2025
2026

Technical Manual

BOW HABITAT STATION

Fish in Schools
Raise to Release
Provincial School Program

Alberta

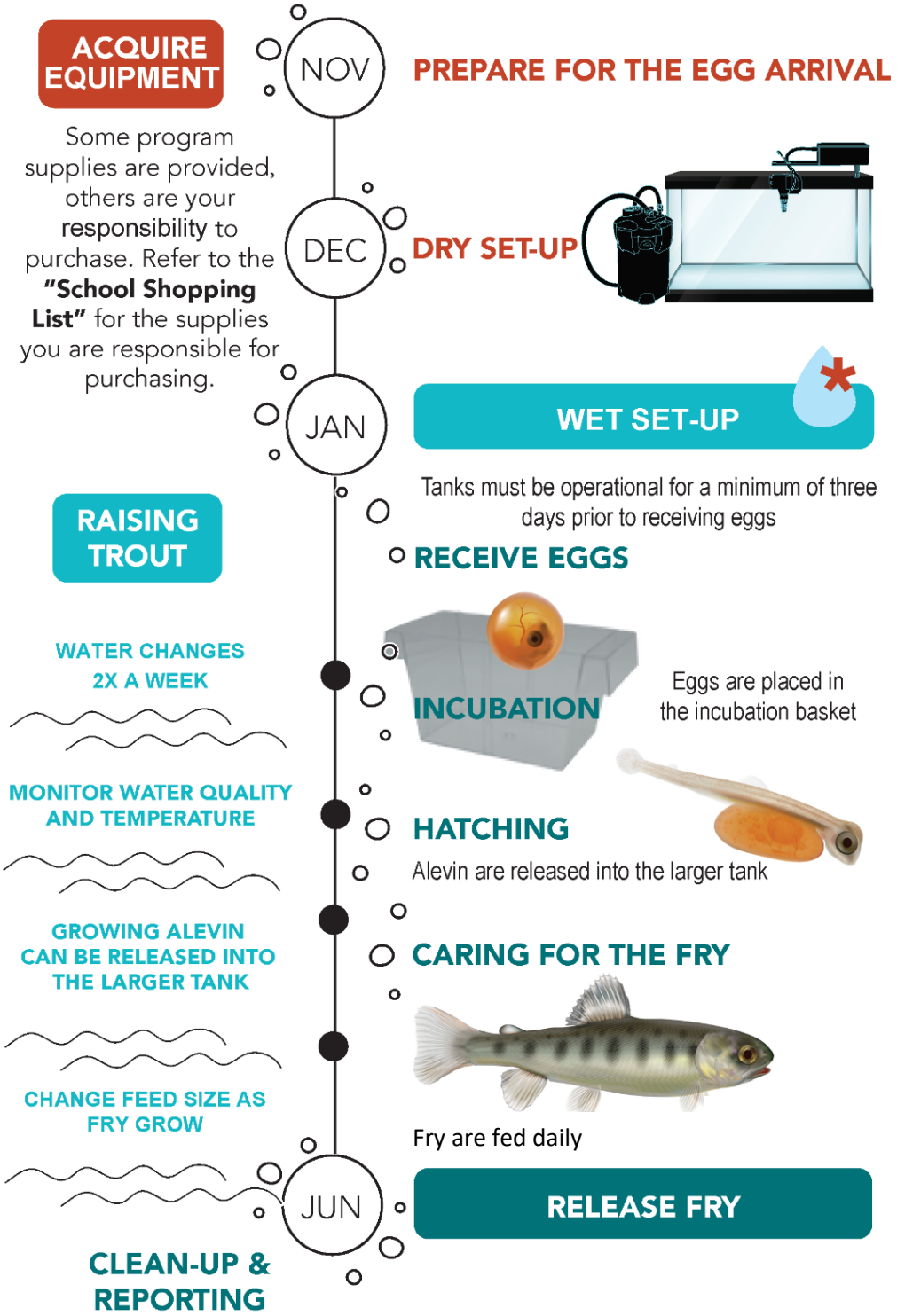


Table of Contents

Equipment and Supplies

***Refer to Appendix F for full and detailed Equipment and Supplies list with specifications and descriptions.**

AQUARIUM PARTS

Schools are responsible for the following Aquarium Parts* List:

1. Coroplast cover
2. Styrofoam Insulation
3. Aerator
4. Incubation Basket
5. Aquarium
6. Under Gravel Filter
   a. Riser tubes x2
   b. Riser Tube Mounts x2
7. Fluval Filter
   a. Corrugated Tube
   b. Outflow Strainer
   c. Rim Connector
8. Clear Plastic Tubing
9. Hose Clamps x2
10. Thermometer
11. Fish Net
12. Chiller
13. Gravel
14. Cabinet
15. Bucket x2
16. Siphon

Annual Supplies

Fish Feed

Water Conditioner & Supplement

Water Media Filters

Water Quality Testing

Setting Up Your Aquarium – Dry Set-Up

Before starting, ensure that you have all of your equipment in working order. If you need to replace any equipment please purchase the models listed in the Shopping List from a local supplier or pet store. There will be slight variations in Aquarium systems based on the year your school purchased your equipment.

Start by preparing your cabinet/shelving. Clean the surfaces. Place near a 110-volt outlet and away from direct sunlight, heat registers, or drafts.

SUPPLIES FOR DRY SET-UP:

For a full detailed list please see Appendix F: Equipment and Supplies Specifications and refer to the FinS Shopping List on the FinS Resource Portal

- Aquarium
- Aquarium Cabinet/Shelf
- Under Gravel Filter
- Tube Mounts & Riser Tubes
- Aerator
- Clean Hose
- Metal Hose Clamps x2
- Fluval Filter: Aqua Stop, Corrugated Hose, Rim Connector, Rubber Connector, & Outflow Strainer
- Filter Media: Ammonia Remover, BIOMAX, & Carbon Filter
- Chiller
- Gravel
- Styrofoam
- Coroplast
- Flat-Head Screwdriver
- Utility Knife

DRY SETUP

Please plan to have all of your equipment and supplies in-hand by the end of November.

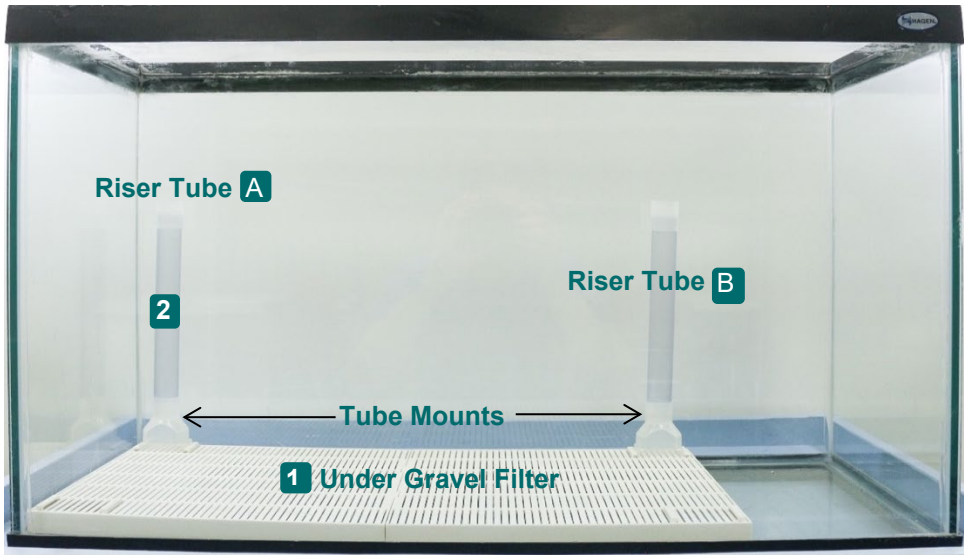
Complete your Dry Setup before the WINTER BREAK. Training videos are available on the FinS Portal:

FinS Resource Portal –

bowhabitat.alberta.ca/programs/fish-in-schools-resource-portal

STEP 1: Assemble the Under Gravel Filter

Clip the base of the Under Gravel Filter together and place in the bottom of the Aquarium. Position it against the back and left-side walls.



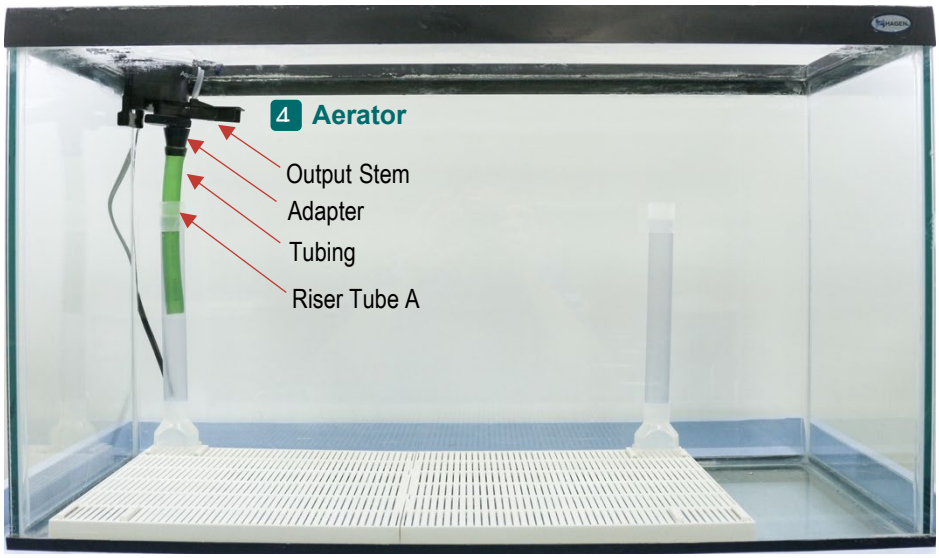
STEP 2: Assemble and Install Riser Tubes

Attach a Tube Mount to each Riser. Snap/insert the two Tube Mounts into the slots/clips of the Under Gravel Filter. The Under Gravel Filter sits directly on the bottom of the tank with the Riser Tubes positioned vertically above.

STEP 3: Assemble the Aerator

Assemble the Aerator (AquaClear Powerhead 30) components using the directions in the box or **Appendix A**.

STEP 4: Install the Aerator



Attach the Aerator to the left side Aquarium rim using the adjustable clamp provided in the box. Ensure it is level and sitting near the top of the tank. The output stem should point towards the center of the tank.

DO NOT PLUG IN THE AERATOR.

SET-UP TIP

*Aerator's adaptor should fit snug into the top of Riser Tube A, to ensure that fish will not get sucked in. If tubing is required to connect the adapter to the riser tube, extend the tubing a minimum of two inches into the riser tube.

STEP 5: Assemble the Fluval Filter

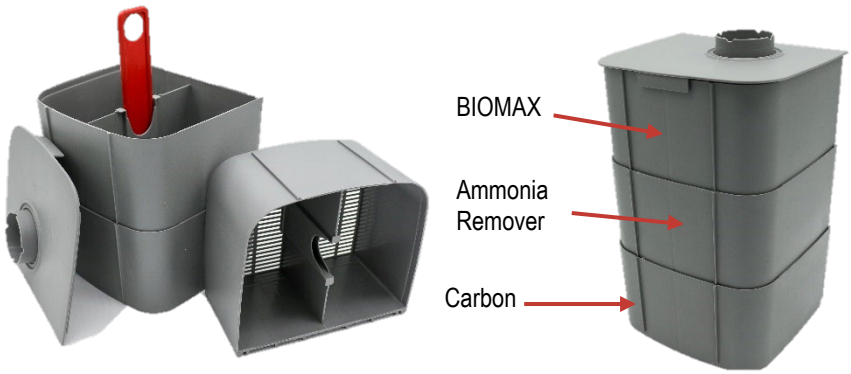
EQUIPMENT:
- AquaStop
- FinS Filter Media
  - Ammonia Remover,
  - BIOMAX,
  - Carbon
- Washing Bin or Sink
- Utility Knife

NEW EQUIPMENT

The Fluval Filter requires specific materials to support your FinS aquarium. Follow the steps within this manual.

If you are using a brand new filter, carbon media and BIOMAX media will be provided with the filter. You will need to remove the Fluval biofoam pieces and replace them with ammonia remover from your annual supplies.

1. Load media into the Fluval Filter.
   a. Remove the lid from the Fluval Filter by unclipping the handles on the side of the lid and pulling upwards.
   b. Remove the media cover, baskets, and media from the filter.
   c. Remove the media's **outer** plastic wrappers, but **do not** remove the Carbon or Ammonia Remover from their porous bag.
   d. Rinse the Carbon media, Ammonia Remover media, and baskets with running water, or in a washing bin.
   e. Place the Ammonia Remover, Carbon, and BIOMAX separately in the baskets.
   f. Place the baskets in order from **bottom to top**: Carbon, Ammonia Remover, BIOMAX.

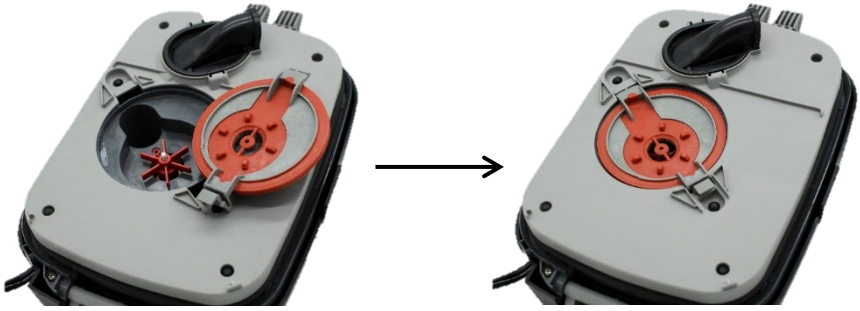


SPECIALIZED SETUP

The Fluval Filter instructions may have a different order for the filter media. It is important for the FinS Aquarium media to be in order as shown here.

2. To secure the lid of the Fluval Filter system, fit the rubber gasket carefully into the channel around the base of the cover.

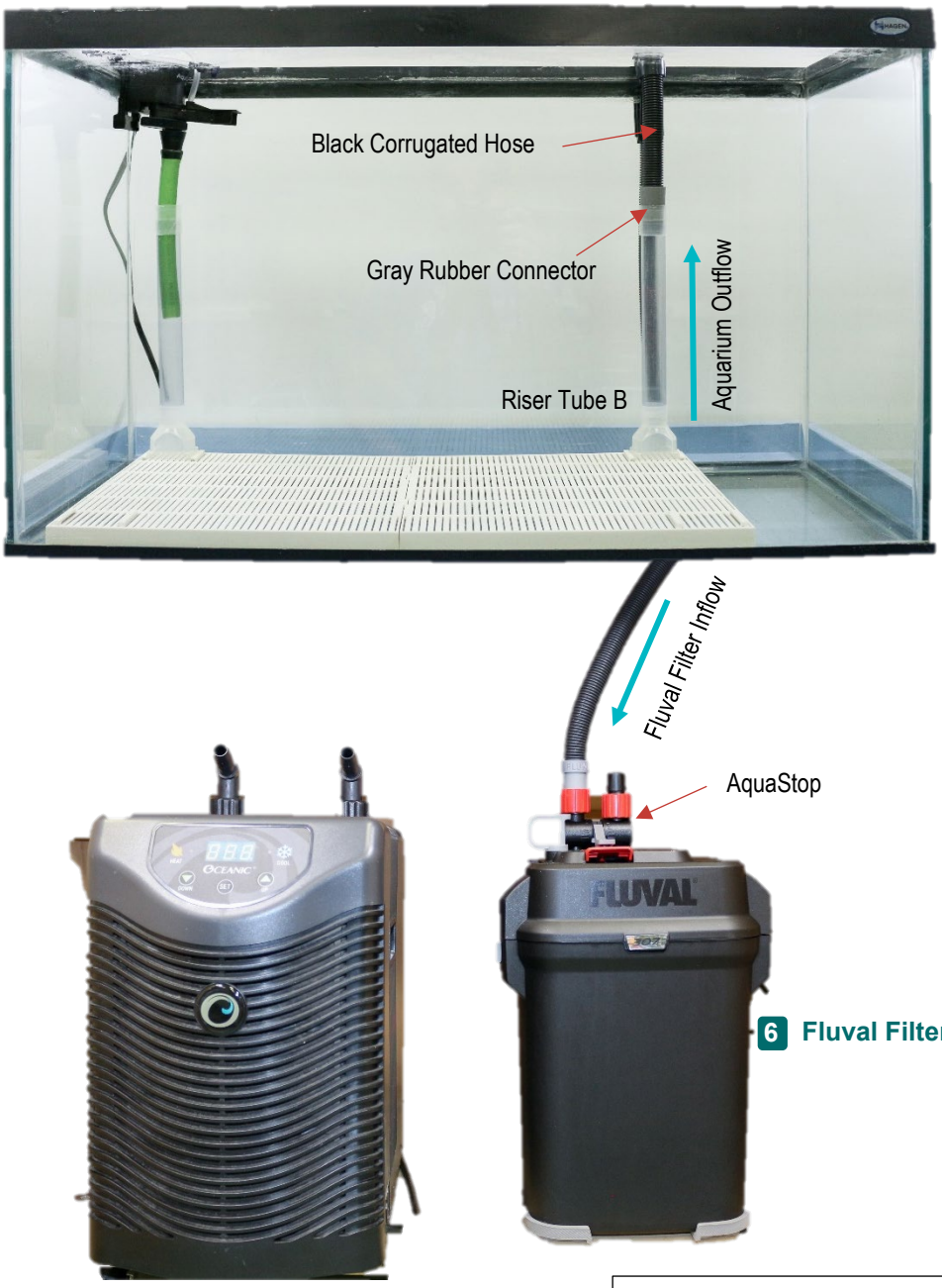
3. Position the impeller cover over the impeller, aligning the shaft so that it is seated in the ring on the cover. Push down around the edge until the tabs click into a locked position.



4. Place the lid on the Fluval Filter and lock it in place, ensuring that the letters on the outside of the filter line up and the impeller cover lines up with the impeller hole. **Do not fill the filter with water.**

5. Insert the AquaStop on to the lid of the Fluval Filter. Lock it in place by pushing down locking lever.

Step 6: Connect the Fluval Filter to the Aquarium



FIRST TIME SETTING UP

Please read all the steps within this manual before assembling the filter. Do not fill your filter with water or plug it in until instructed.

Place your Fluval Filter according to all of the following:

- Below your tank on the right side (front point of view)
- Below the water level in your Aquarium, but no lower than 4.5 feet.
- Hoses follow a straight path from the Aquarium rim to the Fluval Filter, with some slack, but no loops.

EQUIPMENT:

- Corrugated Hose
- Utility Knife
- Rim Connector
- Suction Cups
- Rubber Connector (removed from the output nozzle of the Fluval Filter)

Fluval Filter Inflow

1. Place the Fluval Filter on the cabinet, directly below Riser Tube B (the one without the aerator).

2. Attach the factory-finished end of the black corrugated hose with the grey rubber end onto the intake of the AquaStop valve of the Fluval Filter.

3. Turn the AquaStop intake lock nut counter clockwise until it is as tight as possible without forcing.

4. Run the loose end of the hose through any necessary openings towards Riser Tube B inside the aquarium. Ensure the hose follows a straight path with some slack but no kinks or loops.

5. Using a utility knife cut the hose to size a length that allows you to insert the black corrugated to Riser Tube B. **Keep in mind enough length must remain in the hose to connect your Chiller to the Aquarium.** Set aside the remaining hose to use to connect the Chiller to the Aquarium.

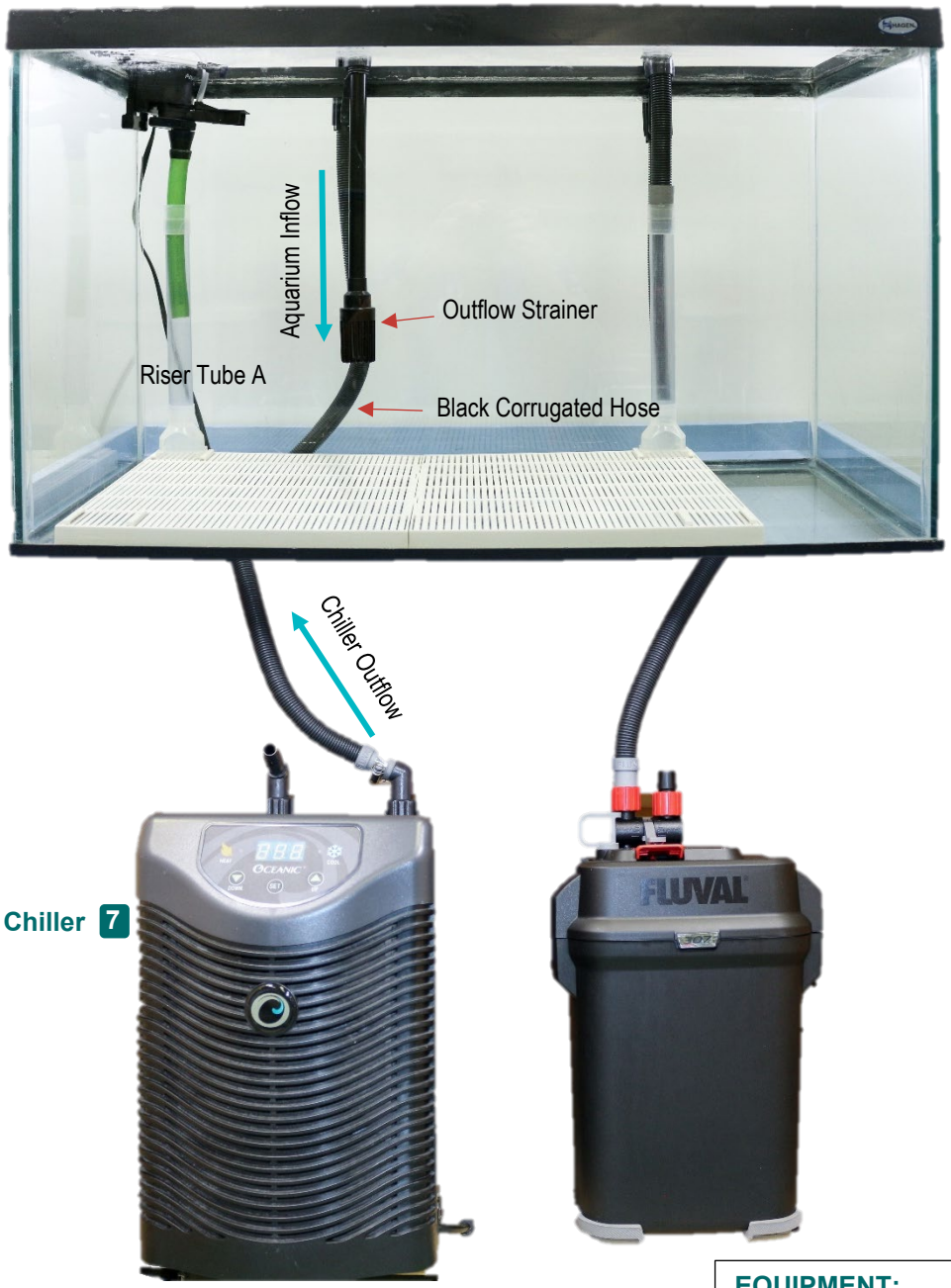
6. Remove the grey Rubber Connector from the output nozzle in the Fluval Filter system.

   a. Attach the grey Rubber Connector to the end of the black corrugated hose that you just cut.

7. Secure the hose to the Aquarium using the Rim Connector assembly while gently inserting the grey Rubber Connector into Riser Tube B.

   a. Attach a suction cup to the glass wall of the Aquarium to secure the hose, if additional support is needed.

Step 7: Connect the Chiller to the Aquarium



REMINDER

The following instructions are adapted from the Chiller user manual:

Please read all the steps within this manual before assembling and using the filter. Do not add water to your Chiller or plug it in until instructed to do so.

EQUIPMENT:

- Corrugated Hose
- Utility Knife
- Screwdriver
- Chiller
- Rim Connector
- Suction Cups
- Metal Hose Clamps
- Chiller Hose-Tubing Connectors (x2)
- Green or clear hose

Chiller Set-Up

1. Place the Chiller under the Aquarium below Riser Tube A (one with the Aerator). Ensure there is sufficient space around the Chiller for proper airflow.

2. If your Aquarium cabinet has doors, it is recommended that they are removed.

Chiller Outflow

3. Connect the factory-finished end of the corrugated hose with the grey Rubber Connector (from the Fluval Filter package) to the hose tubing connector[1] for the Chiller. Attach this end to the outflow water chamber. Tighten the metal hose-clamp onto the Chiller until snug using a screwdriver. Do not overtighten.

4. Run the remaining corrugated hose to the top of the Aquarium tank. Ensure it reaches from the Chiller to inside the Aquarium, following a straight path with some slack but no kinks or loops.

5. Secure the black corrugated hose in place with one of the Rim Connector assemblies provided with the Fluval Filter package.
   a. If required, attach a suction cup to the glass wall of the Aquarium to secure the hose.

6. Take apart the Outflow Strainer from the Fluval Filter.
   a. Disassemble the Outflow Strainer head and remove the small plastic ball that sits inside its cage. **See Appendix B for further instructions.**
   b. Remove ball from head to allow a constant outflow of water into your Aquarium.
   c. Reassemble the Outflow Strainer.

SPECIALIZED SETUP

The Intake Strainer from the Fluval Filter is now acting as the outflow from the chiller.

7. Attach the rigid plastic rod from the Outflow Strainer to the end of the black corrugated hose (Chiller outflow).
   a. The plastic rod will likely need to be custom cut with a utility knife to ensure the strainer sits approximately 5 inches above the Under Gravel Filter.

[1] If you are using the Chiller for the first time, you may need to connect smaller components together first. Please refer to the Chiller User Manual to complete this task.

Step 8: Connect the Fluval Filter to the Chiller

SET-UP TIP

For best results ensure the tube connecting the Fluval Filter to the Chiller is not arched upward. Cut enough tubing to ensure the connection is level or travel downwards.

Fluval Filter Outflow to Chiller Inflow

1. Using the remaining green or clear hose, connect one end to the output valve of the AquaStop on the Fluval Filter. Tighten counter clockwise using the lock nuts.

2. Connect the other end of the green or clear hose to the inflow chamber of the Chiller. Secure with the metal clamp using a screwdriver.

Step 9: Add Gravel to the Aquarium

1. Spread gravel over the Under Gravel Filter. Ensure the surface is smooth but sloped, with the thickest area at the left-hand side of your tank (towards the Aerator end).

2. Fill in spaces between the glass sides of the Aquarium, Riser Tubes and the Under Gravel Filter plate.

   a. This prevents alevin and fry from burrowing under the gravel and Under Gravel Filter, and increases the efficiency of the filter (uneven distribution creates ‘short-circuits’ in the water flow).

SET-UP TIP

DO NOT RINSE GRAVEL. The gravel will appear dirty as you pour it out of the bag, with dust. The minerals in the gravel dust are important to establish your Aquariums biofilter.

Setting Up Your Aquarium – Wet Set-Up

Your FinS Aquarium is a small-scale version of Alberta's provincial fish hatcheries! It is designed to mimic natural habitats of wild rainbow trout as they grow. Your FinS Aquarium is a closed-system that is free of disease and predators to support healthy fish growth and development.

Modifications will be made to the system to accommodate the changing habitat requirements of fish as they grow through different developmental stages in their lifecycle.

Habitat Need	Aquarium System Design
Cold Water	The **Chiller** cools and maintains water temperature in your system at 8˚C to 10 ˚C (46˚F – 50˚F). This is the optimal temperature range to support healthy growth and development of rainbow trout. Styrofoam casing along the sides of the tank helps maintain a constant temperature in your tank.
Clean Water	**Nutrafin AquaPlus** conditions tap water added to your tank at each water change by removing chlorine and chloramine. The **Fluval Filter** contains filter media, which removes liquid and solid impurities from the water. **Nutrafin Cycle** helps to maintain good bacteria (biofilter) in your aquarium by filter feeding fish waste and converting it into less toxic chemical forms.
Oxygen	The Aerator (**AquaClear Powerhead 30**) oxygenates water and creates a current in the Aquarium.
Darkness	The **Styrofoam** casing and **Coroplast** cover blocks excess sunlight and ultraviolet rays from reaching eggs and alevin.

WET SETUP FISH CARE

Do not any add natural objects, such as plants, rocks or sticks, to the aquarium system. these elements may introduce bacteria or disease vectors into the aquarium system, affecting the healthy growth and development of your fish and in turn, any species living in the waterbody your fish will be released into in the spring.

Training videos are available on the FinS Portal:

FinS Resource Portal – bowhabitat.alberta.ca/programs/fish-in-schools-resource-portal

Step 1: Add Water to the Aquarium

When adding water to your Aquarium, use cold tap water only. **Keep track of how much water you have added** to determine how much Nutrafin AquaPlus to add.

1. Use a bucket to gently pour water into your Aquarium. Try not to disturb the gravel.

2. Follow the instructions on the Nutrafin AquaPlus bottle under the heading “TO REMOVE CHLORAMINE” to condition your water and to remove chlorine and chloramine from the water in your Aquarium.

SET-UP TIP

You will likely pour 90-100L (depending on the size of your Aquarium) of water into your Aquarium. The water should be level or a few millimeters below the Aerator outflow nozzle.

Step 2: Start Water Flow

1. Fill the Fluval Filter canister with water.
   a. Remove the AquaStop from the canister, so the Fluval Filter is detached from the Aquarium.
   b. Fill the Fluval Filter canister with tap water.
   c. Reattach the Fluval Filter to the AquaStop, locking the AquaStop on to the lid of the Fluval Filter.
   d. Ensure the Flow Lever is in the closed position (up position).

   DO NOT PLUG IN YOUR FLUVAL FILTER YET!

2. Check all tubing connections to ensure they are secure. Plug the Chiller into a power bar and turn the power bar on.

3. Set the Chiller thermostat between 8 °C and 10°C (46 °F - 50°F) using the arrow buttons on the front of the Chiller. Once you have set the Chiller, the displayed number will change to reflect current water temperature as water is cooled.

4. Start your Fluval Filter
   a. Start with the AquaStop valve closed in the up position.
   b. Plug the Fluval Filter into the power bar. The pump should start immediately.
   c. Open the AquaStop to start to flow of water by pushing the Flow Lever all the way down.

d. If it does not start immediately, pump the instant prime handle until the water flows freely out of the Outflow Strainer into the Aquarium. Return the prime handle to the down position.

e. Wait for the bubbling from the Outflow Strainer in the tank to stop. Gently rock the filter to ensure all air has escaped from the system and that the canister is full of water.

Troubleshooting Flow of Water

Unplug the Fluval Filter and close the AquaStop Flow Lever (upright position).

1. Ensure the Fluval Filter canister is filled to the top with water.
2. Ensure the lid of the Fluval Filter is properly sealed.
3. Ensure there are no knits or loops in the tubing between the Fluval Filter and the Chiller. If possible, prevent the tubing from arching upwards.

4. Ensure the tubing is connected to the proper inflow/outflow of the Fluval Filter and Chiller.
   a. Typically, the left side is inflow and right side is outflow.
5. Reattempt the directions in point 4, but prime before opening the valve to create extra suction/pressure.

Unplug the Fluval Filter and close the AquaStop (upright position). The following method requires 2-3 people. This method might require a few attempts.

1. Ensure the AquaStop Flow Lever is in the closed position (upright).
2. Remove the corrugated hose from Riser Tube B. Using a water jug fill the tube with water from the aquarium.
3. Cover the end of the tube with your thumb and hold the tubing above your head.
4. At the same time have someone plug in the Fluval Filter and open the AquaStop Flow Lever (down position), then begin priming the filter by pumping the Prime Handle up and down.
5. Once you feel suction on your thumb, submerge the tubing in the aquarium and remove your thumb from the end of the tubing.
6. Continue priming until the flow of water starts. The prime handle should become difficult to pump up and down, and the bubbling from the Outflow Strainer in the tank should stop. Gently rock the filter canister to ensure all air has escaped.
7. Water should be flowing out of the Outflow Strainer into the aquarium.
8. Reinsert the tubing into Riser Tube B.

6. As the Chiller and Fluval Filter fill with water, add additional water to the aquarium to ensure the Aerator outflow nozzle is level with the surface of the water.

7. Plug your Aerator into the power bar. You should see and hear a stream of bubbles skimming the surface of the water from the outflow nozzle within 15 to 30 seconds. If not, add more water to the aquarium and ensure the small tubing of the Aerator is properly attached.

8. Aim the Aerator outflow nozzle (where aerated water is coming out) towards the centre of the tank. The nozzle swivels side to side, as well as up and down.

FISH CARE

During the egg stage, a low water flow is imperative. Use the Aerator valve to adjust the Aerator to its lowest setting. Adjust flow as your fish grow.

Step 3: Prevent Power Loss

1. Ensure all electrical connections are secure and will not loosen with a simple tug.

2. Advise custodians, maintenance personnel, colleagues, and students about the importance of continuous power to the unit.

SET-UP TIP

Use of a battery backup or power supply unit is recommended if one is available.

Step 4: Install Protective Covers

1. If you are adding an Aquarium background to the outside of the tank, secure it with tape before installing your Styrofoam case.

2. Cut and secure Styrofoam blocks to the sides and back (four sides of the tank is best), using wide, clear tape. Make additional cuts as necessary to create a viewing window and ensure the case fits snugly. This will help to insulate your tank so the Chiller does not work as hard to maintain a consistent water temperature.

3. As your fish grow, they will become less sensitive to light. If you have placed Styrofoam at the front of your tank, it is common to remove the Styrofoam once your fish reach the fry stage.

4. Place the Coroplast cover on top of the Aquarium, cutting notches where necessary to ensure it fits around the tubing and the Aerator.

SET-UP TIP

Covering the edges of the Styrofoam jacket with duct tape will make it last longer. The jacket can be decorated with non-water soluble paints if desired.

Receiving Your Eggs – Preparing for Shipment

EGG SHIPMENT

Preparing for Shipment: Early January

The FinS Team will be in touch with you in early January to inform you of the shipment day of your eggs. Teachers are expected to be at their schools between the hours for the delivery of their eggs. Schools within the Calgary area are expected to pick up their eggs from Bow Habitat Station (1440 17A Street SE, Calgary), the FinS Team will be in touch about your egg pick up details.

The shipment of the eggs to your school is covered by the FinS program due to the requirement of express delivery. **Schools are responsible for returning the shipping supplies at their own expense before the end of February.** The returning of the shipment supplies is mandatory, as we need to reuse the supplies every year.

Return Address:
Bow Habitat Station
1440 17A Street SW
Calgary, Alberta, T2G 4T9

Your egg shipment will include:

- Egg Delivery Form – Fill out and keep for your records
- Research Licence (x2) - Sign both sets, keep one set and return the other with your shipping supplies
- Cooler
- Ice Pack(s)
- Thermos

Start water flow three says before eggs arrive

Ensure the flow of water in your tank is running for at **least three days** before your eggs arrive. This ensures the Nutrafin AquaPlus has had enough time to treat the water and the temperature of the tank water is at its ideal level.

Receiving Your Eggs – Accumulated Thermal Units

Rainbow trout are ectothermic (cold-blooded) animals. Their rate of development is primarily determined by the temperature of their environment. Warmer water causes more rapid development; cooler water slows development. The ideal temperature for your aquarium is between 8˚C and 10 ˚C (46˚F to 50˚F).

Accumulated Thermal Units (ATUs)

You can predict the timeline of when the eggs will hatch and when the alevin will be free swimming by recording ATUs.

ATUs are important to determine the milestones of your fish, such as growing your biofilter bacterial community or changing the quantity of fish food. It is a key part of monitoring and ensuring healthy development of your fish.

The ATUs of your fish is a sum of all of the daily water temperatures the fish have been exposed to since the egg was laid.

ATUs are positive integers
1ºC/24 hrs = 1 Thermal Unit
Example: If aquarium water is 8ºC = 8 Thermal Units
Sum of all daily water temperatures = Accumulated Thermal Units

Calculating and Recording ATUs

Previous day ATUs + Daily Water Temperature = Current ATU
Example: 262 ATU + 10ºC = 272 ATU

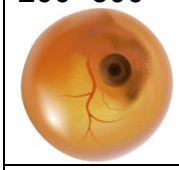
Each day, add the Aquarium water temperature to the ATUs from the previous day. For example, if your water temperature is 10ºC each day, then 10 Thermal Units are added to the ATUs total each day. Record your ATUs on your Fish Health Spreadsheet.

ATU Calculation Chart Example:

Date	Temperature (ºC)	ATUs
Jan. 5		170
Jan. 6	10	180
Jan. 7	10	190
Jan. 8	10	200
Jan. 9	9	209

Use your Fish Health Spreadsheet to share observable moments and teacher interventions with your class during the development of your fish. You do not need to submit these forms to Bow Habitat Station each month.

ATU Milestones:

ATUs	Teacher Intervention (TI) or Observable Moment (OM)
200- 300 	**TI**: Receive eggs, acclimatize (as needed), and release eggs into floating Incubation Basket in Aquarium. **OM**: Fertilized rainbow trout eggs have two large, black eyes. Look for two black spots (eyes) in each egg. Eggshell is softening during this period.
200– 350	**TI**: Remove and discard dead white eggs and empty eggshells. Record mortalities on the Fish Health Spreadsheet. **OM**: Alevin start to hatch. Transparent eggshells will be visible in the Incubation Basket.
320 – 350 	**OM**: All eggs should be hatched. Alevin have distinct yolk sacs on their bellies. Looking closely, you will be able to see fat bubbles in the yolk. Alevin absorb nutrients from their yolk sac as they rest at the bottom of the egg Incubation Basket. The yolk sac will gradually shrink as the alevin grow.
400 – 410	**TI**: Add Nutrafin Cycle to the Aquarium at the "new aquarium installation" rate to start bacterial community growth in the gravel and biofilter. Add a very small pinch of fish food #1 to your tank each day to sustain your biofilter bacteria.
500 – 530	**TI**: First water change. The fish will still be in the egg Incubation Basket. **OM**: Alevin yolk sacs begin to shrink.
550 – 570	**TI**: Release alevin from Incubation Basket after 75% "swim up" to look for food. Begin feeding schedule (feed #1). **OM**: Alevin begin to swim to the water's surface. Alevin are transforming into fry as their yolk is all used up. Their yolk sac gets absorbed.
~970 	**TI**: Switch to feed #2, as described in the Feeding Schedule Spreadsheet. Begin testing pH daily and ammonia weekly. **OM**: No longer have a yolk sac for nutrients, so will need a source of food. As fry grow, Parr marks (vertical black stripes) are visible down their sides and their scales and fins develop grey/brown colours.
1000	**TI**: Complete a media change of your Fluval Filter as described in the Technical Manual.
1250	**TI**: Switch to feed #3, as described in the Feeding Schedule Spreadsheet.
1300	**TI:** Complete secondary media change of your Fluval Filter as described in the Technical Manual

Receiving Your Eggs – Egg Arrival

Step 1: Record the Accumulated Thermal Units (ATUs)

1. If your eggs arrived the same day they were shipped record the shipping ATUs. If your eggs arrived the same date that they were shipped, then the ATUs will be the same as at the time of packing. Record the ATUs from the Egg Delivery Form onto your FinS Health Spreadsheet. Continue recording the ATU's by checking the water temperature each day.

2. If your eggs were in transit for longer than one day, you will have to calculate the ATUs of the eggs.

   a. To do this, add the current temperature of the water in the Thermos to the ATUs recorded at packing for each day they were in transit. One ATU is equal to one degree Celsius per one day.

      Example:
      The eggs were packed on January 19th, but you received them on January 20th.

      ATUs at time of packing on January 19th was 220 ATUs
      Temperature of the Thermos water on January 20th is 8 °C
      Calculation: 220 ATUs + 8 °C = 228 ATUs
      ATUs at delivery on January 20th: 228 ATUs
      Record your updated ATUs on January 20th on the Fish Health Spreadsheet.

Step 2: Equalize the Water Temperature

1. You will need to equalize the temperature of the water before putting the eggs in the incubation basket (your aquarium should be 8-10 °C, if it is not, please contact the FinS Team immediately), especially if the water temperature in the thermos differs by more than 2 °C from the water in your aquarium.

2. To do this, pour the water and Egg Cylinder from the thermos into a Ziploc bag. Float the opened Ziploc bag in the Aquarium for at least 5 minutes to allow the water temperature to adjust.

Step 3: Put the Eggs in the Incubation Basket.

1. Float the Incubation Basket in the Aquarium (stuff Styrofoam into the handles to help it float if needed). Your Incubation Basket should have slits or holes for water flow on the sides.

WHEN YOUR EGGS ARRIVE

Be prepared with the following supplies:

- Aquarium Thermometer
- Ziploc Bag
- Incubation Basket

2. Pour the water and Egg Cylinder from the Ziploc bag into the egg Incubation Basket.

3. Place the Egg Cylinder under the water within the Incubation Basket, open both ends of the lid while submerged and allow the eggs to sit freely in the Incubation Basket.

4. Check to make sure all your eggs have been removed from the egg cylinder and count them. Add the number of eggs in your FinS Health Spreadsheet. **Please do not throw out the Egg Cylinder.**

Step 4: Return Supplies and Paperwork

1. Sign all pages of your Fish Research Licence. Keep one set with your tank and send the other back to Bow Habitat Station.

2. Locate the Ziploc Bag containing your Dissolved Oxygen Test within your egg shipment. Keep in a safe spot as this will be needed for your release event.

3. Return the delivery supplies and one set of signed Fish Research Licence to Bow Habitat Station by the end of February.

    Mailing Address:
    Bow Habitat Station – FinS,
    1440-17A Street SE
    Calgary, AB, T2G 4T9

*Please note the project school is responsible for the financial requirement of returning the delivery supplies to Bow Habitat Station.

Fish Development & Care

Egg Care

Orange Eggs:

Healthy, growing eggs!

Milky-White Eggs:

It is normal for a few of the eggs you receive to die. Dead eggs turn milky-white from a naturally occurring fungus and begin to decay.

Immediately remove dead eggs and fungus to avoid spreading the fungus to other eggs, use a spoon or tweezers to do this. Throw dead eggs into the garbage; do not put them down the drain. Record any mortalities on the Fish Health Spreadsheet.

Transparent Eggshells:

Accumulate in your floating Incubation Basket as your fish hatch. Remove empty eggshells with a spoon or tweezers. Throw these into the garbage.

Environmental Conditions:

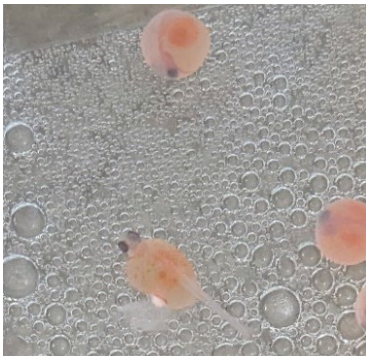
Temperature	Maintain a constant water temperature of **8˚C to 10 ˚C** (46˚F to 50˚F). Avoid temperature fluctuation.
Oxygen	When your eggs arrive, **slow water flow** from the Aerator by adjusting the Aerator outflow nozzle, so that the water is not rocking and jarring the Incubation Basket.
pH	Optimal pH range: **5.5 to 9.0.**
Ammonia Levels	There should not be any ammonia in your tank during the egg stage. **Do not change your Aquarium water** during the egg stage.
Feeding	**Do not feed** your eggs.
Light Conditions	**Protect from large amounts of sunlight or fluorescent light** – turn the classroom lights off when removing the Coroplast cover.
Other	**Protect from any physical shock** or jarring.

Fish Development & Care

Alevin Care

Alevin are not strong swimmers and have a fragile yolk sac. Keep alevin in the Incubation Basket.

You will release the alevin around 550 ATUs, when 75% are swimming towards the surface in search of food.



Remove any alevin that have, or you suspect of having, a fungal infection. Fungus can still grow on alevin after they hatch from their eggshell. Notice the white spot on the alevin's yolk sac in the image. This alevin should be removed to protect the health of the other alevin.

Environmental Conditions:

Temperature	Maintain a constant water temperature of **8˚C to 10 ˚C** (46˚F to 50˚F). Avoid temperature fluctuation.
Oxygen	Adjust your Aerator so that the current in your Aquarium is **slow to medium**.
pH	Optimal pH range: 5.5 to 9.0
Ammonia Levels	Once your start feeding your biofilter, you should be regularly testing ammonia levels in your Aquarium. **Levels should not be exceeding 1mg/L**. **Water changes will start at ~500 ATUs**, during the alevin stage. Start changing at least 8L of your Aquarium water, two times per week, as described in Water Changes section.
Feeding	**Do not feed your alevin**. At 400 ATUs, feed your biofilter by adding a pitch of feed size #1 until you start feeding your fish. Avoid putting food into your Incubation Basket.
Light Conditions	**Protection from large amounts of sunlight or fluorescent light**. Turn off the classroom lights if removing the Coroplast cover.
Other	**Protection from any physical shock** or jarring.

Fish Development & Care

Fry Care

Fry will swim throughout the column of water in your Aquarium. They are still light sensitive, but less so than the egg and alevin stage.

Adjust the feeding of your fry by referencing the Feeding section of the Technical Manual.

If you observe unusually behaviour or physical appearances on your fry refer to the Fish Health Spreadsheet and Appendix E before contacting the FinS Team.

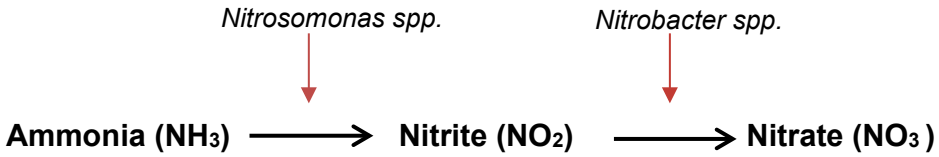
Environmental Conditions:

Temperature	Maintain a constant water temperature of **8˚C to 10 ˚C** (46˚F to 50˚F). Avoid temperature fluctuation.
Oxygen	Adjust your Aerator so that the current in your Aquarium is **medium (3/4 of the full flow** if the valve is fully open).
pH	Optimal pH range: 5.5 to 9.0. **When you start using Feed #2**, **before each water change.**
Ammonia Levels	**Test ammonia levels in your Aquarium before each water change** (twice per week) to ensure it is below 1 mg/L. Continue to change at least 8L of your Aquarium water, two times per week, as described in Water Changes section.
Feeding	**Start feeding your fry**. The right amount and size of feed, as described in the FinS Feeding Chart. Over-feeding fry is the most common water quality problem and can lead to waste and mold build up on your gravel.
Light Conditions	You may **remove the front of the Styrofoam case to be able to observe your fry**. Classroom lights turned off at night to simulate night conditions.
Other	Protection from any physical shock or jarring.

Biofilter

The biofilter system carries out some of the most important biochemical processes that occur in a closed-system Aquarium, including hosting bacteria to convert fish waste products into less toxic forms. The biofilter is made up of living organisms and therefore needs oxygen and food to survive. The Aerator provides oxygen to both the biofilter community and your fish by aerating the water. As your fish begin to eat and produce waste, the biofilter bacteria feed on the fish waste products.

The biofilter system controls the levels of ammonia (NH_3) in your Aquarium. Ammonia is naturally occurring, but is also a harmful by-product of protein breakdown. Ammonia level is controlled by nitrification. This process converts NH_3 (ammonia) to NO_3 (nitrate), which is less toxic to fish. Nitrification also leads to the release of hydrogen ions and acidifies the water, resulting in a lower pH in your aquarium. The two main bacterial species active throughout this process are *Nitrosomonas spp*. and *Nitrobacter spp.*



Biofilter System

Your Aquarium biofilter system has two main parts:

1. Gravel Filter: Made up of the Aquarium Gravel and Under Gravel Filter. The system's Aerator moves water through the Gravel and Under Gravel Filter.

2. Fluval Filter: The Fluval Filter motor circulates water through the Ammonia Remover, BIOMAX and Carbon media.

Within your Aquarium, ammonia accumulates from fish urine, feces, respiration, and the breakdown of excess food.

Test your Aquarium ammonia levels with the ammonia test kit before each water change.

Starting & Maintaining the Biofilter

1. At **400 ATUs,** add Nutrafin Cycle for three consecutive days, following the "NEW AQUARIUM" rate on the Nutrafin Cycle bottle.

   a. This will start bacterial growth in your biofilter. Depending on which Aquarium model you have, there will be 90-100L of water in your Aquarium.

2. Once you have added Nutrafin Cycle, **feed your biofilter** a small pinch of fish food #1 once a day to maintain the good bacteria that are establishing themselves in the Aquarium. You will need to feed your biofilter until you begin feeding the fish (at that point, the biofilter will have enough to eat from the production of fish waste).

3. At **500–530 ATUs begin water changes**, removing and replenishing at least 8L of your Aquarium water twice a week.

a. Do not forget to condition your tap water with 2.5 mL Nutrafin AquaPlus before adding it to your Aquarium and then add 5 mL Nutrafin Cycle to the tank for regular maintenance. See the water changes for detailed water change information.

4. Do not majorly disturb Aquarium Gravel once you have established your biofilter.

The Fluval Filter starts working when you plug in your Aquarium system. However, as the fish are not yet producing waste, bacteria does not establish a biological filter (biofilter) system. This starts when you begin adding Nutrafin Cycle at 400 ATUs.

Water Changes

Water changes begin at **500-530 ATU's** to manage the ammonia levels in your Aquarium.

Remove at least 8L of water twice a week (Tuesday and Friday). Replace the same amount of water that was removed with water that has been treated with Nutrafin AquaPlus.

1. Fill bucket with cold tap water and add 2.5 mL of Nutrafin AquaPlus per 8 L (2 gallons), following the "TO REMOVE CHLORAMINE" rate on the Nutrafin AquaPlus bottle.
   a. Let the buckets sit for at least 15 minutes to allow Nutrafin Aqua Plus time to remove chlorine and chloramine from the water before pouring it into your Aquarium.

2. Unplug the Aerator from the power bar**. Do not** disconnect the Chiller or Fluval Filter.

3. Remove the 8 L (2 gallons) of the water from the Aquarium using your Siphon. Gently tap the gravel with your siphon to vacuum up fish waste and uneaten food. Ensure that the water you are removing is collected in your wastewater buckets.

4. Gently pour the treated Nutrafin AquaPlus water into your Aquarium as to not disturb the gravel or the fish.

5. Add 5 mL of Nutrafin Cycle directly into the tank to boost the bacteria population following the "ALL REGULAR MAINTENANCE ACTIVIES" rate on the Nutrafin Cycle bottle.

6. In the **wastewater** bucket, add 10 mL of household bleach; let it sit for 10 minutes before pouring it down the drain. **Sterilizing your wastewater with chlorine (bleach) is a requirement of your Fish Research License to prevent the spread of any diseases.** Rinse out the wastewater buckets.

7. Plug your Aerator back into the power bar. Ensure that it is aerating the water with bubbles on the surface and creating flow in your Aquarium.

WATER CHANGE SUPPLIES

Be prepared with the following supplies:

- Siphon (if you have one)
- Nutrafin AquaPlus
- Nutrafin Cycle
- Bleach
- Two 5-gallon buckets (Label the buckets with "Wastewater" and "Treated Water". Do not use the same bucket for waste and treated water as wastewater is bleached before discarding.)

FinS Resource Portal –

bowhabitat.alberta.ca/programs/fish-in-schools-resource-portal

FISH CARE

Be careful not to disturb the gravel too much when siphoning the water. Fish waste can lay at the bottom of the tank and stirring up the gravel too much can cause it to mix with the aquarium water, potentially leading to fish sickness or fatalities.

Feeding

The total amounts of Feed #1, #2 and #3 have been pre-measured and should last until your fry are released from your Aquarium in May or June. The daily feed amount (total grams/day) is calculated to maintain a healthy growth rate of your fish. Although it is expected that some fish will die in the egg and alevin stage, the feed is calculated for 65 fish. The Fish Health Spreadsheet will calculate how much food your fish should be receiving each day. This will give them a good chance for survival when released and will make it easier to sustain them in your Aquarium.

When to start feeding your fish (rather than your biofilter):

Do not begin the FinS Feeding Schedule until you have released the alevin from the egg Incubation Basket. You will release the alevin around 550 ATUs, when 75% are swimming towards the surface in search of food.

Start feeding your fish between **550-570 ATUs.**

You can tell when the fish are hungry and its time to start the schedule when they show interest in the small pinch of food added to the Aquarium when you feed the biofilter. Refer to the FinS Feeding Chart (Appendix D) for amounts and size of food.

Feeding Techniques:

Many feedings of small quantities of food are better than larger feedings in fewer intervals. Small fish can only eat a little bit at a time. Optimally, spread the daily ration into multiple feedings, several hours apart.

When feeding, grind the food finely between your fingers and sprinkle it across the surface of the water with a minimal arm movement. If the fry are startled by motion, they will not eat immediately.

Only feed as much as the fry will eat. If the fish are not eating the entire daily ration then you may need to reduce the amount of food.

Do not overfeed your fish! It is better to keep the fry a little hungry and attacking the food rather than having excess food creating additional waste by-products in your Aquarium. Evidence of overfeeding can include murky water, moldy gravel, and/or extra waste hanging from the fish.

Measure the daily amount of feed for your fish in the morning. Put it in a small container beside your tank and ration it in smaller meals for the fish throughout the day.

Weekends/Holidays:

On a regular weekend, feed your fish before you leave on Friday and as soon as you return Monday morning. The fish can survive without feed over a weekend.

During holiday weekends when there is an extra day (or more) away from your Aquarium, be sure to make arrangements to feed at least every third day during that time.

Adjustments:

Account for any mortalities that occur in you daily fish food rations as the FinS Feeding Chart is calculated for 65 surviving fish. If significant amounts of fish die, correct your feeding rate by subtracting a percentage from the total feed to ensure that your fish are not overfed. If you are using the Fish Health Spreadsheet this calculation will be done for you.

Example: If you suffer a 20%, or 0.20 mortality rate:

Multiply the total grams/day by 20%
2.0 grams/day X 0.20 = 0.40

Then subtract this number from the original total grams/day.
2.0 grams/day – 0.40 = 1.6 grams/day

Therefore the new daily ration, factoring in a 20% mortality rate would be: 1.6 grams/day.

Filter Media Change

Media changes are necessary to maintain the water quality of your FinS Tank. Your primary media change should occur when fry have reached **1000 ATUs** (typically around the beginning of April). Your secondary media change should occur at **1300 ATUs** (typically around the start of May).

Carbon and Ammonia Remover media have absorption capacities and will no longer effectively clean the water once these capacities are reached.

Step 1: Prepare the Media

1. Remove the new Carbon and Ammonia Remover media's plastic outer wrappers, but **do not remove** their respective porous bag.

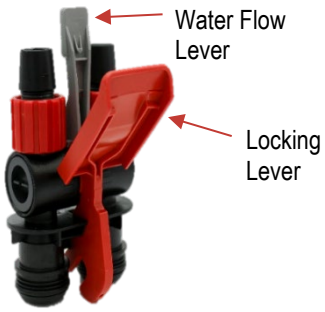
2. Rinse the Carbon and Ammonia Remover media under running water, or in a washing bin.

3. Rinse the new BIOMAX with **Aquarium water** if you are completing your first media change. For the second media change at **1300 ATUs** BIOMAX does not need to be replaced.

Step 2: Remove the Fluval Filter

1. Turn off your power bar, or unplug the Aerator, Chiller and Fluval Filter.

2. Close the AquaStop by pulling up the Water Flow lever on the Fluval Filter. This seals the hose connections and maintains a vacuum pressure necessary to restart the filter system without additional priming.



3. Unlock/release the AquaStop by lifting up the Locking Lever. Pull the AquaStop valve head out of the filter and allow it to hang from the tubing (away from the Fluval Filter canister).

FILTER MEDIA CHANGE

Media replacement is a two-person job, as it does require unplugging your filter to rinse and change your media, then restarting the flow of water in your aquarium system.

Be prepared with the following supplies:

- Washing Bin
- Towels/rags
- 2 unused bags of Ammonia Remover media
- 2 unused bags of Carbon media
- BIOMAX (only replace ½ of the BIOMAX)
- 4-5L of Nutrafin AquaPlus treated water.

FinS Resource Portal – bowhabitat.alberta.ca/programs/fish-in-schools-resource-portal

REMINDER

If the water flow lever is not lifted up (in the closed position), water will continue to flow out of the AquaStop valve and onto the floor when you disconnect the filter canister.

4. Remove the Fluval Filter canister from your Aquarium cabinet/shelves. The filter canister is full of water, and may spill if the canister is tipped over.

5. Empty part of the water from the canister by tipping in to your wastewater bucket.

Step 3: Replace the Media

1. Push down on the clamps to lift the lid off the canister.

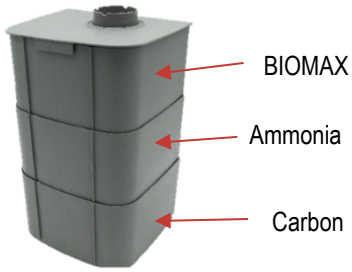
2. Lift out the media baskets. Place the baskets into a bucket/tub or sink. If the filter screen is inside the canister, remove it for cleaning. Pour remaining water from the Fluval Filter into your wastewater bucket.

3. First media change only: Remove the top basket of BIOMAX. BIOMAX should be rinsed using the water from the aquarium. **Never rinse BIOMAX with tap water or any water that could contain chlorine**. Only remove half of the BIOMAX from the basket as it contains beneficial bacteria for the FinS Aquarium. Add new BIOMAX to fill the basket.

4. Remove old Ammonia Remover and Carbon media. Rinse out the remaining canisters and media baskets under running tap water and wipe off any waste or slime build-up.

5. Replace the used Ammonia Remover and Carbon, with the new rinsed media that was prepared in Step 1.

6. Place media back in canisters and stack as shown in the image below.



7. Treat the used media in the wastewater bucket as you normally treat wastewater. Let sit for 30 minutes, throw out media and drain the wastewater down the drain.

8. Clean off the impeller cover area, if there is visible build up.

SPECIALIZED SETUP

The Fluval Filter instructions may have a different order for the filter media. It is important for the FinS Aquarium media to be in order as shown here.

Step 4: Reassemble the Filter

1. Place media baskets and filter screen back into the Fluval Filter.

2. Refill the canister with treated Nutrafin AquaPlus water, filling to the top of the canister.

3. Put lid back on the Fluval Filter. Align the Fluval logo on the front side of the canister to ensure the cover is on properly. Lock the side clamps to secure the cover.

4. Restore the Fluval Filter to its place under the Aquarium. Re-insert the AquaStop valve and push down the Locking Lever to secure the AquaStop to the Fluvial Filter.

5. Push down the Water Flow Lever to open the AquaStop valve. The sound of water flowing should start immediately, along with **visible bubbling** from the Chiller hosing that leads into the Aquarium.

6. Plug the Fluval Filter and Chiller back into the power bar. If needed, rock the Fluval Filter canister back and forth a few times to **ensure all of the air bubbles have exited the system**. If the Fluval Filter does not immediately start refer to the troubleshooting tips under “Staring the Flow of Water”

7. Ensure the water level in the Aquarium is level with the nozzle of the Aerator. If needed, replenish water levels using treated AquaPlus water prepared earlier in Step 1.

8. Plug in the Aerator.

9. **Monitor the system closely for the next 30-min to 1-hour to check for any water leakage.**

REMINDER

If flow does not start on its own, use the primer pump to encourage flow.

Release Event - Preparation

Preparing for your Release Event

A key part of the FinS experience is **releasing the fish into an Alberta Environment and Protected Areas (EPA) approved water body.** Part way through the FinS program the FinS Team will reach out to you and schedule your fish release date and location.

As required by your Fish Research Licence, you will be required to participate in training on how to properly release your fish in May/June. The FinS Team will host a virtual training for teachers on how to prepare and release your fish, typically in April. This **training and quiz is mandatory** for all teachers to complete **BEFORE** their release date.

RELEASE EVENT

Be prepared with the following supplies:

- Fish Research Licence
- Final Project Report
- Thermometer
- pH Test Kit
- Vial (from Ammonia Test Kit)
- Dissolved Oxygen Tablet
- Dissolved Oxygen Indicator Sheet
- Cooler or Bucket
- Fish Net
- Ziploc Bags
- Ice Packs
- Clear Tupperware
- 1-4L Container or Bucket
- Gloves

Days leading up to your release

1. Complete release annual Release Training with the FinS team before your release date.

2. Anything that has been used in your Aquarium this year must be disinfected with bleach, rinsed and allowed to dry completely **before and after** using it for your fish release.

   Disinfect & Pack:
   - Thermometer (from your Aquarium)
   - pH Test Kit (from your annual supplies)
   - Vial only from Ammonia Test Kit (annual supplies)

   Pack:
   - Fish Net
   - Dissolved Oxygen Tablet and Indicator Sheet (from your annual supplies)
   - Container or Bucket (1-4L) to collect water for testing
   - Box of Ziploc Bags (must be new, never used)
   - Clean Tupperware Container
   - Gloves

24 hours leading up to release

Prepare your fish for travel to the release site:
DO NOT FEED your fish in the 24 hours leading up to your release.

Release Event – Release Day

Step 1: Prepare fish for transport

1. Transfer fish from Aquarium to transportation bucket/cooler.
   a. Fill a large bucket or cooler 2/3 full with cold water from your Aquarium
   b. Add icepacks (not fresh ice, as it has not been conditioned) to the bucket or cooler to keep the water cool during transit.
   c. Net your fish one at a time and transfer them to the prepared bucket or cooler. Do this as close to your release as possible to ensure your fish have enough oxygen for the transit time. Keeping the water cool during transit will help to maintain dissolved oxygen levels in the water.
   d. Put a lid on your bucket that allows for airflow (this might mean poking holes in the lid).

2. Ensure that you have your **Fish Research License and Final Project Report** with you.

3. Travel to the approved waterbody. If for some reason you are no longer able to release your fish on your confirmed date, please call 403-297-6561 and ask for the FinS Team to arrange an alternate date.

FISH RESEARCH LICENCE

All equipment and supplies that are in contact with the Aquarium water must be disinfected following your release.

This includes the container you transport your fish in and any ice packs you use to keep the water cool.

Step 2: Water quality testing

Prior to releasing your fish at your release site, you and your students must ensure the water quality of the waterbody is appropriate for the survival of your rainbow trout by testing and reporting on:

- Temperature
- pH
- Dissolved Oxygen
- Turbidity

If the water quality is appropriate, you can then release your fish, as per your FinS release training.

1. Put your bucket or cooler of fish in a cool area (in the shade) and leave the lid ajar while completing your water quality testing.

2. Collect some water from the waterbody in a container or bucket.

3. Use your thermometer to measure the water temperature from the container or bucket. **Record the temperature on your final**

WATER QUALITY

- **Dissolved Oxygen: > 4 (pink)**
- **pH: 5.5 – 9**
- **Temperature: 0 < and < 21**
- **Turbidity: clear to moderately murky**

project report.

4. Use your thermometer to measure the water temperature of the bucket or cooler containing your fish. You do not need to record this value.

5. Using the clean Tupperware collect a sample of water. To complete your turbidity test simply note the colour and turbidity (murkiness) of the water. **Record what you see on your final project form.**

6. Follow the steps outlined in your pH test kit to measure the pH of the waterbody. **Record the pH level on the Final Project Report Form.** Once your test is complete, empty the vial contents into a garbage can or your wastewater container.

7. Fill your second vial (from the ammonia test kit) ¼ full with water from the water body. Put on a glove before emptying the dissolved oxygen tablet into the vial. Hold the lid on tightly and shake the vial until the tablet has fully dissolved. **Record the colour of the water in the vial on your final project report form**. Once your test is complete, empty the vial contents into a garbage can or into your container of wastewater to properly dispose of back at school.

8. If all of your water quality testing falls within the healthy habitat ranges, you can now prepare to release your fish. If they do not, **please call 403-297-6561 and ask for the FinS Team** before continuing with your release activities.

Step 3: Prepare your fish for release

1. Hand out clean Ziploc bags or containers to anyone releasing a fish.

2. Fill bags or containers ½ full with water from the bucket or cooler that contains your fish.

3. Net fish and transfer them to the prepared bags or containers.

4. Keep the bag or containers open to allow for air exchange.

Step 4: Release your fish

If the temperature in the bucket or cooler containing your fish differs by 2 or more degrees from the temperature of the waterbody, your fish will need to be acclimatized before they are released.

1. Hold bag or container in the waterbody for 5 minutes.

2. Add some water from the waterbody into the bag or container (without releasing your fish)

3. Hold the bag or container in the water for another 1-2 minutes.

4. Tip over the bag or container into the water and let the fish swim out.

   If there is any water left in your bucket or cooler from transporting your fish, do not empty it into the waterbody. Remaining wastewater should be returned to your school sanitized with bleach and properly disposed of.

Step 5: After your release

1. Throw out all Ziploc bags. These cannot be safely reused, as there is always a risk of spreading aquatic invasive species, bacteria or disease from any waterbody.

2. Disinfect all of your release equipment and supplies, including footwear, and follow the steps outlined in your technical manual to disinfect your Aquarium upon returning to your school. How to disinfect your Aquarium video available on the FinS Resource portal.

3. Submit a copy of your final report to the FinS Team by email, no later than June 30. The submission of this report is required to take part in the program in the next school year.

End Of Year Clean Up

The cleanup, disinfection, and storage of your Aquarium system and equipment are important to ensure a healthy, disease free environment for future eggs and fish. Attention to the little details now will avoid expensive repairs or maintenance next year.

Your FinS system should be drained and thoroughly cleaned immediately after the release of fish in the spring. Stagnant water, if left in the unit, will soon start to smell and become a medium for bacterial growth.

Health and Safety

You are working with vinegar and bleach to disinfect your FinS aquarium.

Do not mix bleach and vinegar together toxic gases called chloramines are produced.

Be sure to always read the product label before using a cleaning product.

Please review the safe job procedures in Appendix G.

When disinfecting and cleaning your Aquarium remember;

- Limit the amount of time you are using products that give off fumes
- Wear proper Personal Protective Clothing (PPE)
- Gloves
- Goggles
- Apron
- Closed toe footwear
- Use cleaners in properly ventilated rooms
- Tightly close containers after use
- Keep all cleaners properly labeled
- Stop using products if you become dizzy, sick or develop a headache

If bleach and vinegar come into contact during the disinfection, leave the area immediately and restrict access to the room, if possible.
Call Alberta Poison and Drug Information Service at 1-800-332-1414.

DISINFECT AQUARIUM

All equipment and supplies that are in contact with the Aquarium water must be disinfected following your release.

FinS Resource Portal – bowhabitat.alberta.ca/programs/fish-in-schools-resource-portal.aspx

How to disinfect your aquarium

Clean Up Preparation

Please keep the following principles in mind as you begin the cleanup and disinfection process:

1. Disinfectants work only on a clean surface. You cannot disinfect dirt!
2. All disinfectants have a specific contact time to destroy target organisms. Ensure the equipment are **submerged** in the disinfectant for the specified time.
3. All disinfectants, especially chlorine, are corrosive and will damage equipment if used at inappropriate concentrations or if left too long. Measure all amounts carefully and be sure all surfaces are thoroughly rinsed after the specified contact time.
4. Because many fish diseases are waterborne (i.e. passed from fish to fish through the water), it is important to disinfect all components of your unit that have been wet. For example, Buckets, Net, Thermometer, Aquarium, Under Gravel Filter, etc.
5. All disinfectants should be handled with caution, using appropriate hand and eye protection to prevent personal injury.

If you are using a stronger or weaker concentration of bleach, your disinfection solution may vary. Commercial grade bleach can be greater than or equal to 12% sodium hypochlorite.

Your solution MUST equal 300 ppm of chlorine, which will depend on the strength of your bleach.

Examples:

Low: 3% sodium hypochlorite bleach – use 10 ml of bleach for every 1L of water

Household: 5% sodium hypochlorite bleach – use 6 ml of bleach for every 1L of water

Commercial/Industrial: 12% sodium hypochlorite bleach – use 3 ml of bleach for every 1L of water

AQUARIUM CLEAN UP SUPPLIES

Be prepared with the following supplies:

- Glass cleaner (vinegar and water)
- Bleach
- Disposable wipes (paper towel)
- Cloths/rags
- Rubber Gloves
- Measuring Cup
- Buckets (x2)
- Wash Tub
- Siphon
- Scrub brushes
- Sieve
- **NO SOAP** as it will leave a residue harmful to fish!

Step 1: Disassemble and cleanup

1. Unplug the Chiller, Aerator, and Fluval Filter. Remove the Aerator and set aside. If you are using an older custom Chiller, leave the heat exchange coil in the Aquarium until the Aquarium has been emptied.

2. Siphon water from your Aquarium into your wastewater bucket. For a 20L pail add 120 mL of undiluted household grade bleach to the pail, mix and let sit for 10 minutes then pour down the drain. Repeat until the Aquarium is empty. **This procedure is mandatory to meet the terms of your Fish Research License.**

3. Remove the gravel (small rocks) from the Aquarium then transfer to your pail and fill with enough water to cover the gravel.

a. If you are using grit #2 you must discard the grit. Add enough bleach as suggested in the 'Note' above, stir and let sit for 10 minutes. Pour the water down the drain and discard the gravel. This gravel **cannot** be adequately cleaned and must be **replaced annually.**

b. If you are using standard Aquarium gravel you can clean, disinfect and reuse it up to four times (unless there has been a disease/fungus outbreak).

i. Add a vinegar solution and let sit for a few minutes. Stir and agitate (using a brush is ideal) to loosen any organic materials. Pour the vinegar solution down the drain.

ii. Rinse and repeat with water until most of the organic materials have been removed. Once the gravel is completely rinsed then add enough bleach as suggested in the 'Note' above. Stir and let sit for 10 minutes.

iii. Pour excess water down the drain. Using a sieve collect the gravel from the bucket and lay flat onto a protected area (clean garbage bag with paper towels to soak up any additional water). Let the gravel dry for up to 48 hours.

Aquarium gravel should only be reused up to 4 times then new gravel should be purchased. It is important that the gravel be rinsed well and left to dry out completely.

4. Disassemble all components, since fish waste finds its way into every nook and cranny. Remove and scrub the Under Gravel Filter, Tube Mounts, Riser Tubes, Aerator, Fluval Filter hoses, AquaStop, and Outflow Strainer. Rinse well with clean water and scrub with a hose brush to remove all grime.

REMINDER

Do not mix bleach and vinegar together as it produces toxic chlorine gases called chloramines.

5. Place the Aquarium on the floor or on a lower surface so that it is easy to clean. It is also handy to clean near a utility drain (usually found in utility or custodial rooms/closets). If you are using an older Chiller unit, make sure you slide the empty Aquarium carefully out from under the heat exchange coil to move. Be careful not to kink the Corrugated Hose.

6. Scrub the Aquarium thoroughly with rags and brushes to dislodge all fish waste, rinse out the grime with water, and then use a vinegar and water solution to finish the job. (The heat exchange coil should also be cleaned if your system has one.)

7. Clean off any visible grime from the external surfaces of the Aerator, thermometer, net, and stainless steel well (which holds the temperature sensor for the older Chiller unit).

8. Disassemble the Fluval Filter (it is best to do this in a flat square tub or sink as water may leak onto the floor). Disinfect the filter media (BIOMAX, Carbon and Ammonia Remover) with bleach solution and dispose of filter media in the garbage.

a. Add a capful of bleach to the water in the filter canister and let sit for 10 minutes to treat the water.

b. Pour the water down the drain and rinse the canister with clean water.

c. Do not use cleaning agents on the canister, however, you can let it sit in a warm solution of water and vinegar then scrub the inside components. You may also use the vinegar solution to clean other parts of the Fluval Filter including the rubber elbows, Corrugated Hose, Aquastop, and the underside of the Fluval Filter lid. Be sure to remove the impeller cover for thorough cleaning with a brush and that you clean around the rubber gasket.

Step 2: Disinfection

Once all wet parts of your FinS unit are clean from grime and fish waste, they must be disinfected with a 300 ppm chlorine solution (see ‘Note’ on previous page). In order to disinfect the Chiller, start water flow and continue to run for 3 hours to disinfect the internal components.

1. Set up the complete system in order to have water run through the system again. Place the Under Gravel Filter in the bottom of the Aquarium.
2. Add water to fill the Aquarium. Start the flow of water.

3. Once flow has been established, add 700 ml of household grade bleach to the system (for a 28-gallon aquarium).
4. Add Thermometer, Net, and any other used components into the Aquarium for 30 minutes then remove, rinse with clean water and let air dry.
5. Allow the system to run for 3 hours.
6. Have 20 L pails (with handles) ready to collect and dispose the water. An additional person to assist will allow this part to run more smoothly and much faster.
7. Turn off any power sources if applicable. You are going to collect the water out of the system simply by utilizing the existing flow of water. Take the hose with the water outflow from the Chiller (water being directed back into the Aquarium) and place into an empty pail (or drain). When the pail becomes full then move the output hose into another pail to collect more water or back into the Aquarium if you need more time (if you are working alone). Empty the first pail and return to collect more of the wastewater. Your disposal drain needs to be close by if this system of removing the water is going to work efficiently.
8. Continue to fill the pails and dispose of the water until the Aquarium has been emptied.
9. Disassemble components and let air dry. Be sure to empty the excess water from the Fluval Filter and let it dry as well. Remove all hoses, let dry. **Do not tip the Chiller to drain the water.** Simply leave the caps off the hose outlets in order to let any internal bleach evaporate.

Step 3: Storage

All components of your FinS unit should be completely dry before storage with the exception of the Chiller (which should be stored with water in it). The unit can be left ready to set up if the unit will be stored in a secure, warm environment, otherwise all components should be packed up into their original packaging or other storage container.

If the system will be left partially set up, ensure that the Aquarium is covered as well as all of the components (items can be put away into cabinet or kept in the Aquarium and covered).

Appendix

Appendix A: Setting Up the Aerator (AquaClear Powerhead 30)

The names of the unit parts in this section come from the productions manual.

1. Attach the adjustable Aquarium rim attachment to the motor unit.
2. Attach the clear air hose to the top of the impeller housing.
3. Attach the clear air hose around the adjustable Aquarium rim attachment.
4. Attach the other end of the clear air hose to the Venturi valve.
5. Attach the stem adaptor to the swivel strainer plate.

SET UP TIP

Use the picture from the instructions within the AquaClear Powerhead 30 box to match the names of each part.

Appendix B: Repurposing the Intake Assembly for Chiller Outflow

1. Take the inflow assembly from the packaging of the Fluval Filter.

2. Take apart the outflow head.

3. Remove the ball from the (from the bottom) by cutting out the plastic ring that is currently holding the ball in place.

4. Remove the ball.

5. Reassemble the outflow head and connect it to the rigid plastic rod.

Appendix C: Daily Monitoring Checklist

Complete this checklist daily in additional to specific actions based on the ATU Milestones and current developmental stage of your rainbow trout.

- ❑ Refer to the ATU Milestones chart for observable moments (i.e. fish hatching) or teacher interventions (i.e. feed changes).
- ❑ Turn off fluorescent lights in the classroom (during the egg and alevin stage only).
- ❑ Remove the Coroplast cover.
- ❑ Record the temperature, calculate and record the ATUs on the FinS Fish Health Spreadsheet.
- ❑ Ensure that the Chiller is plugged in and its thermostat is set between 8˚C and 10 ˚C (46˚F and 50˚F).
- ❑ Ensure water is flowing out of the Outflow Strainer in the aquarium.
- ❑ Ensure that the Aerator is aerating water and is creating flow at an appropriate rate for the fish life stage.
- ❑ Check water level in the Aquarium and top up as necessary with AquaPlus treated water (treat at the chlorine removal rate) to replace water lost due to evaporation.
- ❑ Replace the Coroplast cover.

FISH CARE

Explain to your students and custodian how important fluorescent lights and continuous power supply are to the Aquarium, Chiller, circulation and filtration systems.

Appendix D: FinS Feeding Chart for 65 Fish

ATU's	Feed	Weekly Feed (grams)	Daily Feed (grams)*	Daily Feed (tsp) **
550 – 620	#1	3	0.6	= 1/8 tsp
620 – 690	#1	3	0.6	= 1/8 tsp
690 – 760	#1	4	0.8	> 1/8 tsp
760 – 830	#1	5	1	< 1/4 tsp
830 – 900	#1	6	1.2	= 1/4 tsp
900 – 970	#1	8	1.6	> 1/4 tsp
970 – 1040	#2	9	1.8	> 1/4 tsp
1040 – 1110	#2	11	2.2	< 1/2 tsp
1110 – 1180	#2	12	2.4	= 1/2 tsp
1180 – 1250	#2	14	2.8	>1/2 tsp
1250 – 1310	#3	16	3.2	< 3/4 tsp
1310 – 1380	#3	19	3.8	= 3/4 tsp
1380 – 1450	#3	21	4.2	> 3/4 tsp
1450 – 1520	#3	24	4.8	= 1 tsp
1520 – 1590	#3	27	5.4	= 1 1/8 tsp
1590 – 1660	#3	29	5.8	> 1 1/8 tsp

*Based on your fish being fed 5 days a week (excluding weekends).

**Since it is not likely you can measure the feed to two decimal places, refer to this column to indicate an amount in relation to a teaspoon. These amounts are not exact so please consider this as a guideline only.

FISH CARE

It is better to under feed your fish than to over feed them.

Adjustments:

Account for any mortalities that occur in you daily fish food rations as the FinS Feeding Chart is calculated for 65 surviving fish. If significant amounts of fish die, correct your feeding rate by subtracting a percentage from the total feed to ensure that your fish are not overfed.
Example: If you suffer a 20%, or 0.20 mortality rate:

Multiply the total grams/day by 20%
2.0 grams/day X 0.20 = 0.40

Then subtract this number from the original total grams/day.
2.0 grams/day – 0.40 = 1.6 grams/day. Therefore the new daily ration, factoring in a 20% mortality rate would be: 1.6 grams/day.

Appendix E: Troubleshooting Guide

The FinS Aquarium is a complex mini-ecosystem with many components working together to create a healthy environment for your fish. We have compiled a list of issues below that may occur, and possible solutions to those issues.

TROUBLE-SHOOTING

If you are ever unsure on how to respond to an issue, please email the FinS team at fins.program@gov.ab.ca.

In emergency cases, please call Bow Habitat Station at 403-297-6561 and ask for the FinS Teams.

Water Changes

Please follow water changes schedule as best as possible. Staggering regular water changes allows recovery time for both the fish and for beneficial bacteria.

When performing a water change, remove at least 8L of the tanks wastewater from your Aquarium at each cleaning, and replace with Nutrafin AquaPlus treated water. Below are details on the recommended schedules for regular and increased water changes:

1. **Regular water changes**: happen twice a week, ideally on Mondays and Thursdays, or Tuesdays and Fridays. Your regular water changes schedule may be on different days depending on what works best for your school.
2. **Increased water changes:** happen three to five times a week, ideally on Mondays, Wednesday and Fridays or daily. Increased water changes when there issues occurring in your tank.

Many issues can be resolved by increasing the number of water changes (indicated in the below outlined issues). Once the issue is resolved, return to a schedule of **regular water changes.**

pH Levels

Starting at 970 ATUs, test and record the pH levels every other day (before doing a water change). Optimal pH range is typically 6.5 to 9.0.

pH exists in equilibrium and can have a wide range of variation. Different water sources have different pH values based on the amount of dissolved minerals and ions. Your community's water might have naturally higher or lower levels of dissolved minerals and ions, which might influence the pH in your Aquarium.

Trout are remarkably adaptable and **adjust best to slow changes over time.** Making drastic adjustments to pH may have dire consequences. **Before taking any action, consider how the fish are behaving, and decide whether it is necessary to start increased water changes.**

Ammonia Levels

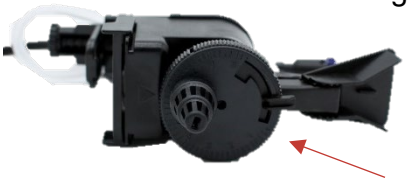
Start ammonia testing before your complete your water changes at 970 ATUs. The optimal ammonia level is typically below 1mg/L.

Ammonia is a naturally occurring, but is also a harmful by-product of protein breakdown. Within your Aquarium, ammonia accumulates from fish urine, feces, respiration, and the breakdown of excess food. High levels of ammonia in your tank can lead to rapid mortalities.

If ammonia levels rise above 1mg/L increase water changes until the ammonia level return to an optimal level.

Reduce feed by 50% until ammonia level is back in a healthy range.

Equipment Failure/Noise(s)

Issue	Solution
Aerator (AquaClear Powerhead 30) - making loud noises	If the water level drops below the Aerator, it will be very noisy. Ensure the Aerator is submersed at the appropriate level in the water. If the Aerator is submersed at the appropriate water level, loud noises may be caused by debris caught in the impeller. Unplug and remove the Aerator from the tank. Open the stem adapter and remove any debris that may be causing components of the Aerator to grind.
Aerator (AquaClear Powerhead) - spraying water too strong	There are two ways to control the flow of water: 1. The Venturi valve (attached to the end of the clear tube). 2. A small lever underneath near the connection of the stem adaptor. Redirect the flow of water to the edge of the tank to reduce the amount the strength of the outflow.  Slide the lever back and forth to control the flow of water.

Aerator (AquaClear Powerhead) – sucking up fish	1. Ensure the flow rate of your Aertaor is appropriate for the ATU's of the fish (see Fish Development & Care section, under Environmental Conditions: Oxygen). 2. Block gaps around tubes and underside of the Aerator. a. Unplug Aerator and remove from Aquarium. b. Ensure that the Swivel Strainer Plate and Output Stem Adapter are attached. c. Use sponge or nylon material to fill gaps around tube and Aerator. Allow for water to be drawn and fish to be blocked.

Water Leaking

Issue	Solution
Leaking from Fluval Filter	Ensure the AquaStop valve is fully secured to the filter, and the silver (305 model) or red (306/307 model) locking lever is pushed down to secure it in place. Ensure hoses are securely attached to the rubber connectors on the AquaStop valve. Ensure the clasps on the sides of the filter are both snapped closed. If water appears to be leaking from the sides of the filter, close the AquaStop valve by flipping the lever up. Remove the filter lid by lifting the silver or red locking lever. Open the filter canister using the clasp handles on either side of the filter. Check that the gasket (rubber band) on in the inside of the lid fits tightly but is wet to the touch. If necessary, remove the gasket from the filter lid and lubricate it with petroleum jelly. Replace the gasket and reattach the lid to the filter, remembering the start the flow of water again by pushing the lever down.

Leaking from Chiller	Ensure the hose tubing connectors are tightly secured on the chiller (use a screwdriver to tighten). Ensure flexible tubing is attached to the hose tubing connectors. Tighten hose clamps if connections are loose.
Leaking from Aquarium	Check around your Aquarium for obvious wetness or leaks. Look for any metal that has become separated from the glass or any protruding sealant. If there is obvious wetness, feel the edges of the Aquarium for wetness and move your fingers upwards until you find a dry patch. If you have targeted a potential leak, contact the FinS Team immediately.

Water Conditions

Issue	Solution
Water appears tinted green/yellow	Dissolved organic compounds can cause discolouration from decaying plant or animal material (waste / leftover food). Reduce feeding by 50% until the water clears. Tanks with excess food waste or fish deaths should move to a schedule of increased water changes to clean the tank. Foamy water or water that foams when shaken is an indicator of dissolved organics in the water. Move to a schedule of increased water changes to clean the tank, and: Remove all decaying materials to clean your Aquarium. Ensure the Fluval Filter is running at normal output. If the filter is running slowly, it may be clogged with debris (another potential source of organics).

REMINDER

Start pH testing every two days and recording at 970 ATUs. Optimal pH range is typically 6.5 to 9.0**

Water is murky/cloudy	Water will appear murky when first added to the Aquarium. Allow time for sediments from the grit to settle before taking any action. Presence of residual phosphates or heavy metals may cause murky water. This will increase your pH level. If the pH is high for your range (check your daily recording for range), move to a schedule of increased water changes until the pH returns to your tank's normal range. If the murkiness remains, there may be a bacterial bloom in the Aquarium (often caused by excessive organic waste). Allow time for bacteria to create its cycle first. It is not abnormal for cloudy water to correct itself. Continue removing waste through a schedule of increased water changes, and reduce the amount of feedings by 50% until the water clears.
Water pH is reading outside range of 5.5 – 9	pH issues should be able to remain constant if you adhere to a schedule of regular water changes, and remove any waste material on a regular basis. It is recommended to monitor pH for 3 days before making changes to your water change schedule while continuing to monitor fish behavior and conditions. Should pH levels continue to increase/decrease move to a schedule of increased water changes until pH goes back to the optimal range.

Fish Behaviour and Condition(s)

Issue	Solution
Fish with blotchy or patchy black marks	This may be the fry developing their Parr marks (vertical black stripes) on the side of their body (refer to 'Caring for You Fish' section of manual). Dark colours may be caused by ammonia burns resulting from an excess of fish waste/uneaten food in the tank. If fish are behaving irregularly as well as displaying blotchy or patchy black marks, move to a schedule of **increased water changes.**

Remove all dead fish from the Aquarium as soon as you notice them! Deceased fish release ammonia into the water, which can lead to more fish fatalities.

Fish turning dark in colour	Darkness can be a result of low exposure to light. At hatcheries, fish in low light conditions (or covered) tend to be a darker colour – sometimes turning completely black. Moving fish into areas with more light will often result in the fish returning to a lighter colour. If fish are swimming irregularly, move to a schedule of **increased water changes.**
Fish sitting at the bottom of the tank	This could be a result of high levels of fish waste and decomposing excess food. Move to a schedule of **increased water changes**. Inactivity of your fish may also be a sign of ill health. **Check for signs of fungus** or bacterial growth on their bodies. If growths are apparent, see issue: fish with white growth(s) or fuzzy appearance. Fish sitting on the bottom of the tank may be a result of nitrogen saturation in the water caused by leaks in the system where air could be drawn in. **Check connections to ensure hose clamps are tight**, and move to a schedule of increased water changes.
Fish with white growth(s) or fuzzy appearance	Fin rot or water mould are caused by fungi or bacteria. **Remove affected fish for treatment**: Isolate affected fish in a separate container filled with cold tap water pretreated with Nutrafin AquaPlus. Add salt (about 10 g of salt for every litre of water) to remove the bacteria. Move to a schedule of **increased water changes.** If bacteria are in the water, they will continue to multiply and infect other fish. If the condition does not improve in one week, contact the FinS Team.

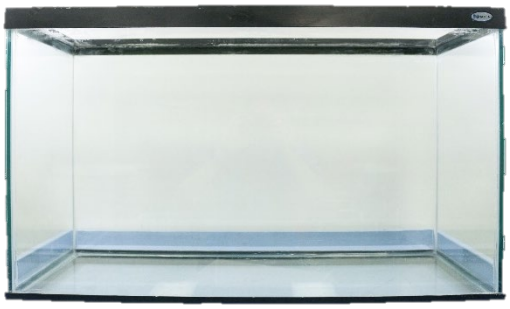
Fish Behaviour and Condition(s)

Issue	Solution
Fish "gulping" for air at the surface	Typically, an indication fish are not getting enough oxygen. Ensure the Aerator is aerating and creating flow in your Aquarium. Ammonia and nitrites can make it difficult to extract oxygen from the water. Check the pH levels and move to a schedule of **increased water changes,** if necessary.
Fish with excessive waste hanging from body	Fish producing high quantities of waste are likely being overfed. Check the amount being fed to the fish daily, remembering to make adjustments for mortalities.
Excessive uneaten feed on the bottom of the aquarium	Excess food may have negative effects on the water quality as it decomposes; including increased ammonia levels. Should you notice excessive food, move to a schedule of **increased water changes,** and decrease the amount of food being fed until the issue is resolved.
Fish swimming in circles, sideways, or upside down	If only a few fish are showing this behaviour, it is likely a developmental issue and the fish will not survive. On rare occasions, this behaviour can indicate a swim bladder disorder or another disease; often caused by constipation and made worse by poor water quality. Reduce feeding by 50% for 3-4 days, and provide a frozen pea (skin removed) for the fish to eat. A frozen pea is almost completely indigestible for fish, and is an effective way to clear their digestive tract. Test pH levels and move to a schedule of **increased water changes.**
Fish with obvious reddened gills	Discolouration of your fish's gills is indicative of high ammonia levels. Move to a schedule of **increased water changes** immediately. Add zeolite rocks (can be found at your local pet store) in their porous container to the bottom of your tank to help with ammonia absorption.

Appendix F: Equipment and Supplies Specifications

Aquarium

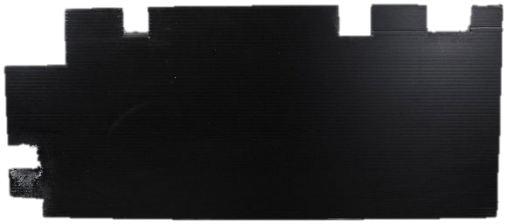
- 29 Gal (131L)
  - Dimensions: 30” x 12” x 18”
  - 76.2cm x 30.48cm x 45.72cm
- 30 Gal (136L)
  - Dimensions: 36” x 18” x 12”
  - 91.44cm x 45.72cm x 30.48cm



Find at your local pet shop.

Tank Cover

- Coroplast.
- Custom cut so that pieces fit over top of your aquarium and Styrofoam.
- Prevents excess evaporation.
- Creates shade.



Find at your local hardware store.

Styrofoam Insulation

- 1 inch extruded polystyrene Styrofoam “SM”
- Insulate aquarium to maintain water temperature.
- Eliminates excess light

Find at your local hardware store.

Under Gravel Filter

- Cover at least 60% of your aquarium floor
- Combined with gravel, supports filtration of solids from water
- Tube and tube end mounts connect to the under gravel filter.

Find at your local pet shop or online.

Aerator

- AquaClear Powerhead 30
- Maximum flow rate: 660 LPH/175 U.S. gph.
- Recommended aquarium capacity: 120 litres/30 U.S. gal.
- Creates a current to oxygenate the water.
- Connects to Under Gravel Filter.

Find at your local pet shop or online.

Water Filter – Fluval Filter

- Fluval Filter (305 or 306 or 307)
  - Holds filter media that cleans water.
- Fluval Filter components:
  - AquaStop controls the flow of water in/out of Fluval Filter.
  - Corrugated Hose (black) connects the Aquarium to Fluval Filter (via Riser Tube) and Chiller to Aquarium.
  - Rim Connector holds hoses in place on Aquarium rim
  - Outflow Strainer is modified to be used as outflow water to aquarium. Connects the Chiller to Aquarium.

Find at your local pet shop or online.

Chiller

- The chiller should be able to process your 29 - 30 gallon tank and maintain a water temperature in your system at 8˚C to 10 ˚C (46˚F – 50˚F)
- If your tank is larger than 30 gallons, ensure that the chiller has the capacity to process the volume of water in your tank.
- Temperature: 46ºF - 50ºF (8ºC - 10ºC)
- Volume (Aquarium Size): 29 – 30 Gal.
- Tubing Size Connectors: 5/8” or 3/4”
- Connects Fluval Filter to Aquarium.

Find at your local pet shop, hydroponics store, or online.

Hose Clamps

- Metal hose-clamps or compression gaskets (x2)
- Secures tubing to the Chiller

Find at your local hardware store.

Plastic Tubing

- Pliable clear or green.
- Inner Diameter: 5/8” Outer Diameter: 13/16” or 7/8”
- Length: 10 ft coil is more than enough
- Size may vary depending on your chiller in/out flow and the size of the tubing on the underground gravel filter.
- Connects the Under Gravel Filter (and Riser Tubes) to Aerator
- Connects the Fluval Filter to the Chiller
- Connects the Chiller to the Outflow Strainer.

Find at your local hardware store.

Gravel or Granite Grit (size 1 or 2)

- Provides substrate for bacteria growth.
- Covers the Under Gravel Filter.
- Gravel can be sanitized and reused up to 4 times.
- Granite must be disposed of at the end of the season.

Find at your local pet shop or online.

Floating Thermometer

- Measures Aquarium temperature

Find at your local pet shop or online.

Siphon

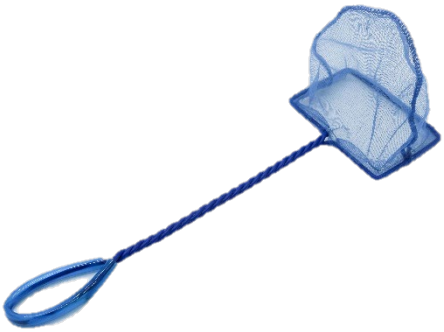
- Used for water changes and regular Aquarium maintenance
- Select one that can reach to the bottom of the tank to clean the gravel without holding your hand in the water.
- Simple design siphon and hose. Do not need a pump attachment.

Find at your local pet shop or online.

Fish Net

- Small mesh net.
- Used to remove any mortalities from your Aquarium.
- Used to collect fish for release in the spring.

Find at your local pet shop.



Incubation Basket

- Houses eggs and alevin.
- Prevents alevin from burrowing into the gravel
- Floating fish hatchery.
- Must have slits or holes on the sides for water to pass through.
- No holes on the bottom.

Find at your local pet shop or online.

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5 Gallon Buckets

- Used for Aquarium water changes.
- Reserve one bucket for treated tap water and one for wastewater.
- If possible, have them be different colours or shapes to avoid accidents.

Find at your local hardware store.

Appendix G: Safe Job Procedure for Disinfecting and Cleaning FinS Aquarium

Scope

This Safe Work Practice (SWP) will provide a set of guidelines or "Do's and Don'ts" that have been developed to mitigate hazards associated with this work task.

The cleanup, disinfection and storage of your FinS unit are important to ensure a healthy, disease free environment for future eggs and fish.

Procedure

After disinfecting your aquarium and/or equipment with bleach or vinegar, rinse the aquarium and/or equipment with water before continuing to the next step in the Technical Manual.

Disassemble and cleanup:

- If you are using standard Aquarium gravel you can clean, disinfect and reuse it up to four times.
- Clean the Aquarium thoroughly with an all-purpose cleaner, rinse out the grime, and then use a vinegar and water solution to finish the job.
- Disassemble the Fluval Filter (it is best to do this in a flat square tub or sink as water may leak onto the floor).

When cleaning and disinfecting aquariums remember to:

- **NEVER mix bleach and vinegar together**.
- If bleach and vinegar are mixed, call **Alberta Poison & Drug Information Service at 1-800-332-1414.**
- Limit the amount of time you are using products that give off fumes
- Wear gloves and protective clothing to protect your skin, as well as goggles to shield your eyes from splashes and fumes
- Use cleaners in properly ventilated rooms
- Tightly close containers after use to prevent release of fumes
- Keep all household products in their original labeled containers
- Never reuse product containers for anything else
- Stop using a cleaning product if you become dizzy, sick to your stomach, and/or develop a headache
- Work in a well ventilated area

Do not mix bleach and vinegar together toxic gases called chloramines are produced. Exposure to chloramine gases can cause the following symptoms:

- Coughing
- Nausea
- Shortness of breath
- Watery eyes
- Chest pain
- Irritation to the throat, nose, and eyes
- Wheezing
- Pneumonia and fluid in the lungs
- Never smoke when using flammable products

Personal Protective Equipment Required

- Gloves
- Goggles
- Apron
- Closed Toe Footwear