48 hours
Chlorpyrifos Oxon	None	48 hours
Clethodim Sulfone	None	48 hours
Clethodim Sulfoxide	None	48 hours
Clopyralid	None	48 hours
Cloransulam Methyl	None	48 hours
Clothianidin	None	48 hours
Cyanazine	None	48 hours
Cyanazine Acid	None	48 hours
Cyanazine Amide	None	48 hours
Cyantraniliprole	None	48 hours
Cyclaniliprole	None	48 hours
Cyprosulfamide	None	48 hours
Deethylcyanazine	None	48 hours
Deethylcyanazine Acid	None	48 hours
Deethylcyanazine Amide	None	48 hours
Deisopropylatrazine	None	48 hours
Diamino-Atrazine	None	48 hours
Dicamba	None	48 hours
Diclotophos	None	48 hours
Didealkylatrazine	None	48 hours
Difenoconazole	None	48 hours

Dimethenamid ESA	None	48 hours
Dimethenamid OA	None	48 hours
Dimethoate	None	48 hours
Dinotefuran	None	48 hours
Disulfoton Sulfone	None	48 hours
Diuron	None	48 hours
Flumetsulam	None	48 hours
Flupyradifurone	None	48 hours
Fluroxypyr	None	48 hours
Flutriafol	None	48 hours
Fluxapyroxad	None	48 hours
Fomesafen	None	48 hours
Halauxifen Acid	None	48 hours
Halauxifen Methyl	None	48 hours
Halosulfuron Methyl	None	48 hours
Hexazinone	None	48 hours
Hydroxyatrazine	None	48 hours
Imazamethabenz Acid	None	48 hours
Imazamethabenz Methyl	None	48 hours
Imazamox	None	48 hours
Imazapic	None	48 hours
Imazapyr	None	48 hours
Imazaquin	None	48 hours
Imazethapyr	None	48 hours
Imidacloprid	None	48 hours
Imidacloprid Olefin	None	48 hours
Imidacloprid Urea	None	48 hours
Inpyrfluxam	None	48 hours
Isoxaflutole	None	48 hours
Isoxaflutole DKN	None	48 hours
Linuron	None	48 hours
Mandestrobin	None	48 hours
MCPA	None	48 hours
MCPB	None	48 hours
MCPP	None	48 hours
Mefentrifluconazole	None	48 hours
Mesotrione	None	48 hours
Metalaxyl	None	48 hours
Metconazole	None	48 hours
Methiozolin	None	48 hours
Metolachlor ESA	None	48 hours

Metolachlor OA	None	48 hours
Metribuzin DA	None	48 hours
Metribuzin DK	None	48 hours
Metsulfuron Methyl	None	48 hours
Momfluorothrin	None	48 hours
Myclobutanil	None	48 hours
Nicosulfuron	None	48 hours
Norflurazon	None	48 hours
Norflurazon Desmethyl	None	48 hours
Oxathiapiprolin	None	48 hours
Oxydemeton Methyl	None	48 hours
Parathion Methyl Oxon	None	48 hours
Picarbutrazox	None	48 hours
Picarbutrazox TZ-1E	None	48 hours
Picloram	None	48 hours
Picoxystrobin	None	48 hours
Prometryn	None	48 hours
Propiconazole	None	48 hours
Prothioconazole-desthio	None	48 hours
Pydiflumetofen	None	48 hours
Pyraclostrobin	None	48 hours
Pyridafol	None	48 hours
Pyrimisulfan	None	48 hours
Pyroxasulfone	None	48 hours
Saflufenacil	None	48 hours
Siduron	None	48 hours
Sulfentrazone	None	48 hours
Sulfentrazone-3-carboxylic acid	None	48 hours
Sulfometuron Methyl	None	48 hours
Tebuconazole	None	48 hours
Tembotrione	None	48 hours
Tetraconazole	None	48 hours
Tetraniliprole	None	48 hours
Tetraniliprole quinazolinone	None	48 hours
Thiacloprid	None	48 hours
Thiamethoxam	None	48 hours
Thiencarbazone methyl	None	48 hours
Thifensulfuron Methyl	None	48 hours
Thiobencarb	None	48 hours
Tolpyralate	None	48 hours
Topramezone	None	48 hours

Triasulfuron	None	48 hours
Triclopyr	None	48 hours

2. Macroinvertebrate Community Measurements

Aquatic benthic macroinvertebrate samples are collected using a modification of the U.S. EPA Rapid Bioassessment Protocol multihabitat (MHAB) approach using a D-frame dip net (Plafkin et al. 1989; Barbour et al. 1999; Klemm et al. 1990; IDEM 2023c). The IDEM MHAB approach (IDEM 2023c) is composed of a 1-minute “kick” sample within a riffle, if a riffle is present in the sample reach. A kick sample is collected by disturbing one square meter of stream bottom substrate in a riffle or run habitat and collecting the dislodged macroinvertebrates within the dipnet. A 50-meter “sweep” sample of additional instream habitats is collected by disturbing habitats such as emergent vegetation, root wads, coarse particulate organic matter, depositional zones, logs, and sticks and collecting the dislodged macroinvertebrates within the dipnet. The 50-meter length of riparian corridor sampled at each site will be defined using a tape measure or rangefinder. If the stream is too deep to wade, a boat will be used to sample the 50-meter zone along the shoreline that has the best available habitat. The 1-minute “kick” (if collected) and 50-meter “sweep” samples are combined in a bucket of water. The sample will be elutriated through a U.S. standard number 35 (500 µm) sieve a minimum of five times so that all rocks, gravel, sand, and large pieces of organic debris are removed from the sample. The remaining sample is then transferred from the sieve to a white plastic tray. The collector (while still onsite) will conduct a 15-minute pick of macroinvertebrates at a single organism rate with an effort to pick for maximum organism diversity and relative abundance through turning and examination of the entire sample in the tray. The resulting picked sample will be preserved in 80% isopropyl alcohol, returned to the laboratory for identification at the lowest practical taxonomic level, (genus or species level when possible) and evaluated using the MHAB macroinvertebrate IBI (IDEM 2023e).

3. Habitat Assessments

Habitat assessments will be completed immediately following macroinvertebrate community sample collections at each site using a slightly modified version of the Ohio Environmental Protection Agency (OHEPA) Procedures for Completing the QHEI, 2006 edition (OHEPA 2006). See IDEM 2023d for a description of the method used in completing the QHEI (Attachment 3).

4. Field Parameter Measurements

Dissolved oxygen, pH, water temperature, specific conductance, and dissolved oxygen percent saturation will be measured with a data sonde during each sampling event, regardless of the sample type being collected. Measurement procedures and operation of the data sonde shall be performed according to the manufacturers’ manuals (IDEM 2020c). Turbidity will be measured with a Hach turbidity kit, and the meter number written in the comments under the field parameter measurements (IDEM 2020b). If a

Hach turbidity kit is not available, the data sonde measurement for turbidity will be recorded and noted in the comments. All field parameter measurements and weather codes will be recorded on the IDEM Stream Sampling Field Data Sheet (Attachment 2) with other sampling observations. A digital photo will also be taken upstream and downstream of the site during each macroinvertebrate sampling event.

B.3. Analytical Methods

1. Water Chemistry Parameter Measurements:

Pace Analytical Services will perform analyses of nutrient and general chemistry parameters and the Indiana State Chemist Office will perform analyses on pesticide parameters. All analyses will be in accordance with preapproved test methods and within the allotted time frames listed in Table 5.

Table 5. Water Chemistry Parameters Test Methods

Parameter	Method	Lab Reporting Limit	Units
Nutrients and General Chemistry			
Alkalinity (as CaCO ₃)	SM2320B	10.0	mg/L
Solids, total residue (TS)	SM 2540B	10.0	mg/L
Solids, nonfilterable residue (TSS)	SM 2540D	2.5	mg/L
Solids, filterable residue (TDS)	SM 2540C	10.0	mg/L
Sulfate	EPA 300.0	0.25	mg/L
Chloride	EPA 300.0	0.25	mg/L
Hardness (as CaCO ₃)	SM 2340B	10.0	mg/L
Ammonia as nitrogen	EPA 350.1	0.10	mg/L
Nitrogen, Kjeldahl (TKN)	EPA 351.2	0.50	mg/L
Nitrogen, nitrate+nitrite	EPA 353.2	0.10	mg/L
Phosphorous, total	EPA 365.1	0.05	mg/L
Total organic carbon (TOC)	SM 5310C	1.0	mg/L
Chemical oxygen demand (COD)	EPA 410.4	10.0	mg/L
Calcium	EPA 200.7	1,000	µg/L
Magnesium	EPA 200.7	1,000	µg/L
Pesticide Parameters³			
2,4,5-T		0.007	mg/L
2,4,5-TP		0.037	mg/L
2,4-D		0.007	mg/L
2,4-DB		0.6	mg/L
2,4-DP		0.007	mg/L
Acetamiprid		0.0075	mg/L
Acetochlor ESA		0.075	mg/L
Acetochlor OA		0.045	mg/L
Acifluorfen		0.007	mg/L

Parameter	Method	Lab Reporting Limit	Units
Afidopyropen		12.5	mg/L
Alachlor ESA		0.08	mg/L
Alachlor OA		0.037	mg/L
Aldicarb Sulfone		0.0075	mg/L
Aldicarb Sulfoxide		0.5	mg/L
Aminopyralid		1.125	mg/L
Azoxystrobin		0.0075	mg/L
Bensulfuron Methyl		2.505	mg/L
Bensulide		37.5	mg/L
Bentazon		0.007	mg/L
Bentazon AIBA		2.5	mg/L
Bicyclopyrone		0.0075	mg/L
Bicyclopyrone SYN503780		15	mg/L
Bixafen		15	mg/L
Boscalid		7.5	mg/L
Bromacil		0.075	mg/L
Carbaryl		0.037	mg/L
Carbendazim		1.5	mg/L
Carbofuran		0.0075	mg/L
Chloramben		2.4	mg/L
Chlorantraniliprole		0.037	mg/L
Chlorimuron Ethyl		3	mg/L
Chlorpyrifos Oxon		0.0075	mg/L
Clethodim Sulfone		15	mg/L
Clethodim Sulfoxide		7.5	mg/L
Clopyralid		0.375	mg/L
Cloransulam Methyl		15	mg/L
Clothianidin		0.0075	mg/L
Cyanazine		3.75	mg/L
Cyanazine Acid		1.5	mg/L
Cyanazine Amide		1.5	mg/L
Cyantraniliprole		0.037	mg/L
Cyclaniliprole		0.15	mg/L
Cyprosulfamide		0.0075	mg/L
Deethylcyanazine		3.75	mg/L
Deethylcyanazine Acid		3.75	mg/L
Deethylcyanazine Amide		3.75	mg/L
Deisopropylatrazine		3.75	mg/L
Diamino-Atrazine		0.03	mg/L

Parameter	Method	Lab Reporting Limit	Units
Dicamba		0.225	mg/L
Dicrotophos		3.75	mg/L
Didealkylatrazine		7.5	mg/L
Difenoconazole		3.75	mg/L
Dimethenamid ESA		0.007	mg/L
Dimethenamid OA		0.037	mg/L
Dimethoate		7.5	mg/L
Dinotefuran		0.0075	mg/L
Disulfoton Sulfone		3	mg/L
Diuron		0.0075	mg/L
Flumetsulam		0.0075	mg/L
Flupyradifurone		0.0075	mg/L
Fluroxypyr		0.105	mg/L
Flutriafol		1.5	mg/L
Fluxapyroxad		1.5	mg/L
Fomesafen		0.007	mg/L
Halauxifen Acid		3.75	mg/L
Halauxifen Methyl		1.5	mg/L
Halosulfuron Methyl		0.0075	mg/L
Hexazinone		0.0075	mg/L
Hydroxyatrazine		1.005	mg/L
Imazamethabenz Acid		1.5	mg/L
Imazamethabenz Methyl		0.75	mg/L
Imazamox		1.995	mg/L
Imazapic		1.5	mg/L
Imazapyr		0.0075	mg/L
Imazaquin		2.505	mg/L
Imazethapyr		0.0075	mg/L
Imidacloprid		0.0075	mg/L
Imidacloprid Olefin		7.5	mg/L
Imidacloprid Urea		7.5	mg/L
Inpyrfluxam		4.5	mg/L
Isoxaflutole		0.0075	mg/L
Isoxaflutole DKN		0.007	mg/L
Linuron		0.0075	mg/L
Mandestrobin		3.75	mg/L
MCPA		0.007	mg/L
MCPB		0.15	mg/L
MCPP		0.007	mg/L

Parameter	Method	Lab Reporting Limit	Units
Mefentrifluconazole		3.75	mg/L
Mesotrione		0.015	mg/L
Metalaxyl		0.0075	mg/L
Metconazole		3.75	mg/L
Methiozolin		4.5	mg/L
Metolachlor ESA		0.007	mg/L
Metolachlor OA		0.041	mg/L
Metribuzin DA		3.75	mg/L
Metribuzin DK		75	mg/L
Metsulfuron Methyl		0.0075	mg/L
Momfluorothrin		7.5	mg/L
Myclobutanil		1.5	mg/L
Nicosulfuron		0.0075	mg/L
Norflurazon		0.0075	mg/L
Norflurazon Desmethyl		7.5	mg/L
Oxathiapiprolin		15	mg/L
Oxydemeton Methyl		3	mg/L
Parathion Methyl Oxon		3.75	mg/L
Picarbutrazox		2.25	mg/L
Picarbutrazox TZ-1E		2.25	mg/L
Picloram		0.007	mg/L
Picoxystrobin		7.5	mg/L
Prometryn		0.0075	mg/L
Propiconazole		0.0075	mg/L
Prothioconazole-desthio		0.0075	mg/L
Pydiflumetofen		3.75	mg/L
Pyraclostrobin		3.75	mg/L
Pyridafol		3.75	mg/L
Pyrimisulfan		3.75	mg/L
Pyroxasulfone		7.5	mg/L
Saflufenacil		0.0075	mg/L
Siduron		1.005	mg/L
Sulfentrazone		0.037	mg/L
Sulfentrazone-3-carboxylic acid		22.5	mg/L
Sulfometuron Methyl		0.0075	mg/L
Tebuconazole		1.5	mg/L
Tembotrione		0.015	mg/L
Tetraconazole		1.5	mg/L
Tetraniliprole		7.5	mg/L

Parameter	Method	Lab Reporting Limit	Units
Tetraniliprole quinazolinone		7.5	mg/L
Thiacloprid		0.0075	mg/L
Thiamethoxam		0.0075	mg/L
Thiencarbazone methyl		0.037	mg/L
Thifensulfuron Methyl		2.505	mg/L
Thiobencarb		1.245	mg/L
Tolpyralate		7.5	mg/L
Topramezone		15	mg/L
Triasulfuron		3.495	mg/L
Triclopyr		0.037	mg/L

³Pesticide parameters use test methods from “Pesticide Residue in Water by LCMSMS” provided by Indiana State Chemists Office.

2. Field Parameter Measurements:

Take the field measurements of DO, DO% saturation, temperature, pH, conductivity, and turbidity each time a sample is collected. Table 6 identifies the field parameters, respective test methods, and sensitivity limits. Place the data sonde in the center of flow during sampling. The field staff member collecting the sample shall wait for all readings to stabilize before recording the readings on the IDEM Stream Sampling Field Data Sheet (Attachment 2).

Table 6. Field Parameters Test Methods

Parameter	Method	Sensitivity Limit	Units
DO (data sonde optical)	ASTM D888-09 ⁴	0.01	mg/L
DO (membrane probe)	SM4500-OG	0.03	mg/L
DO % saturation (data sonde optical)	ASTM D888-09	0.01	%
Turbidity (data sonde)	SM2130B	0.02	NTU
Turbidity (Hach™ turbidity kit)	EPA 180.1 ⁴	0.01	NTU
Specific conductance (data sonde)	SM 2510B	1.0	µmho/cm
Temperature (data sonde)	SM 2550B(2)	0.1	°C
Temperature (field meter)	SM 2550B(2) ⁴	0.1	°C
pH (data sonde)	EPA 150.2	0.01	SU
pH (field meter)	SM 4500-HB ⁴	0.01	SU

⁴ Method used for Field Calibration Verification

B.4. Quality Control and Custody Requirements

Quality assurance protocols will follow part D.3.2. of the Surface Water QAPP (IDEM 2023a, p 105) and part B.5. of the Biological and Habitat QAPP (IDEM 2020a, p 27).

1. Field Instrument Testing and Calibrations

The data sonde will be calibrated prior to each week's sampling at minimum (IDEM 2020c). The dissolved oxygen component of the calibration procedure will be conducted using the air calibration method. Calibration results and drift values will be recorded, maintained, stored, and archived in the calibration laboratories at the Shadeland facility. The drift value is the difference between two successive calibrations. Field parameter calibrations will conform to the procedures described in the instrument user's manuals (Xylem 2017; Xylem 2018). The unit will be field checked for accuracy once during the week by comparison with a YSI EcoSense DO200A DO Probe (IDEM 2020b, p 24), Hach™ turbidity, and an Oakton Series 5 pH meter. Weekly calibration verification results will be recorded on the field calibrations portion of the IDEM OWQ Stream Sampling Field Data Sheets (Attachment 2) and entered into the AIMS II database. The YSI D.O. meter will also be used in the field where the dissolved oxygen concentration is 4.0 mg/L or less. Any pH below 4 or above 10 will be verified with an Oakton Series 5 pH meter.

2. Field Measurement Data

In-situ water chemistry field data are collected in the field using calibrated or standardized equipment and recorded on the IDEM OWQ Stream Sampling Field Data Sheet (Attachment 2). Detection limits and ranges have been set for each analysis (Table 6). Quality control checks (such as duplicate measurements, measurements of a secondary standard, or measurements using a different test method or instrument) performed on field or laboratory data, are usable for ensuring precision, accuracy, and completeness for the project, as described in the Surface Water QAPP (IDEM 2023a Table 1, p 37 and Section B.5 p 91).

3. Water Chemistry Measurement Data

The manufacturer will certify sample bottles and preservatives for purity. Do not use damaged sample bottles and preservatives, and do not use preservatives past their stated expiration date. Field blanks check the purity of sample bottles and preservatives. Sample collection containers for each parameter, preservative, and holding time (Table 4 and Table 5) will adhere to U.S. EPA requirements. Collect field duplicates and matrix spike/matrix spike duplicates at the rate of one per sample analysis set. Additionally, take field blank samples at a rate of one set per sample analysis set. A chain of custody (COC) form created by the AIMS II database IDEM OWQ COC (Attachment 4) and an IDEM Water Sample Analysis Request form (Attachment 5) accompany each sample set through the analytical process. The field staff member collecting the samples signs the COC form upon delivery of samples to the laboratory.

4. Macroinvertebrate Community Measurement Data

Duplicate macroinvertebrate field samples will be collected for at least 10 percent of the total sites sampled for the project. The duplicate sample sites, approximately three in this basin, will be randomly selected prior to the beginning of the field season. The macroinvertebrate community duplicate sample and corresponding habitat assessment at a single site will be performed by the same team member who performed the original

sample at that site and will be conducted immediately after the initial sample is collected. This will result in a precision evaluation based on a 10% duplicate of samples collected (IDEM 2020a). The IDEM OWQ Field Chain of Custody Form is used to track samples from the field to the laboratory (Attachment 4). A field staff member from the crew completes the OWQ COC form after sampling is complete. After completion of weekly field sampling activities, the laboratory custodian uses the OWQ COC form to check in samples prior to long-term storage. Samples will be processed by Rhithron Associates, Inc. in Missoula, Montana.

C. Assessment and Oversight

C.1. Field and Laboratory Performance and System Audits

Field and laboratory performance and system audits will be conducted to ensure good quality data. The field and laboratory performance checks include precision measurements by relative percent difference (RPD) of field and laboratory duplicate, accuracy measurements by percent of recovery of MS/MSD samples analyzed in the laboratory, and completeness measurements by the percent of planned samples that are actually collected, analyzed, reported, and usable for the project (IDEM 2023a, Table 1 p. 37).

Biological and habitat measurements, field performance measurements include:

- Completeness (IDEM 2020a, pp 10-11, 14)
- RPD for number of taxa for macroinvertebrate duplicate samples (IDEM 2020a, p 13)
- Difference between the two mIBI scores for macroinvertebrate duplicate samples (IDEM 2020a)
- RPD between the two total Qualitative Habitat Evaluation Index (QHEI) scores for macroinvertebrate duplicate samples (IDEM 2020a, p 18)

Macroinvertebrate lab performance measurements include:

- Percent taxonomic difference (PTD) for macroinvertebrates (IDEM 2020a, pp 15-16)
- Percent difference in enumeration (PDE) and percent sorting efficiency (PSE) for macroinvertebrates (IDEM 2020a, pp 14-16)

All macroinvertebrate samples will be sent to Rhithron Associates, Inc. (Missoula, MT) for identification and verification. Macroinvertebrate identifications and verifications by an external lab require the lab's taxonomists to maintain Society for Freshwater Science taxonomic certifications. Genus level taxonomic certifications are required for (1) Eastern General Arthropods; (2) Eastern Ephemeroptera, Plecoptera, and Trichoptera; (3) Chironomidae; and (4) Oligochaeta.

Contract laboratories are required to have National Environmental Laboratories Accreditation Conference (NELAC) audits annually as part their certification renewals. In addition, IDEM QA staff annually review performance studies conducted by the contract laboratories. The audit includes any or all the operational quality control elements of the laboratory's quality assurance system. All applicable elements of this QAPP and the

laboratory contract requirements are addressed including, but not limited to, sample handling, sample analysis, record keeping, preventative maintenance, proficiency testing, personnel requirements, training, and workload. (IDEM 2023a, Section C.1. p. 99).

IDEM WAPB staff conduct field audits every other year to ensure sampling activities adhere to approved SOPs. WAPB managers will systematically conduct audits to include all WAPB personnel engaging in field sampling activities. Managers trained in the associated sampling SOPs and in the processes related to conducting an audit evaluate WAPB field staff involved with sample collection and preparation. Managers will produce an evaluation report documenting each audit for review by those field staff audited as well as WAPB management. Corrective actions will be communicated to field staff who implement the corrective actions as a result of the audit process (IDEM 2023a, Section C. p 99-100; IDEM 2020a, p 31).

The QA officer submits quality assurance reports upon completion of a dataset's data validation to the program manager or WAPB branch chief. The QA manager, relevant section chief, project manager, any technical staff working on corrective actions, and quality assurance staff receive copies of the progress reports when new developments arise. The section chief, project officer, or QA officer is responsible for working with relevant staff members to develop corrective actions and notifying the QA manager of corrective action progress. Depending on the associated corrective actions, either the section chief or the QA officer approves the final corrective action (IDEM 2023a, Section C.2. p. 101).

C.2. Data Quality Assessment Levels

The samples and various types of data collected by this program are intended to meet the quality assurance criteria and rated DQA Level 3, as described in the Surface Water QAPP (IDEM 2023a, pp 107-108) and the Biological and Habitat QAPP (IDEM 2020a, pp 34–35).

D. Data Validation and Usability

Quality assurance reports to management, data validation and usability are important components of Indiana's Surface Water QAPP to ensure good quality data for this project. The QA officer submits quality assurance reports upon completion of a dataset's data validation to the program manager or WAPB branch chief. This is done to ensure investigation and correction of problems that arise during the sampling and analysis phases of the project (IDEM 2023a, p 101). As described in Section D of the Surface Water QAPP (IDEM 2023a), data are reduced (converted from raw analytical data into final results in proper reporting units); validated (qualified based on the performance of field and laboratory QC measures incorporated into the sampling and analysis procedures); and reported (described to completely document the calibration, analysis, QC measures, and calculations). These steps allow users to assess the data to ensure the project DQOs are met.

D.1. Quality Assurance, Data Qualifiers, and Flags

Various data qualifiers and flags are used for quality assurance and validation of the data found in the Surface Water QAPP (IDEM 2023a Section D.3.3. pp 108-109) and the Biological and Habitat QAPP (IDEM 2020a pp 33-34).

D.2. Data Usability

Qualify the environmental data's collection and usability per each lab or field result obtained and classify into one or more of the four categories: acceptable data, enforcement capable results, estimated data, and rejected data as described in the Surface Water QAPP (IDEM 2023a pp 107-108) and in the Biological and Habitat QAPP (IDEM 2020a pp 35-36).

D.3. Information, Data, and Reports

Data collected in 2023 and 2024 will be stored in the AIMS II database and presented in two compilation summaries. The first summary is a general compilation of the watershed field and water chemistry data prepared for use in the 2026 Indiana Integrated Report. The second summary is in database report format containing biological results and habitat evaluations, produced for inclusion in the integrated report as well as individual site folders. Site folders are maintained at the WAPB facility, and all data and reports are available to public and private entities. The work plan is saved in the virtual file cabinet and in the OWQ QA Library. Field sheets are scanned and stored in the project in the AIMS II database. The data is uploaded to U.S. EPA's Water Quality Portal via the Water Quality Exchange (formerly Storet), which allows the data to be shared with U.S. EPA and others. The Water Quality Exchange is a framework which allows states, tribes, and other data partners to submit and share water quality monitoring data via the web to the Water Quality Portal.

D.4. Laboratory and Estimated Cost

Laboratory analysis and data reporting for this project complies with the Surface Water QAPP (IDEM 2023a); Request for Proposals 22-68153 (IDEM 2021); the IDEM QMP (IDEM 2018b); and Pace Analytical Services- contract #58643, PO # 0020003041. The analytical and identification funds for Pace Analytical Services and Rithron Associates, Inc are provided by an EPA Section 106 Monitoring Initiative grant, 03E02329. Pace Analytical Services in Indianapolis, Indiana will perform analytical tests on general chemistry and nutrient parameters outlined in Table 5 with a total estimated cost of \$58,240. The Office of Indiana State Chemist will perform analytical tests on pesticide parameters outlined in Table 5 for no additional charge. IDEM staff will collect macroinvertebrate samples. Rhithron Associates, Inc. in Missoula, Montana will identify and verify all macroinvertebrate samples with a total estimated cost of \$8,700. The anticipated total budget for laboratory costs for the project is \$66,940. Laboratory accreditations can be referenced in Attachment 6.

D.5. Reference Manuals and Personnel Safety

Table 7. Personnel Safety and Reference Manuals

Role	Required Training or Experience	Training References	Training Notes
All staff participating in field activities	<ul style="list-style-type: none"> - Basic first aid and cardio-pulmonary resuscitation (CPR) - Personal protective equipment (PPE) policy - Personal floatation devices 	<ul style="list-style-type: none"> - A minimum of four hours of in-service training provided by WAPB (IDEM 2010a) - IDEM 2008 - February 29, 2000, WAPB internal memorandum regarding use of approved personal flotation devices 	<ul style="list-style-type: none"> - WAPB staff that meet health and safety training requirements will accompany staff lacking four hours of in-service training, or appropriate certification, in the field at all times. - When working on boundary waters as defined by Indiana Code (IC) 14-8-2-27 or between sunset and sunrise on any waters of the state, all personnel in the watercraft must wear a high intensity whistle and Safety of Life at Sea (SOLAS) certified strobe light.

E. References

Standard documentation include:

- U.S. EPA 1983. "[Methods for Chemical Analysis of Water and Wastes](#)", EPA 600/4-79/020, March 1983. Washington, DC.
- U.S. EPA 1999. Barbour, M.T., J. Gerritsen, B.D. Snyder and J.B. Stribling. 1999. [Rapid Bioassessment Protocols for Use in Streams and Wadable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition](#). EPA/841/B-99/002. U.S. EPA, Office of Water, Washington, D.C.
- U.S. EPA 2002. [Guidance for Quality Assurance Project Plans](#) EPA QA/G-5, EPA/240R-02/009 U.S. EPA, Office of Environmental Information, Washington D.C.
- U.S. EPA 2006. [Guidance on Systematic Planning Using the Data Quality Objectives Process](#). EPA QA/G-4. EPA/240/B-06/001. U.S. EPA, Office of Environmental Information, Washington D.C. 20460
- Indiana Administrative Code, [Title 327 Water Pollution Control Division, Article 2. Water Quality Standards](#).

Standard operating procedures (SOPs) or technical SOPs (TSOP):

- IDEM 2008. IDEM Personal Protective Equipment Policy, revised May 1, 2008. A-059-OEA-08-P-R0. IDEM, Indianapolis, Indiana.
- IDEM 2008. IDEM policy, [Personal Protective Equipment Policy](#), revised May 1, 2008, A-059-OEA-08-P-R0, Office of Program Support Health and Safety Director, IDEM, Indianapolis, Indiana
- IDEM 2010a. IDEM policy, [Health and Safety Training Policy, revised October 1 2010](#). A-030-OEA-10-P-R2. IDEM, Indianapolis, Indiana.
- IDEM 2010b. IDEM policy [Injury and Illness Resulting from Occupational Exposure Policy, revised February 12, 2016](#). A-034-AW-16-P-R3. IDEM, Indianapolis, Indiana.
- IDEM 2018. [IDEM 2018 Quality Management Plan](#). IDEM, Indiana Government Center North, 100 N. Senate Ave., Indianapolis, Indiana, 46204.
- IDEM 2019a. [IDEM Hazard Communication \(HazCom\) Plan](#), IDEM, Office of Program Support, Indianapolis, Indiana.
- IDEM 2019b. [IDEM Health and Safety Manual](#), IDEM, Office of Program Support, Indianapolis, Indiana
- IDEM 2020a. [Quality Assurance Program Plan \(QAPP\) for Biological Community and Habitat Measurements](#). B-003-OWQ-WAP-XXX-20-Q-R0. IDEM, OWQ, WAPB, Indianapolis, Indiana.
- IDEM 2020b. [Water Chemistry Field Sampling Procedures](#). B-015-OWQ-WAP-XXX-20-T-R0. IDEM, OWQ, WAPB, Indianapolis, Indiana.
- IDEM 2020c. [Calibration of YSI Multiparameter Data Sondes](#). B-014-OWQ-WAP-XXX-20-T-R0. IDEM, OWQ, WAPB, Indianapolis, Indiana.

- IDEM 2021. [“State of Indiana Request for Proposals 22-68153, Solicitation for: Laboratory Analytical Services”](#), Indiana Department of Administration, Indianapolis, IN, February 26, 2016. *
- IDEM 2021b. Office of Water Quality Watershed Assessment and Planning Branch Laboratory Safety Plan. IDEM, Office of Program Support, Indianapolis, Indiana.
- IDEM 2022a. [Appendix G: IDEM’s 2022 Consolidated Assessment and Listing Methodology](#). IDEM, OWQ, WAPB, Indianapolis, Indiana.
- IDEM 2022b. [Global Positioning System \(GPS\) Data Creation TSOP](#). B-001-OWQ-WAP-XXX-22-T-R0. OWQ, WAPB, Indianapolis, Indiana.
- IDEM 2022c. [AIMS II Database User Guide](#). OWQ, WAPB, Indianapolis, Indiana*
- IDEM 2023a. [WAPB Indiana Surface Water Programs Quality Assurance Project Plan \(QAPP\)](#), (Rev. 5, July 2023). B-001-OWQ-WAP-XX-23-Q-R5. IDEM, OWQ, WAPB, Indianapolis, Indiana.
- IDEM 2023b. [Global Navigational Satellite System \(GNSS\) R1 Unit User Instructions TSOP](#). B-055-OWQ-WAP-XXX-23-T-R0. OWQ, WAPB, Indianapolis, Indiana.
- IDEM 2023c. [Multi-habitat \(MHAB\) Macroinvertebrate Collection Procedure](#). B-011-OWQ-WAP-XXX-23-T-R1. OWQ, WAPB, Indianapolis, Indiana.
- IDEM 2023d. [Procedures for Completing the Qualitative Habitat Evaluation Index](#). B-003-OWQ-WAP-XX-23-T-R2. IDEM, OWQ, WAPB, Indianapolis, Indiana. (Under revision as of 3/27/2023)
- IDEM 2023e. [Processing and Identification of Macroinvertebrate Samples](#). B-061-OWQ-WAP-XXX-23-T-R0. OWQ, WAPB, Indianapolis, Indiana.
- Klemm, D.J., P.A. Lewis, F. Fulk and J.M. Lazorchak. 1990. [Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters](#). EPA/600/4-90/030. Environmental Monitoring Systems Laboratory, Monitoring Systems and Quality Assurance, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio.

Additional publications and resources relevant to the implementation of this QAPP include:

- American Public Health Association, American Water Works Association, Water Environment Federation. Lipps WC, Braun-Howland EB, Baxter TE, eds. [Standard Methods for the Examination of Water and Wastewater. 24th ed.](#) Washington DC: APHA Press; 2023.
- Moore, R.B., McKay, L.D., Rea, A.H., Bondelid, T.R., Price, C.V., Dewald, T.G., and Johnston, C.M. 2019, [User’s guide for the national hydrography dataset plus \(NHDPlus\) high resolution](#): U.S. Geological Survey Open-File Report 2019–1096.
- OHEPA. 2006. [Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index \(QHEI\)](#). OHIO EPA Technical Bulletin EAS/2006-06-1. Revised by the Midwest Biodiversity Institute for State of Ohio Environmental Protection Agency, Division of Surface Water, Ecological Assessment Section, Groveport, Ohio.
- Plafkin, J.L., M.T. Barbour, K.D. Porter, S.K. Gross, and R.M. Hughes. 1989. [Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates](#)

[and Fish](#). EPA/444/4-89/001. Assessment and Watershed Protection Division, U.S. Environmental Protection Agency, Washington, D.C.

- Xylem Incorporated 2017. Revision G, [EXO User Manual](#), Yellow Springs, Ohio.
- Xylem Incorporated 2018. Revision H, [YSI ProDigital User Manual](#), Yellow Springs, Ohio.

*Document may be inspected at the Watershed Assessment and Planning Branch office, located at 2525 North Shadeland Avenue Suite 100, Indianapolis, Indiana.

F. Distribution List

Electronic Distribution Only

<u>Name</u>	<u>Organization</u>
Caleb Rennaker	IDEM OWQ WAPB Technical and Logistical Services Section Chief
Kelly Jones	IDEM OPS Recycling Education and Quality Assurance QA Manager
Timothy Bowren	IDEM OWQ WAPB Technical and Logistical Services Section
Michaela Hecox	IDEM OWQ WAPB Targeted Monitoring Section
Charles Hostetter	IDEM OWQ WAPB Technical and Logistical Services Section
Mitchell Owens	IDEM OWQ WAPB Probabilistic Monitoring Section
Paul McMurray	IDEM OWQ WAPB Technical Environmental Specialist
Stacey Sobat	IDEM OWQ WAPB Probabilistic Monitoring Section Chief
Ali Meils	IDEM OWQ WAPB Targeted Monitoring Section Chief
Kristen Arnold	IDEM OWQ WAPB Branch Chief

G. Attachments

Attachment 1: IDEM OWQ Site Reconnaissance Form

	Site Reconnaissance Form		EPA Site Identifier	Rank:
			Recon #:	Trip #:

Site Number: Stream: County:

Location Description:

Reconnaissance Data Collected			
Recon Date	Crew Members		
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Avg. Width (m)	Avg. Depth (m)	Max. Depth (m)	Nearest Town
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Water Present?	Site Wadeable?	Riffle/Run Present?	Road/Public Access Possible?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Site Impacted by Livestock?	Collect Sediment?	Gauge Present?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Landowner/Contact Information		
First Name	Last Name	
<input type="text"/>	<input type="text"/>	
Street Address		
<input type="text"/>		
City	State	Zip
<input type="text"/>	<input type="text"/>	<input type="text"/>
Telephone	E-Mail Address	
<input type="text"/>	<input type="text"/>	
Pamphlet Distributed?	Please Call In Advance?	Results Requested?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rating, Results, Comments, and Planning

Site Rating By Category (1=easy, 10=difficult) Access Route <input type="text"/> Safety Factor <input type="text"/> Sampling Effort <input type="text"/>	Reconnaissance Decision Pre-Recon Recon In process Approved Site No, Landowner denied access No, Dry No, Stream channel missing No, Physical barriers No, Impounded stream No, Marsh/Wetland No, Bridge gone or not accessible No, Unsafe due to traffic or location No, Site impacted by backwater No, Other <input type="text"/>	Equipment Selected <input type="text"/>	Circle Equipment Needed Backpack Boat Towbarge Longline Scanoes Seine Weighed Handline Waders Gill Net <input type="text"/>
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Comments

Sketch of Stream & Access Route – Indicate Flow, Direction, Obstacles, & Land Use (Use Back of Page, if Necessary)

Attachment 2: IDEM OWQ Stream Sampling Field Data Sheet

IDEM Stream Sampling Field Data Sheet										Analysis Set #	EPA Site ID	Rank
Sample #		Site #		Sample Medium			Sample Type		Duplicate Sample #			
Stream Name:					River Mile:			County:				
Site Description:												
Survey Crew Chief	Sample Collectors				Sample Collected		Hydrolab #	Water Depth/Gage Ht (ft)	Water Flow (cfs/Sec)	Flow Estimated?	Algae?	Aquatic Life?
	1	2	3	4	Date	Time						
Sample Taken?		Allquots				Water Flow Type			Water Appearance		Canopy Closed %	
<input type="checkbox"/> Yes <input type="checkbox"/> No; Stream Dry <input type="checkbox"/> No; Owner refused Access		<input type="checkbox"/> No; Frozen <input type="checkbox"/> No; Other		<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 8 <input type="checkbox"/> 8 <input type="checkbox"/> 12 <input type="checkbox"/> 24 <input type="checkbox"/> 48 <input type="checkbox"/> 72 <input type="checkbox"/> All-Flow		<input type="checkbox"/> Rime <input type="checkbox"/> Dry <input type="checkbox"/> Stagnant <input type="checkbox"/> Pool <input type="checkbox"/> Run <input type="checkbox"/> Flood <input type="checkbox"/> Glide <input type="checkbox"/> Eddy <input type="checkbox"/> Other			<input type="checkbox"/> Clear <input type="checkbox"/> Green <input type="checkbox"/> Sheen <input type="checkbox"/> Murky <input type="checkbox"/> Black <input type="checkbox"/> Other <input type="checkbox"/> Brown <input type="checkbox"/> Gray (Septic/Sewage)		<input type="checkbox"/> 0-20% <input type="checkbox"/> 80-90% <input type="checkbox"/> 20-40% <input type="checkbox"/> 80-100% <input type="checkbox"/> 40-80%	
Special Notes:												

Field Data:

Date (m/d/yy)	24-hr Time (hh:mm)	D.O. (mg/l)	pH	Water Temp (°C)	Spec Cond (µmhos/cm)	Turbidity (NTU)	% Sat.	Chlorine (mg/l)	Chloride (mg/l)	Chlorophyll (mg/l)	Weather Codes		
SC	WD	WS	AT										
Comments													
Comments													
Comments													
Comments													
Comments													
Comments													

Measurement Flags	<	< Min. Meter Measurement	Weather Code Definitions			
	>	> Max. Meter Measurement	SC	WD	WS	AT
E	E	Estimated (See Comments)	Sky Conditions	Wind Direction	Wind Strength	Air Temp
R	R	Rejected (See Comments)	1 Clear 2 Scattered 3 Partly 4 Cloudy 5 Mist 6 Fog 7 Shower	00 North (0 degrees) 09 East (90 degrees) 18 South (180 degrees) 27 West (270 degrees)	0 Calm 1 Light 2 Mod/Light 3 Moderate 4 Mod/Strong 5 Strong 6 Gale	1 < 32 2 33-45 3 46-50 4 61-75 5 76-85 6 > 86

Field Calibrations:

Date (m/d/yy)	Time (hh:mm)	Calibrator Initials	Calibrations			
			Type	Meter #	Value	Units


Preservatives/Bottle Lots:

Group: Preservative	Preservative Lot #	Bottle Type	Bottle Lot #	Groups: Preservatives	Bottle Types
GC				General Chemistry: Ice	2000P 2000mL Plastic, Narrow Mouth
Nr				Nutrients: H2SO4	1000P 1000mL Plastic, Narrow Mouth
Metals				Metals: HNO3	500P 500mL Plastic, Narrow Mouth
CN				Cyanide: NaOH	250P 250mL Plastic, Narrow Mouth
D&G				Oil & Grease: H2SO4	1000G 1000mL Glass, Narrow Mouth
Toxics				Toxics: Ice	500G 500mL Glass, Wide Mouth
Ecol				Bacteriology: Ice	250G 250mL Glass, Wide Mouth
VOA				Volatle Organics: HCl & Thiosulfate	125G 125mL Glass, Wide Mouth
Pest				Pesticides: Ice	40GV 40mL Glass Vial
Phen				Phenols: H2SO4	120PB 120mL Plastic (Bacteria Only)
Sed				Sediment: Ice	1000PF 1000mL Plastic, Coming Filter
Gly				Glyphosate: Thiosulfate	500PF 500mL Plastic, Coming Filter
Hg				Mercury(1631): HCl	60P 60mL Plastic
Cr6				Chromium(VI)(1636): NaOH	250T 250mL Teflon
MeHg				Methyl Mercury(1630): HCl	500T 500mL Teflon 125T 125mL Teflon

Data Entered By: _____ QC1: _____
 QC2: _____

Stream Sampling Field Data Sheet

Attachment 3: IDEM OWQ Biological Qualitative Habitat Evaluation Index (front)



OWQ Biological QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
Surveyor	Sample Date	County	Macro Sample Type
<input type="checkbox"/> Habitat Complete			QHEI Score:

1] SUBSTRATE Check ONLY Two predominant substrate TYPE BOXES and check every type present

BEST TYPES	OTHER TYPES	ORIGIN	QUALITY
PREDOMINANT <input type="checkbox"/> BLDR/SLABS [10] <input type="checkbox"/> BOULDER [9] <input type="checkbox"/> COBBLE [8] <input type="checkbox"/> GRAVEL [7] <input type="checkbox"/> SAND [6] <input type="checkbox"/> BEDROCK [5]	PRESENT P/G R/R <input type="checkbox"/> HARDPAN [4] <input type="checkbox"/> DETRITUS [3] <input type="checkbox"/> MUCK [2] <input type="checkbox"/> SILT [2] <input type="checkbox"/> ARTIFICIAL [0]	PRESENT P/G R/R <input type="checkbox"/> LIMESTONE [1] <input type="checkbox"/> TILLS [1] <input type="checkbox"/> WETLANDS [0] <input type="checkbox"/> HARDPAN [0] <input type="checkbox"/> SANDSTONE [0] <input type="checkbox"/> RIP/RAP [0] <input type="checkbox"/> LACUSTRINE [0] <input type="checkbox"/> SHALE [-1] <input type="checkbox"/> COAL FINES [-2]	Check ONE (Or 2 & average) SILT <input type="checkbox"/> HEAVY [-2] <input type="checkbox"/> MODERATE [-1] <input type="checkbox"/> NORMAL [0] <input type="checkbox"/> FREE [1] SANDSTONE <input type="checkbox"/> EXTENSIVE [-2] <input type="checkbox"/> MODERATE [-1] <input type="checkbox"/> NORMAL [0] <input type="checkbox"/> NONE [1]

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

Substrate Maximum 20

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

<input type="checkbox"/> UNDERCUT BANKS [1] <input type="checkbox"/> OVERHANGING VEGETATION [1] <input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1] <input type="checkbox"/> ROOTMATS [1]	<input type="checkbox"/> POOLS > 70cm [2] <input type="checkbox"/> ROOTWADS [1] <input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> OXBOWS, BACKWATERS [1] <input type="checkbox"/> AQUATIC MACROPHYTES [1] <input type="checkbox"/> LOGS OR WOODY DEBRIS [1]
--	---	--

AMOUNT
 Check ONE (Or 2 & average)
 EXTENSIVE > 75% [11]
 MODERATE 25 - 75% [7]
 SPARSE 5 - < 25% [3]
 NEARLY ABSENT < 5% [1]

Cover Maximum 20

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4] <input type="checkbox"/> MODERATE [3] <input type="checkbox"/> LOW [2] <input type="checkbox"/> NONE [1]	<input type="checkbox"/> EXCELLENT [7] <input type="checkbox"/> GOOD [5] <input type="checkbox"/> FAIR [3] <input type="checkbox"/> POOR [1]	<input type="checkbox"/> NONE [6] <input type="checkbox"/> RECOVERED [4] <input type="checkbox"/> RECOVERING [3] <input type="checkbox"/> RECENT OR NO RECOVERY [1]	<input type="checkbox"/> HIGH [3] <input type="checkbox"/> MODERATE [2] <input type="checkbox"/> LOW [1]

Channel Maximum 20

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY	CONSERVATION/TILLAGE
<input type="checkbox"/> NONE/LITTLE [3] <input type="checkbox"/> MODERATE [2] <input type="checkbox"/> HEAVY/SEVERE [1]	<input type="checkbox"/> WIDE > 50m [4] <input type="checkbox"/> MODERATE 10-50m [3] <input type="checkbox"/> NARROW 5-10m [2] <input type="checkbox"/> VERY NARROW [1] <input type="checkbox"/> NONE [0]	<input type="checkbox"/> FOREST, SWAMP [3] <input type="checkbox"/> SHRUB OR OLD FIELD [2] <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] <input type="checkbox"/> FENCED PASTURE [1] <input type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<input type="checkbox"/> CONSERVATION/TILLAGE [1] <input type="checkbox"/> URBAN OR INDUSTRIAL [0] <input type="checkbox"/> MINING/CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.
 Riparian Maximum 10

5] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!) <input type="checkbox"/> > 1m [6] <input type="checkbox"/> 0.7 - < 1m [4] <input type="checkbox"/> 0.4 - < 0.7m [2] <input type="checkbox"/> 0.2 - < 0.4m [1] <input type="checkbox"/> < 0.2m [0] [metric = 0]	Check ONE (Or 2 & average) <input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] <input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	Check ALL that apply <input type="checkbox"/> TORRENTIAL [-1] <input type="checkbox"/> VERY FAST [1] <input type="checkbox"/> FAST [1] <input type="checkbox"/> MODERATE [1]	Check ONE (Or 2 & average) <input type="checkbox"/> SLOW [1] <input type="checkbox"/> INTERSTITIAL [-1] <input type="checkbox"/> INTERMITTENT [-2] <input type="checkbox"/> EDDIES [1]

Indicate for reach - pools and riffles.
 Pool/Current Maximum 12

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2] <input type="checkbox"/> BEST AREAS 5 - 10cm [1] <input type="checkbox"/> BEST AREAS < 5cm [metric = 0]	<input type="checkbox"/> MAXIMUM > 50cm [2] <input type="checkbox"/> MAXIMUM < 50cm [1]	Check ONE (Or 2 & average) <input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] <input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] <input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> NONE [2] <input type="checkbox"/> LOW [1] <input type="checkbox"/> MODERATE [0] <input type="checkbox"/> EXTENSIVE [-1]

Riffle/Run Maximum 8

6] GRADIENT (ft/mi) VERY LOW-LOW [2-4] MODERATE [6-10] HIGH-VERY HIGH [10-6]

DRAINAGE AREA (mi²)

% POOL: % GLIDE:
 % RUN: % RIFFLE:

Gradient Maximum 10

Attachment 3 (continued): IDEM OWQ Biological Qualitative Habitat Evaluation Index (back)



OWQ Biological QHEI (Qualitative Habitat Evaluation Index)

COMMENT _____

A-CANOPY

- > 85% - Open
- 55% - < 85%
- 30% - < 55%
- 10% - < 30%
- < 10% - Closed

B-AESTHETICS

- Nuisance algae
- Invasive macrophytes
- Excess turbidity
- Discoloration
- Foam/Scum
- Oil sheen
- Trash/Litter
- Nuisance odor
- Sludge deposits
- CSOs/SSOs/Outfalls

C-RECREATION

- Area > 100ft²
- Depth > 3ft

D-MAINTENANCE

- Public Private
- Active Historic
- Succession: Young Old
- Spray Islands Scoured
- Snag: Removed Modified
- Leveed: One sided Both banks
- Relocated Cutoffs
- Bedload: Moving Stable
- Armoured Slumps
- Impounded Desiccated
- Flood control Drainage

E-ISSUES

- WWTP CSO NPDES
- Industry Urban
- Hardened Dirt & Grime
- Contaminated Landfill
- BMPs: Construction Sediment
- Logging Irrigation Cooling
- Erosion: Bank Surface
- False bank Manure Lagoon
- Wash H₂O Tile H₂O Table
- Mine: Acid Quarry
- Flow: Natural Stagnant
- Wetland Park Golf
- Lawn Home
- Atmospheric deposition
- Agriculture Livestock

Looking upstream (> 10m, 3 readings; ≤ 10m, 1 reading in middle); Round to the nearest whole percent

% open	Right %	Middle %	Left %	Total Average %
	X	X	X	

Stream Drawing:

Attachment 5: IDEM OWQ Water Sample Analysis Request Form



Indiana Department of Environmental Management
 Office of Water Quality
 Watershed Planning and Assessment Branch
www.idem.IN.gov

Water Sample Analysis Request

Project Name: 2022 Black Creek Composite Grab

OWQ Sample Set	21BLWxxx	IDEM Sample Nos.	
Crew Chief	Ross Carlson	Lab Sample Nos.	
Collection Date	Nov. 15-17, 2021	Lab Delivery Date	

Anions and Physical Parameters			
Parameter	Test Method	Total	Dissolved
Alkalinity (as CaCO ₃)	310.2	<input checked="" type="checkbox"/> **	<input type="checkbox"/>
Total Solids	SM2540B	<input checked="" type="checkbox"/> **	
Suspended Solids	SM2540D	<input checked="" type="checkbox"/> **	
Dissolved Solids	SM2540C		<input checked="" type="checkbox"/> **
Sulfate (as SO ₄)	300.0	<input checked="" type="checkbox"/> **	<input type="checkbox"/> **
Chloride (as Cl)	300.0	<input checked="" type="checkbox"/> **	<input type="checkbox"/> **
Hardness (Calculated)	SM-2340B	<input checked="" type="checkbox"/> **	<input type="checkbox"/> **
Fluoride (as F)	SM4500-F-C	<input type="checkbox"/> **	<input type="checkbox"/> **

Priority Pollutant Metals Water Parameters			
Parameter	Test Method	Total	Dissolved
Antimony (as Sb)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Arsenic (as As)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Beryllium (as Be)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Cadmium (as Cd)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Chromium (as Cr)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Copper (as Cu)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Lead (as Pb)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Mercury, Low Level	1631, Rev E.	<input type="checkbox"/>	<input type="checkbox"/>
Nickel (as Ni)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Selenium (as Se)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Silver (as Ag)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Thallium (as Tl)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Zinc (as Zn)	200.8	<input type="checkbox"/>	<input type="checkbox"/>

Cations and Secondary Metals Parameters			
Parameter	Test Method	Total	Dissolved
Aluminum (as Al)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Barium (as Ba)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Boron (as B)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Calcium (as Ca)	200.7	<input checked="" type="checkbox"/> ***	<input type="checkbox"/>
Cobalt (as Co)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Iron (as Fe)	200.7	<input type="checkbox"/>	<input type="checkbox"/>
Magnesium (as Mg)	200.7	<input checked="" type="checkbox"/> ***	<input type="checkbox"/>
Manganese (as Mn)	200.8	<input type="checkbox"/>	<input type="checkbox"/>
Sodium (as Na)	200.7	<input type="checkbox"/>	<input type="checkbox"/>
Silica, Total Reactive (as SiO ₂)	200.7	<input type="checkbox"/>	<input type="checkbox"/>
Strontium (as Sr)	200.8	<input type="checkbox"/>	<input type="checkbox"/>

Organic Water Parameters		
Parameter	Test Method	Total
Priority Pollutants: Oranochlorine Pesticides and PCBs	608	<input type="checkbox"/>
Priority Pollutants: VOCs - Purgeable Organics	624	<input type="checkbox"/>
Priority Pollutants: Base/Neutral Extractables	625	<input type="checkbox"/>
Priority Pollutants: Acid Extractables	625	<input type="checkbox"/>
Phenolics, 4AAP	420.4	<input type="checkbox"/>
Oil and Grease, Total	1664A	<input type="checkbox"/>

Nutrient & Organic Water Chemistry Parameters			
Parameter	Test Method	Total	Dissolved
Ammonia Nitrogen	SM4500NH3-G	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CBOD ₅	SM5210B	<input type="checkbox"/>	
Total Kjeldahl Nitrogen (TKN)	SM4500N(Org)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Nitrogen, Nitrate + Nitrite as N	353.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Total Phosphorus	365.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
TOC	SM 5310C	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COD	410.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cyanide (Total)	335.4	<input type="checkbox"/>	<input type="checkbox"/>
Cyanide (Free)	SM4500CN-I	<input type="checkbox"/> *	<input type="checkbox"/>
Cyanide (Amenable)	SM4500CN-G	<input type="checkbox"/> *	<input type="checkbox"/>
Sulfide, Total	376.2	<input type="checkbox"/>	<input type="checkbox"/>

RFP 16-74	018620 (Pace-Indy)
Contract Number:	PO # 0020000887-5 (Pace-Indy)

30 day reporting time required.

Notes:

**** = DO NOT RUN PARAMETER IF SAMPLE IDENTIFIED AS A BLANK ON THE CHAIN OF CUSTODY**

*** = RUN ONLY IF TOTAL CYANIDE IS DETECTED**

***** = Report Calcium, Magnesium components of Total Hardness (Calculated)**

Send reports (Fed. Ex. or UPS) to:

Tim Bowren - IDEM
 Bldg. 20, STE 100
 2525 North Shadeland Ave.
 Indianapolis, IN 46219

Deliver reports to:

Tim Bowren - IDEM
 Bldg. 20, STE 100
 2525 North Shadeland Ave.
 Indianapolis, IN 46219

Testing Laboratory: Pace Analytical Services, Inc.
 Attn: Olivia Deck
 Phone: 317-228-3102 7726 Moller Road
 Indianapolis, IN 46268

Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation



State of Kansas

Department of Health and Environment

CERTIFICATE

This is to certify that Certification No.: E-10177

Pace Analytical Services, Inc - Indianapolis

**7726 Moller Road
Indianapolis, IN 46268-4163**

has been accredited in accordance with K.S.A. 65-1,109a under the standards adopted in K.A.R. 28-15-36 for performing environmental analyses for the parameters listed on the most current scope of accreditation. Continuous accreditation depends on successful, ongoing participation in the program. Clients are urged to verify with this agency the laboratory's certification status for particular methods and analytes.

Effective Date: 5/1/2023

Expiration Date: 4/30/2024

Handwritten signature of Leo Henning in cursive.

Leo Henning
Acting Director
Office of Laboratory Services

Handwritten signature of Carissa Robertson in cursive.

Carissa Robertson
Certification Section Chief
Office of Laboratory Services

Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

Division of Environment
 Kansas Health and Environmental Laboratories
 Environmental Laboratory Improvement Program
 6810 SE Dwight Street
 Topeka, KS 66620



Phone: 785-296-3811
 Fax: 785-559-5207
 KDHE.ELIPO@KS.GOV
 www.kdheks.gov/envlab

Janet Stanek, Secretary

Laura Kelly, Governor

The Kansas Department of Health and Environment encourages all clients and data users to verify the most current scope of accreditation for certification number E-10177

The analytes tested and the corresponding matrix and method which a laboratory is authorized to perform at any given time will be those indicated in the most recently issued scope of accreditation. The most recent scope of accreditation supersedes all previously issued scopes of accreditation. It is the certified laboratory's responsibility to review this document for any discrepancies. This scope of accreditation will be recalled in the event that your laboratory's certification is revoked.

Accreditation Start: 5/1/2023 Accreditation End: 4/30/2024

EPA Number: IN00043

Scope of Accreditation for Certification Number: E-10177

Page 1 of 26

Pace Analytical Services, Inc - Indianapolis

Primary AB

Program/Matrix: CWA (Non Potable Water)

Method ASTM D516-16

Sulfate KS

Method EPA 120.1

Conductivity KS

Method EPA 1631E

Mercury KS

Method EPA 1664A

Oil & Grease KS

Method EPA 1664A (SGT-HEM)

n-Hexane Extractable Material - Silica Gel Treated (HEM-SGT) KS

Method EPA 180.1 Rev. 2 - 1993

Turbidity KS

Method EPA 200.7 Rev 4.4

Aluminum KS

Antimony KS

Arsenic KS

Barium KS

Beryllium KS



Kansas Department of Health and Environment
 Kansas Health Environmental Laboratories
 6810 SE Dwight Street, Topeka, KS 66620



Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

EPA Number: *IN00043* Scope of Accreditation for Certification Number: *E-10177* Page 2 of 26

Pace Analytical Services, Inc - Indianapolis IN **Primary AB**

Program/Matrix: *CWA (Non Potable Water)*

Molybdenum	KS
Nickel	KS
Potassium	KS
Selenium	KS
Silver	KS
Sodium	KS
Strontium	KS
Thallium	KS
Tin	KS
Titanium	KS
Vanadium	KS
Zinc	KS

Method EPA 200.8

Aluminum	KS
Antimony	KS
Arsenic	KS
Barium	KS
Beryllium	KS
Boron	KS
Cadmium	KS
Chromium	KS
Cobalt	KS
Copper	KS
Lead	KS
Manganese	KS
Molybdenum	KS
Nickel	KS
Selenium	KS
Silver	KS
Thallium	KS
Tin	KS
Titanium	KS
Vanadium	KS
Zinc	KS

Method EPA 245.1

Mercury	KS
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Method EPA 300.0

Bromide	KS
Chloride	KS
Fluoride	KS
Nitrate	KS
Nitrate-nitrite	KS
Nitrite	KS
Sulfate	KS

Method EPA 335.4

Amenable cyanide	KS
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Kansas Department of Health and Environment
 Kansas Health Environmental Laboratories
 6810 SE Dwight Street, Topeka, KS 66620



Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

EPA Number: <i>IN00043</i>	Scope of Accreditation for Certification Number: <i>E-10177</i>	Page 3 of 26
Pace Analytical Services, Inc - Indianapolis IN		Primary AB
Program/Matrix: <i>CWA (Non Potable Water)</i>		
Cyanide		KS
Method EPA 350.1		
Ammonia as N		KS
Method EPA 351.2		
Total Kjeldahl Nitrogen (TKN)		KS
Method EPA 351.2 minus EPA 350.1		
Organic nitrogen		KS
Method EPA 353.2		
Nitrate		KS
Nitrate-nitrite		KS
Nitrite		KS
Method EPA 365.1		
Phosphorus		KS
Method EPA 410.4		
Chemical oxygen demand		KS
Method EPA 420.4		
Total phenolics		KS
Method EPA 6010B		
Arsenic		KS
Cadmium		KS
Copper		KS
Lead		KS
Molybdenum		KS
Nickel		KS
Selenium		KS
Strontium		KS
Total chromium		KS
Zinc		KS
Method EPA 6020		
Arsenic		KS
Cadmium		KS
Copper		KS
Lead		KS
Nickel		KS
Selenium		KS
Total chromium		KS
Zinc		KS
Method EPA 608.3 GC-ECD		
4,4'-DDD		KS
4,4'-DDE		KS
4,4'-DDT		KS
Aldrin		KS
alpha-BHC (alpha-Hexachlorocyclohexane)		KS
Aroclor-1016 (PCB-1016)		KS
Aroclor-1221 (PCB-1221)		KS



Kansas Department of Health and Environment
 Kansas Health Environmental Laboratories
 6810 SE Dwight Street, Topeka, KS 66620



Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

EPA Number: *IN00043* Scope of Accreditation for Certification Number: *E-10177* Page 4 of 26

Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *CWA (Non Potable Water)*

Aroclor-1232 (PCB-1232)	KS
Aroclor-1242 (PCB-1242)	KS
Aroclor-1248 (PCB-1248)	KS
Aroclor-1254 (PCB-1254)	KS
Aroclor-1260 (PCB-1260)	KS
beta-BHC (beta-Hexachlorocyclohexane)	KS
Chlordane (tech.)(N.O.S.)	KS
delta-BHC	KS
Dieldrin	KS
Endosulfan I	KS
Endosulfan II	KS
Endosulfan sulfate	KS
Endrin	KS
Endrin aldehyde	KS
gamma-BHC (Lindane, gamma-HexachlorocyclohexaneE)	KS
Heptachlor	KS
Heptachlor epoxide	KS
Methoxychlor	KS
Toxaphene (Chlorinated camphene)	KS

Method EPA 624.1

1,1,1-Trichloroethane	KS
1,1,2,2-Tetrachloroethane	KS
1,1,2-Trichloroethane	KS
1,1-Dichloroethane	KS
1,1-Dichloroethylene	KS
1,2-Dichlorobenzene (o-Dichlorobenzene)	KS
1,2-Dichloroethane (Ethylene dichloride)	KS
1,2-Dichloropropane	KS
1,3-Dichlorobenzene	KS
1,4-Dichlorobenzene	KS
2-Chloroethyl vinyl ether	KS
Acrolein (Propenal)	KS
Acrylonitrile	KS
Benzene	KS
Bromodichloromethane	KS
Bromoform	KS
Carbon tetrachloride	KS
Chlorobenzene	KS
Chlorodibromomethane	KS
Chloroethane (Ethyl chloride)	KS
Chloroform	KS
cis-1,3-Dichloropropene	KS
Ethylbenzene	KS
Methyl bromide (Bromomethane)	KS
Methyl chloride (Chloromethane)	KS
Methylene chloride (Dichloromethane)	KS



Kansas Department of Health and Environment
 Kansas Health Environmental Laboratories
 6810 SE Dwight Street, Topeka, KS 66620



Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

EPA Number: *IN00043* Scope of Accreditation for Certification Number: *E-10177* Page 5 of 26

Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *CWA (Non Potable Water)*

Naphthalene	KS
Tetrachloroethylene (Perchloroethylene)	KS
Toluene	KS
trans-1,2-Dichloroethylene	KS
trans-1,3-Dichloropropylene	KS
Trichloroethene (Trichloroethylene)	KS
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	KS
Vinyl chloride	KS
Xylene (total)	KS

Method EPA 625.1

1,2,4-Trichlorobenzene	KS
1,2-Dichlorobenzene (o-Dichlorobenzene)	KS
1,3-Dichlorobenzene	KS
1,4-Dichlorobenzene	KS
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	KS
2,4,6-Trichlorophenol	KS
2,4-Dichlorophenol	KS
2,4-Dimethylphenol	KS
2,4-Dinitrophenol	KS
2,4-Dinitrotoluene (2,4-DNT)	KS
2,6-Dinitrotoluene (2,6-DNT)	KS
2-Chloronaphthalene	KS
2-Chlorophenol	KS
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	KS
2-Nitrophenol	KS
3,3'-Dichlorobenzidine	KS
4-Bromophenyl phenyl ether	KS
4-Chloro-3-methylphenol	KS
4-Chlorophenyl phenylether	KS
4-Nitrophenol	KS
Acenaphthene	KS
Acenaphthylene	KS
Anthracene	KS
Benzidine	KS
Benzo(a)anthracene	KS
Benzo(a)pyrene	KS
Benzo(b)fluoranthene	KS
Benzo(g,h,i)perylene	KS
Benzo(k)fluoranthene	KS
bis(2-Chloroethoxy)methane	KS
bis(2-Chloroethyl) ether	KS
Butyl benzyl phthalate	KS
Chrysene	KS
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	KS
Dibenz(a,h) anthracene	KS
Diethyl phthalate	KS



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Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

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Pace Analytical Services, Inc - Indianapolis IN		Primary AB
Program/Matrix: <i>CWA (Non Potable Water)</i>		
Dimethyl phthalate		KS
Di-n-butyl phthalate		KS
Di-n-octyl phthalate		KS
Fluoranthene		KS
Fluorene		KS
Hexachlorobenzene		KS
Hexachlorobutadiene		KS
Hexachloroethane		KS
Indeno(1,2,3-cd) pyrene		KS
Isophorone		KS
Naphthalene		KS
Nitrobenzene		KS
n-Nitrosodimethylamine		KS
n-Nitrosodi-n-propylamine		KS
n-Nitrosodiphenylamine		KS
Pentachlorophenol		KS
Phenanthrene		KS
Phenol		KS
Pyrene		KS
Method EPA 7470A		
Mercury		KS
Method EPA 7471A		
Mercury		KS
Method EPA 8015D		
Propylene glycol		KS
Method EPA 8260C		
1,1,2-Trichloro-1,2,2-trifluoroethane		KS
1,3,5-Trichlorobenzene		KS
Method EPA 8270C		
1-Methylnaphthalene		KS
Carbazole		KS
Method OIA 1677-09		
Available Cyanide		KS
Free cyanide		KS
Method SM 2310 B-2011		
Acidity, as CaCO ₃		KS
Method SM 2320 B-2011		
Alkalinity as CaCO ₃		KS
Method SM 2340 B-2011		
Hardness		KS
Method SM 2510 B-2011		
Conductivity		KS
Method SM 2540 B-2011		
Residue-total		KS



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 Kansas Health Environmental Laboratories
 6810 SE Dwight Street, Topeka, KS 66620



Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

EPA Number: <i>IN00043</i>	Scope of Accreditation for Certification Number: <i>E-10177</i>	Page 7 of 26
Pace Analytical Services, Inc - Indianapolis IN		Primary AB
Program/Matrix: <i>CWA (Non Potable Water)</i>		
Method SM 2540 C-2011 Residue-filterable (TDS)		KS
Method SM 2540 D-2011 Residue-nonfilterable (TSS)		KS
Method SM 2540 F-2011 Residue-settleable		KS
Method SM 3500-Cr B-2011 Chromium VI		KS
Method SM 4500-Cl G-2011 Total residual chlorine		KS
Method SM 4500-Cl⁻ E-2011 Chloride		KS
Method SM 4500-CN⁻ C-2011 Cyanide		KS
Method SM 4500-CN⁻ E-2011 Cyanide		KS
Method SM 4500-CN⁻ G-2011 Amenable cyanide		KS
Method SM 4500-F⁻ C-2011 Fluoride		KS
Method SM 4500-H⁺ B-2011 pH		KS
Method SM 4500-NH₃ G-2011 Ammonia as N		KS
Method SM 4500-P E-2011 Orthophosphate as P		KS
Method SM 4500-S₂⁻ D-2011 Sulfide		KS
Method SM 5210 B-2011 Biochemical oxygen demand Carbonaceous BOD, CBOD		KS KS
Method SM 5310 C-2011 Total organic carbon		KS
Method SM 5540 C-2011 Surfactants - MBAS		KS
Method TKN-NH₃-CAL Organic nitrogen		KS



Kansas Department of Health and Environment
 Kansas Health Environmental Laboratories
 6810 SE Dwight Street, Topeka, KS 66620



Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

EPA Number: *IN00043* Scope of Accreditation for Certification Number: *E-10177* Page 8 of 26

Pace Analytical Services, Inc - Indianapolis IN **Primary AB**

Program/Matrix: *RCRA (Non Potable Water)*

Method EPA 1010A

Ignitability KS

Method EPA 1311

Toxicity Characteristic Leaching Procedure (TCLP) KS

Method EPA 1312

Synthetic Precipitation Leaching Procedure (SPLP) KS

Method EPA 6010B

Aluminum KS

Antimony KS

Arsenic KS

Barium KS

Beryllium KS

Boron KS

Cadmium KS

Calcium KS

Chromium KS

Cobalt KS

Copper KS

Iron KS

Lead KS

Lithium KS

Magnesium KS

Manganese KS

Molybdenum KS

Nickel KS

Potassium KS

Selenium KS

Silicon KS

Silver KS

Sodium KS

Strontium KS

Thallium KS

Tin KS

Titanium KS

Vanadium KS

Zinc KS

Method EPA 6020

Aluminum KS

Antimony KS

Arsenic KS

Barium KS

Beryllium KS

Cadmium KS

Chromium KS

Cobalt KS

Copper KS



Kansas Department of Health and Environment
 Kansas Health Environmental Laboratories
 6810 SE Dwight Street, Topeka, KS 66620



Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

EPA Number: <i>IN00043</i>	Scope of Accreditation for Certification Number: <i>E-10177</i>	Page 9 of 26
Pace Analytical Services, Inc - Indianapolis IN		Primary AB
Program/Matrix: <i>RCRA (Non Potable Water)</i>		
Lead		KS
Manganese		KS
Molybdenum		KS
Nickel		KS
Selenium		KS
Silver		KS
Thallium		KS
Thorium		KS
Uranium		KS
Vanadium		KS
Zinc		KS
Method EPA 7196A		
Chromium VI		KS
Method EPA 7470A		
Mercury		KS
Method EPA 7471A		
Mercury		KS
Method EPA 8011		
1,2-Dibromo-3-chloropropane (DBCP)		KS
1,2-Dibromoethane (EDB, Ethylene dibromide)		KS
Method EPA 8015D		
Diesel range organics (DRO)		KS
Ethanol		KS
Ethylene glycol		KS
Gasoline range organics (GRO)		KS
Isobutyl alcohol (2-Methyl-1-propanol)		KS
Isopropyl alcohol (2-Propanol, Isopropanol)		KS
Methanol		KS
n-Butyl alcohol (1-Butanol, n-Butanol)		KS
n-Propanol (1-Propanol)		KS
Propylene glycol		KS
Method EPA 8081B		
4,4'-DDD		KS
4,4'-DDE		KS
4,4'-DDT		KS
Aldrin		KS
alpha-BHC (alpha-Hexachlorocyclohexane)		KS
alpha-Chlordane, cis-Chlordane		KS
beta-BHC (beta-Hexachlorocyclohexane)		KS
Chlordane (tech.)(N.O.S.)		KS
delta-BHC		KS
Dieldrin		KS
Endosulfan I		KS
Endosulfan II		KS
Endosulfan sulfate		KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Non Potable Water)*

Endrin	KS
Endrin aldehyde	KS
Endrin ketone	KS
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	KS
gamma-Chlordane	KS
Heptachlor	KS
Heptachlor epoxide	KS
Methoxychlor	KS
Toxaphene (Chlorinated camphene)	KS

Method EPA 8082A

Aroclor-1016 (PCB-1016)	KS
Aroclor-1221 (PCB-1221)	KS
Aroclor-1232 (PCB-1232)	KS
Aroclor-1242 (PCB-1242)	KS
Aroclor-1248 (PCB-1248)	KS
Aroclor-1254 (PCB-1254)	KS
Aroclor-1260 (PCB-1260)	KS

Method EPA 8141B

Atrazine	KS
Azinphos-methyl (Guthion)	KS
Chlorpyrifos	KS
Chlorpyrifos-methyl	KS
Demeton-o	KS
Demeton-s	KS
Diazinon	KS
Dichlorovos (DDVP, Dichlorvos)	KS
Dimethoate	KS
Disulfoton	KS
Famphur	KS
Malathion	KS
Merphos	KS
Methyl parathion (Parathion, methyl)	KS
Naled	KS
Parathion, ethyl	KS
Phorate	KS
Ronnel	KS
Simazine	KS
Terbufos	KS
Tetrachlorvinphos (Stirophos, Gardona) E-isomer	KS

Method EPA 8151A

2,4,5-T	KS
2,4-D	KS
2,4-DB	KS
3,5-Dichlorobenzoic acid	KS
Acifluorfen	KS
Bentazon	KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Non Potable Water)*

Dalapon	KS
DCPA di acid degradate	KS
Dicamba	KS
Dichloroprop (Dichlorprop)	KS
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	KS
MCPA	KS
MCPP	KS
Pentachlorophenol	KS
Picloram	KS
Silvex (2,4,5-TP)	KS

Method *EPA 8260C*

1,1,1,2-Tetrachloroethane	KS
1,1,1-Trichloroethane	KS
1,1,2,2-Tetrachloroethane	KS
1,1,2-Trichloro-1,2,2-trifluoroethane	KS
1,1,2-Trichloroethane	KS
1,1-Dichloroethane	KS
1,1-Dichloroethylene	KS
1,1-Dichloropropene	KS
1,2,3-Trichlorobenzene	KS
1,2,3-Trichloropropane	KS
1,2,4-Trichlorobenzene	KS
1,2,4-Trimethylbenzene	KS
1,2-Dibromo-3-chloropropane (DBCP)	KS
1,2-Dibromoethane (EDB, Ethylene dibromide)	KS
1,2-Dichlorobenzene (o-Dichlorobenzene)	KS
1,2-Dichloroethane (Ethylene dichloride)	KS
1,2-Dichloropropane	KS
1,3,5-Trichlorobenzene	KS
1,3,5-Trimethylbenzene	KS
1,3-Dichlorobenzene	KS
1,3-Dichloropropane	KS
1,4-Dichlorobenzene	KS
1,4-Dioxane (1,4- Diethyleneoxide)	KS
1-Methylnaphthalene	KS
2,2-Dichloropropane	KS
2-Butanone (Methyl ethyl ketone, MEK)	KS
2-Chloroethyl vinyl ether	KS
2-Chlorotoluene	KS
2-Hexanone	KS
2-Methylnaphthalene	KS
4-Chlorotoluene	KS
4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)	KS
4-Methyl-2-pentanone (MIBK)	KS
Acetone	KS
Acetonitrile	KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Non Potable Water)*

Acrolein (Propenal)	KS
Acrylonitrile	KS
Allyl chloride (3-Chloropropene)	KS
Benzene	KS
Bromobenzene	KS
Bromochloromethane	KS
Bromodichloromethane	KS
Bromoform	KS
Carbon disulfide	KS
Carbon tetrachloride	KS
Chlorobenzene	KS
Chlorodibromomethane	KS
Chloroethane (Ethyl chloride)	KS
Chloroform	KS
Chloroprene (2-Chloro-1,3-butadiene)	KS
cis-1,2-Dichloroethylene	KS
cis-1,3-Dichloropropene	KS
Cyclohexane	KS
Dibromomethane (Methylene bromide)	KS
Dichlorodifluoromethane (Freon-12)	KS
Diethyl ether	KS
Ethyl acetate	KS
Ethyl methacrylate	KS
Ethylbenzene	KS
Hexachlorobutadiene	KS
Iodomethane (Methyl iodide)	KS
Isobutyl alcohol (2-Methyl-1-propanol)	KS
Isopropylbenzene	KS
Methacrylonitrile	KS
Methyl acetate	KS
Methyl bromide (Bromomethane)	KS
Methyl chloride (Chloromethane)	KS
Methyl methacrylate	KS
Methyl tert-butyl ether (MTBE)	KS
Methylcyclohexane	KS
Methylene chloride (Dichloromethane)	KS
m-Xylene	KS
Naphthalene	KS
n-Butyl alcohol (1-Butanol, n-Butanol)	KS
n-Butylbenzene	KS
n-Hexane	KS
n-Propylbenzene	KS
o-Xylene	KS
Propionitrile (Ethyl cyanide)	KS
p-Xylene	KS
sec-Butylbenzene	KS
Styrene	KS



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Primary AB

Program/Matrix: RCRA (Non Potable Water)

tert-Butyl alcohol	KS
tert-Butylbenzene	KS
Tetrachloroethylene (Perchloroethylene)	KS
Tetrahydrofuran (THF)	KS
Toluene	KS
trans-1,2-Dichloroethylene	KS
trans-1,3-Dichloropropylene	KS
trans-1,4-Dichloro-2-butene	KS
Trichloroethene (Trichloroethylene)	KS
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	KS
Vinyl acetate	KS
Vinyl chloride	KS
Xylene (total)	KS

Method EPA 8270C

1,2,4,5-Tetrachlorobenzene	KS
1,2,4-Trichlorobenzene	KS
1,2-Dichlorobenzene (o-Dichlorobenzene)	KS
1,2-Diphenylhydrazine	KS
1,3,5-Trinitrobenzene (1,3,5-TNB)	KS
1,3-Dichlorobenzene	KS
1,3-Dinitrobenzene (1,3-DNB)	KS
1,4-Dichlorobenzene	KS
1,4-Naphthoquinone	KS
1,4-Phenylenediamine	KS
1-Methylnaphthalene	KS
1-Naphthylamine	KS
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	KS
2,3,4,6-Tetrachlorophenol	KS
2,4,5-Trichlorophenol	KS
2,4,6-Trichlorophenol	KS
2,4-Dichlorophenol	KS
2,4-Dimethylphenol	KS
2,4-Dinitrophenol	KS
2,4-Dinitrotoluene (2,4-DNT)	KS
2,6-Dichlorophenol	KS
2,6-Dinitrotoluene (2,6-DNT)	KS
2-Acetylaminofluorene	KS
2-Chloronaphthalene	KS
2-Chlorophenol	KS
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	KS
2-Methylaniline (o-Toluidine)	KS
2-Methylaniline (o-Toluidine)	KS
2-Methylnaphthalene	KS
2-Methylphenol (o-Cresol)	KS
2-Naphthylamine	KS
2-Nitroaniline	KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Non Potable Water)*

2-Nitrophenol	KS
2-Picoline (2-Methylpyridine)	KS
3,3'-Dichlorobenzidine	KS
3,3'-Dimethylbenzidine	KS
3-Methylcholanthrene	KS
3-Methylphenol (m-Cresol)	KS
3-Nitroaniline	KS
4-Aminobiphenyl	KS
4-Bromophenyl phenyl ether	KS
4-Chloro-3-methylphenol	KS
4-Chloroaniline	KS
4-Chlorophenyl phenylether	KS
4-Dimethyl aminoazobenzene	KS
4-Methylphenol (p-Cresol)	KS
4-Nitroaniline	KS
4-Nitrophenol	KS
4-Nitroquinoline 1-oxide	KS
5-Nitro-o-toluidine	KS
7,12-Dimethylbenz(a) anthracene	KS
a-a-Dimethylphenethylamine	KS
Acenaphthene	KS
Acenaphthylene	KS
Acetophenone	KS
Aniline	KS
Anthracene	KS
Aramite	KS
Atrazine	KS
Benzaldehyde	KS
Benzidine	KS
Benzo(a)anthracene	KS
Benzo(a)pyrene	KS
Benzo(b)fluoranthene	KS
Benzo(g,h,i)perylene	KS
Benzo(k)fluoranthene	KS
Benzoic acid	KS
Benzyl alcohol	KS
Biphenyl	KS
bis(2-Chloroethoxy)methane	KS
bis(2-Chloroethyl) ether	KS
Butyl benzyl phthalate	KS
Caprolactam	KS
Carbazole	KS
Chlorobenzilate	KS
Chrysene	KS
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	KS
Diallate	KS
Dibenz(a,h) anthracene	KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Non Potable Water)*

Dibenzofuran	KS
Diethyl phthalate	KS
Dimethoate	KS
Dimethyl phthalate	KS
Di-n-butyl phthalate	KS
Di-n-octyl phthalate	KS
Diphenylamine	KS
Disulfoton	KS
Ethyl methanesulfonate	KS
Famphur	KS
Fluoranthene	KS
Fluorene	KS
Hexachlorobenzene	KS
Hexachlorobutadiene	KS
Hexachlorocyclopentadiene	KS
Hexachloroethane	KS
Hexachlorophene	KS
Hexachloropropene	KS
Indeno(1,2,3-cd) pyrene	KS
Isodrin	KS
Isophorone	KS
Isosafrole	KS
Kepone	KS
Methapyrilene	KS
Methyl methanesulfonate	KS
Methyl parathion (Parathion, methyl)	KS
Naphthalene	KS
Nitrobenzene	KS
n-Nitrosodiethylamine	KS
n-Nitrosodimethylamine	KS
n-Nitroso-di-n-butylamine	KS
n-Nitrosodi-n-propylamine	KS
n-Nitrosodiphenylamine	KS
n-Nitrosomethylethalamine	KS
n-Nitrosomorpholine	KS
n-Nitrosopiperidine	KS
n-Nitrosopyrrolidine	KS
o,o,o-Triethyl phosphorothioate	KS
Parathion, ethyl	KS
Pentachlorobenzene	KS
Pentachloronitrobenzene	KS
Pentachlorophenol	KS
Phenacetin	KS
Phenanthrene	KS
Phenol	KS
Phorate	KS
p-Phenylenediamine	KS



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Pace Analytical Services, Inc - Indianapolis IN		Primary AB
Program/Matrix: RCRA (Non Potable Water)		
Pronamide (Kerb)		KS
Pyrene		KS
Pyridine		KS
Safrole		KS
Sulfotep (Tetraethyl dithiopyrophosphate)		KS
Thionazin (Zinophos)		KS
Method EPA 8270C SIM		
1-Methylnaphthalene		KS
2-Methylnaphthalene		KS
Acenaphthene		KS
Acenaphthylene		KS
Anthracene		KS
Benzo(a)anthracene		KS
Benzo(a)pyrene		KS
Benzo(b)fluoranthene		KS
Benzo(g,h,i)perylene		KS
Benzo(k)fluoranthene		KS
Chrysene		KS
Dibenz(a,h) anthracene		KS
Fluoranthene		KS
Fluorene		KS
Indeno(1,2,3-cd) pyrene		KS
Naphthalene		KS
Phenanthrene		KS
Pyrene		KS
Method EPA 9012A		
Amenable cyanide		KS
Cyanide		KS
Method EPA 9038		
Sulfate		KS
Method EPA 9056A		
Bromide		KS
Chloride		KS
Fluoride		KS
Iodide		KS
Nitrate		KS
Nitrite		KS
Sulfate		KS
Method EPA 9066		
Total phenolics		KS
Method EPA 9095B		
Paint Filter Test		KS
Method EPA RSK-175 (GC/FID)		
Ethane		KS
Ethene		KS



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Pace Analytical Services, Inc - Indianapolis IN		Primary AB
Program/Matrix: <i>RCRA (Non Potable Water)</i>		
Methane		KS



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Pace Analytical Services, Inc - Indianapolis IN **Primary AB**

Program/Matrix: *RCRA (Solid & Hazardous Material)*

Method EPA 1010A	
Ignitability	KS
Method EPA 1311	
Toxicity Characteristic Leaching Procedure (TCLP)	KS
Method EPA 1312	
Synthetic Precipitation Leaching Procedure (SPLP)	KS
Method EPA 6010B	
Aluminum	KS
Antimony	KS
Arsenic	KS
Barium	KS
Beryllium	KS
Boron	KS
Cadmium	KS
Calcium	KS
Chromium	KS
Cobalt	KS
Copper	KS
Iron	KS
Lead	KS
Magnesium	KS
Manganese	KS
Molybdenum	KS
Nickel	KS
Potassium	KS
Selenium	KS
Silver	KS
Sodium	KS
Strontium	KS
Thallium	KS
Tin	KS
Titanium	KS
Vanadium	KS
Zinc	KS
Method EPA 6020	
Aluminum	KS
Antimony	KS
Arsenic	KS
Barium	KS
Beryllium	KS
Cadmium	KS
Chromium	KS
Cobalt	KS
Copper	KS
Lead	KS
Manganese	KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Solid & Hazardous Material)*

Nickel	KS
Selenium	KS
Silver	KS
Thallium	KS
Vanadium	KS
Zinc	KS
Method EPA 7196A	
Chromium VI	KS
Method EPA 7470A	
Mercury	KS
Method EPA 7471A	
Mercury	KS
Method EPA 8015D	
Diesel range organics (DRO)	KS
Ethanol	KS
Ethylene glycol	KS
Gasoline range organics (GRO)	KS
Isobutyl alcohol (2-Methyl-1-propanol)	KS
Isopropyl alcohol (2-Propanol, Isopropanol)	KS
Methanol	KS
n-Butyl alcohol (1-Butanol, n-Butanol)	KS
n-Propanol (1-Propanol)	KS
Propylene glycol	KS
Method EPA 8081B	
4,4'-DDD	KS
4,4'-DDE	KS
4,4'-DDT	KS
Aldrin	KS
alpha-BHC (alpha-Hexachlorocyclohexane)	KS
alpha-Chlordane, cis-Chlordane	KS
beta-BHC (beta-Hexachlorocyclohexane)	KS
Chlordane (tech.)(N.O.S.)	KS
delta-BHC	KS
Dieldrin	KS
Endosulfan I	KS
Endosulfan II	KS
Endosulfan sulfate	KS
Endrin	KS
Endrin aldehyde	KS
Endrin ketone	KS
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	KS
gamma-Chlordane	KS
Heptachlor	KS
Heptachlor epoxide	KS
Methoxychlor	KS
Toxaphene (Chlorinated camphene)	KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Solid & Hazardous Material)*

Method EPA 8082A

Aroclor-1016 (PCB-1016)	KS
Aroclor-1221 (PCB-1221)	KS
Aroclor-1232 (PCB-1232)	KS
Aroclor-1242 (PCB-1242)	KS
Aroclor-1248 (PCB-1248)	KS
Aroclor-1254 (PCB-1254)	KS
Aroclor-1260 (PCB-1260)	KS

Method EPA 8141B

Atrazine	KS
Azinphos-methyl (Guthion)	KS
Chlorpyrifos	KS
Chlorpyrifos-methyl	KS
Demeton-o	KS
Demeton-s	KS
Diazinon	KS
Dichlorovos (DDVP, Dichlorvos)	KS
Dimethoate	KS
Disulfoton	KS
Famphur	KS
Malathion	KS
Merphos	KS
Methyl parathion (Parathion, methyl)	KS
Naled	KS
Parathion, ethyl	KS
Phorate	KS
Ronnel	KS
Simazine	KS
Terbufos	KS
Tetrachlorvinphos (Stirophos, Gardona) E-isomer	KS

Method EPA 8151A

2,4,5-T	KS
2,4-D	KS
2,4-DB	KS
3,5-Dichlorobenzoic acid	KS
Acifluorfen	KS
Bentazon	KS
Dalapon	KS
DCPA di acid degradate	KS
Dicamba	KS
Dichloroprop (Dichlorprop)	KS
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	KS
MCPA	KS
MCPP	KS
Pentachlorophenol	KS
Picloram	KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Solid & Hazardous Material)*

Silvex (2,4,5-TP)

KS

Method **EPA 8260C**

1,1,1,2-Tetrachloroethane

KS

1,1,1-Trichloroethane

KS

1,1,2,2-Tetrachloroethane

KS

1,1,2-Trichloro-1,2,2-trifluoroethane

KS

1,1,2-Trichloroethane

KS

1,1-Dichloroethane

KS

1,1-Dichloroethylene

KS

1,1-Dichloropropene

KS

1,2,3-Trichlorobenzene

KS

1,2,3-Trichloropropane

KS

1,2,4-Trichlorobenzene

KS

1,2,4-Trimethylbenzene

KS

1,2-Dibromo-3-chloropropane (DBCP)

KS

1,2-Dibromoethane (EDB, Ethylene dibromide)

KS

1,2-Dichlorobenzene (o-Dichlorobenzene)

KS

1,2-Dichloroethane (Ethylene dichloride)

KS

1,2-Dichloropropane

KS

1,3,5-Trichlorobenzene

KS

1,3,5-Trimethylbenzene

KS

1,3-Dichlorobenzene

KS

1,3-Dichloropropane

KS

1,4-Dichlorobenzene

KS

1,4-Dioxane (1,4- Diethyleneoxide)

KS

1-Methylnaphthalene

KS

2,2-Dichloropropane

KS

2-Butanone (Methyl ethyl ketone, MEK)

KS

2-Chloroethyl vinyl ether

KS

2-Chlorotoluene

KS

2-Hexanone

KS

2-Methylnaphthalene

KS

4-Chlorotoluene

KS

4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)

KS

4-Methyl-2-pentanone (MIBK)

KS

Acetone

KS

Acetonitrile

KS

Acrolein (Propenal)

KS

Acrylonitrile

KS

Allyl chloride (3-Chloropropene)

KS

Benzene

KS

Bromobenzene

KS

Bromochloromethane

KS

Bromodichloromethane

KS

Bromoform

KS

Carbon disulfide

KS



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Solid & Hazardous Material)*

Carbon tetrachloride	KS
Chlorobenzene	KS
Chlorodibromomethane	KS
Chloroethane (Ethyl chloride)	KS
Chloroform	KS
cis-1,2-Dichloroethylene	KS
cis-1,3-Dichloropropene	KS
Dibromomethane (Methylene bromide)	KS
Dichlorodifluoromethane (Freon-12)	KS
Diethyl ether	KS
Ethyl acetate	KS
Ethyl methacrylate	KS
Ethylbenzene	KS
Hexachlorobutadiene	KS
Iodomethane (Methyl iodide)	KS
Isopropylbenzene	KS
Methacrylonitrile	KS
Methyl bromide (Bromomethane)	KS
Methyl chloride (Chloromethane)	KS
Methyl methacrylate	KS
Methyl tert-butyl ether (MTBE)	KS
Methylene chloride (Dichloromethane)	KS
m-Xylene	KS
Naphthalene	KS
n-Butyl alcohol (1-Butanol, n-Butanol)	KS
n-Butylbenzene	KS
n-Hexane	KS
n-Propylbenzene	KS
o-Xylene	KS
Propionitrile (Ethyl cyanide)	KS
p-Xylene	KS
sec-Butylbenzene	KS
Styrene	KS
tert-Butyl alcohol	KS
tert-Butylbenzene	KS
Tetrachloroethylene (Perchloroethylene)	KS
Toluene	KS
trans-1,2-Dichloroethylene	KS
trans-1,3-Dichloropropylene	KS
trans-1,4-Dichloro-2-butene	KS
Trichloroethene (Trichloroethylene)	KS
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	KS
Vinyl acetate	KS
Vinyl chloride	KS
Xylene (total)	KS

Method **EPA 8270C**



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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Solid & Hazardous Material)*

1,2,4,5-Tetrachlorobenzene	KS
1,2,4-Trichlorobenzene	KS
1,2-Dichlorobenzene (o-Dichlorobenzene)	KS
1,2-Diphenylhydrazine	KS
1,3-Dichlorobenzene	KS
1,3-Dinitrobenzene (1,3-DNB)	KS
1,4-Dichlorobenzene	KS
1,4-Naphthoquinone	KS
1,4-Phenylenediamine	KS
1-Methylnaphthalene	KS
1-Naphthylamine	KS
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	KS
2,3,4,6-Tetrachlorophenol	KS
2,4,5-Trichlorophenol	KS
2,4,6-Trichlorophenol	KS
2,4-Dichlorophenol	KS
2,4-Dimethylphenol	KS
2,4-Dinitrophenol	KS
2,4-Dinitrotoluene (2,4-DNT)	KS
2,6-Dichlorophenol	KS
2,6-Dinitrotoluene (2,6-DNT)	KS
2-Acetylaminofluorene	KS
2-Chloronaphthalene	KS
2-Chlorophenol	KS
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	KS
2-Methylaniline (o-Toluidine)	KS
2-Methylaniline (o-Toluidine)	KS
2-Methylnaphthalene	KS
2-Methylphenol (o-Cresol)	KS
2-Naphthylamine	KS
2-Nitroaniline	KS
2-Nitrophenol	KS
2-Picoline (2-Methylpyridine)	KS
3,3'-Dichlorobenzidine	KS
3,3'-Dimethylbenzidine	KS
3-Methylcholanthrene	KS
3-Methylphenol (m-Cresol)	KS
3-Nitroaniline	KS
4-Aminobiphenyl	KS
4-Bromophenyl phenyl ether	KS
4-Chloro-3-methylphenol	KS
4-Chloroaniline	KS
4-Chlorophenyl phenylether	KS
4-Dimethyl aminoazobenzene	KS
4-Methylphenol (p-Cresol)	KS
4-Nitroaniline	KS
4-Nitrophenol	KS



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Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Solid & Hazardous Material)*

4-Nitroquinoline 1-oxide	KS
5-Nitro-o-toluidine	KS
7,12-Dimethylbenz(a) anthracene	KS
a-a-Dimethylphenethylamine	KS
Acenaphthene	KS
Acenaphthylene	KS
Acetophenone	KS
Aniline	KS
Anthracene	KS
Aramite	KS
Benzidine	KS
Benzo(a)anthracene	KS
Benzo(a)pyrene	KS
Benzo(b)fluoranthene	KS
Benzo(g,h,i)perylene	KS
Benzo(k)fluoranthene	KS
Benzoic acid	KS
Benzyl alcohol	KS
bis(2-Chloroethoxy)methane	KS
bis(2-Chloroethyl) ether	KS
Butyl benzyl phthalate	KS
Carbazole	KS
Chlorobenzilate	KS
Chrysene	KS
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	KS
Diallate	KS
Dibenz(a,h) anthracene	KS
Dibenzofuran	KS
Diethyl phthalate	KS
Dimethoate	KS
Dimethyl phthalate	KS
Di-n-butyl phthalate	KS
Di-n-octyl phthalate	KS
Diphenylamine	KS
Disulfoton	KS
Ethyl methanesulfonate	KS
Famphur	KS
Fluoranthene	KS
Fluorene	KS
Hexachlorobenzene	KS
Hexachlorobutadiene	KS
Hexachlorocyclopentadiene	KS
Hexachloroethane	KS
Hexachlorophene	KS
Hexachloropropene	KS
Indeno(1,2,3-cd) pyrene	KS
Isodrin	KS



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Attachment 6: Pace Analytical Services Indianapolis Laboratory Accreditation (cont.)

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Pace Analytical Services, Inc - Indianapolis IN

Primary AB

Program/Matrix: *RCRA (Solid & Hazardous Material)*

Isophorone	KS
Isosafrole	KS
Kepone	KS
Methapyrilene	KS
Methyl methanesulfonate	KS
Methyl parathion (Parathion, methyl)	KS
Naphthalene	KS
Nitrobenzene	KS
n-Nitrosodiethylamine	KS
n-Nitrosodimethylamine	KS
n-Nitroso-di-n-butylamine	KS
n-Nitrosodi-n-propylamine	KS
n-Nitrosodiphenylamine	KS
n-Nitrosomethylethylamine	KS
n-Nitrosomorpholine	KS
n-Nitrosopiperidine	KS
n-Nitrosopyrrolidine	KS
o,o,o-Triethyl phosphorothioate	KS
Parathion, ethyl	KS
Pentachlorobenzene	KS
Pentachloronitrobenzene	KS
Pentachlorophenol	KS
Phenacetin	KS
Phenanthrene	KS
Phenol	KS
Phorate	KS
Pronamide (Kerb)	KS
Pyrene	KS
Pyridine	KS
Safrole	KS
Sulfotep (Tetraethyl dithiopyrophosphate)	KS
Thionazin (Zinophos)	KS

Method EPA 8270C SIM

1-Methylnaphthalene	KS
2-Methylnaphthalene	KS
Acenaphthene	KS
Acenaphthylene	KS
Anthracene	KS
Benzo(a)anthracene	KS
Benzo(a)pyrene	KS
Benzo(b)fluoranthene	KS
Benzo(g,h,i)perylene	KS
Benzo(k)fluoranthene	KS
Chrysene	KS
Dibenz(a,h) anthracene	KS
Fluoranthene	KS



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Pace Analytical Services, Inc - Indianapolis IN		Primary AB
<hr/>		
Program/Matrix: <i>RCRA (Solid & Hazardous Material)</i>		
Fluorene		KS
Indeno(1,2,3-cd) pyrene		KS
Naphthalene		KS
Phenanthrene		KS
Pyrene		KS
Method EPA 9012A		
Amenable cyanide		KS
Cyanide		KS
Method EPA 9045C		
pH		KS
Method EPA 9066		
Total phenolics		KS
Method EPA 9095B		
Paint Filter Test		KS

End of Scope of Accreditation



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