

ADDENDUM A

Water & Food: Zero to Full Competency

Why This Addendum Exists

Chapter 1 tells you what to have and do at each tier of a disruption. It does not tell you how to actually get good at water treatment, food preservation, or growing your own food if you're starting from zero. This addendum is a skill-building curriculum for exactly that: a structured path from no relevant knowledge to genuine, tested competency in Water & Food, built from real Utah programs, certifications, and hands-on practice, not just reading lists.

It's organized by skill stage, not by disaster duration, because building competency isn't duration-bound the way disaster response is. You can be at Stage 3 in food preservation and Stage 1 in foraging at the same time; that's normal and expected. Move through each stage at whatever pace your life allows, and treat the self-check at the end of each stage as the actual gate, not the time spent.

Four stages: Foundations (basic safe practice), Applied Practice (hands-on competence), Self-Sufficiency (independent, resilient skill), and Mastery & Teaching (able to teach others and operate at community scale). Each stage covers three sub-skill tracks that run in parallel: water, food preservation and storage, and food production.

Stage 1: Foundations (Awareness)

Goal: know the core safety facts well enough to not hurt yourself or your household, and understand the landscape of what's ahead. This stage is readable in a weekend; it's meant to be the floor everyone in the household clears quickly, not a deep skill.

Water: Core Knowledge

The two things that actually matter at this stage: knowing which water treatment method fits which situation, and knowing how much water a household actually needs. Chapter 1's Tier 1 section already covers the practical dosing (bleach, chlorine dioxide tablets); this stage is about understanding why those methods work and where they fail. Boiling kills essentially all pathogens but does nothing for chemical contamination. Chlorination (bleach or tablets) is effective against bacteria and most viruses but doesn't reliably kill some protozoan cysts like *Cryptosporidium* at typical household dosing. Filtration mechanically removes particles and many pathogens

depending on pore size, but a filter rated for bacteria isn’t automatically rated for viruses, which are smaller. No single household method handles every contamination type; that’s why the CDC and EPA recommend combining methods (filter, then disinfect) when the water source or contamination type is unknown. See the Water Purification skill guide for the full method-by-method comparison.

Food: Core Knowledge

The core food-safety concept at this stage is the “danger zone”: bacteria multiply fastest between 40°F and 140°F, which is why the 2-hour rule (4-hour rule above 90°F ambient) for perishable food exists. The second core concept is basic nutrition math: roughly 2,000 kcal per person per day as a baseline (more for children, nursing mothers, larger adults, or anyone doing physical labor), covered in Chapter 1’s Tier 1. At this stage, you don’t need to know how to preserve food yet; you need to know how to keep what you already have safe, and roughly how much you’ll actually need to store or produce.

Stage 1 Learning Path

Resource	Cost / Format	Notes
CDC Emergency Water Treatment guidance	Free, online	cdc.gov. Read this first; it's the source for Chapter 1's dosing guidance and explains the reasoning, not just the numbers.
EPA Emergency Disinfection of Drinking Water	Free, online	epa.gov. Complements the CDC guidance with the regulatory/technical side of water treatment method effectiveness.
National Center for Home Food Preservation (NCHFP)	Free, online, nchfp.uga.edu	University of Georgia's USDA-funded research center; the authoritative, science-based source for every home preservation method (canning, freezing, drying, fermenting, curing). Read the “Guide Part 1: Principles of Home Canning” section first.
So Easy to Preserve (UGA Cooperative Extension book)	Free PDF or ~\$25 print, 6th edition	The NCHFP's companion book; 388 pages covering canning, pickling, jams, freezing, and drying in one reference. Worth owning in print per Chapter 9's archival-library guidance.

Stage 1 Practice Exercises

- **Do the water math:** Calculate your household’s actual daily water need (1 gal/person/day minimum, more for pets, cooking, and hygiene) and compare it against Chapter 1’s stored quantity. Most people are surprised how much a 4-person household actually needs for 14 days.

- **Practice the treatment decision:** Given three scenarios (cloudy stream water, tap water during a boil-water notice, water from a compromised municipal line after an earthquake), decide which treatment method or combination you'd use for each, and explain why.
- **Read one full NCHFP guide section:** Pick one preservation method you don't currently use (canning, dehydrating, or freezing) and read its full NCHFP guide section, not just a summary.

Self-Check: Ready for Stage 2?

You should be able to explain, without looking it up, why boiling and chlorination aren't interchangeable, state your household's actual daily water requirement in gallons, and describe the 2-hour/4-hour perishable food rule. If any of those requires a lookup, stay in Stage 1 a little longer; the applied practice in Stage 2 assumes this is automatic.

Stage 2: Applied Practice (Competent)

Goal: move from knowing the theory to having actually done it, under real (if low-stakes) conditions. This stage is hands-on by design; reading about canning is not the same skill as having canned. Expect this stage to take a few months, mostly gated by class schedules and growing/harvest seasons rather than effort.

Water: Applied Practice

- **Practice treatment methods for real:** Actually treat a batch of water with household bleach at the correct dose, and separately with a filter you own. Taste the difference, time the process, and confirm you can do it without instructions in front of you.
- **Build and test a rotation system:** Set up whatever water storage Chapter 1 calls for, and actually run the 6-month rotation cycle once, including relabeling and treating on the way back into storage if using a treatment additive.
- **Practice a boil-water response:** The next time your area issues a boil-water notice (or simulate one), follow it for real: boil for the recommended time, let it cool, and use it, rather than defaulting to bottled water.

Food: Applied Practice

- **Take a hands-on preservation class:** USU Extension's Home Food Preservation Series (canning and dehydrating, roughly \$6/class) is specifically designed as a low-cost, low-commitment entry point. Attend at least two sessions covering different methods. See the Food Preservation skill guide for tested processing times and methods to practice against.

- **Can or dehydrate a real batch:** Complete one full preservation run start to finish, following a tested NCHFP recipe exactly (not an heirloom family recipe with unverified processing times), and record what you'd do differently next time.
- **Build a real FIFO rotation:** Set up and actually use a first-in-first-out rotation system for your stored food for at least one full month, not just as a one-time organizing exercise.
- **Build a bulk long-term supply hands-on:** The Church of Jesus Christ of Latter-day Saints operates Home Storage Centers open to the public (not just members) along the Wasatch Front, selling bulk long-term staples (wheat, rice, beans, oats, powdered milk) at low cost; several locations let you actually operate the canning/sealing equipment yourself to package your own #10 cans. This is genuinely hands-on bulk storage practice, not just an online order. See the Sealing Bulk Food for Long-Term Storage skill guide for how to package and seal what you buy.

Stage 2 Learning Path

Resource	Cost / Format	Notes
USU Extension Home Food Preservation Series	~\$6/class, in-person, Cache County and other counties	extension.usu.edu/preserve-the-harvest . Short, specific classes (canning beef, canning vegetables, dehydrating jerky, etc.); check your county's extension office for local scheduling, since offerings vary by county.
USU Extension Food Safety resources	Free, online	extension.usu.edu/foodsafety . Complements the preservation classes with the food-safety reasoning behind each processing time and method.
A tested pressure canner or dehydrator	\$80–\$250 depending on equipment	Buy once, good quality; an under-processed low-acid canned good is a real botulism risk, so this isn't a place to cut corners on equipment reliability.
LDS Home Storage Centers	Low-cost bulk goods; open to the public	churchofjesuschrist.org/life/home-storage-centers . Find your nearest Wasatch Front location; some offer self-service canning stations for packaging your own bulk purchase.

Self-Check: Ready for Stage 3?

You should have physically completed at least one full water treatment cycle and one full food preservation run, not just read about them, and you should be able to do both again without referring back to instructions for the core steps. If you've only read the material so far, that's still Stage 1 competency regardless of how much you've read.

Stage 3: Self-Sufficiency (Proficient)

Goal: genuine independence from the supply chain for meaningful stretches of time, the actual skill level Chapter 1's Tier 3 assumes a household has. This stage is a real commitment, typically a full growing season plus a multi-week course sequence, and produces skills that don't degrade quickly once built.

Water: Self-Sufficiency

- **Understand your legal water sourcing options:** Work through Utah's actual rainwater harvesting rules (up to 200 gallons in up to 2 containers registered for free at waterrights.utah.gov; larger systems need a water right) and, if relevant to your property, research well water rights and permitting through the Utah Division of Water Rights. See the Legal Rainwater Harvesting in Utah skill guide for the full registration process and system sizing.
- **Build redundant treatment capability:** Own and know how to use at least two independent water treatment methods (e.g., a quality filter plus chemical disinfection) so a single point of failure doesn't leave you without safe water. The Building a Biosand Water Filter skill guide covers one low-cost, durable option worth adding to that redundancy.
- **Understand your local watershed:** Know where your area's water actually comes from (Wasatch Front municipal supplies are largely snowpack-fed surface water and groundwater) and what could plausibly contaminate or disrupt it; this shapes which Tier 3 water sourcing options are realistic for your specific property.
- **Build real skill sourcing and testing water outside your stored supply:** Know how to actually haul water from an outside source, test water of unknown quality before relying on it, and collect water from snow, dew, or condensation when nothing else is available, the practical skills behind Chapter 1's Tier 3 self-sufficiency assumption. See the Sourcing & Hauling Water, Water Testing, and Collecting Water From Snow, Dew & Condensation skill guides.

Food: Self-Sufficiency

- **Complete a real preservation certification:** USU Extension's Master Food Preserver course (hands-on workshops, based in Salt Lake City) goes well beyond the Stage 2 classes into a genuine, in-depth certification covering the full range of preservation science.
- **Complete a real production certification:** USU Extension's Master Gardener Program is 13–14 weeks of college-level lecture and hands-on training (botany, soils, irrigation, pest management, and more), offered at 13 locations across Utah, plus a 40-hour volunteer service requirement to receive the certificate.

- **Learn regional wild foods:** Utah-specific foraging instruction (for example, Edible Wilds LLC's classes and book, or Wild Utah Edibles' guided tours) teaches identification of genuinely local wild edible plants; this is a real skill with real poisoning risk if self-taught from a generic national guide that doesn't account for regional look-alikes. See the Foraging Wild Edibles Basics skill guide for the specific deadly look-alikes worth knowing before any class, not as a substitute for one.
- **Run a real growing season:** Grow, harvest, and preserve at least one meaningful crop from your own property through a complete season; this is the step that actually tests whether the Master Gardener and Master Food Preserver knowledge holds up under real conditions.
- **Build real no-fuel cooking capability:** A genuinely independent food system includes a way to cook that doesn't draw down your fuel or power reserves; the Solar Cooking skill guide covers box, panel, and parabolic designs and the real conditions each one needs.
- **Build real no-power cold storage capability:** Canning and dehydrating aren't the only preservation methods; root cellaring and evaporative cooling extend produce life without processing it at all, and without power. See the Improvised Cold Storage skill guide for real crop-by-crop targets and four buildable methods.

Additional Food Production Tracks (Situational)

The three tracks below are genuinely valuable Stage 3 skills, but unlike gardening and preservation, they're not universal: legal restrictions, property size, dietary preference, and local ordinance all determine whether they're realistic for a given household. Treat them as worth pursuing if they fit your situation, not as a gate everyone needs to clear.

- **Animal protein through hunting and fishing:** Utah's Division of Wildlife Resources (DWR) requires a hunter education course to obtain a hunting license if you were born after December 31, 1965; the course (about \$12, roughly 4–6 hours online plus a required field day with a written test and live-fire exercise) covers firearm safety, wildlife management, and survival skills directly relevant to food production self-sufficiency. A fishing license is required at age 12+ (free under 12), and Utah DWR's "Fishing for Beginners" resources are a genuine, low-barrier entry point if hunting isn't the right fit. Build this skill assuming it gets harder to rely on the longer a disruption lasts, not easier: real famines and wartime shortages consistently show wild game and fish near population centers depleted by competing demand within months, so a household planning on hunting or fishing as a real Stage 3 food source should also have Chapter 4's Tier 4 community-governance skills, the same ones that cover shared resource disputes generally, not just security. See the Hunting, Trapping & Field Dressing Basics skill guide for the field-dressing side of this.
- **Small livestock: backyard poultry:** Chapter 1's Tier 3 explicitly names small livestock as part of self-sufficient food production; backyard chickens are the most accessible version for most Wasatch Front properties. Before acquiring birds, check your specific city or county ordinance: flock size limits, rooster restrictions, and whether poultry is permitted at all vary significantly by jurisdiction (Utah Code § 10-8-59 leaves this to local

land-use codes, so there's no statewide default). USU Extension maintains a dedicated poultry specialist and fact sheets specifically for science-based backyard flock guidance. See the Backyard Poultry & Small Livestock Basics skill guide for real coop space and predator-proofing specs.

- **Seed saving and seed libraries:** Buying starts or seed packets every season is a real dependency on the supply chain; saving your own seed from a successful harvest closes that gap. Utah has a genuine, free seed library network (Salt Lake City Public Library, Provo Library, University of Utah, and others), and USU Extension runs seed-saving classes and publishes a seed-saving guide. Note that open-pollinated varieties save true to type; hybrid varieties generally don't, so which seed you save matters as much as whether you save it. The What to Grow skill guide covers the actual technique: which crops are easy versus hard to save true seed from, real isolation distances, and how to store what you save so it's still viable years later.

Stage 3 Learning Path

Resource	Cost / Format	Notes
USU Master Food Preserver Course	Fees vary by cohort; contact USU Extension	In-depth, hands-on workshops in Salt Lake City. Contact USU Extension (e.g., Melanie Jewkes, 385-468-4838) to get on the list for the next cohort, since it doesn't run continuously.
USU Master Gardener Program	Fees vary by county (each county sets its own price)	extension.usu.edu/mastergardener . 13–14 weeks of training plus 40 hours of required volunteer service; offered in 13 Utah locations. Find your county's program through the USU Extension site.
Edible Wilds LLC / “Practical Guide to Utah's Wild Edible Plants”	Course fees vary; book ~\$20	Steven C. Golieb's Utah-specific foraging instruction and reference book; a genuinely regional resource rather than a generic national foraging guide.
Wild Utah Edibles guided tours	Course fees vary	wildutahedibles.com . Utah County-area guided foraging tours pairing identification with hands-on tasting and habitat context.
Utah Division of Water Rights	Free registration for small systems	waterrights.utah.gov . The authoritative source for rainwater harvesting registration and well/water-right permitting specific to your property.
Utah DWR Hunter Education	~\$12 resident, online + field day	wildlife.utah.gov/huntereducation . Required for anyone born after 12/31/1965 to obtain a Utah hunting license; the online course covers firearm safety and wildlife ID.
Utah DWR Fishing for Beginners / licensing	License required at 12+; free under 12	wildlife.utah.gov/fishing/beginners . A lower-barrier entry point into animal protein self-sufficiency than hunting.
USU Extension Poultry Resources	Free fact sheets, online	extension.usu.edu/poultry . Science-based backyard flock guidance; check your city/county ordinance before acquiring birds, since permitted flock sizes vary by jurisdiction.
Utah seed libraries (SLC Public Library, Provo Library, University of Utah, and others)	Free	Search “[your city] seed library”; most Wasatch Front library systems now run one. Pair with USU Extension's seed-saving classes and guide.

Northern Utah Note

Both the Master Gardener and Master Food Preserver programs are run county-by-county, so availability, price, and schedule differ across the Wasatch Front. Start with your own county's USU Extension office; if your county doesn't currently offer a cohort, most programs allow enrolling through a neighboring county.

Self-Check: Ready for Stage 4?

You should hold (or be actively enrolled in) at least one real certification (Master Food Preserver or Master Gardener), have completed a full growing season with real output, and be comfortable making an on-the-spot call about water safety or food safety without consulting a reference. This is the stage where you become the person your household or neighbors would actually ask. If any of the situational tracks above (hunting/fishing, backyard poultry, seed saving) fit your household, completing them is a genuine bonus toward Stage 3 readiness, not a requirement for it.

Stage 4: Mastery & Teaching (Expert)

Goal: the ability to teach others reliably, operate at a scale beyond your own household, and hold professional-level credentials where they exist. This is the stage Chapter 1's Tier 4 (community-scale, shared resources) actually depends on: someone has to be capable enough to lead it. This stage is ongoing rather than something you finish.

Teaching & Certification

- **Volunteer as an instructor:** Both the Master Gardener and Master Food Preserver programs are built around graduates teaching the next cohort or the public; this volunteer-teaching requirement is itself the mechanism that turns personal competency into community capability.
- **Pursue a professional food safety credential:** USU Extension's Food Safety Managers Certificate Program is a real, professional-level credential (the kind required of commercial food service managers) and is a legitimate path if you want to run community-scale food operations (a shared kitchen, a food pantry, a community canning program) credibly and safely.
- **Understand (don't necessarily pursue) water system operator certification:** Utah's Division of Drinking Water certifies water system operators under Administrative Rule R309-300; a "Small System" (SS) license covers distribution systems serving 25–500 people. Actually pursuing this certification is a serious undertaking (a 100-question exam covering math, operations, pumps, chemical feed, rules, and safety), appropriate only if your community's Tier 4 plan genuinely involves operating a shared water system; know that this pathway exists even if you don't pursue the full license.

Community-Scale Practice

- **Design for a group, not a household:** Take what you've built at Stage 3 (a garden, a preservation routine, a treatment setup) and scope out what it would take to run the same thing at 5x or 10x the household scale;

the constraints are different (labor coordination, equipment sharing, storage logistics), not just “more of the same.”

- **Build the roster and cache described in Chapter 1’s Tier 4:** Chapter 1 calls for a community seed bank, shared production tools, and a skills roster; Stage 4 is where you’re the person capable of stocking, maintaining, or teaching from that roster rather than just listing it as a goal.
- **Mentor, don’t just instruct:** A one-time class teaches a technique; ongoing mentorship (checking in on someone’s first canning batch, walking a neighbor’s garden with them mid-season) is what actually transfers competency reliably. Build at least one real mentoring relationship, not just a teaching credential.

Stage 4 Learning Path

Resource	Cost / Format	Notes
Master Gardener / Master Food Preserver volunteer-instructor track	Time commitment (40+ hrs), not a course fee	The built-in progression path within programs you've already completed in Stage 3; ask your county coordinator how to move from graduate to instructor.
USU Food Safety Managers Certificate Program	Fee-based, exam required	extension.usu.edu/foodsafety/certificate-program . A genuine professional credential; check current FAQ and requirements directly, since certificate programs are periodically updated.
Utah Division of Drinking Water operator certification info	Free to research; exam fees apply if pursued	deq.utah.gov , Administrative Rule R309-300. Worth understanding the framework even if community-scale water operation isn't your specific Tier 4 plan.

Self-Check: Have You Actually Arrived?

The real test of Stage 4 isn’t a credential; it’s whether someone else has successfully learned a skill from you and can now do it independently. If you’ve taught at least one person to safely can food or treat water and they’ve since done it again without you, that’s the actual signal, more than any certificate on its own.

A Suggested Learning Sequence

The three tracks (water, preservation, production) don’t have to move at the same pace, and most households will naturally be further along in one than another. As a rough guide, not a requirement:

- **Weeks 1–2:** Stage 1 across all three tracks: read the core references, do the water math, pick a preservation method to focus on first.
- **Months 1–4:** Stage 2: take a first hands-on class, run one full preservation cycle, complete one water treatment cycle.
- **One growing season plus a course cycle (roughly 6–14 months):** Stage 3: enroll in Master Food Preserver and/or Master Gardener, register any rainwater catchment, run a full season of production and preservation.
- **Ongoing:** Stage 4: move into a volunteer-instructor role, consider a professional credential if your household's Tier 4 plan calls for it, and start mentoring specific people rather than just taking more classes.

At a Glance: Water & Food Deep Dive

A single-page reference for planning purposes. This does not replace the detailed guidance above; use it to see how the four stages scale, and cross-reference against Chapter 1's tiers, which describe what a household needs to have and do rather than how skilled it needs to be.

Stage	Focus	Key Milestone	Primary Resource
Stage 1: Foundations	Core safety knowledge, no hands-on requirement yet	Can explain water treatment method limits and the food danger zone from memory	CDC/EPA guidance, NCHFP guide
Stage 2: Applied Practice	Hands-on, low-stakes repetition	Completed one full water treatment cycle and one full preservation run	USU Home Food Preservation Series
Stage 3: Self-Sufficiency	Independent, certified skill over a full season	Holds or is enrolled in a real certification; completed a full growing season	USU Master Gardener / Master Food Preserver
Stage 4: Mastery & Teaching	Teaching others, community/professional scale	Has taught someone who has since succeeded independently	Volunteer-instructor tracks, professional certificates