

Thermistry

Means to Recover Organic Spills from Water, Shores and Soil

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USP 7,631,506

Thermistry uses temperature difference to drive change or motion using an *inert material* creating action while preventing chemical reaction.

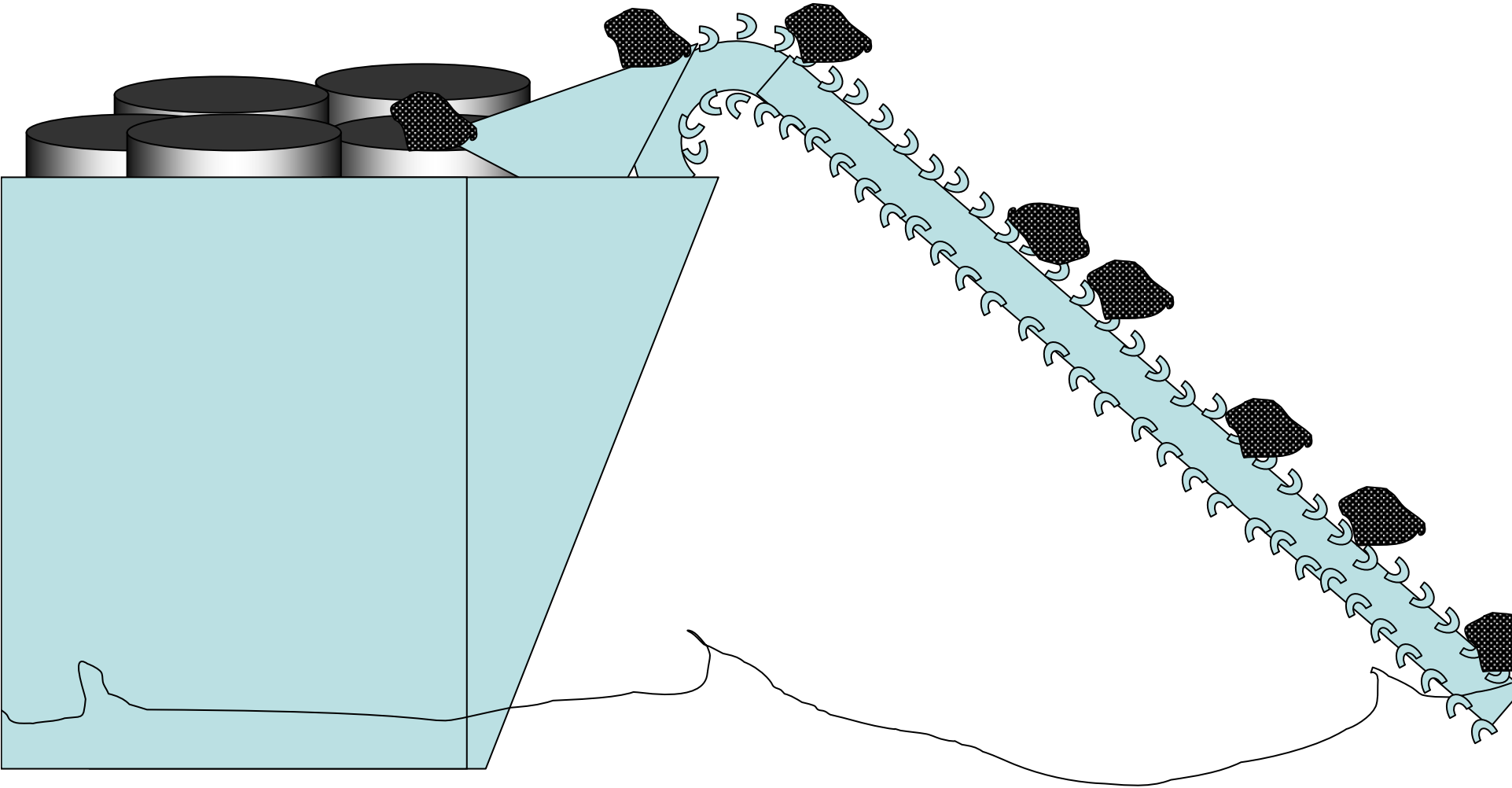
The cheapest, most abundant *inert material* is Nitrogen, N₂ molecules, the fourth coldest liquid in the world which evaporates into a pure, inert cloud of Nitrogen gas comprising 78% of the atmosphere.

The Liquid Nitrogen technology was proposed to handle the situations in the Gulf of Mexico caused by the BP Oil Spill.

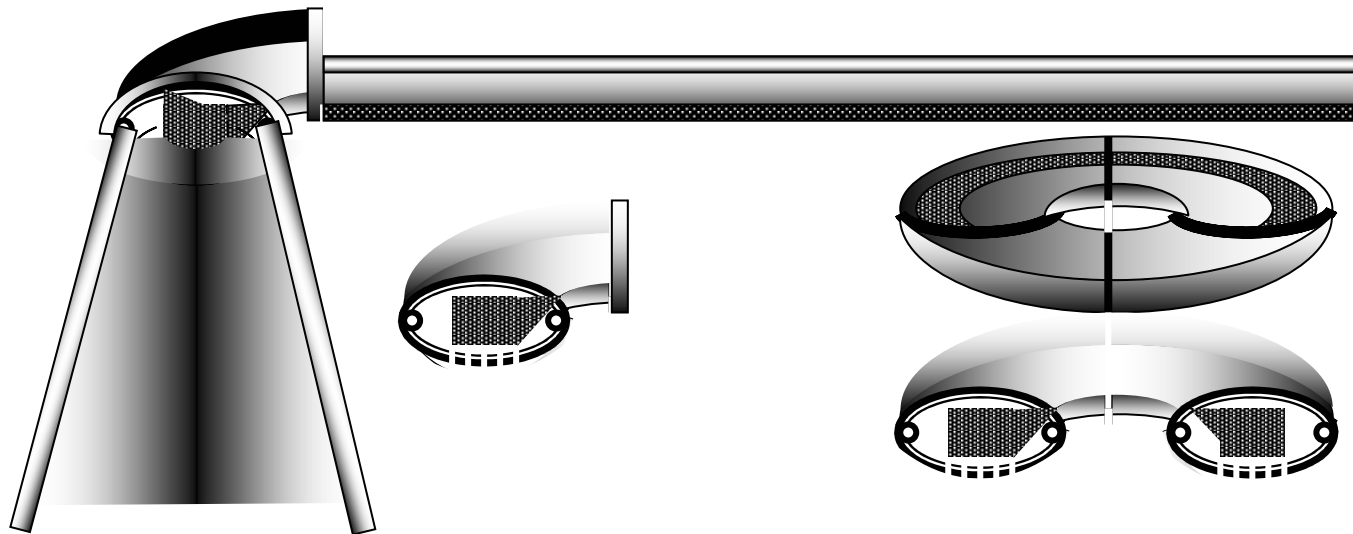
Unfortunately in 2003 my letter to the US Army Corps of Engineers on how to end Iraqi Pipeline Fires in a day rather than the ten it was taking in July 2003 cut the profits of Halliburton considerably when they were made to hustle the work and lost pay for the nine extra days. They got revenge in 2010 getting the first reason to turn down a proposal to handle the Gulf of Mexico crises to be “Freezing is not Feasible” which held for both BP in its choices and the US Coast Guard with theirs.

CryoRain offered to end the flow from the well a mile deep in the sea, to gather the crude oil from the water surface as solid masses brought onboard fishing boats like they gather fish, and gathering solid tarballs from the shores in sand, rocks and marshes. We never got there but here is how the technology would have worked, cleanly, and with no added detergents.

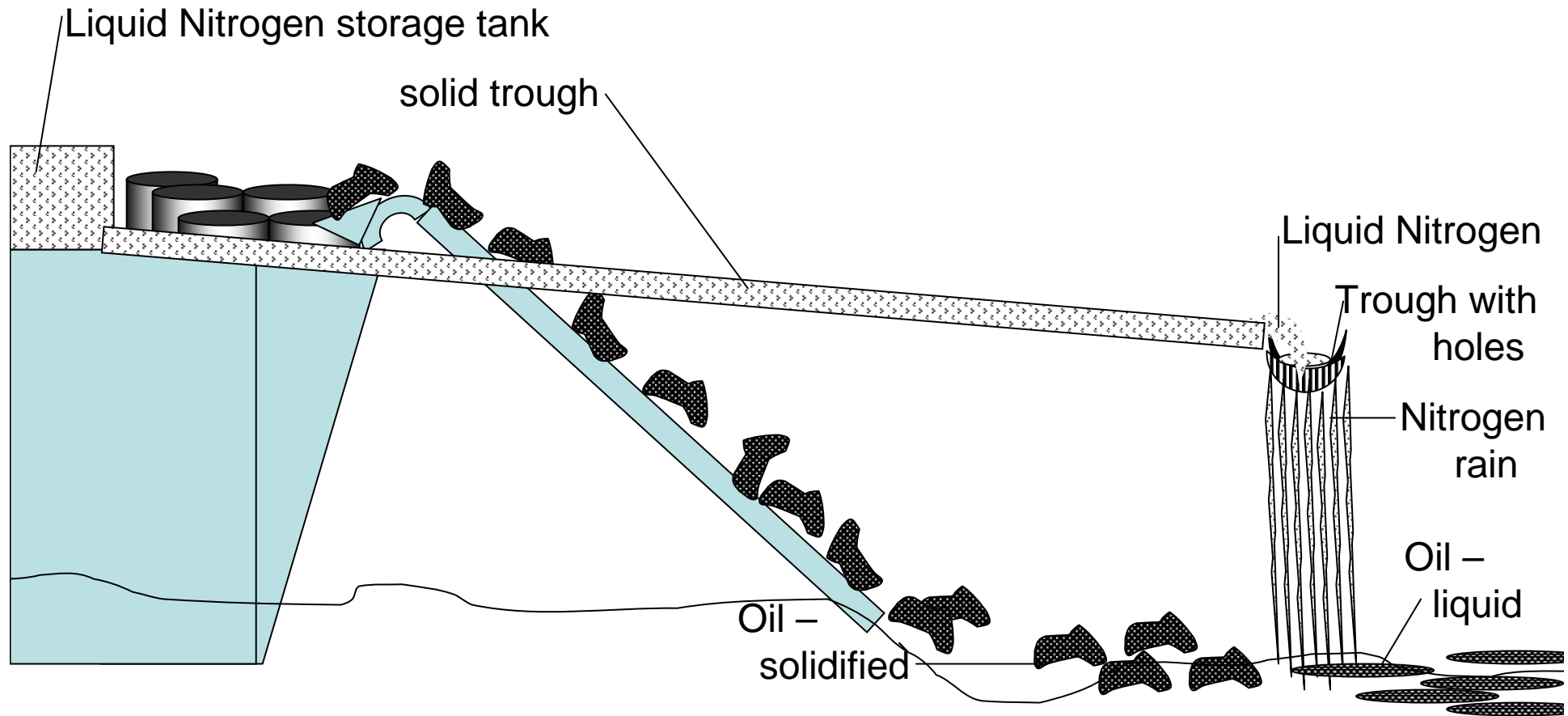
Conveyor and slide guide
puts frozen oil globs into
barrels aboard fishing vessel.

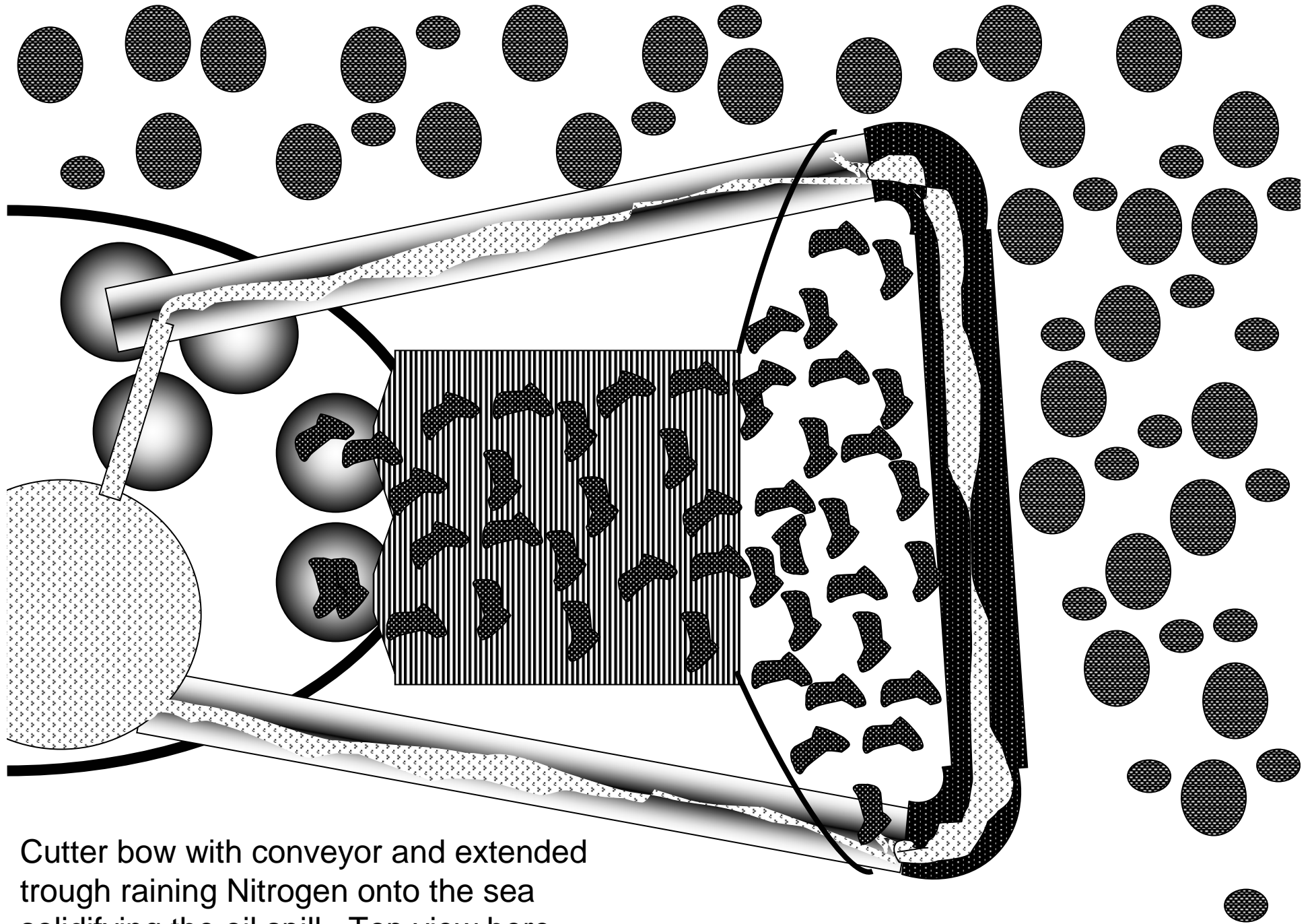


Solid trough leads from the bow of the cutter out front to an elbow and cross-trough which has holes, 3/16" spaced 1/2" apart. A second solid trough can emerge from the starboard area of the bow with an elbow and apertured trough crossing in front of the cutter. When Liquid Nitrogen pours into these apertured troughs, it rains down in drops that evaporate onto the sea water freezing the surface oil chunks. These will be guided to the conveyor and on board ship cast into barrels.



Using throttle back to speeds that allow the solidification of oil, the cutter can cover the river surface as if it were mowing lawn collecting the oil from the surface, containing it and taking it to a refinery for processing.

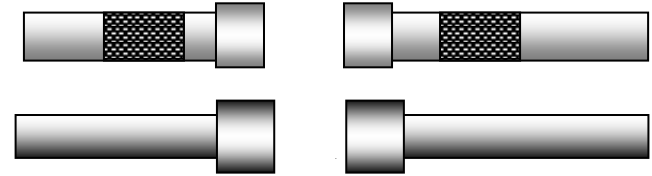
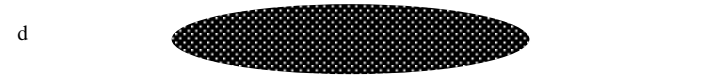
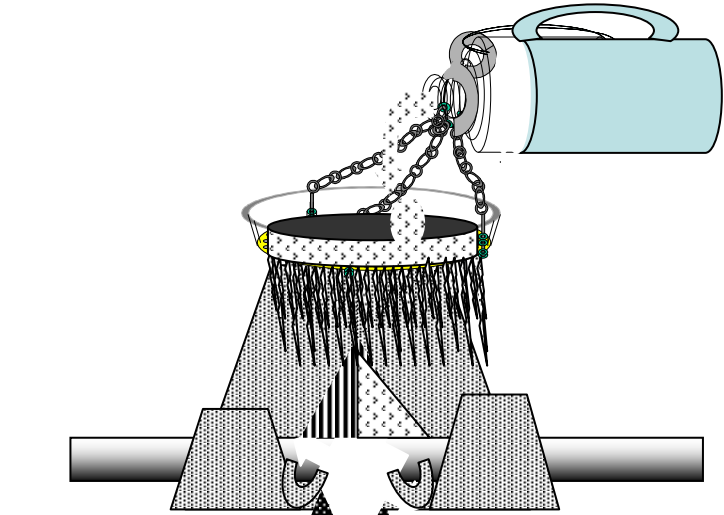
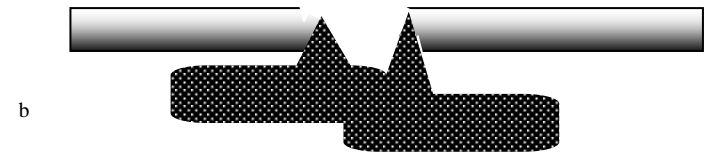




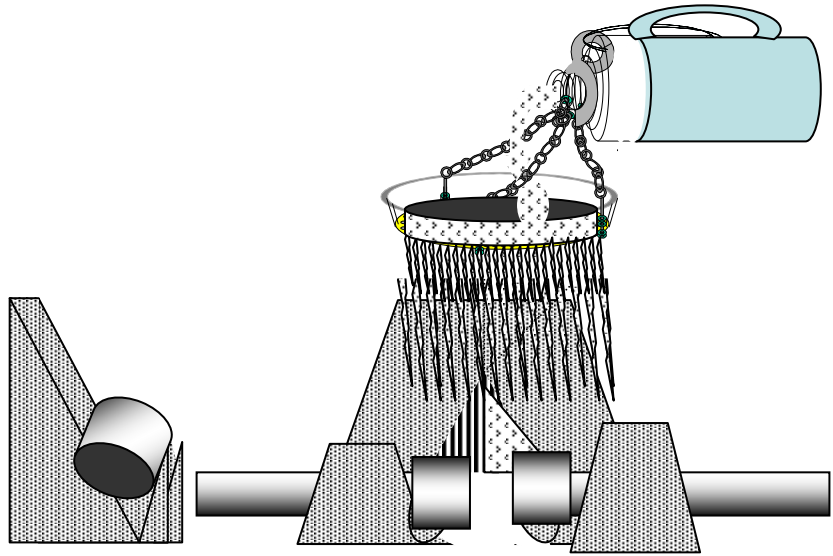
Cutter bow with conveyor and extended trough raining Nitrogen onto the sea solidifying the oil spill. Top view here.

Keeping the Land Clean

- Handling broken pipes.
- Handling spills
- Freezing tar balls solid for quick pickup
- Gathering a fuel spill
- Pulling in a toxin release



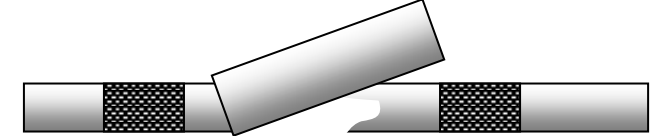
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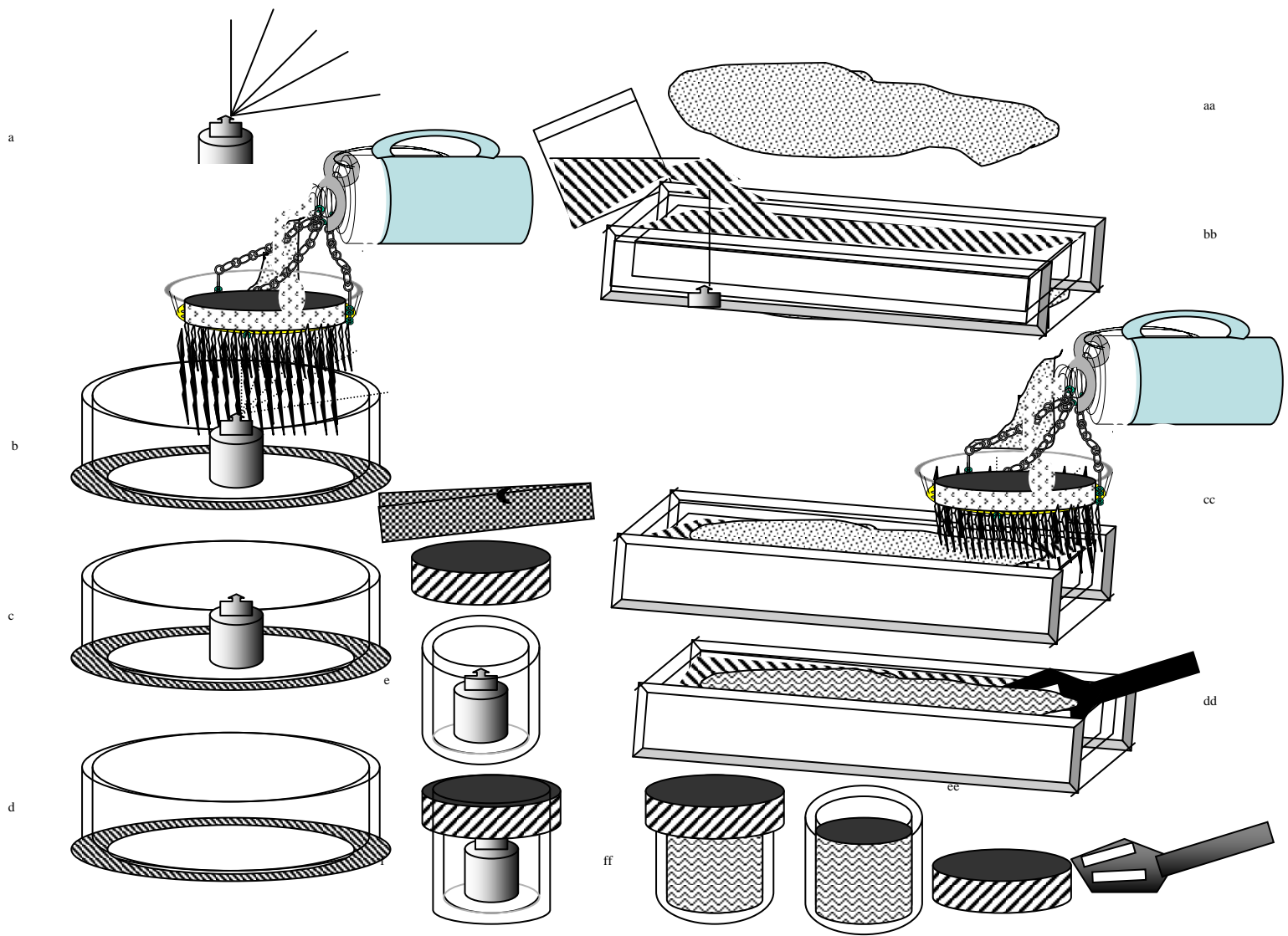


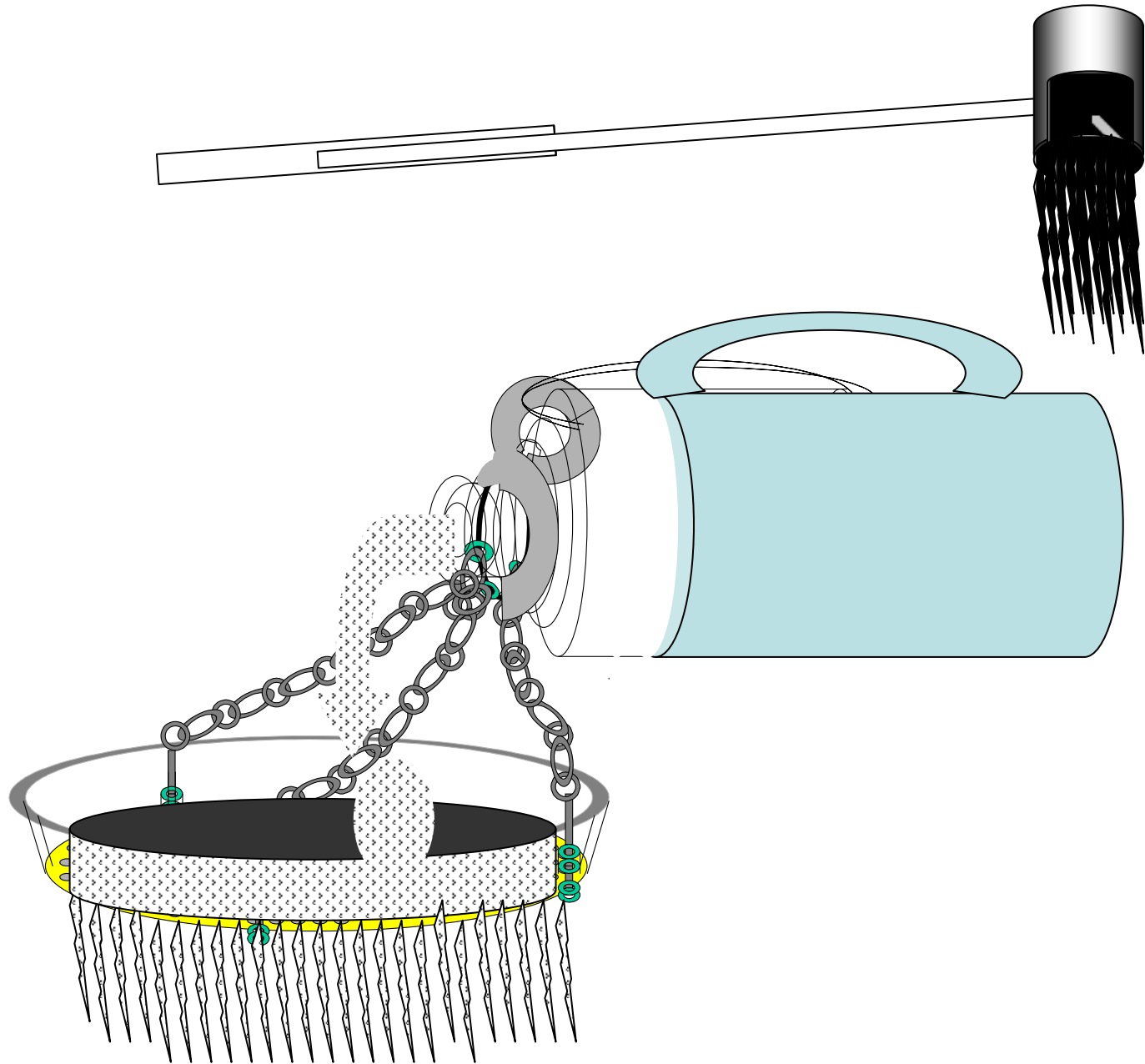
bb



cc







Illustrated on the slides that follow are two ranges of extraction.

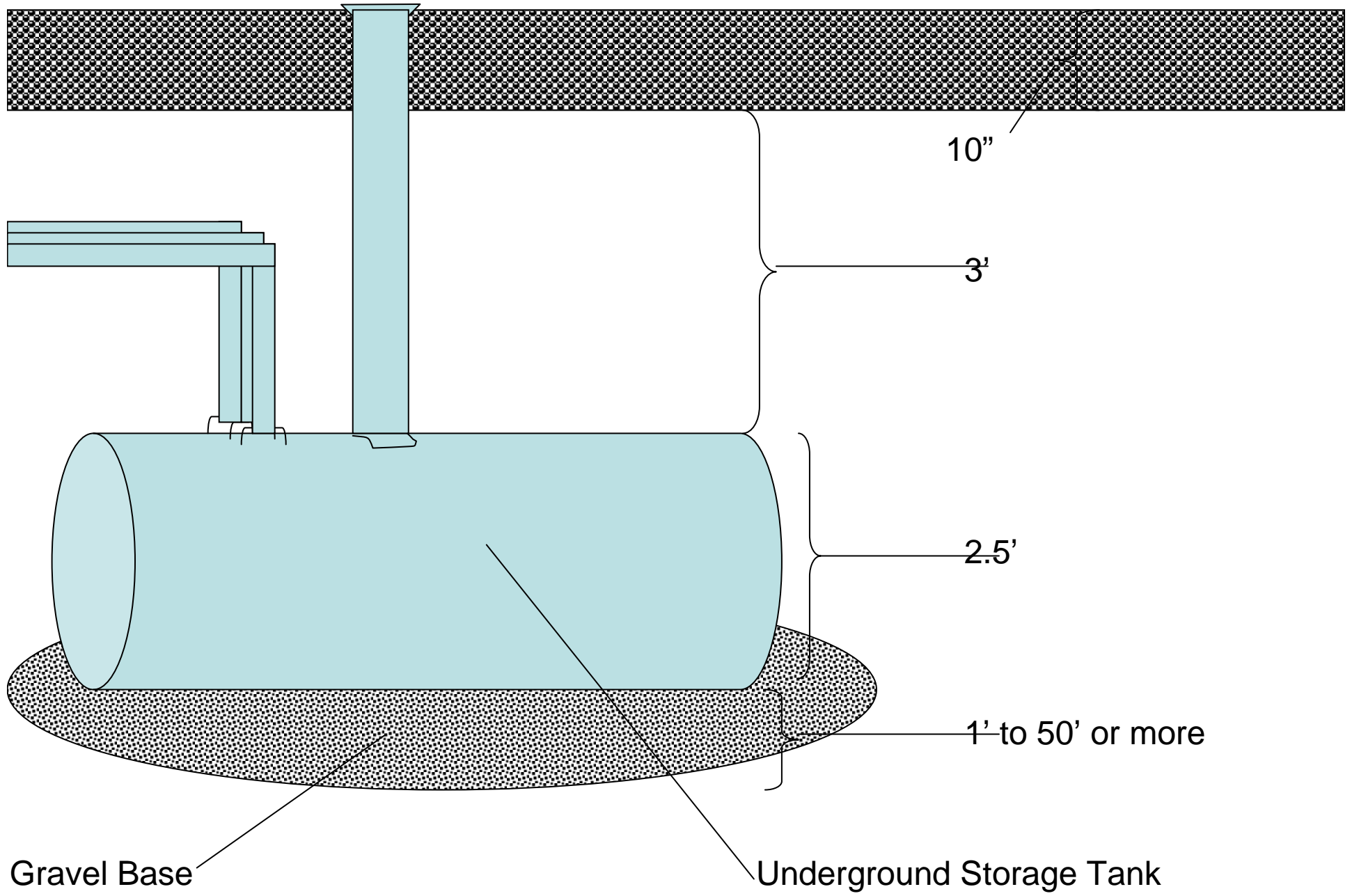
First, the small area contamination handling for items like leaking underground storage tanks and leaking pipes related often with pumps.

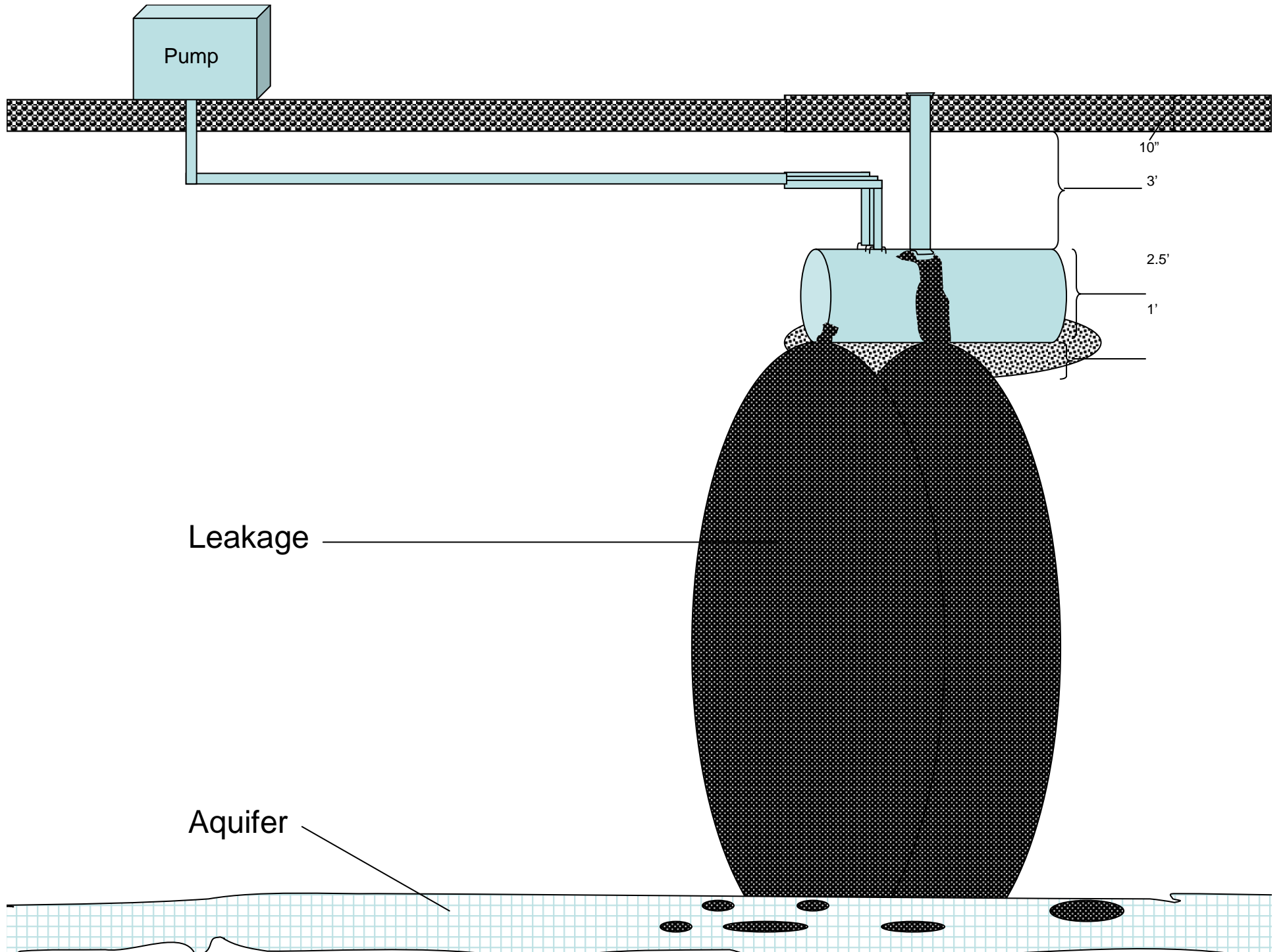
Second, the large area to over 18 acres to be extracted as a grand area spill or seepage where we have nine subunits with extraction hardware operating in units until the complete acreage is cleared of pollutant.

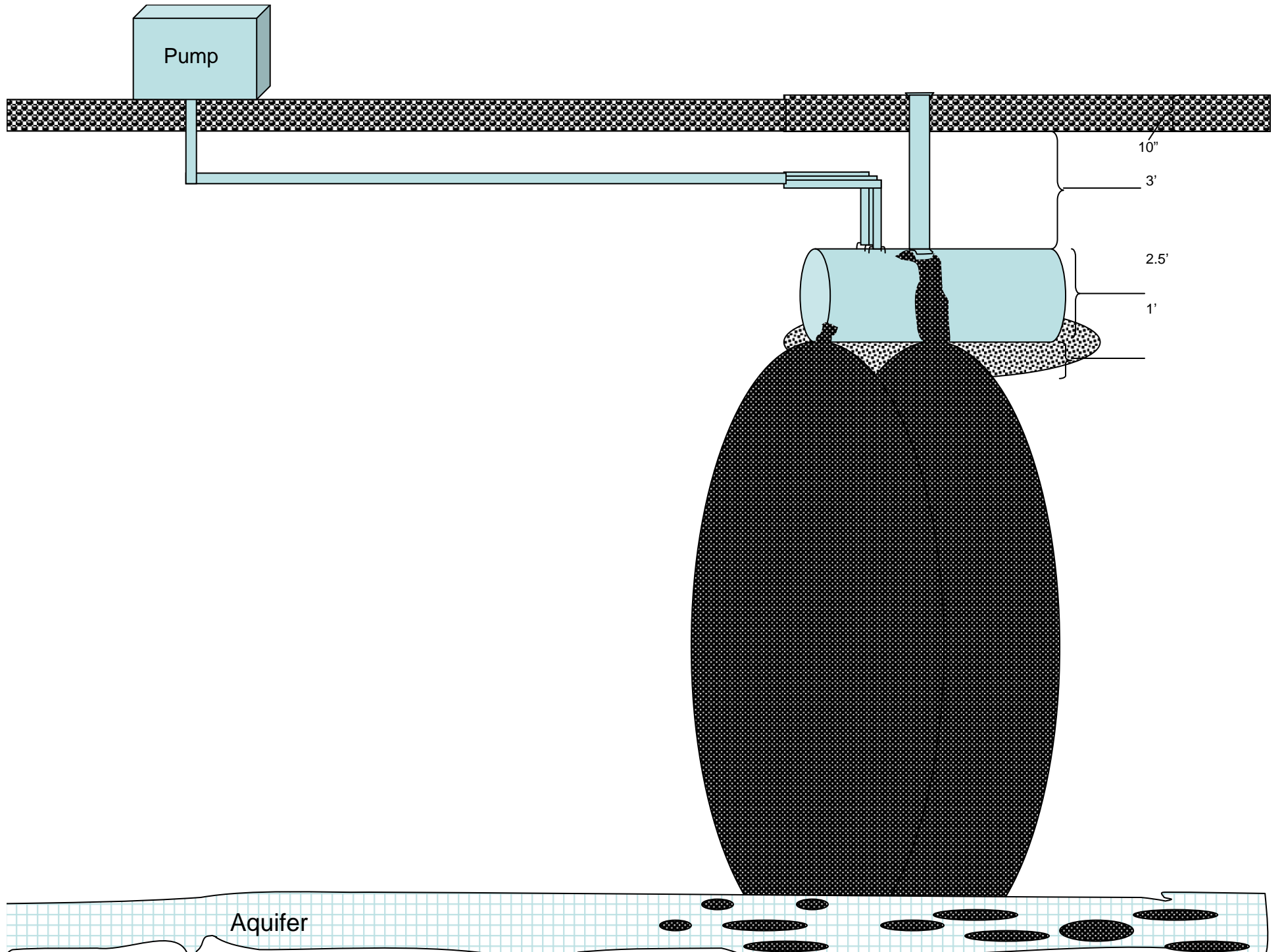
Were the circumstances widely varied over such an acreage, the area maybe better covered with plume-specific treatments like illustrated for leaking underground storage tanks and pipes leading to pumps as in the first sequence.

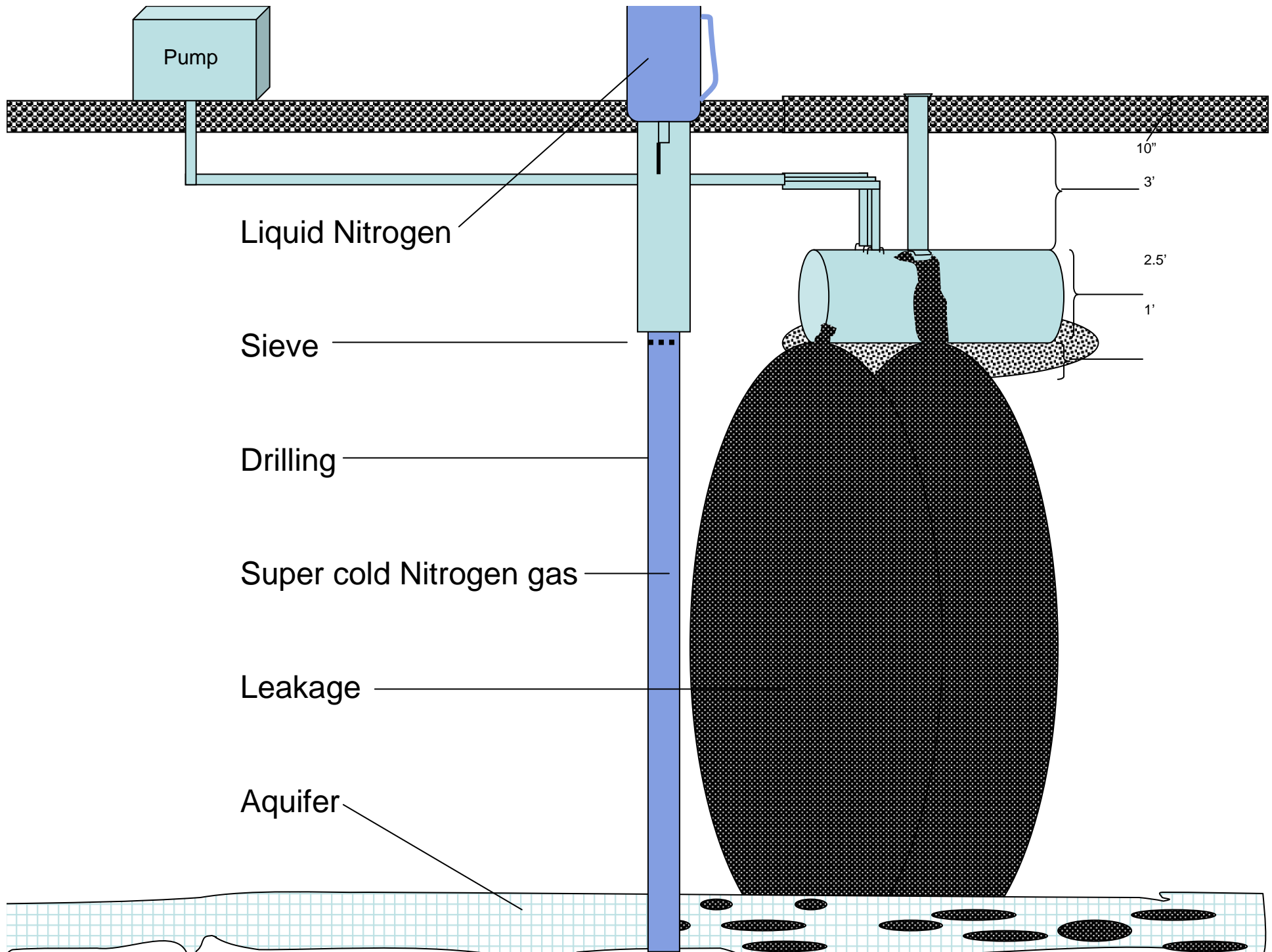
ADVANTAGES OF USING THE NITROGEN, CRYOGENIC METHOD

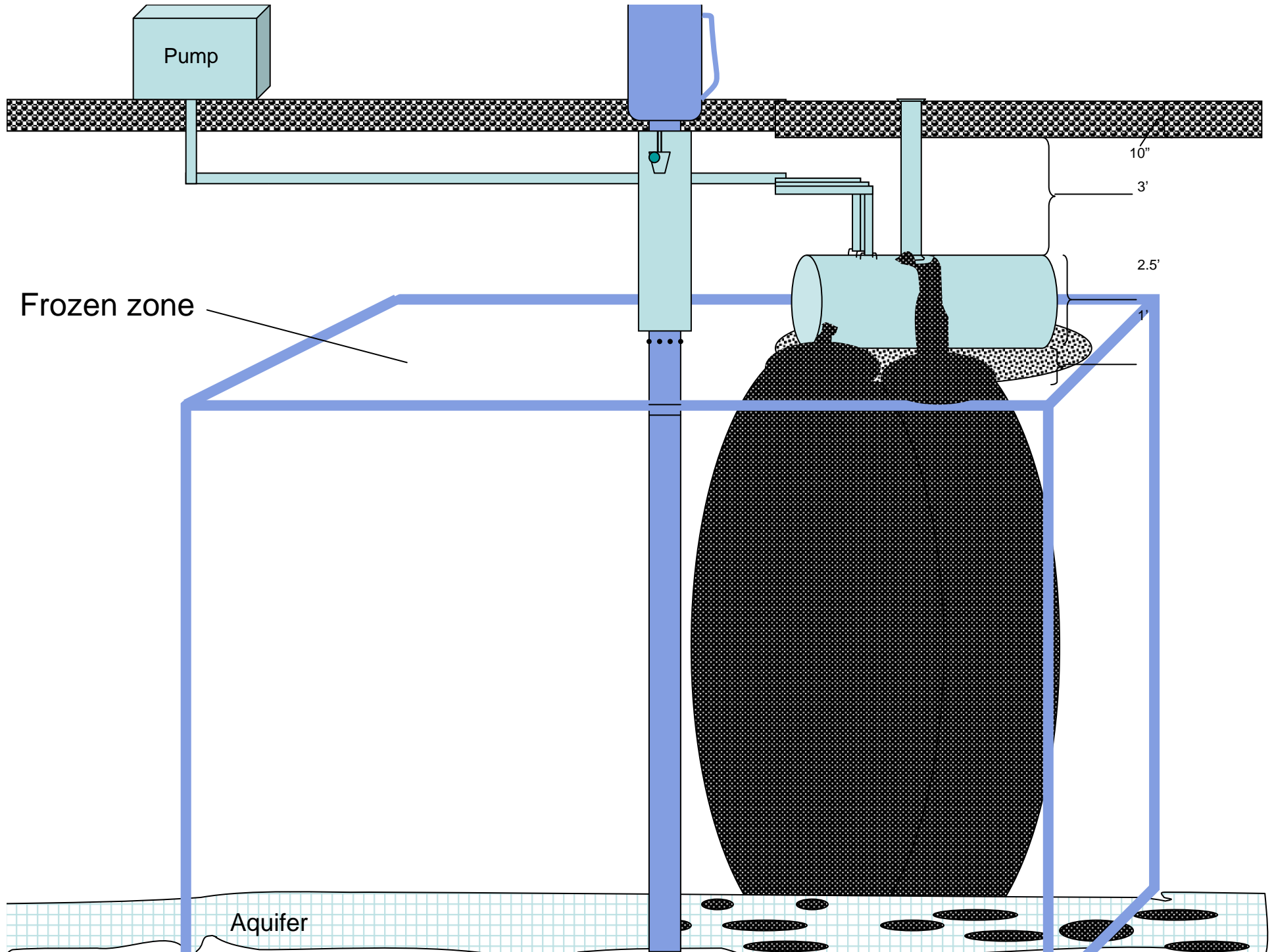
When the polluted ground is frozen to extremely cryogenic temperatures, the movement of pollutants is restricted. Cupping the heated area in the frozen zone gives one way for the evaporated material to go, riding on the produced Nitrogen gas through evaporation – up the central drilling pipes and on down the pipe until it condenses and is bottled for disposal.

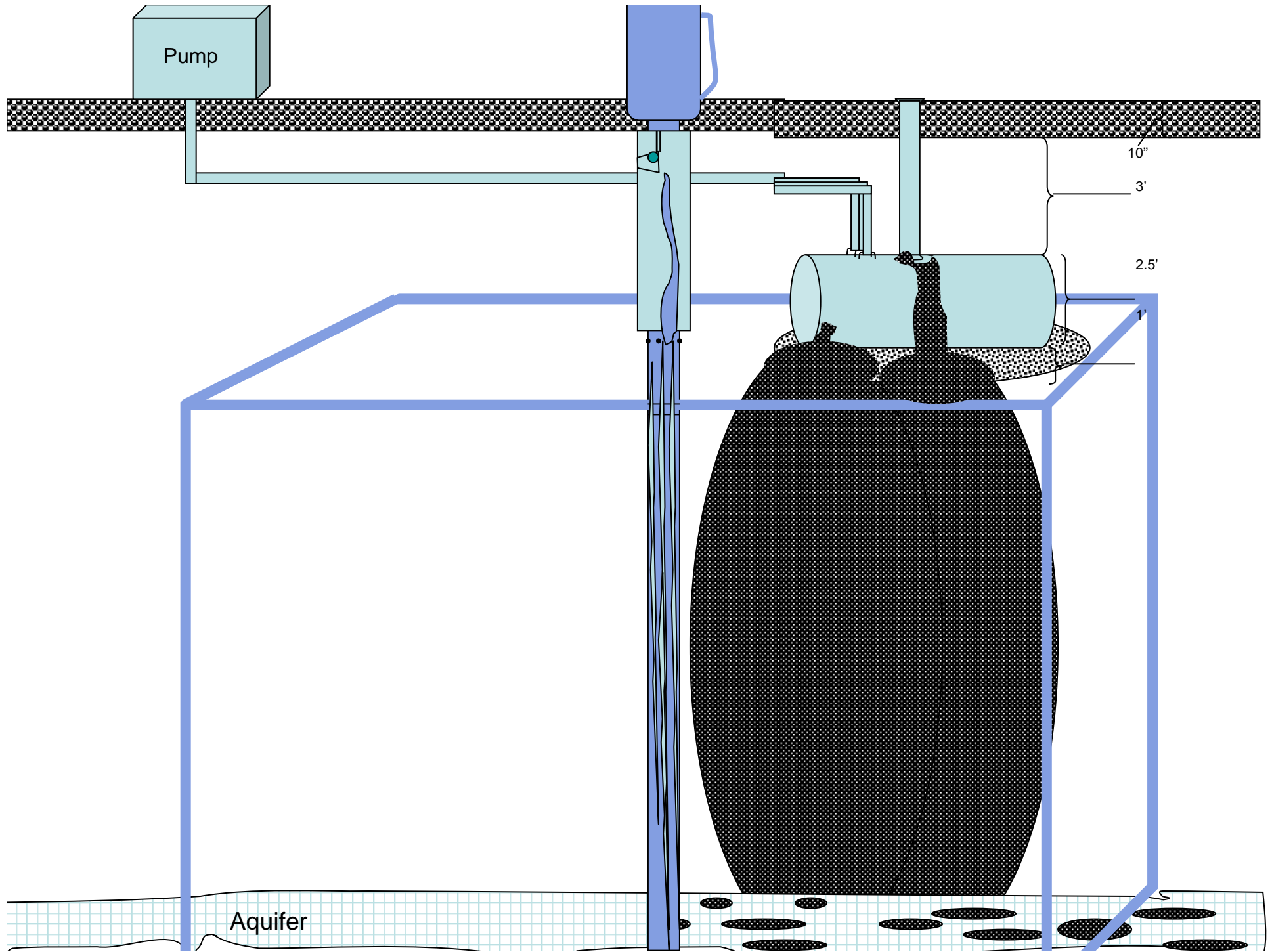


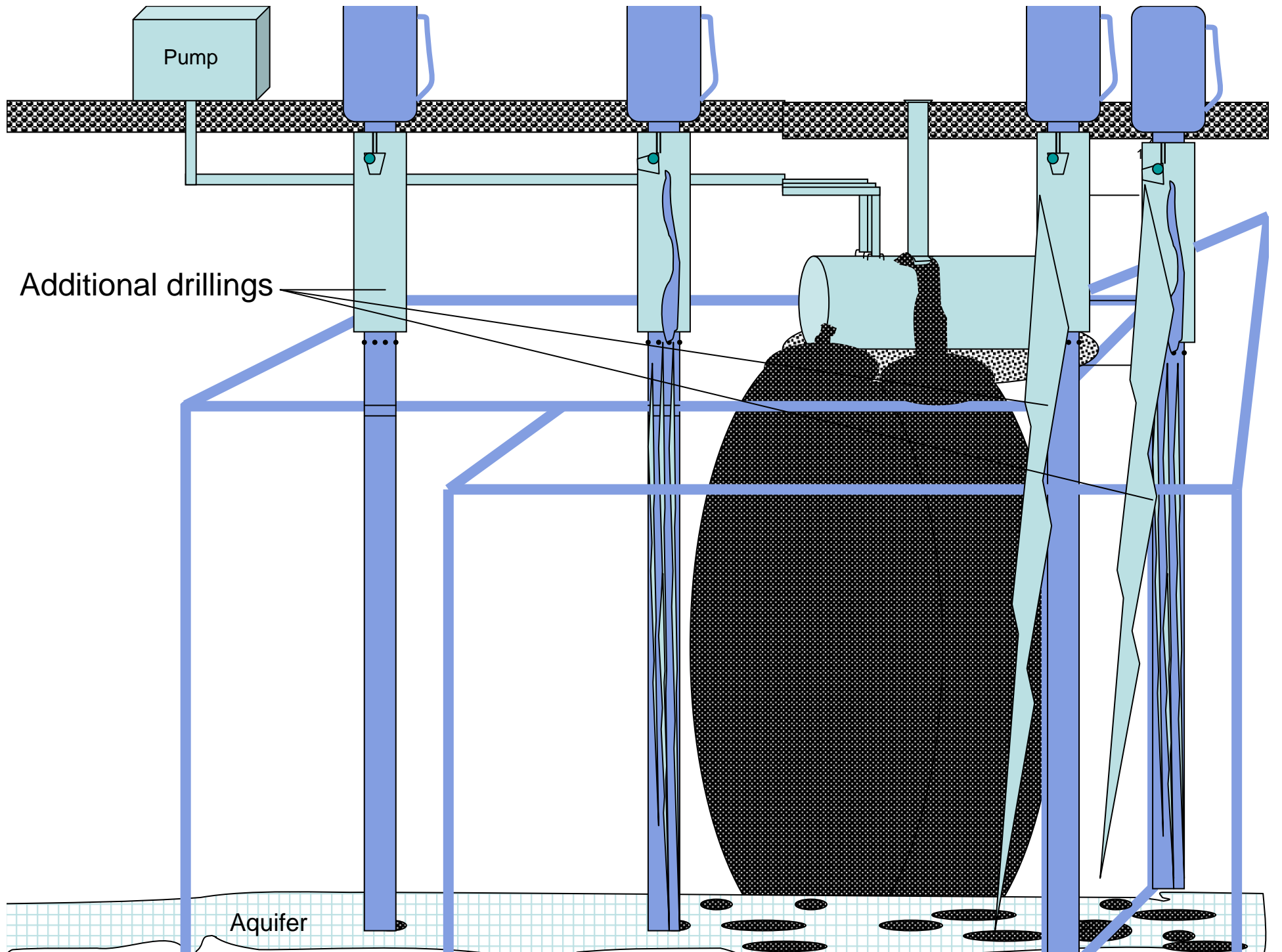


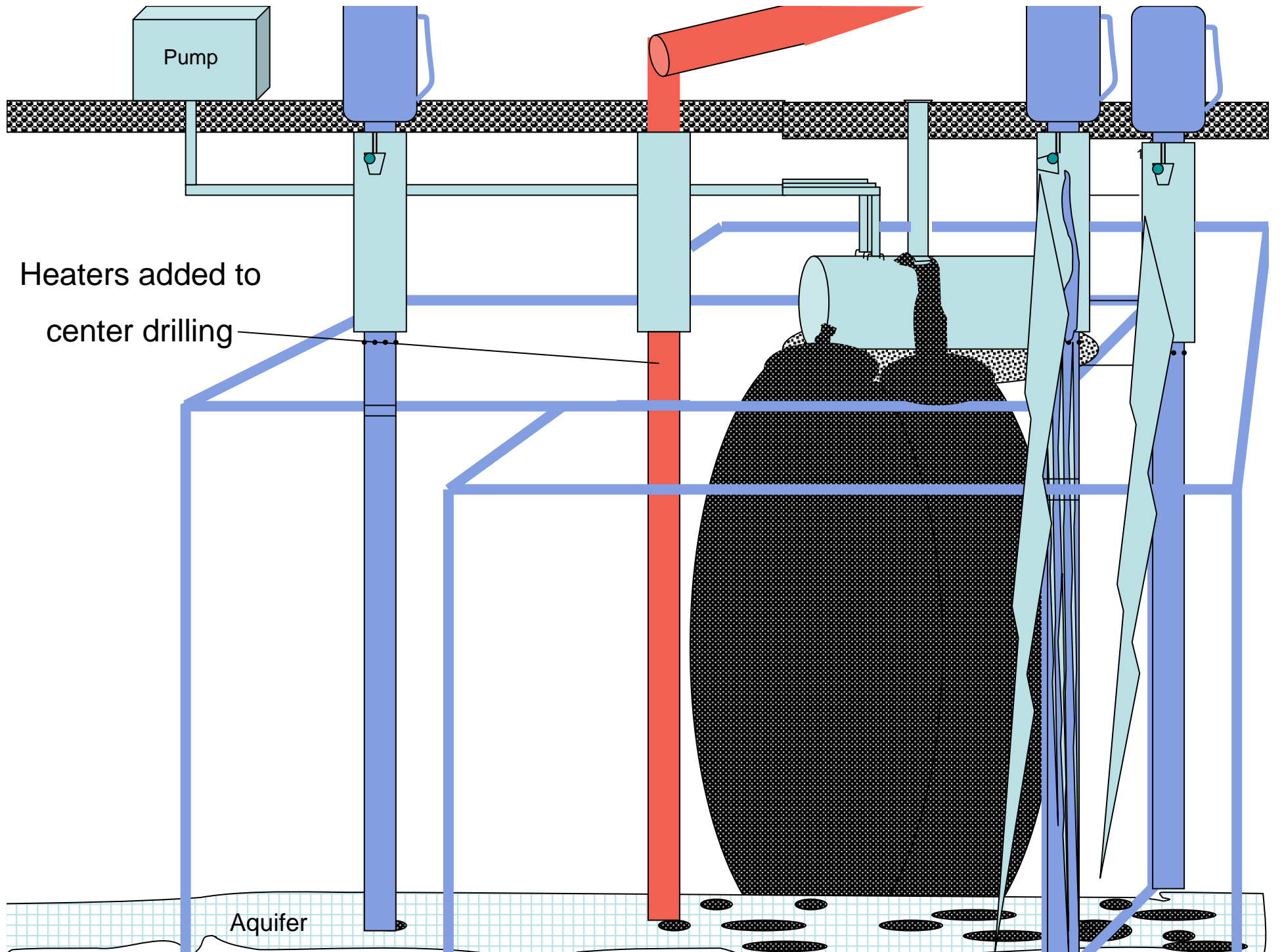


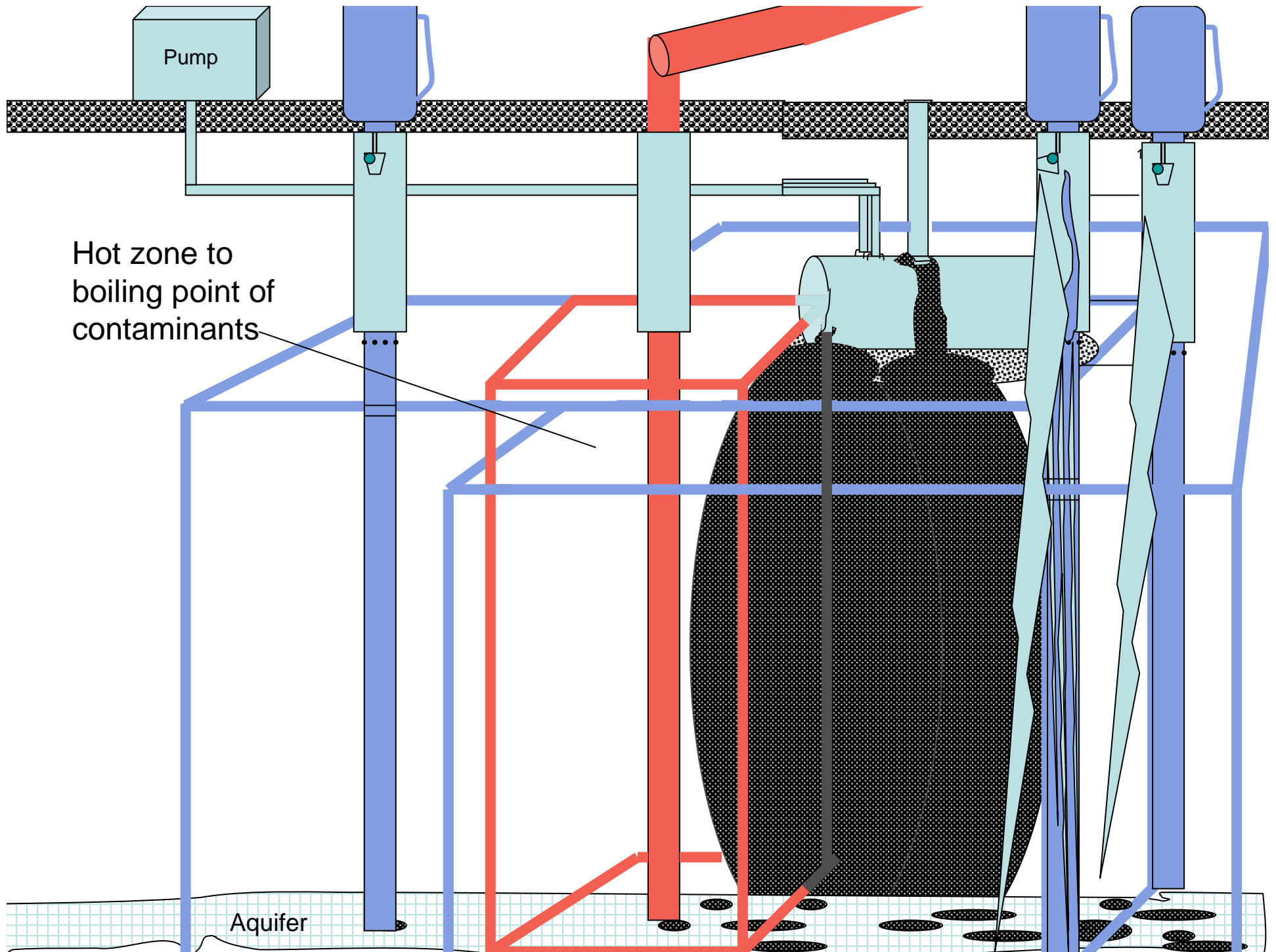






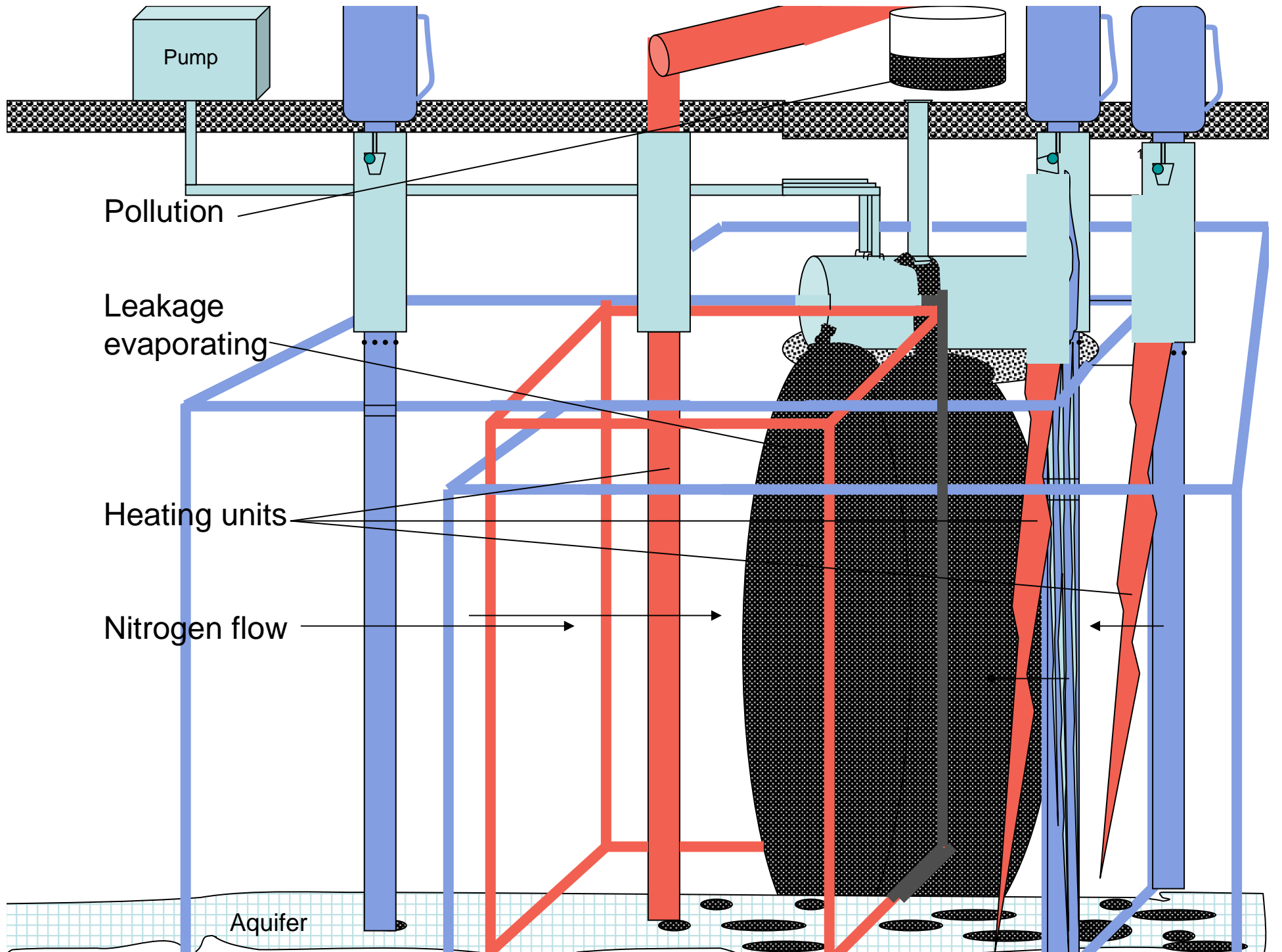


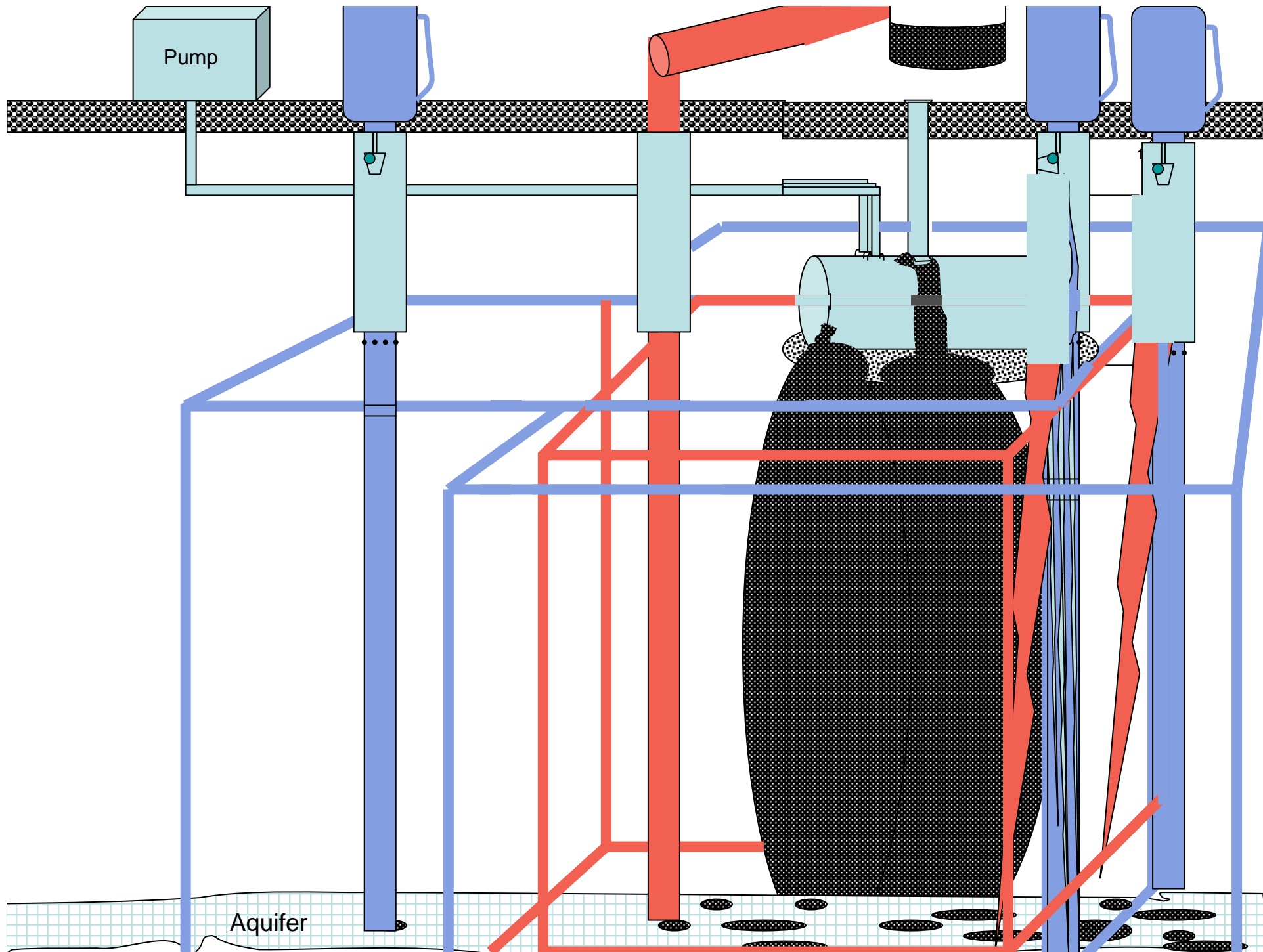


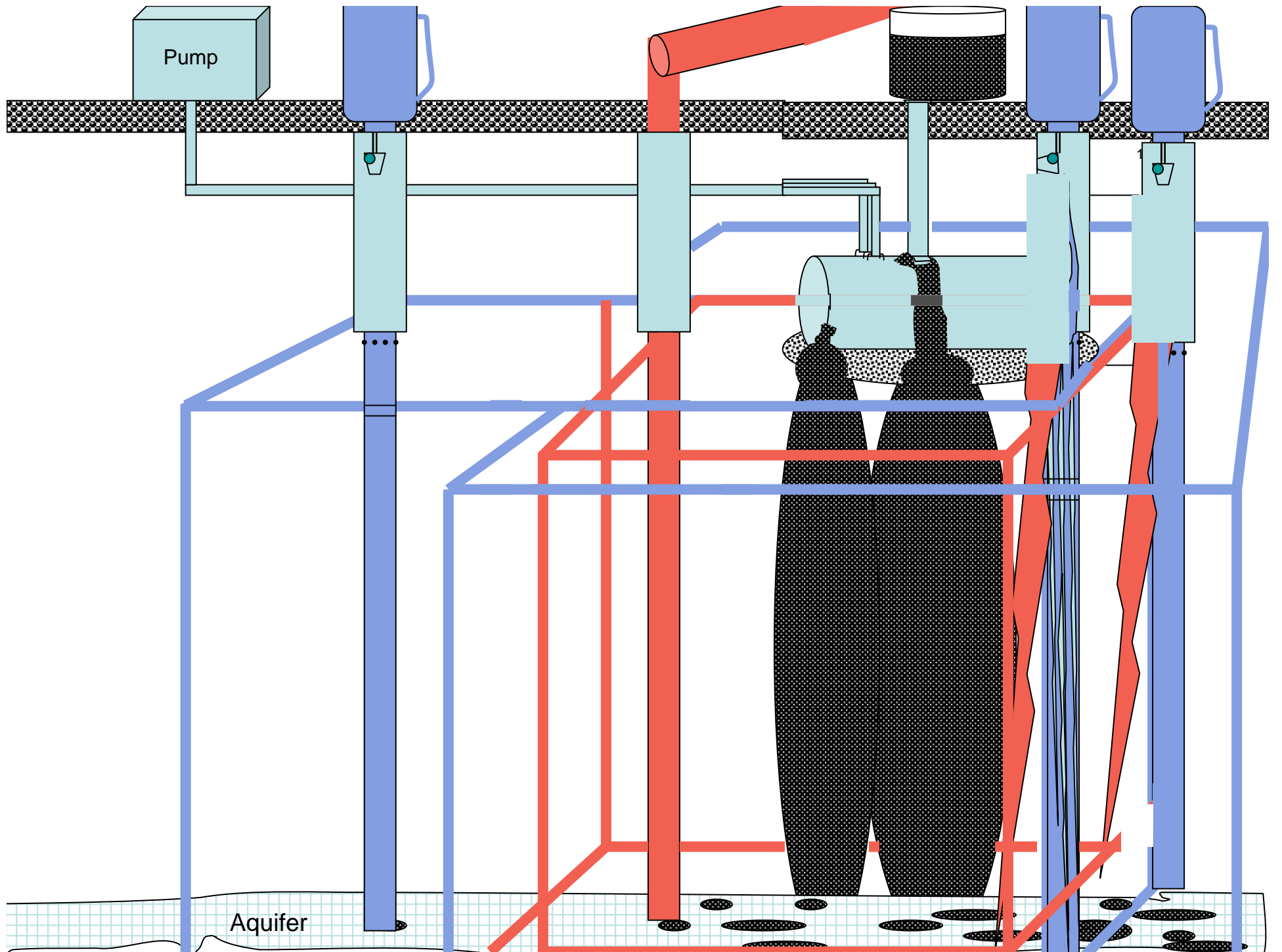


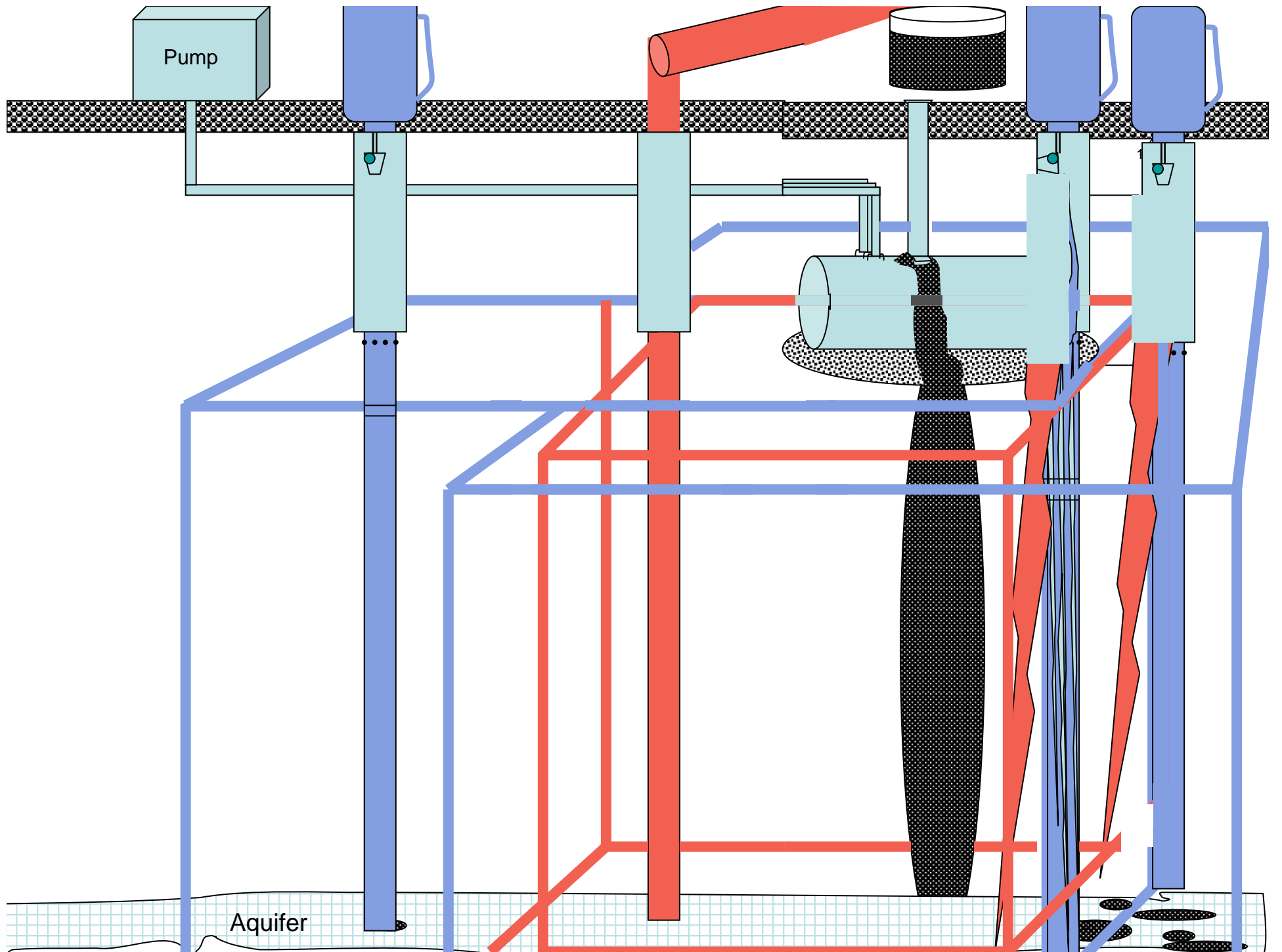
Hot zone to boiling point of contaminants

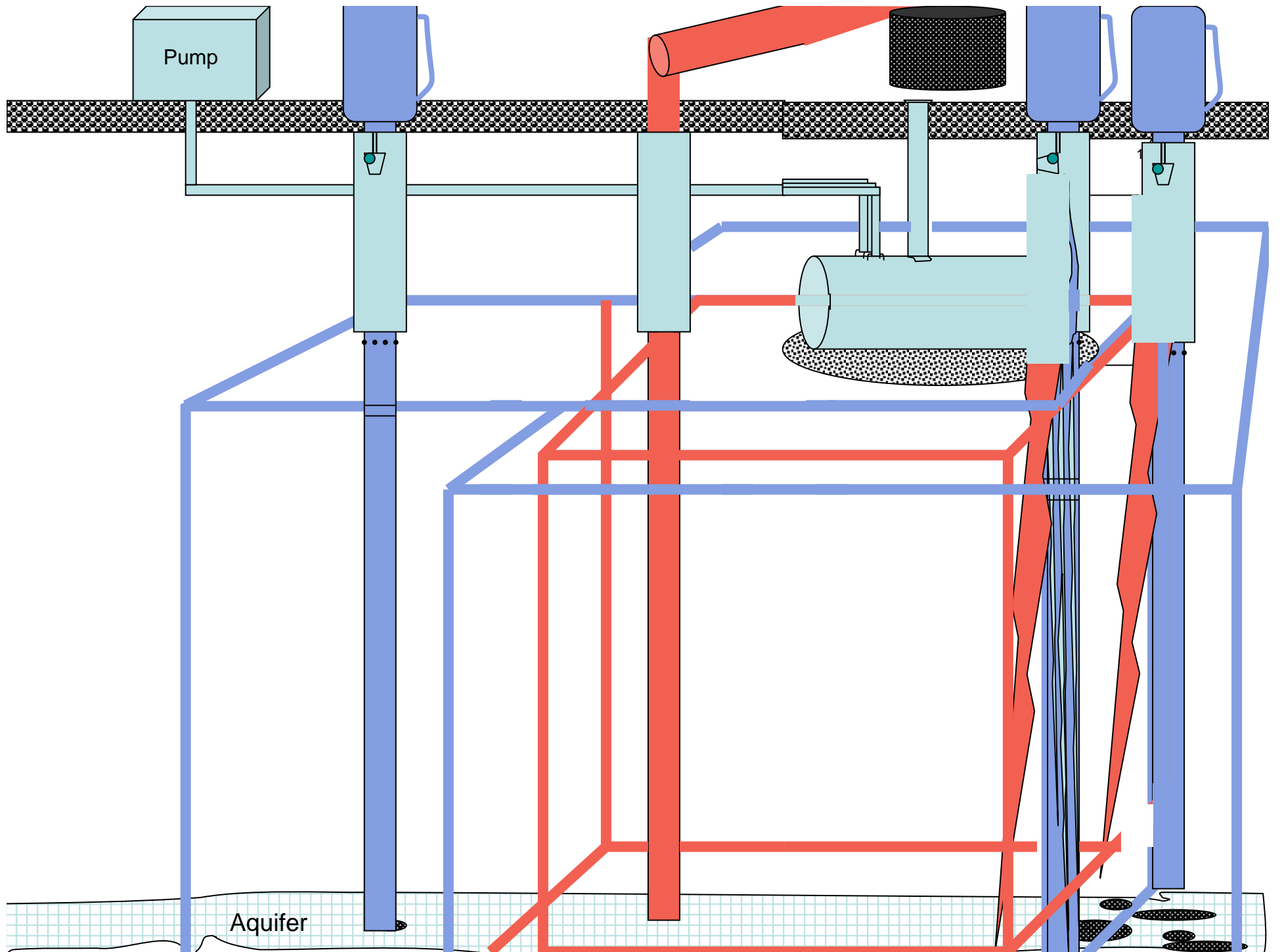
Aquifer

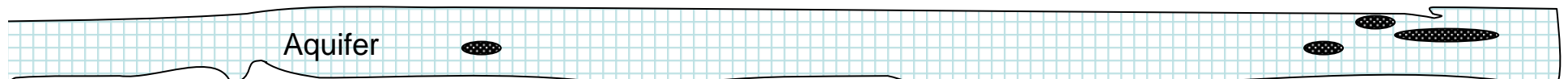
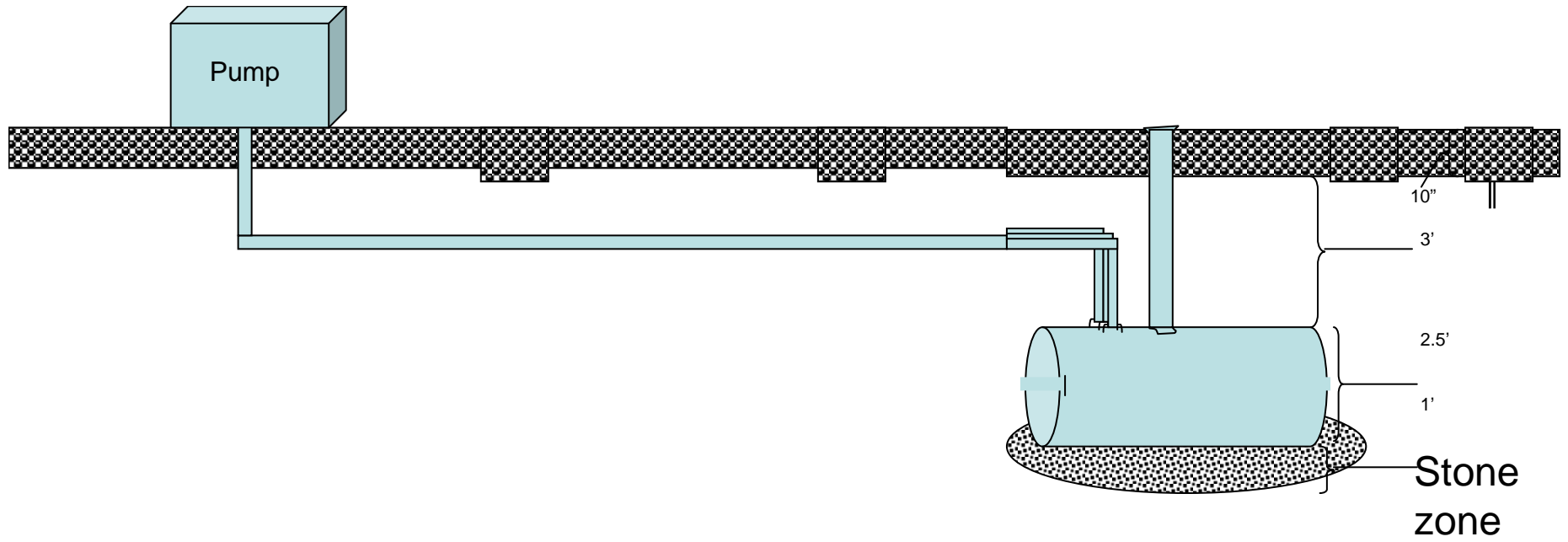


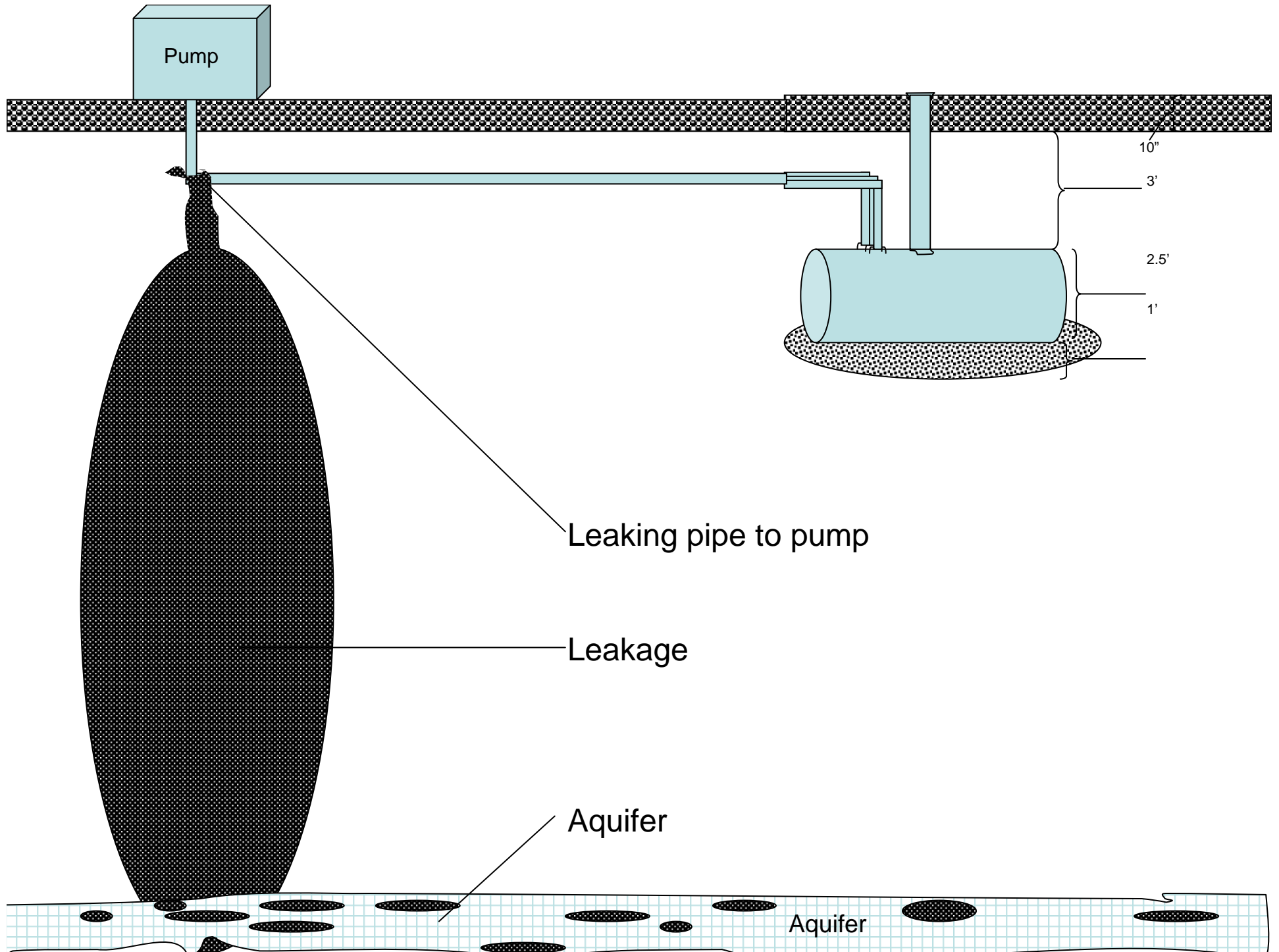


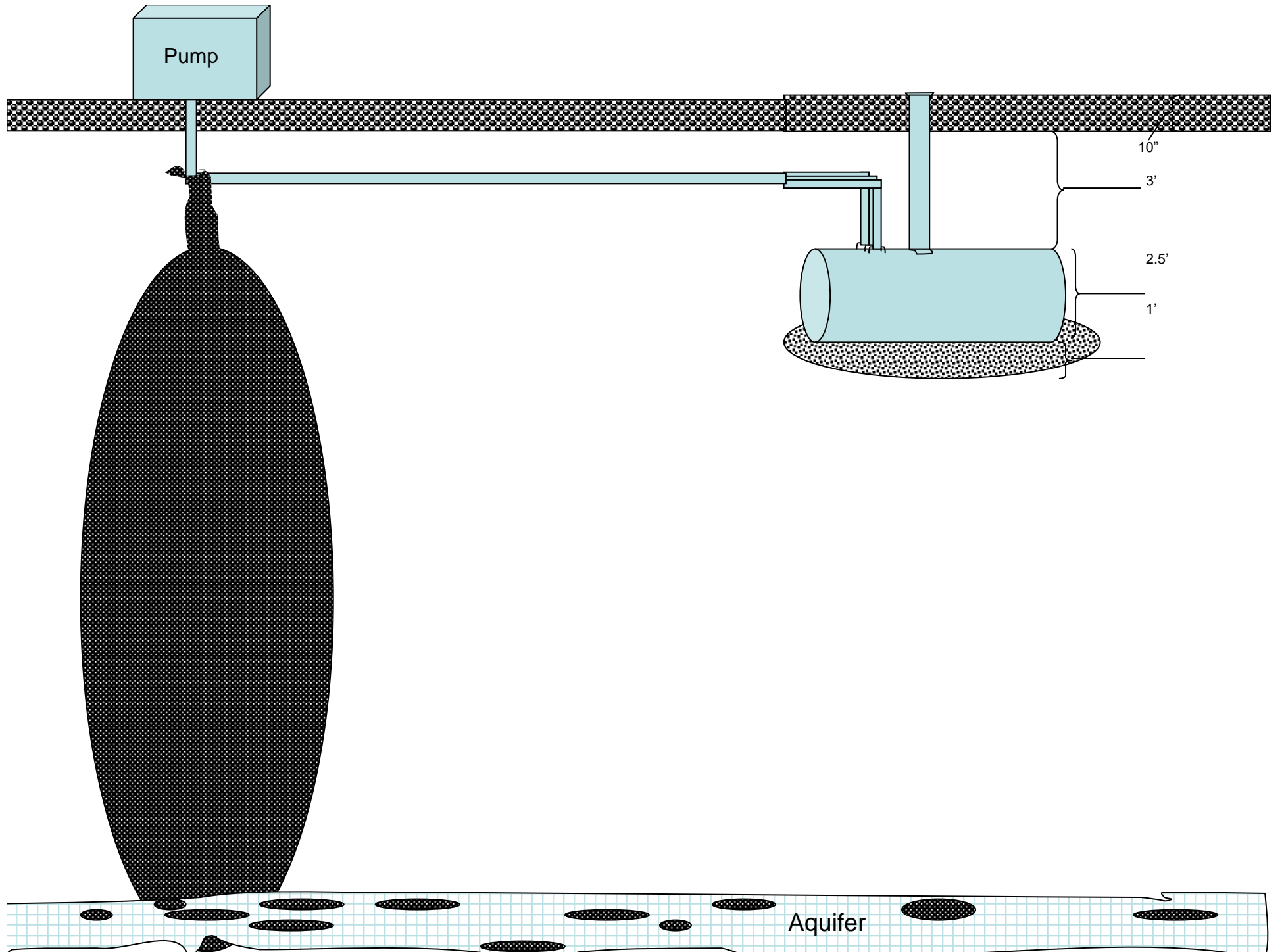


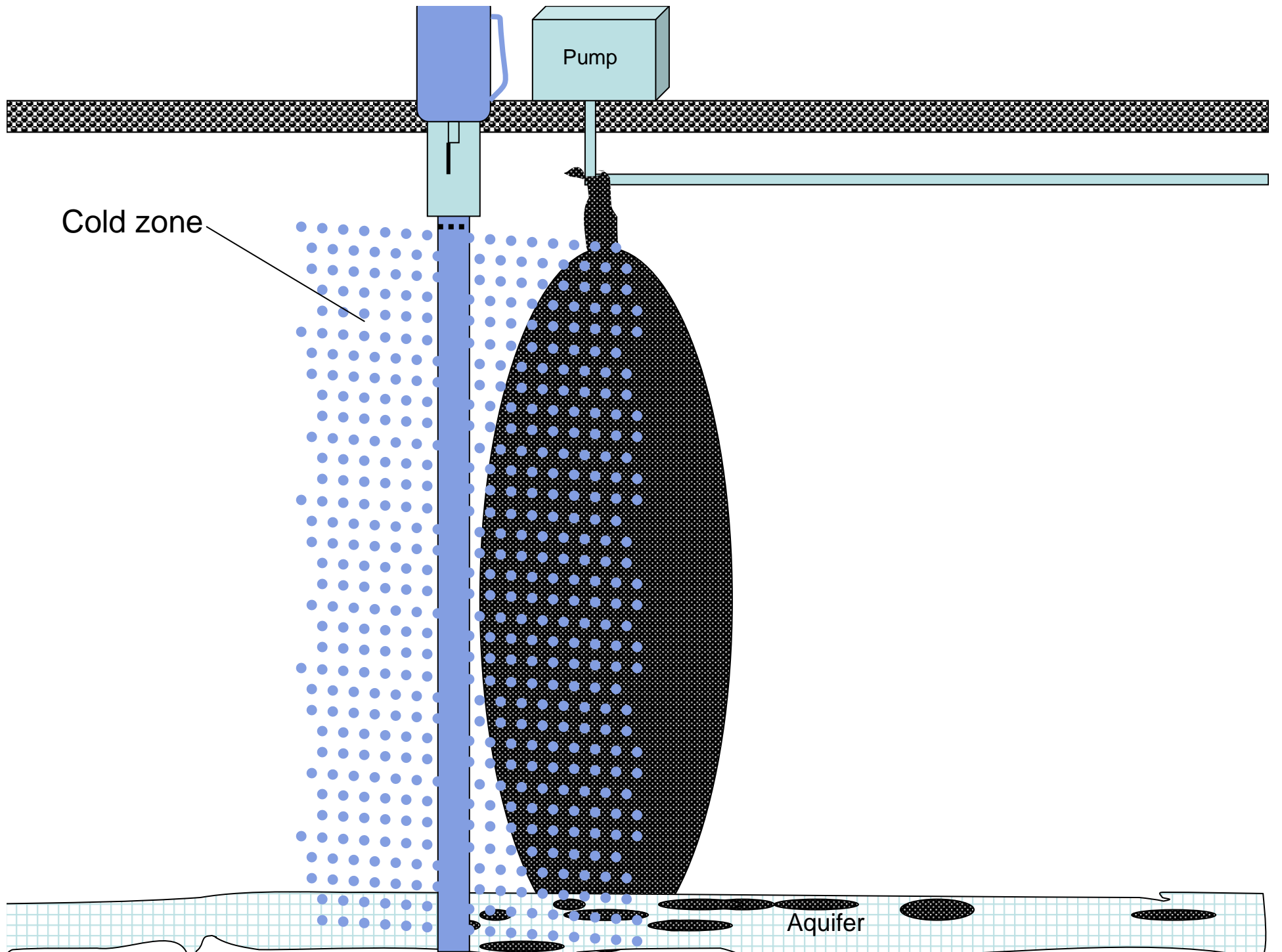


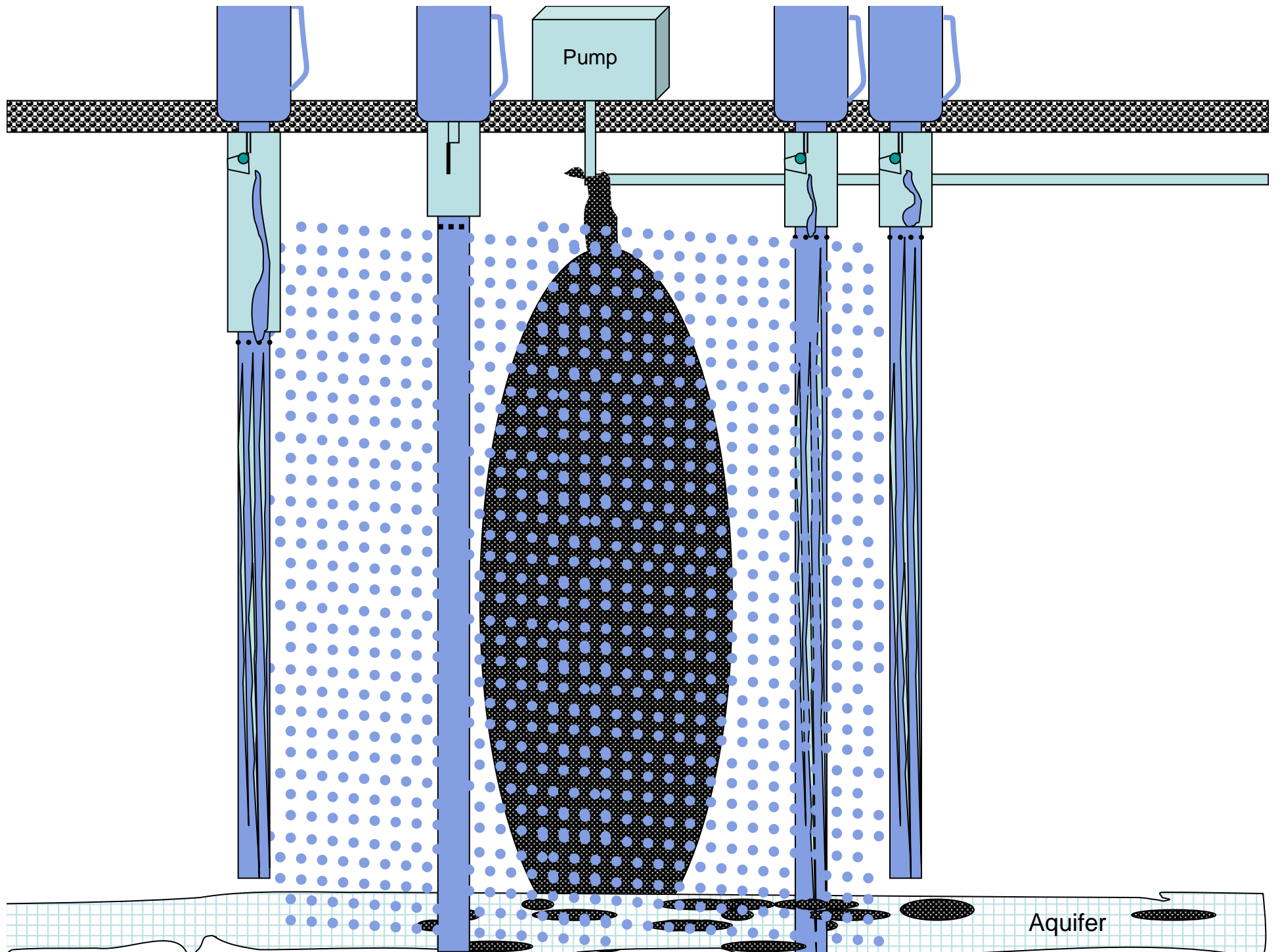


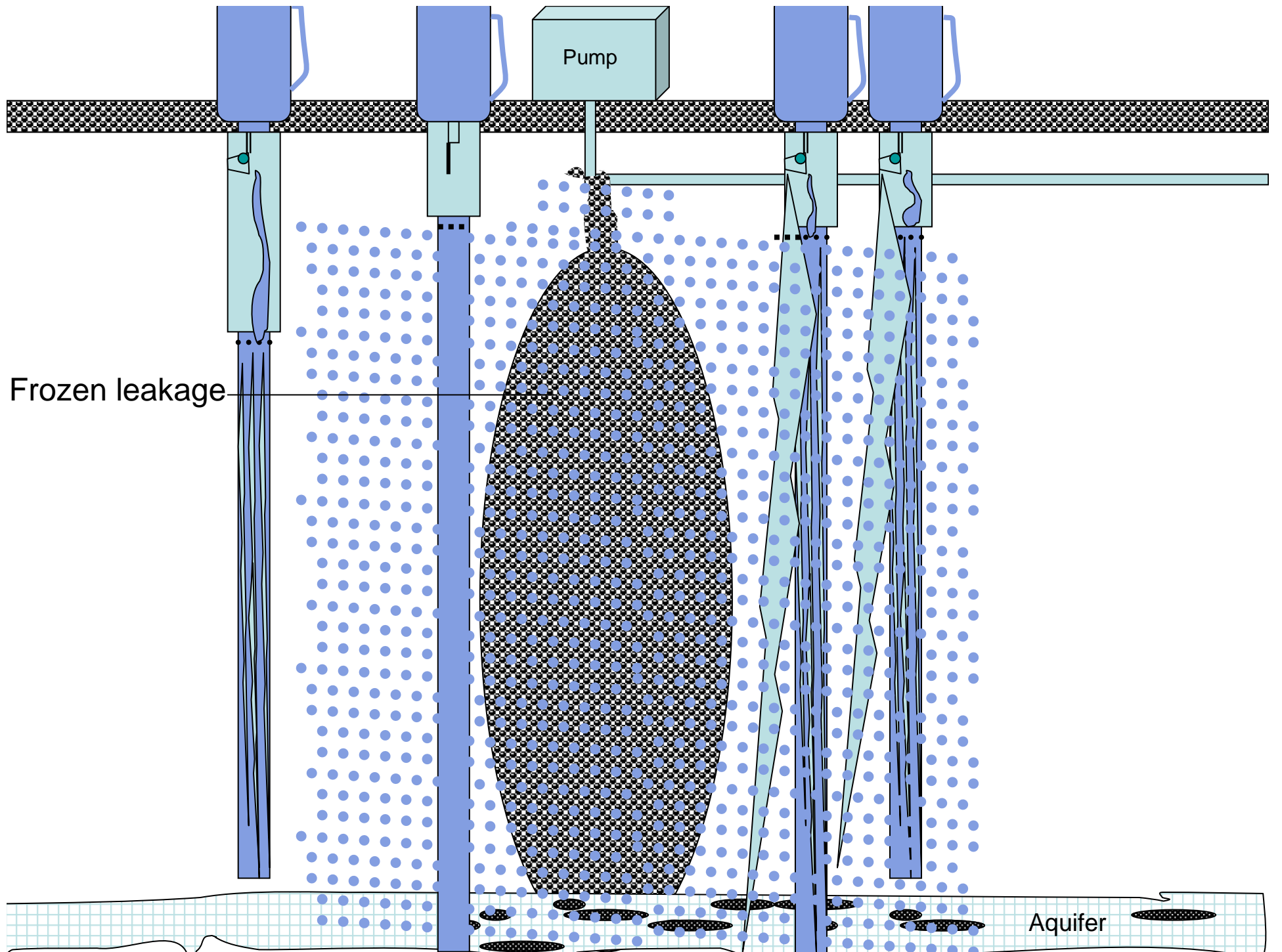


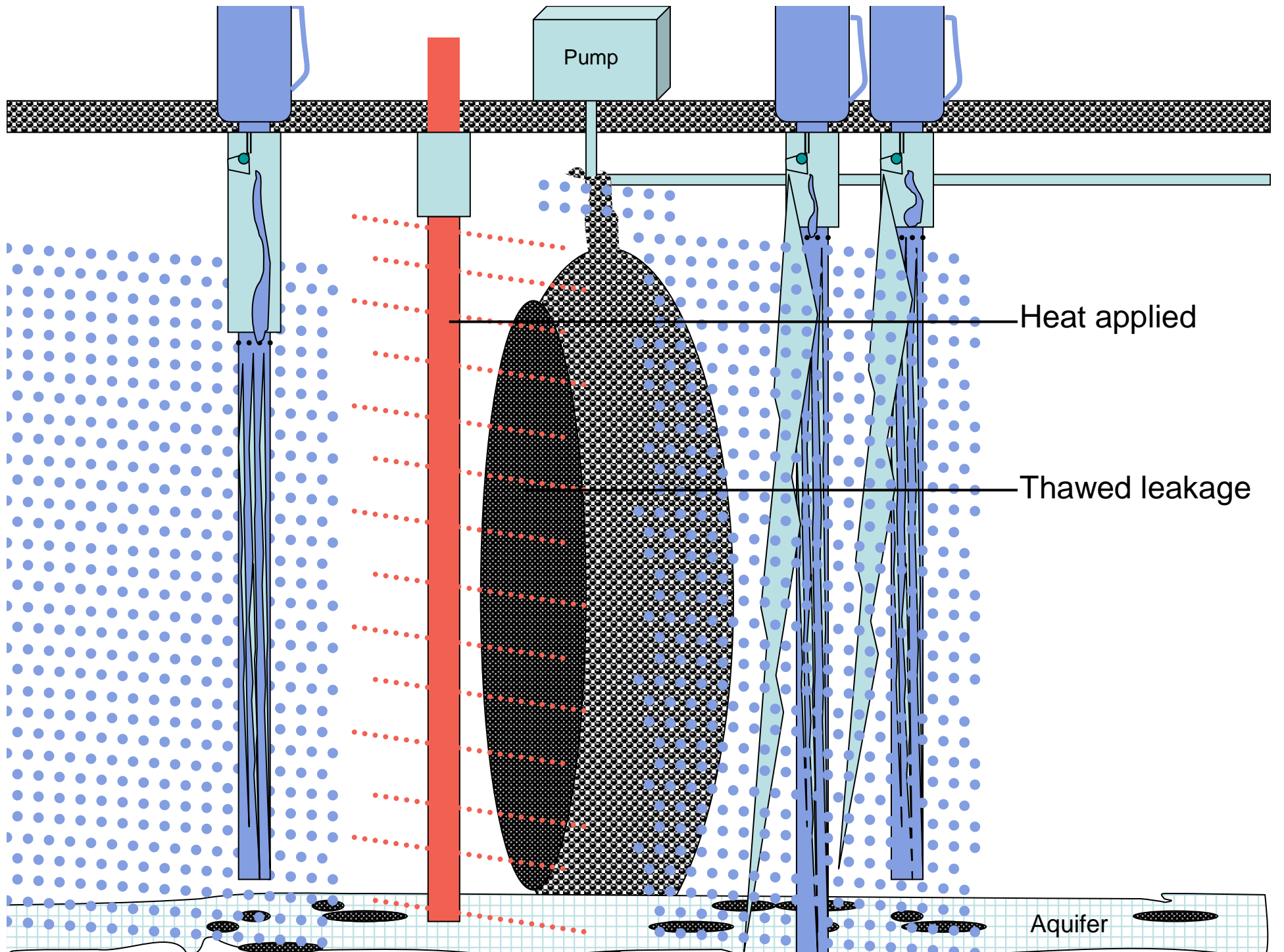


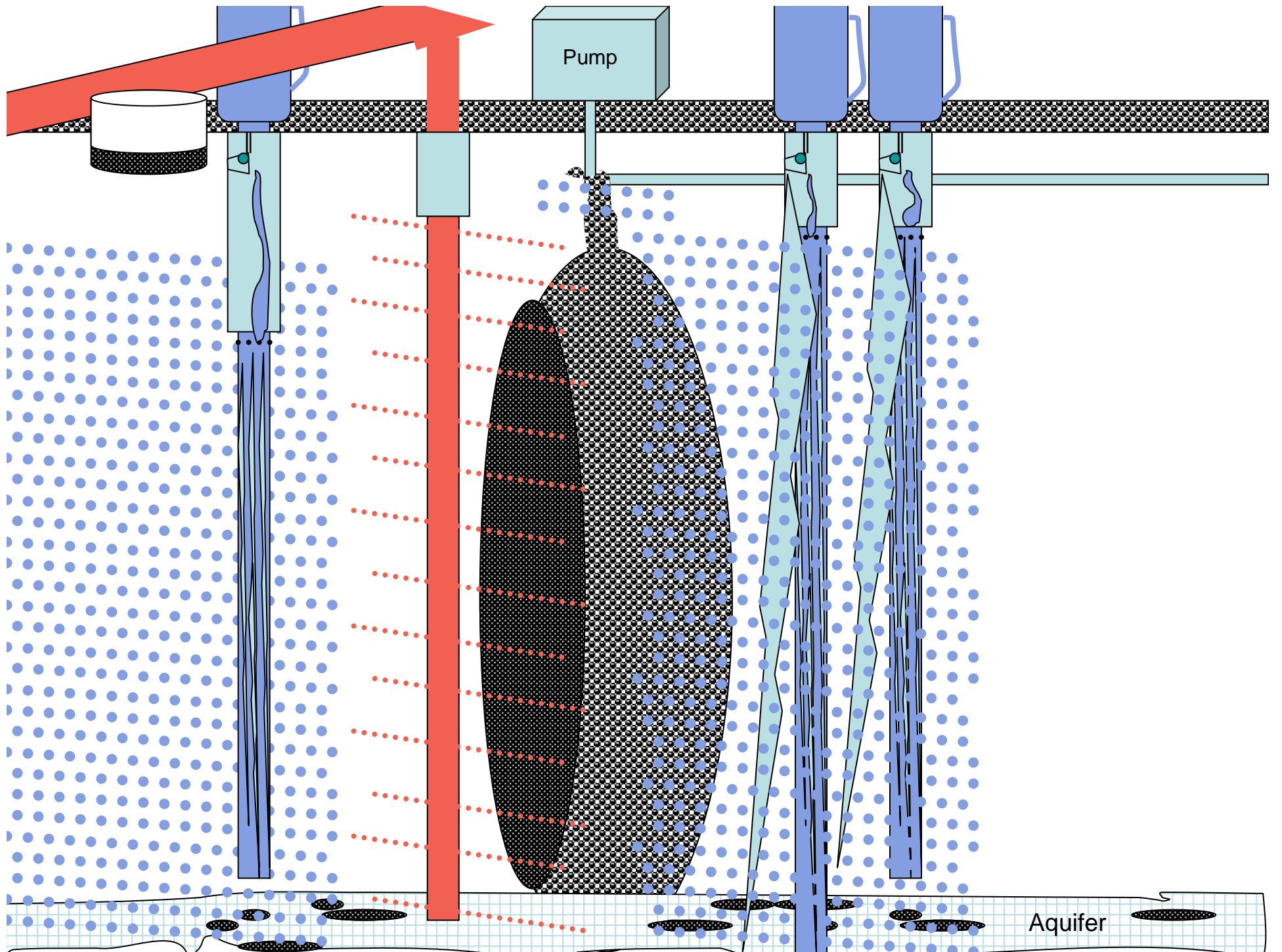


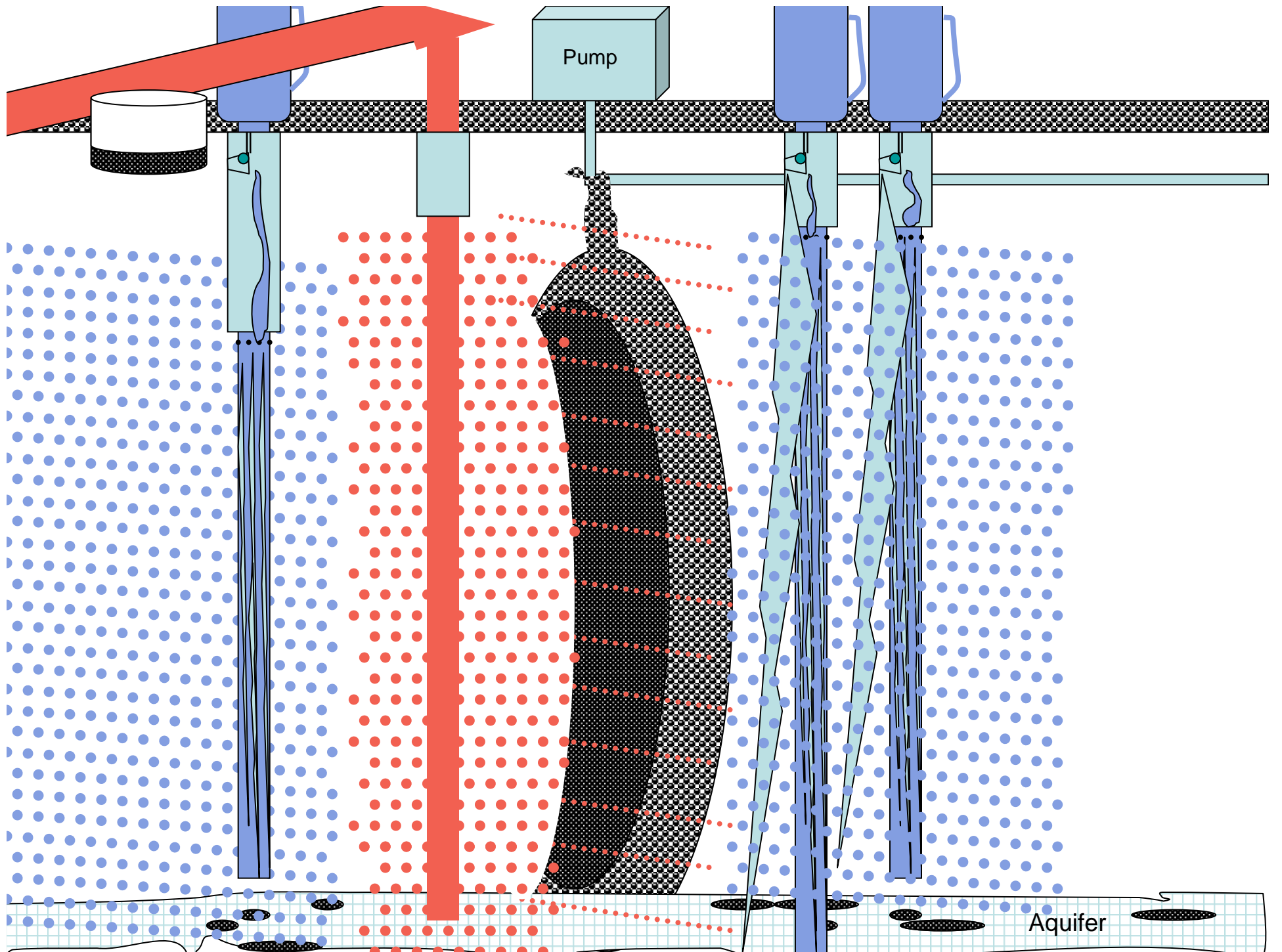


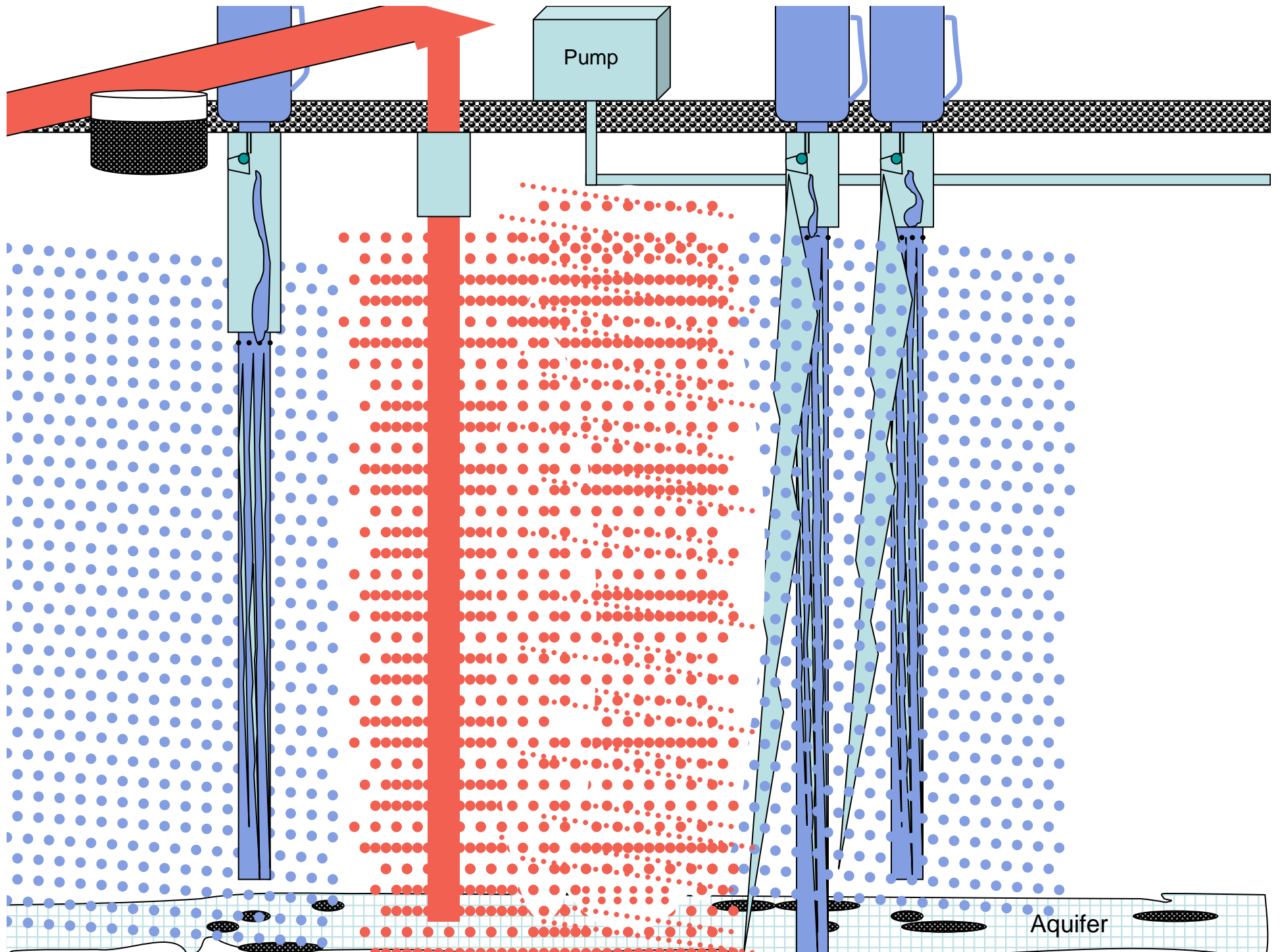


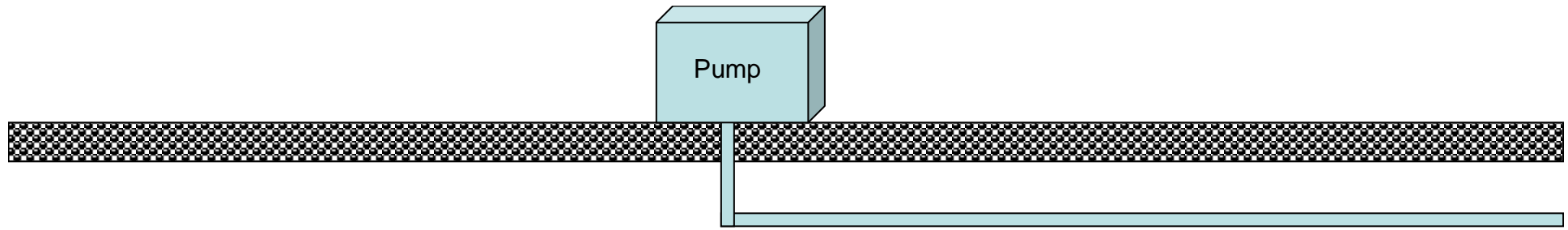






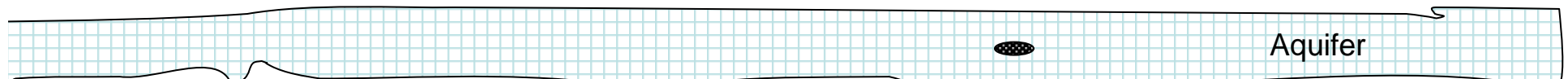






With skilled filling of drillings and patching concrete, the area is clear of pollution and ready for use.

Installer of the pump will have repaired the pipe section that caused the leakage.



Cost Estimates for Leaking Underground Storage Tank Pollution Extraction

BUSTR Budgeting	Day 1	Day 2	Day 3	2 Day Pump	3 Day Tank
Supervision	1,000	1,000	1,000	2,000	3,000
Site Staffing 24/7					
\$50/hr, 3 member crew	1,800	1,800	1,800		
Benefits 40%	720	720	720		
	<hr/> 2,520	<hr/> 2,520	<hr/> 2,520	5,040	7,560
Nitrogen - 230 liter dewar	500		500	500	1,000
Hardware Charge	600	600	600	1,200	1,800
Per diem, crew of six	720	720	720	1,440	2,160
Totals	<hr/> 5,340	<hr/> 4,840	<hr/> 5,340	<hr/> 10,180	<hr/> 15,520
20% Administrative Support	1,068	968	1,068	2,036	3,104
TOTAL	<hr/> <hr/> 6,408	<hr/> <hr/> 5,808	<hr/> <hr/> 6,408	<hr/> <hr/> 12,216	<hr/> <hr/> 18,624

These estimated costs are for each 15' depth of contamination anticipated/found.

Handling large area of pollution

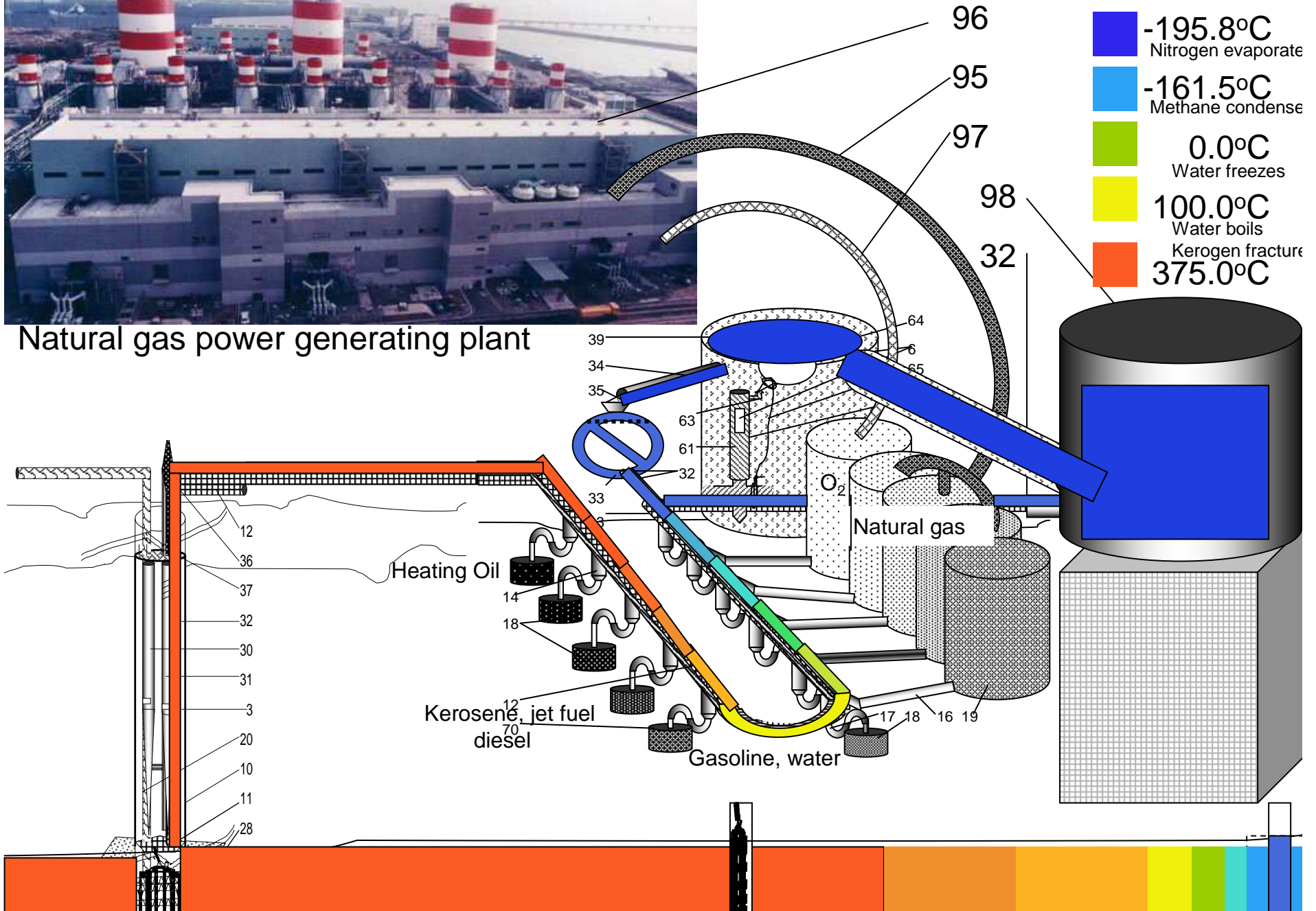
- Overview of the oil shale fuel extraction configuration which can apply for large areas of contaminated soils.
- Thermally driven process.
- Nitrogen sourced hot in center hole, cryogenically cold in outer ring of auxiliary holes.
- Heaters placed in inner rings of auxiliary holes.
- Area can be multiple of the 300' square with squares having common sides. A nine hundred by nine hundred foot square covers 18.595 acres. This could be cleared of pollution at one time being one month effort.

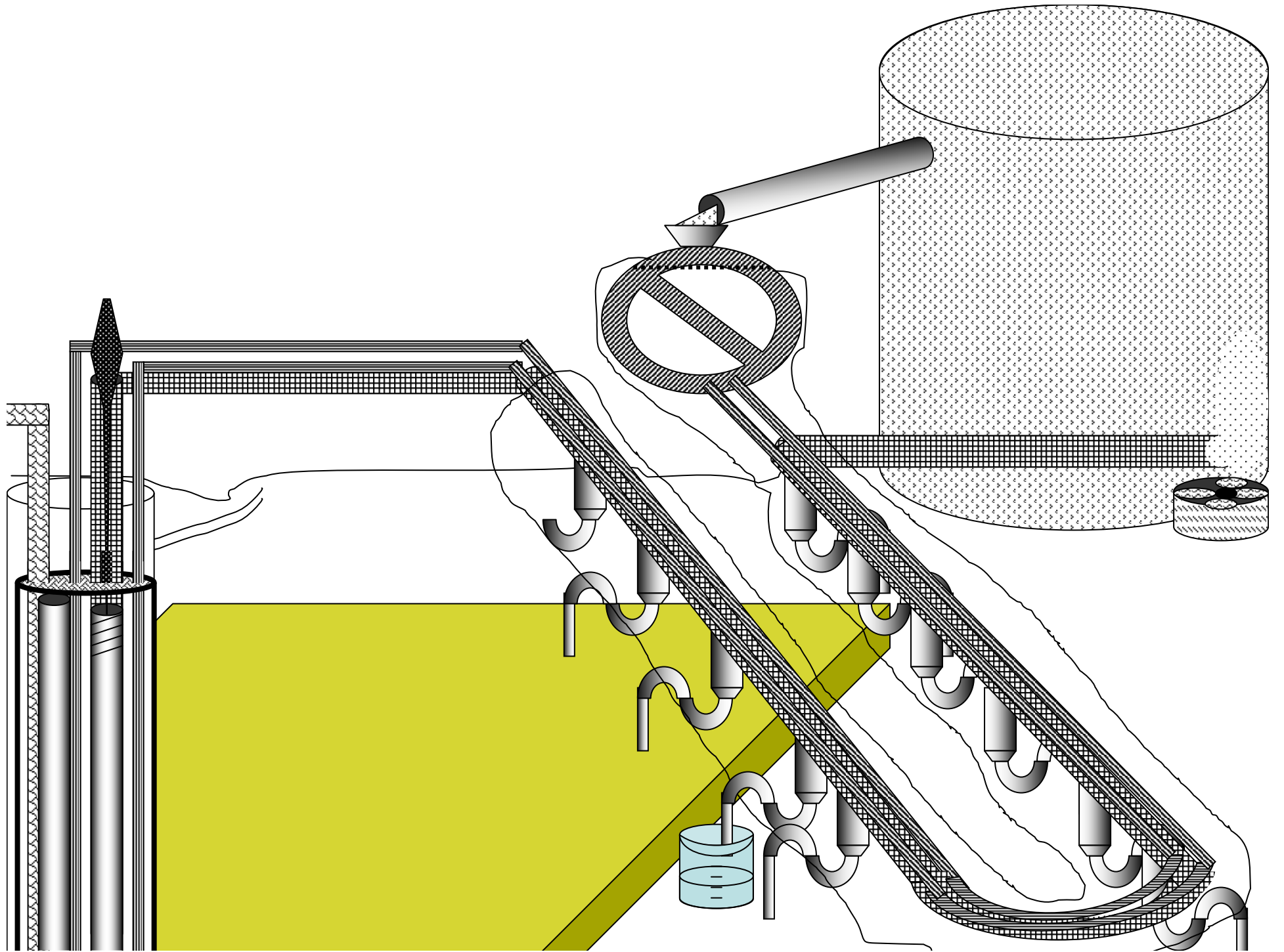


Natural gas power generating plant

Harvesting System Thermally Defined

- 195.8°C
Nitrogen evaporate
- 161.5°C
Methane condense
- 0.0°C
Water freezes
- 100.0°C
Water boils
- Kerogen fracture
375.0°C





Two Acre Extraction Zone – three layers deep so far.

Note: One fuel fractionating location at main shaft.

Five surrounding supplemental heating rings.

One outer freeze ring to keep out ground water.

Two layers have had fuel extracted, the third near completion.

Vegetation undisturbed but for entry road and center hole.

