



DEPARTMENT OF
ECOLOGY
State of Washington

Standard Operating Procedure EAP070, Version 2.4

Minimize the Spread of Invasive Species

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Purpose of this Document

The Washington State Department of Ecology develops Standard Operating Procedures (SOPs) to document agency practices related to sampling, field and laboratory analysis, and other aspects of the agency's technical operations.

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The Washington State Department of Ecology's (Ecology's) Standard Operating Procedures (SOPs) are adapted from published methods, or developed by in-house technical and administrative experts. Their primary purpose is for internal Ecology use, although sampling and administrative SOPs may have a wider utility. Our SOPs do not supplant official published methods. Distribution of these SOPs does not constitute an endorsement of a particular procedure or method.

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Although Ecology follows the SOP in most instances, there may be instances in which Ecology uses an alternative methodology, procedure, or process.

SOP Revision History

Revision Date	Revision History	Summary of Changes	Sections	Reviser(s)
5/15/2009	1.0	Initial draft, formatting	All	Jenifer Parsons
11/2009	1.0	Add boat information		Keith Seiders
11/10/09	1.0	Revise to apply to all sampling		Jenifer Parsons
11/24/09	1.0	Review		Dave Hallock
1/4/10	1.0	Added Chris and Keith's comments		Jenifer Parsons
1/29/10	1.0	Address comments from committee		Jenifer Parsons
3/23/2010	1.0	Cover Page		Bill Kammin
2/13/12	2.0	Draft revision to combine moderate and extreme concern SOPs and to comply with Invasive Species Council SOP	All	Jenifer Parsons
4/30/2012	2.0	Change approval date	Cover	Bill Kammin
1/29/2016	2.1	Minor edits, update links	All	Jenifer Parsons
2/21/2018	2.2	Update links, minor edits	All	Jenifer Parsons
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4/21/21	2.3	Recertified	All	Arati Kaza
4/24/24	2.4	Updated links, made minor edits throughout the text, and updated appendices.	All	Wesley Glisson
5/14/24	2.4	Recertified	All	Jenny Wolfe

1.0 Purpose and Scope

- 1.1 Environmental ethics and Washington law prohibit the transportation of all aquatic plants, animals, and many noxious weeds. Specifically, it is a misdemeanor to “transport aquatic plants on any state or public road, including forest roads” or to “knowingly import, move within the state, or export” animals ([RCW 77.15.290](#), [Chapter 77.135 RCW](#), and [WAC 16-752-620](#)).
- 1.2 This document is the Environmental Assessment Program (EAP) Standard Operating Procedure (SOP) to minimize the risk of spreading any organisms, especially aquatic invasive species (AIS), within or between waterbodies or other field sites as a result of fieldwork, reconnaissance activities, or other operations.
- 1.3 This SOP combines and implements the prevention and control measures identified in Ecology’s Hazard Analysis and Critical Control Point (HACCP) Plans for conducting operations in Areas of Extreme Concern and Areas of Moderate Concern.
- 1.4 This SOP supersedes the Washington Invasive Species Council (WISC) SOP “Reducing Accidental Introductions of Invasive Species” (WISC 2019).

2.0 Applicability

- 2.1 This SOP covers all EAP field operations.
- 2.2 These procedures also apply to contractors operating under contract to EAP. They do not apply to other organizations conducting joint fieldwork with EAP.

3.0 Definitions

- 3.1 Aquatic invasive species (AIS) – Any freshwater or marine species that is not native to an ecosystem and whose introduction does, or has the potential to, cause environmental, economic, or human harm.
- 3.2 Areas of Extreme Concern – Areas of the state documented as having established AIS that are considered to be a particular environmental or economic threat and hard to remove from sampling equipment, such as areas with New Zealand mudsnail (NZMS) populations. Most equipment and sampling gear used in these areas must undergo rigorous inspection and decontamination procedures to prevent accidental introductions to other waters. Currently, confirmed or highly likely presence of NZMS triggers an Extreme Concern designation and the extra cleaning requirements at the point of sighting as well as all waters downstream of that sighting. The Washington Department of Fish and Wildlife (WDFW) maintains a map of confirmed NZMS locations: [WDFW New Zealand Mudsnail Sightings](#). Links to EAP’s GIS layers for Areas of Extreme Concern and static maps of these layers are on the EAP Field Training SharePoint page. These GIS layers are also publicly available through [Ecology’s GIS Data webpage](#), under Invasive Species Areas of Extreme Concern (letter “E”).
- 3.3 Areas of Moderate Concern – Areas of the state not documented as having established NZMS or other species of extreme concern. These areas may have other invasive species, including plants, animals, fish, invertebrates, and pathogens that should not be spread.

- 3.4 Decontamination – A method used to kill invasive species that may be lodged in or on equipment. These include drying, hot water wash, freezing, and chemical treatments.
- 3.5 Ecology – Washington State Department of Ecology.
- 3.6 Hazard Analysis and Critical Control Point (HACCP) – A systematic analysis tool used to identify the risks and the preventative procedures needed to significantly reduce the spread of aquatic species from sampling equipment and operations.
- 3.7 Invasive species – Non-native species introduced by humans (either intentionally or unintentionally), that do, or have the potential to, cause environmental, economic, or human harm. Typically, species considered to be invasive have the following traits: (1) can survive outside of cultivation, (2) have self-sustaining populations, (3) can reproduce sexually or asexually, (4) have spread beyond the point of initial introduction, and (5) create new populations that also survive, sustain, reproduce, and can subsequently spread (Blackburn et al. 2011).
- 3.8 New Zealand mudsnail (NZMS) – An AIS from New Zealand that has been spreading across North America since its introduction in the late 1980s. These snails are very small (< 1/8 in.), and since they can clone themselves, just one individual is capable of producing 230 juveniles per year. New Zealand mudsnails are easily transported into new waters by hitchhiking on waders and other aquatic equipment. They are considered an environmental and economic threat to the state. For more information, see [New Zealand mudsnail | Washington Department of Fish & Wildlife](#).
- 3.9 Non-native species – A species that does not occur naturally in a specified geographic area, typically introduced to the new area by humans. Not all non-native species are considered invasive or noxious weeds.
- 3.10 Noxious weed – A plant included on the Washington State Noxious Weed List. Noxious weed is legal definition that in Washington State refers to a plant, “that when established is highly destructive, competitive, or difficult to control by cultural or chemical practices” ([RCW 17.10.010](#)). The list of noxious weeds and information about the State Noxious Weed Control Board is available at [Washington State Noxious Weed Control Board](#).
- 3.11 Equipment – This means all equipment that contacts water, sediment, plants, or the ground during site access, reconnaissance, and sample collection. Such equipment includes but is not limited to:
- Waders, wading boots, and shoes.
 - Samplers, ropes, and nets.
 - Boats, trailers, and vehicles.
 - Anchors and chain.
 - Water and sediment grab samplers.
 - Cables, probes, and multi-probes.
 - Flow measuring or gaging devices.

- 3.12 Felt-soled waders – Waders with any sort of fibrous surface affixed to the sole. They require decontamination because of their ability to trap and hold mud, vegetation, and moisture.
- 3.13 Weed – A cultural term used for a plant that is unwanted in a given situation. This term is typically applied to non-native and invasive plants but can also be used for native species that are a nuisance.

4.0 Personnel Qualifications/Responsibilities

- 4.1 General field operations require training specified in EAP's Field Safety Manual (Ecology 2023) such as First Aid, CPR, and Defensive Driving,
- 4.2 As specified in EAP Procedure 1-15 (EAP 2010), all EAP field staff that use equipment, including boats, that contact the state's freshwater, marine, and estuarine aquatic resources are responsible for following this SOP and taking the online training "Don't Spread Invasive Species" found on the EAP Field Training SharePoint page. This online training must be completed at least once per year and prior to beginning fieldwork. Completion of the online training will produce a certificate that must be signed by the employee and their supervisor.

5.0 Equipment, Reagents, and Supplies

- 5.1 For general cleaning ([section 6.3.1](#)) and some decontamination procedures ([section 6.3.2](#)) the following items and materials may be required depending on the equipment used in sampling:
- Clean water supply free of mud and debris.
 - Scrub brushes and bucket.
 - Hose adapters for flushing outboard boat motors.
 - Hand tools for attaching hoses or taking apart equipment if necessary.
- 5.2 For decontamination procedures ([section 6.3.2](#)), the following additional items and materials may be required depending on the equipment used in sampling.
- 5.2.1 For chemical treatment:
- Chemicals needed (see [Table 1](#)).
 - Backpack sprayer and/or squirt bottle.
 - Container(s) to apply, contain, and transport chemicals (e.g., tub, bucket, bag).
- 5.2.2 For hot water treatment:
- Thermometer to monitor temperature,
 - Stopwatch to monitor treatment times.
 - Adequate supply of hot water.

6.0 Summary of Procedure

6.1 Before conducting field work

- 6.1.1 Determine if the field activity is located within an Area of Extreme Concern by checking the current maps. Images of the maps and links to GIS layer files are available on the EAP Field Training SharePoint page. They are also publicly available on [Ecology's GIS Data webpage](#). If the field activity is located in an Area of Extreme Concern, the decontamination step ([section 6.3.2](#)) will need to be followed for all equipment that contacted aquatic sediment, aquatic vegetation, amphibians, or fish. (Note: felt-soled wading boots must be decontaminated no matter where they are used).
- 6.1.2 Plan to sample from the least to most risky areas for transporting organisms, for example, sample upstream to downstream or from areas of less weed growth to those of dense weed growth.
- 6.1.3 Select equipment which can be easily inspected and cleaned to both avoid spreading AIS and reduce impacts to planned field schedules. If possible, bring extra sets of backup field equipment in case cleaning and decontamination (if required) can't be done in the field prior to arrival at a new sampling site. Where feasible, especially when working in Areas of Extreme Concern, dedicate gear to be used only in that waterbody.
- 6.1.3.1 To the extent possible, consider using non-felt-soled waders, and ideally, bootfoot waders. Wading gear has been implicated in the spread of NZMS and other AIS, as well as fish, amphibian, and plant diseases. Felt soles can be particularly problematic because of their tendency to stay moist for long periods. Because of the risks from felt-soled waders, they must go through the decontamination step ([section 6.3.2](#)). Additionally, the laces and eyelets of lace-up wading boots can be problematic because they are difficult to completely clean. Hence, bootfoot waders are the best choice to minimize the spread of invasive species.

6.2 While conducting fieldwork

- 6.2.1 Conduct field activities to minimize contact between equipment and potential sources of AIS, particularly aquatic plants, sediment, amphibians, and fish. This can include the following:
- Sample from least to most contaminated areas, for example, sample upstream to downstream or from areas of less weed growth to dense weed growth.
 - Minimize wading and avoid running boats onto sediment.
 - Avoid getting plants, sediment, and fish or amphibians inside boats or other sampling gear.
 - Use a catch pan underneath dredges, etc., to keep potential AIS off boat decks and out of bilges.
 - Avoid driving or walking through areas of mud and high aquatic plant growth.

6.3 After conducting fieldwork

6.3.1 Step 1: Inspect, clean, and drain all equipment.

6.3.1.1 Inspect and clean all equipment that contacted (terrestrial or aquatic) sediment, vegetation, or water. Remove any visible vertebrates, invertebrates, plants, algae, or sediment from equipment. If necessary, use a scrub brush, and rinse with clean water either from the site or brought for that purpose. Continue this process until the equipment is clean. Be sure to clean the scrub brush as well. Drain all water in bilges, samplers, or other equipment that could hold water from the site. Flush areas that can't be seen with clean water until the rinse water is clean. Information on cleaning boats and motors can be found in [Appendix B](#). This step must be completed before any of the decontamination procedures below, or else they will not be effective.

6.3.1.2 Conduct procedures above ([6.3.1.1](#)) **before** leaving the sampling site if possible. If conducted after leaving the site, ensure that no debris will leave the equipment and potentially spread invasive species during transit or cleaning. Acceptable interim sites for cleaning include Ecology's Operations Center (OC) or Regional Offices, commercial car washes, Washington Department of Transportation (WSDOT) facilities, and similar facilities. Drains at cleaning sites must go to treatment facilities or septic system and not directly to surface waters.

6.3.2 Step 2: Decontaminate all equipment.

6.3.2.1 This step is encouraged in all situations and **required** when: 1) using felt-soled waders, and 2) conducting fieldwork in Areas of Extreme Concern and equipment has contacted aquatic sediment, aquatic vegetation, amphibians, or fish. See [Appendix C](#) for a flowchart of when decontamination is required. Inspecting, cleaning, and draining ([Step 1, section 6.3.1](#)) must precede the decontamination treatments or else they will not be effective.

6.3.2.2 Wipe smooth-surfaced sampling equipment that can be easily and fully wiped down until dry. The equipment must be smooth enough so there are no cracks or crevices that could harbor a sand-grain-sized juvenile New Zealand mudsnail while being wiped dry.

6.3.2.3 For equipment that is not smooth-surfaced and, therefore, cannot be wiped down until dry, use one of the decontamination treatments from [Table 1](#). See [Appendix A](#) for information on decontamination using hot water and [Appendix B](#) for specific decontamination instructions for felt-soled waders, hydrolabs, boats, motors, trailers, and nets.

6.3.2.4 Decontamination treatments should take place where the procedure can be carried out effectively and safely. Keep in mind that wash and rinse water must not drain to surface water, and all chemicals must be disposed of to a sanitary sewer.

6.3.3 Step 3: Store all equipment to facilitate drying.

6.3.3.1 When moving between field sites, and upon returning from the field, store gear in a manner to facilitate drying. For example, boots and waders should be stored on a drying rack until dry, not left in a gear bag. For boats, open hatches and leave out drain plugs.

6.4 Special circumstances and considerations

6.4.1 Relaxing requirements

6.4.1.1 If procedures in this SOP are not feasible for a particular project, exceptions may be documented and approved following QAPP guidance.

6.4.1.2 Moving by foot: if moving by foot within the same watershed, equipment may be used without following procedures in this SOP. Keep in mind to work from upstream to downstream whenever possible. Procedures laid out in this SOP must be followed when leaving the area.

6.4.1.3 Moving by boat: when transiting by boat to different sites within a waterbody, procedures detailed in this SOP may not be necessary. However, when boating from site to site, do not move water, sediment, organisms, or vegetation on sampling gear, boat props, etc. Procedures laid out in this SOP must be followed when leaving the waterbody.

6.4.2 Float planes

6.4.2.1 In marine systems, the pontoons of float planes should not represent a problem, and special cleaning should not be required unless motoring through vegetated areas, in which case they should be visually inspected before taking off. Amphibious planes (with wheels) should be avoided because they are more likely to catch and transport material. The use of float planes and helicopters in freshwater is not covered in this SOP and should be explicitly addressed in the project QAPP; however, float planes should not be used between waterbodies with invasive plant species.

6.4.3 Construction and restoration projects

6.4.3.1 Avoid moving weed infested gravel, rock, and other fill material to relatively weed-free locations. Gravel and fill should come from weed-free sources. Inspect gravel pits and fill sources to identify weed-free sources.

6.4.3.2 Identify and remove existing noxious weeds in areas of construction to avoid contaminating construction equipment.

6.4.3.3 Minimize ground-disturbing activities.

6.4.3.4 Use only certified weed-free straw and mulch for erosion control.

7.0 **Records Management**

7.1 Completion of the “Don’t Spread Invasive Species” online training found on the EAP Field Training SharePoint page will produce a certificate that must be signed by the employee and their supervisor prior to conducting fieldwork. The certificate should be retained for at least the entire field season or until the training is completed again.

8.0 Quality Control and Quality Assurance

8.1 Follow the procedures of this SOP.

9.0 Safety

9.1 Follow all EAP Safety Manual procedures (Ecology 2023). If using hot water for decontamination, wear heat-resistant gloves, closed-toed shoes, and protective eyewear to avoid burns.

9.2 Safety Data Sheets (SDSs) for all chemicals used in EAP field sampling or analytical procedures can be found in EAP's Material Safety Data Sheets SharePoint library. Also, binders containing SDSs can be found in all field vehicles, vessels, Ecology buildings, or other locations where potentially hazardous chemicals may be handled. EAP staff following Ecology SOPs are required to familiarize themselves with these SDSs and take the appropriate safety measures for these chemicals.

10.0 References

10.1 Blackburn, T. M., P. Pyšek, S. Bacher, J. T. Carlton, R. P. Duncan, V. Jarošík, J. R. U. Wilson, and D. M. Richardson. 2011. A proposed unified framework for biological invasions. *Trends in Ecology and Evolution* 26:333–339.
<https://doi.org/10.1016/j.tree.2011.03.023>

10.2 EAP [Environmental Assessment Program]. 2010. EAP Policy 1-15: Minimize the Spread of Aquatic Invasive Species.

10.3 Ecology [Washington State Department of Ecology]. 2022. Chemical Hygiene Plan. Washington State Department of Ecology, Olympia, WA. 132 pp.

10.4 Ecology [Washington State Department of Ecology]. 2023. Environmental Assessment Program Safety Manual. Washington State Department of Ecology, Olympia, WA. 202 pp.

10.5 WISC [Washington Invasive Species Council]. 2019. Reducing Accidental Introductions of Invasive Species: State Agency Field Work Protocols.
<https://invasivespecies.wa.gov/wp-content/uploads/2019/08/InvsvsPreventProtocol.pdf>

11.0 Appendix A: Decontamination Treatment Options and Resources

Decontamination employs chemicals, freezing, drying, or hot water. While chemical treatments can be used, they are not generally recommended for most equipment, boats, and trailers. The effects of chemical treatments on some equipment have yet to be researched. Moreover, several decontamination chemicals contain ammonia compounds that could contaminate ammonia samples. Chemical treatments need to address safe and environmentally sound storage, handling, and disposal of the chemicals.

The treatment options listed in [Table 1](#) utilize temperature (heat or cold) or chemicals to ensure that organisms such as New Zealand mud snails that may have been missed during the initial cleaning will be killed. Hot water or drying are the recommended treatments for large equipment such as boats and boat trailers. Additional information about hot water sources and treatment methods is provided below.

Hot water sources

- Hot tap water is available at EAP’s Operations Center (OC) in the Skookum bay. (Note: tap water at the Spills Program washdown bay by the Ecology headquarters loading dock can be used for rinsing, but it is not hot enough to meet decontamination requirements).
- A hot water pressure washer is available at EAP’s OC (special training required).
- Other facilities may have hot water, such as Ecology’s regional offices, WSDOT shops, and local government maintenance facilities.
- Car washes can be used for rinsing and cleaning ([section 6.3.1](#)) but are not an option for decontamination: the water is not hot enough to kill aquatic organisms.

Treating equipment with hot water

- Wear appropriate personal protection equipment to prevent burns to self and others.
- Avoid or protect parts of equipment that might be damaged by hot water.
- Ensure that the water is at least 60° C at the discharge side of whatever’s being treated.
- Flush for at least 10 seconds for all equipment except felt soles and nets; 5 minutes for felt-soled boots and nets at 60° C (10 minutes at 49° C).
- After treatment, ensure equipment drains and dries before re-stowing equipment.

Table 1. Options for decontaminating equipment.

Treatment	Concentration or temperature	Exposure time	Comments
Hot water (wash or soak)	60° C (140° F)	Felt-soled boots and nets = 5 minutes All other equipment = 10 seconds	Ensure all parts of the equipment reach temperature for the full exposure time.
Hot water (wash or soak)	49° C (120° F)	Felt-soled boots and nets = 10 minutes All other equipment = 5 minutes	Ensure all parts of the equipment reach temperature for the full exposure time. At this temperature, soaking equipment is more feasible.
Freezing	-4° C	≥ 4 hours	Time starts after the equipment reaches -4° C.
Drying	NA	≥ 48 hours	Time starts after the equipment is thoroughly dry.

Treatment	Concentration or temperature	Exposure time	Comments
			Low humidity, in sunlight is best.
Formula 409 Antibacterial All-Purpose Cleaner ¹	100% (full strength)	10 minutes	Follow proper procedures for storage and handling.
Green Solutions High Dilution Disinfectant 256 ²	≥ 3.1%	10 minutes	Follow proper procedures for storage and handling.
Quat 128	4.60%	10 minutes	Follow proper procedures for storage and handling.
Hydrogen peroxide ³	3% (30,000 ppm)	15 minutes	Spray on until soaked, then keep damp for contact time (cover or place gear in a dry bag).
Virkon Aquatic [®]	2%	20 minutes	Must soak (not spray on) Follow proper procedures for storage and handling ⁴ .

¹ Must be antibacterial (make sure it has quaternary ammonia, otherwise it is ineffective).

² Corrosive; read the MSDS and use with caution (replaced Sparquat 256).

³ May be corrosive; read the MSDS and follow safety precautions.

⁴ Rinse gear after soak to prolong life. Solution degrades; lasts up to 7 days; best if mixed fresh.

Note: All chemicals must be disposed of to a sanitary sewer.

12.0 Appendix B: Additional Cleaning Information

Felt-soled Waders

Felt soles can trap aquatic organisms and hold moisture that can sustain them for long periods.

1. Rinse and brush soles to remove visible mud and debris.
2. Use one of the treatment options in [Table 1](#).
 - Hot water, freezing, or drying are recommended because they are effective against the widest variety of species and don't involve chemicals.
 - If hot water, freezing, or drying are not possible, choose a different option from [Table 1](#). Hydrogen peroxide is inexpensive, readily available, and relatively innocuous to humans and the environment; however, its effectiveness at killing organisms besides New Zealand mudsnails is not clear.

Hydrolabs

Cleaning recommendations for Hydrolabs that are deployed in areas of Extreme Concern and contact aquatic sediment or vegetation include:

1. Follow procedures in section [6.3.2.3](#) (wipe smooth surfaces until clean and dry). Decontaminate any parts of the hydrolab that cannot be wiped clean of sand-grain-sized particles using one of the methods listed in [Table 1](#).
2. Parts of the hydrolab that cannot withstand methods in [Table 1](#) (e.g., the probes) should be soaked in the low pH buffer solution (pH = 4) overnight. (pH 4 buffer is the recommended storage solution).

Boat Trailers

Flush all interior and exterior surfaces of trailers, wheels, and tires until clean. Interior surfaces are the inside of the trailer's metal tube framing.

Boat Hulls: Exterior and Interior

1. Remove gear as needed (e.g. deck mat, dip nets, net anchors, boat anchor and line, ropes) to provide access to all areas of the boat to allow for effective cleaning.
2. Wash down the boat working from bow to stern, and top to bottom. Flush all nooks and crannies to get at all areas where AIS may have gotten into. Wash all boat-related gear.
3. Wash all bilge areas where accessible using hot water, working from bow to stern. However, do not flush the bilge of the jet sled with hot water because of the fuel tank located there.
4. Raise bow of boat for effective draining of water and muck that gets into bilge. Work all of the bilge water, sediment, and muck out of drain on transom.
5. Flush all interior and exterior through-hull pipes and screens. These may be located on the bottom of the hull, on the transom, or inside the hull (e.g., Skookum's strainers for washdown pumps and

engine cooling system). Try backflushing bilge pumps by introducing water into the bilge pump discharge port (on transom or hull exterior) and check to see if water flows through the bilge pump and into the bilge.

- If using hot water or chemicals on inflatable boats, ensure that such treatments will not damage the boat's material or adhesives.

Boat Engines: Propeller and Jet Pump

Boat engines pump ambient water through them for cooling and can pick up and harbor unwanted material which may be transported to another waterbody. While most boat engines have fine-mesh screens (about 2 mm) that can prevent debris from getting into the engine, sand and mud particles may pass through. Jet-pump engines operating in shallow waters often move sediment and fine debris through the cooling passages, so more effort is needed to clean jet-pump engines. The external parts of engines can also collect weeds or other debris, especially propellers and other parts submerged in the water. Clean external parts of engines to remove all visible debris. Clean internal parts of engines by flushing with water as described below.

- Engines with an adaptor that accepts garden hoses.
 - Connect hose or adaptor and run water through the engine.
 - Check to ensure that water is reaching and running from the cooling water pump intake areas.
- Engines that need the “earmuff” type flushing adaptor (many smaller engines).
 - Connect hose to the earmuff adaptor and attach adaptor to the engine over the intake.
 - Turn on water.
 - Start engine and let run at idle speed.
- Engines that have no flushing adaptor (some smaller engines).
 - Mount the engine so that the lower unit can be submerged in a large container (e.g., 18-gallon tote) filled with water.
 - Start engine and let run at idle speed.

All engines can be run while being flushed with cold water. However, running some engines while flushing with hot water could damage the engine. **Do not run engines while flushing with hot water.** The exception to this is the electrofishing boat's outboard engine and generator—these may be run while flushing with hot water (however, monitor temperature for possible overheating condition).

Many engines can be flushed with hot water as long as the engine is not run at the same time. [Table 2](#) at the end of this section shows all of EAP's boat engines, their locations, and the method needed for flushing each engine (electric motors excluded).

Nets and Related Gear

Clean aquatic plants off the net and attached gear while retrieving in order to reduce loading the boat with plant fragments.

1. When ashore at the boat launch, find a way to hang nets and manually pick off all plants from mesh, lead line, and float line. For gillnets, hang 30–50-ft. sections of net at a time between the truck and boat and gather the cleaned section into a clean tub. Repeat for the rest of the net.
2. Clean other nets and gear (e.g., beach seines, fyke net, dip nets, and trawl nets) similarly to gill nets.
3. Ensure that floats, anchors, and anchor line are cleaned of all visible foreign material.
4. After adequately hand-picking and cleaning nets and related gear, one of the treatments in [Table 1](#) is required, preferably a hot water soak.
5. If unable to clean while in the field, nets and gear can be cleaned upon return to the OC provided they are not being used in another waterbody before reaching the OC.

Note: Chemical treatments may damage nets so testing should be done before using chemicals.

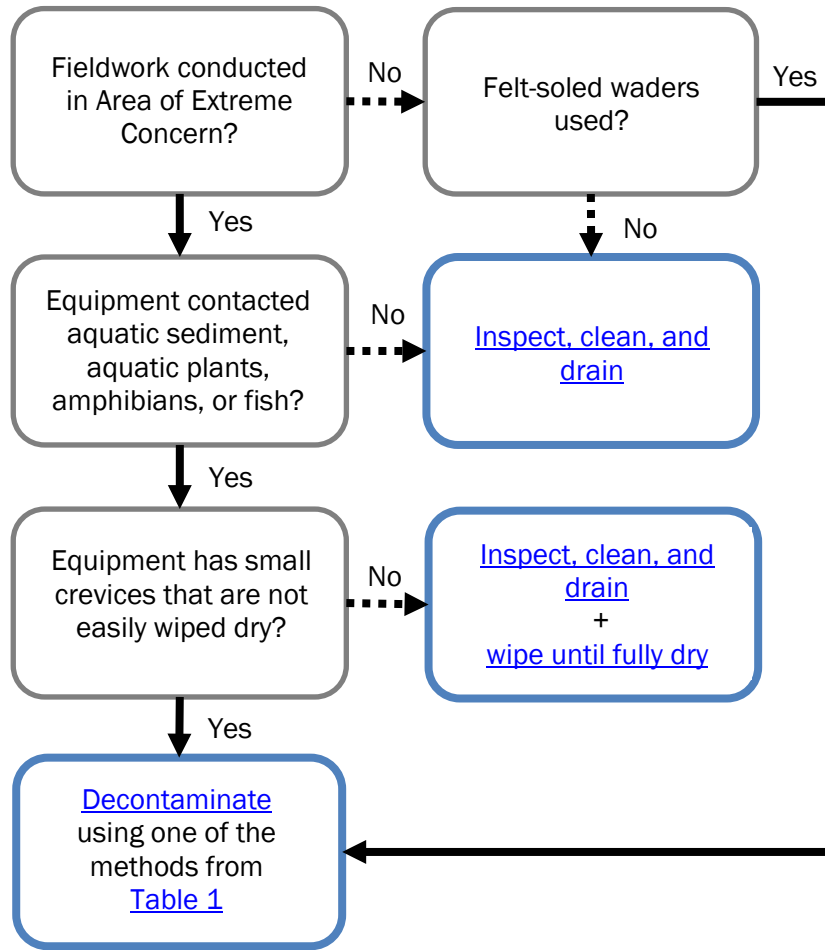


Figure 1. Flowchart of Environmental Assessment Program SOP for minimizing the spread of invasive species when conducting fieldwork.

Table 2. Environmental Assessment Program boat and boat engine information, boat location, and engine flushing method. Only gas-powered motors included.

Boat name and type	Engine information	Location	Flushing method
Almar Sounder 26 ft. “Skookum”	2002 Volvo-Penta 200 HP Diesel Model AD 41/DP	Operations Center Main engine on boat	Earmuffs
Smith-Root SR-18 18 ft. “Electro-fisher”	2007 Yamaha 115 HP 4-cycle Model F115TJRC	Operations Center Main engine on boat	Hose connection and adaptor Generator also uses hose connection and adaptor
Wooldridge 16Xtra Plus 16.5 ft. “Jet sled”	2008 Evinrude 115/80 HP 2-cycle Model E-TEC	Operations Center Main engine on boat	Hose connection and adaptor
North River Pursuit 18 ft. “Jet sled”	2011 Mercury OptiMax 110 HP	Eastern Region Office Main engine on boat	Hose connection
North River Pursuit 18 ft. “Jet sled”	Evinrude 8 HP 4-cycle	Eastern Region Office Extra motor	Earmuffs
McKee Craft 16 ft. “Mckee”	2009 Honda 90 HP 4-cycle	Operations Center Main engine on boat	Hose connection
Multiple (unattached outboard motors)	(2) 2022 Yamaha 6 HP 4-cycle	Operations Center Each on motor stand	Flushing tub