



Environmental Analysis Program

Pomona College
Biogeochemistry Laboratory

SOP-XXX

Biogeochemistry Lab Resource Page

Standard Operating Procedure

SOP Number	SOP-XXX
Revision	—
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How to Use This Site

- **Find an SOP:** Use the sidebar navigation or the search bar (top right).
- **Download a PDF:** Each SOP page has a “View as PDF” link at the top.
- **Suggest a change:** Click the “Edit this page” link on any SOP, or [open an issue](#).
- **Create a new SOP:** Copy `lab_sops/SOP-TEMPLATE.qmd`, fill it in, and submit a Pull Request.

SOP Numbering Scheme

SOPs are numbered by topic. Field SOPs use an **F** prefix and Lab SOPs use an **L** prefix, but both share the same numeric ranges:

Category	Field SOPs	Lab SOPs
Safety and administration	F001–F099	L001–L099
Equipment and instrumentation	F100–F299	L100–L299
Water and aquatic methods	F300–F399	L300–L399
Soil methods	F400–F499	L400–L499
Air and atmospheric methods	F500–F599	L500–L599
Biology, ecology, and molecular biology	F600–F799	L600–L799
Data management and analysis	F800–F899	L800–L899

SOPs (pdf)

- [Complete Set of SOPs \(pdf\)](#)

SOP Subsets by Topic

- [Safety and Administration \(pdf\)](#)
- [Equipment and Instrumentation \(pdf\)](#)
- [Water and Aquatic Methods \(pdf\)](#)
- [Soil Methods \(pdf\)](#)
- [Air and Atmospheric Methods \(pdf\)](#)
- [Biology and Molecular Biology \(pdf\)](#)
- [Data Management and Analysis \(pdf\)](#)

Safety and Administration (001–099)

SOP	Title	Current Rev.	Notes
F001	Field Safety	1.1	
F002	Field Equipment Checklist	0.1	
F003	Field Notebook Protocols	0.1	
F004	Site Access and Permits	0.1	
F005	Random Sampling Design	1.0	FW
F006	GPS and Site Navigation	0.1	
F007	Field Decontamination Protocols	0.1	
F008	Sample Labeling, Chain of Custody, and Transport	0.1	
L001	<i>Lab Orientation and Training Checklist</i>	0.1	TBD
L002	Laboratory Safety	1.04	
L003	Hazardous Materials Handling	1.04	
L004	Chemical Spill Response	0.1	

SOP	Title	Current Rev.	Notes
L005	Chemical Inventory Management	0.1	
L006	Waste Disposal and Hazardous Waste Pickup	0.1	
L007	Equipment and Instrument Inventory	1.0	
L010	Lab Notebook Recording	0.1	
L015	Foreign Soil Handling (Import Permits)	0.3	
L020	Reagent and Standard Preparation	0.1	

Equipment and Instrumentation (100–299)

Field Equipment (F100–F199)

SOP	Title	Current Rev.	Notes
F100	EA Program Vehicle Use	0.1	
F101	Electrical Power in the Field	0.2	
F102	Waders/Wetsuit	–	TBD
F103	<i>Canoe / Kayak / Small Watercraft</i>	–	TBD
F104	<i>Field Laptop and Tablet Use</i>	–	TBD

Field Instrumentation (F200–F299)

SOP	Title	Current Rev.	Notes
F200	Eureka Manta2 Multiprobe	0.7	
F201	Pygmy and Type A Velocity Meters	0.1	
F202	SonTek Acoustic Velocity Meters	0.1	
F203	HOBO Water Level Pressure Transducers	0.1	
F204	HOBO Weather Station Deployment	0.1	
F205	Handheld Turbidity Meter	0.1	
F207	Secchi Disk and Secchi Disk Tube	0.1	
F208	Portable Spectrophotometer / Colorimeter (Field)	0.1	
F209	Dissolved Oxygen Meter (Field)	0.1	

Lab Equipment (L100–L199)

SOP	Title	Current Rev.	Notes
L100	<i>Milli-Q Water System</i>	0.2	Broken
L101	Glassware Cleaning and Preparation	0.1	
L102	Using Balances	0.2	

SOP	Title	Current Rev.	Notes
L103	Micropipettes	0.3	
L104	Using a Vortex Mixer	0.1	
L105	Drying Ovens	0.1	
L106	Refrigerators and Freezers	0.1	
L107	Hot Plates and Dry Bath	0.12	
L108	<i>Clinical Centrifuge</i>	0.1	
L109	Sorvall ST8R Centrifuge	0.1	
L110	<i>Ozone Generator Operation</i>	0.1	
L111	Muffle Furnace	0.1	
L112	Autoclave / Sterilization	0.1	
L113	Laminar Flow Cabinet	0.1	
L114	Vacuum Filtration Apparatus	0.1	
L115	Sonicator	0.1	
L116	Sample Grinding and Homogenization (Ball Mill, Mortar and Pestle)	0.1	

Lab Instrumentation (L200–L299)

SOP	Title	Current Rev.	Notes
L200	Analytical Balance Calibration	1.0	
L201	<i>Spectrophotometer Operation</i>	–	
L202	Accumet pH Meter	0.4	
L203	Trilogy Laboratory Fluorometer	0.4	
L204	Shimadzu TOC/TON Analyzer	1.0	
L205	XRF (X-Ray Fluorescence)	0.1	
L206	<i>ICP-MS</i>	0.1	
L207	<i>LA-ICP-MS (Laser Ablation)</i>	0.1	
L208	ThermoFisher Delta V IRMS	0.2	
L209	<i>Radiometric Dating</i>	NA	TBD
L210	<i>Ion Chromatograph Operation</i>	NA	TBD
L211	Echo Labs Revolve Microscope	0.1	
L212	NanoDrop Spectrophotometer	0.1	
L213	Qubit Fluorometer	0.1	
L214	QX200 Droplet Digital PCR System – Instrument Familiarization	0.1	
L215	Hach DR3900 Benchtop Spectrophotometer	–	TBD
L216	Dissecting and Compound Microscope	0.1	

Water and Aquatic Methods (300–399)

Field – Water / Aquatic Systems (F300–F399)

SOP	Title	Current Rev.	Notes
F300	Surface Water Sampling	0.9	
F301	Stream Discharge Measurement	0.1	
F302	Stormwater Sampling	0.1	
F303	Groundwater Sampling	0.1	
F304	Stream Physical Habitat Analysis	0.1	
F305	Sediment Sampling (Streams and Lakes)	0.1	
F306	Wetland Hydrology Monitoring	0.1	
F306	Wetland Delineation	0.1	
F307	Lake and Reservoir Profiling*	0.1	
F308	eDNA Water Sample Collection	0.1	
F309	<i>Periphyton / Algae Sampling</i>	–	TBD

Lab – Water Analysis (L300–L399)

SOP	Title	Current Rev.	Notes
L300	pH and Conductivity (Bench)	1.0	
L301	Alkalinity Titration	0.1	
L302	<i>Turbidity Measurement</i>	–	TBD
L303	Hach Colorimetric Analysis	1.0	
L304	<i>Nutrient Analysis (Water Samples)</i>	–	TBD
L305	Bacteria Screening (Colilert Quanti-Tray)	4.3	
L306	BOD5 (Biochemical Oxygen Demand)	0.3	
L307	ELISA: BPA, BPB, Pesticides	0.3	
L308	Microplastics in Water	0.2	
L309	Pesticide Analysis – Gas Chromatography	–	
L310	Chlorophyll Extraction and Analysis	0.1	
L311	Dissolved (NPOC) Organic Carbon (Water)	0.1	
L312	Total Suspended Solids / Total Dissolved Solids	0.1	
L313	Metals in Water (ICP-MS Prep and Acidification)	0.1	
L314	<i>Anion Analysis (Ion Chromatography)</i>	–	NA
L315	eDNA Lab Processing (Filtration, Extraction, Inhibition Testing)	0.1	

Soil Methods (400–499)

Field – Soil (F400–F499)

SOP	Title	Current Rev.	Notes
F400	Soil Sampling and Processing	1.0	
F401	Texture by Feel	0.1	DLF
F402	Soil Bulk Density (Core Method)	0.1	AC
F403	Soil Infiltration Rate	0.1	
F404	Soil Temperature Profiles	0.1	
F405	Soil Color (Munsell)	0.1	
F406	Soil Respiration Chambers (Field)	0.1	
F407	Soil Profile Description	0.1	

Lab – Soil and Carbon Analysis (L400–L499)

SOP	Title	Current Rev.	Notes
L400	Soil Moisture – Gravimetric Method	0.2	
L401	Soil Texture (Hydrometer Method)	0.1	DLF
L402	Soil pH and Salinity	0.1	
L403	Nitrate and Ammonium – KCl Extraction	0.4	MLH
L404	Nitrate Quick Test	0.1	FW
L405	Extractable Phosphorus	0.1	
L406	Loss on Ignition (SOM)	1.0	
L407	Total Carbon – Soil	1.0	DLF
L408	Solvita CO ₂ Burst	1.1	
L409	Microbial Biomass Carbon (CFE)	1.0	AC
L410	Hot-Plate Acid Digestion of Soils for Trace Metal Analysis	0.2	
L411	Soil Lead Analysis (MARS Microwave)	0.2	
L412	Nitrification Potential	0.1	
L413	Solvita Compost Maturity	0.1	
L414	Flash EA Soil dN15 and dC13 Combustion	0.1	
L415	Carbonate Isotope Analysis by GasBench II-IRMS	0.1	
L416	Cation Exchange Capacity (CEC)	0.1	
L417	Soil Aggregate Stability (Wet Sieving)	0.1	
L418	Water-Extractable Dissolved Organic Carbon (Soil)	0.1	
L419	Soil Color (Munsell – Lab Confirmation)	0.1	
L420	Soil Labile Amino-Nitrogen – Solvita SLAN Test	0.1	

Air and Atmospheric Methods (500–599)

Field – Air / Atmospheric (F500–F599)

SOP	Title	Current Rev.	Notes
F501	Air Temperature Monitoring (Sensors)	0.1	
F502	Air Quality Monitoring (Portable Sensors)	0.1	
F503	Particulate Matter Sampling*	0.1	
F504	Picarro GHG Analyzer (Field Deployment)	1.0	AC
F505	Passive Air Samplers (Diffusion Tubes)	0.1	
F506	Noise Level Monitoring	0.1	
F510	Weather Monitoring and Field Meteorology	0.1	

Lab – Air / Atmospheric (L500–L599)

No lab air SOPs exist yet. Range is reserved.

SOP	Title	Current Rev.	Notes
L500	<i>Gravimetric PM Filter Analysis</i>	–	TBD
L501	<i>Passive Sampler Extraction and Analysis</i>	–	TBD

Biology, Ecology, and Molecular Biology (600–799)

Field – Microbes, Plants, and Animals (F600–F699)

SOP	Title	Current Rev.	Notes
F602	iNaturalist for Biodiversity Documentation	0.3	
F603	Vegetation Transect Surveys	0.1	
F604	Tree DBH and Forest Inventory	0.1	
F605	Leaf Area Index Measurement	0.1	
F606	Canopy Cover (Densiometer & Hemispherical Photography)	0.1	
F607	Tree Tagging for Restoration Monitoring	0.1	
F608	Plant Tissue Sampling	0.1	
F610	Macroinvertebrate Sampling	0.1	
F611	Pollinator Observation Surveys	0.1	
F615	Bird Point Count Surveys	0.1	
F620	Camera Trap (CamPark T20)	0.1	
F621	<i>Acoustic Monitoring (Bioacoustics)</i>	–	TBD
F622	<i>Small Mammal Trapping (Sherman Traps)</i>	–	TBD
F630	Drone Operations (DJI Matrice/Mavic)	0.1	
F631	<i>360 Camera</i>	–	

Field – Molecular Biology and DNA (F700–F799)

SOP	Title	Current Rev.	Notes
F700	eDNA Field Sampling and Preservation	0.1	
F701	Soil Microbial Field Sampling for Molecular Analysis	0.1	

Lab – Microbes, Plants, and Animals (L600–L699)

SOP	Title	Current Rev.	Notes
L600	<i>TBD</i>	–	
L601	Wet Mount for Microscopy	0.1	
L602	Macroinvertebrate Sorting, Subsampling, and Identification	0.1	
L603	Plant Tissue Drying, Grinding, and Preparation for Analysis	0.1	
L604	Algae / Periphyton Identification and Enumeration	0.1	
L605	Soil Enzyme Assays (Fluorometric)	0.1	

Lab – Molecular Biology and DNA (L700–L799)

SOP	Title	Current Rev.	Notes
L700	DNA Extraction	0.1	AC
L701	Primer Selection and Design for Nitrogen Cycle Genes	0.1	
L702	ddPCR Applications Guide – Absolute Quantification of Soil Nitrogen-Cycle Functional Genes	0.1	
L703	PCR Amplification and Gel Electrophoresis	0.1	
L704	Amplicon Library Preparation for Sequencing	0.1	
L705	Bioinformatics Pipeline (QIIME2 / DADA2)	0.1	
L706	eDNA Metabarcoding Lab Workflow	0.1	

Data Management and Analysis (800–899)

SOP	Title	Current Rev.	Notes
L801	RStudio Server and GitHub	1.5	
L802	Quality Control and Quality Assurance	1.0	
L803	Data Entry and Database Management	0.1	
L804	GIS	0.1	
L805	Drone Image Processing (Photogrammetry)	0.1	
L806	Statistical Analysis Templates (R)	0.1	
L807	Instrument Data Export and File Management	0.1	

i Note

This table is maintained manually. Italicized entries marked *TBD* are planned SOPs that have not yet been written. Entries marked TBD are suggested additions identified during the 2026 renumbering review. The sidebar navigation reflects every .qmd file in the repository automatically.