

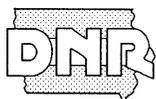
# THE HISTORY OF BIG SPRING

by Mary Bankes

**Geological Survey Bureau  
Technical Information Series 30**



*edited by Kathie Bentley, communication specialist  
Big Spring Demonstration Project*



**Iowa Department of Natural Resources**

**Larry J. Wilson, Director**

**August 1994**

COVER PHOTO:

The undeveloped Big Spring as Mary and Otto Bankes found it in 1938.



*Printed on Recycled Paper*

# **THE HISTORY OF BIG SPRING**

by Mary Bankes

**Geological Survey Bureau  
Technical Information Series 30**

*edited by Kathie Bentley, communication specialist  
Big Spring Demonstration Project*

Energy and Geological Resources Division  
Geological Survey Bureau

August 1994

**Iowa Department of Natural Resources  
Larry J. Wilson, Director**



## **Foreword**

Environmental issues and environmental research are more than mere technical matters. Perhaps most importantly they involve the stories of real people. The following report is one such story. The personal history of the development of the Big Spring by Mary Bankes provides a unique glimpse at the personal impacts of some of the environmental concerns that led to the Big Spring Basin research and demonstration projects. At the same time, it outlines historic records that provide technical background information that allowed these noteworthy studies to be developed.

This report is exemplary of the multifaceted work that has gone on in the Big Spring Basin region; work that has been unique in its attempt to provide as complete an overview of the real-world setting as possible, as resources allowed. This report provides a significant compliment to the many technical reports that have been generated from studies in this region.

On behalf of all those who have followed the work of the Big Spring Basin Demonstration Project, an effort trying to help Iowan's help themselves to improve their environmental conditions, we thank Ms. Bankes for her many hours outlining this oral history, for her effort to share per personal stories, and her personal files of news clippings and photographs to provide this unique insight.

George Hallberg, previously Chief, Environmental Geology, Geological Survey Bureau  
Chief, Environmental Research, University Hygienic Laboratory

## **Acknowledgments**

This is a joint report of the Iowa Department of Natural Resources-Geological Survey Bureau and the Iowa State University Extension Service from the Bit Spring Basin Demonstration Project. The Big Spring Basin Demonstration Project of the Iowa Department of Natural Resources is supported, in part, through the Iowa Groundwater Protection Act and Petroleum Violation Escrow accounts, and other sponsoring agencies: the U.S. Environmental Protection Agency, Region VII, Kansas City, Nonpoint Source Programs; the U.S. Department of Agriculture, Soil Conservation Service, the Iowa State University Extension Service, the University Hygienic Laboratory, and the Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation.



## Preface

*I met Mary Banks in 1990 while researching the historical development of Big Spring, a Department of Natural Resources (DNR) trout rearing station. Mary and her husband Otto had developed the farm land and large natural ground-water spring into a private fishing club in the 1930s.*

*Although Otto died in 1984, Mary Banks was quite willing to share her memories of their Big Spring business. She grew up learning how to care for fish at her uncle's fish-out pond. Mary was intimately involved in the development of Big Spring along with her husband and her Uncle Earl. She helped with construction, fish rearing and club operation. Scores of scrapbooks and boxes of old photographs and slides are her link to years past when they operated the Big Spring Trout Pond.*

*Mary kept detailed handwritten records of rainfalls, floods, and weather affecting the spring, as well as fish growth, and fish kills throughout the years. After several months of interviews and reviewing old scrapbooks, newspaper clippings and notes, Mary and I collaborated on a historical narrative of Big Spring development. I wrote a feature story from Mary's notes including several black and white photo reproductions from the mid 1930s. It was published widely in newspapers across northeast Iowa and submitted to Iowa natural history publications, the Iowan, and several Midwestern magazines.*

*A Luther College anthropology student, Jill Robinson, was hired to expand this historical narrative into a more complete oral history. Meanwhile Mary continued to find more old photographs and slides of Big Spring. She also amended Robinson's oral history text with an additional eight pages of handwritten notes, corrections and descriptions which I edited into the final manuscript after Jill Robinson left the project.*

*The amended history, including 40 reproduced black and white photographs, has been given to the Elkader Historical Museum for future display, and is part of a permanent wall display developed for the Big Spring Trout Hatchery. Large mounted photographs showing historical development of the spring have been used during Big Spring Project tours conducted by both project and hatchery staff.*

*Besides the historical significance of Mary Banks work, it was interesting to share with tour groups the Bankes' early efforts to tie erosion, farming practices and voluntary land use changes to water quality. Sinkhole cleanup and closings and erosion control methods were tried privately throughout the 1930s to contend with silt loads at the spring.*

*The very economics of the Bankes' trout rearing business was affected by each major flood in the Big Spring watershed. Cost of continually repairing silt and flood damage led the Bankes' to accept an offer from the Iowa Conservation Commission ([ICC] which later became the Iowa Department of Natural Resources [IDNR]) to purchase Big Spring in 1961. After the sale Otto stayed on at Big Spring as an ICC fisheries biologist until his retirement in Dec. 1973.*

*Kathie Bentley, communication specialist  
Big Spring Basin Demonstration Project*

---

***Mary grew up learning how to care for fish at an uncle's fish-out pond near Mederville. When she and Otto started the Big Spring Trout Pond Mary helped with fish rearing, building construction, and club operations.***

---



Mary Banks visits with current Big Spring Trout Hatchery manager, Jerry Spykerman.



## The History of Big Spring—by Mary Bankes

### *The Dream*

My uncle, Earl Hubbard, had a small spring-fed rearing and catch-out pond near Mederville, Iowa. He could only raise enough trout to stay open for approximately two weeks of fishing in late summer. Earl's dream was to find a spring large enough to rear more trout. Though this was during the depression years, fishermen came from as far away as Waterloo, Cedar Rapids, and Clear Lake to trout fish.

Earl mentioned his idea to two gentlemen from Clear Lake who frequently fished his catch-out pond. They were quite interested in this idea. My husband Otto and I were also very interested in Earl's project. I spent a lot of time there asking questions about rearing trout.

### *A Spring*

In the fall of 1935, Otto and I went to work for the Benson brothers on a farm across the Turkey River from Big Spring. Our combined wages as farm hand and housekeeper were fifty dollars a month, a good wage for that time. Oscar Benson told Otto about a big spring across the Turkey River. In late fall in 1937, Oscar and Otto went to look at the spring. Otto was awed by its size and called Earl to come see this spring. He too was amazed.

Access to the spring was by foot or boat across the Turkey River. The spring is located at the base of a big bluff approximately 550 feet from the Turkey River. It bubbles up through the ground on top of a shelf of layered rock approximately four to five feet higher than the river water level. The temperature was 47 degrees. After seeing the spring, Earl, Otto, and I talked about what could be done if we only had some money.

In December of 1937, Earl decided to contact the two gentlemen from Clear Lake who had expressed an interest in spring development. They were very interested. On Christmas Day Earl and Otto took F.P. Walker, a former banker and owner of Clear Lake Sand and Gravel, and W.A. Ames, a former country club owner and promoter, to see the spring. They, like Earl and Otto, were also enthusiastic about the spring's possibilities.

### *A Partnership*

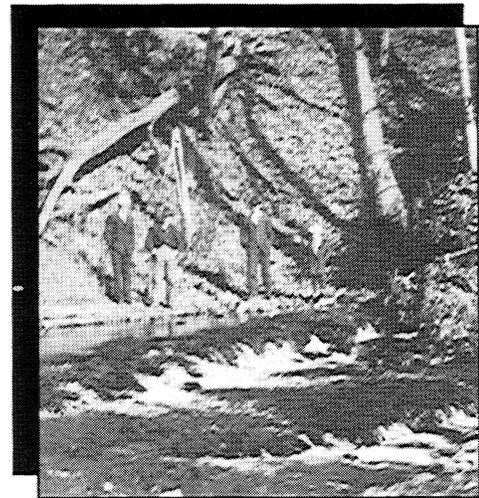
During the first week of January 1938, F.P. Walker took out an option to purchase 21.7 acres, including the spring, on the farm of F.E. Sharp, an Elkader, Iowa lawyer. Big Spring Trout Farm and Fishing Club was about to become a reality! A partnership was formed. F.P. Walker put up the money, Walter A. Ames promoted the fishing club, and Earl Hubbard engineered the project as trout rearing expert. My husband, Otto Bankes, was in charge of construction. During the rest of the winter Earl and Otto designed a dam, hatchery, office, shop, and completed a layout for fishing and rearing ponds.

In April, the spring's flow was measured at 5,338 gallons per minute by L.A. Crawford of the Iowa Geological Society. This was during the end of the 1930s drought years. Since the surrounding ground was much higher than the spring, we knew the spring had to be raised to an operating level. This was a big gamble. By raising the spring we could lose it; that is, it could follow other crevices and come out somewhere else.

---

**Earl's dream was to find a spring large enough to rear more trout.**

---



Clark family members on the banks of Big Spring prior to development in 1938.

---

**An Iowa City engineer was surprised — Earl and Otto, with no engineering training, could design and draw plans for a dam this size. Everything was okayed just as designed.**

---



Earl, Otto and Ben Petsche constructing the back control dam in May of 1938.



18-by-94 foot section of dam base with 30-inch tube for water flow during dam construction in 1938.

Otto started to build a temporary road to the spring on April 10, 1938. Our only access at that time was a homemade boat across the Turkey River or a long walk in. A neighbor, Joel Clark, gave Otto permission to clear a roadway through his farm land. We later leased this roadway.

#### *Construction begins*

F.P. Walker put up two thousand dollars to build the dam. Earl and Otto built forms from the plans they had designed. After putting forms in place for the first 6-foot section of the dam, F.P. Walker thought it wise to ask an Iowa City engineer to come look at the dam's design and plan. He was surprised that Earl and Otto, with no engineering training, could design and draw up plans for a dam that size. Everything was okayed just as designed.

A gas engine powered a "cement mixer" for dam construction. Extra help was hired to push concrete-filled wheelbarrows up plank walkways to fill the forms. I helped Earl place and tie re-rod in the forms.

The dam is 70 feet in length at the base and stretches nearly 94 feet at the top. It is 18 inches wide at the base, tapering to 10 inches at the 18 foot top. The dam was built in six foot sections, one on top of another. Two 30 inch tubes were built into the base of the dam, one at each end, allowing water to flow as construction progressed. The spring could be temporarily drained should the need arise. A 36 inch chute from each tube to the top of the dam was built with double slots so oak planks could be placed in the slots to either raise or lower the spring level.

When the dam was 12 feet high, the water level was raised a couple of feet to see if there were any leaks on the other side of the dam. The spring came up through three different cracks in the rock. A "cement box" was built over each crack with a pipe allowing water to run until the concrete was set. Next a cap was screwed on the pipe and the leaks were sealed.

We used the first weekend of June 1938 to build a 12 by 16 foot one-room cabin for Otto and I to live in. Little did I know at that time it would be my home for the next 18 years! An 8 by 10 foot bedroom and small closet were added later.

Next we acquired a used crawler and "tumble bug," a type of dirt scraper. Otto started digging out the fishing pond using the soil as fill in front of the dam. Then, after all the dry weather we had, it started to rain. The spring flowed heavier and got roily. Neighbors Seth and Joel Clark told us they had seen the spring look muddy years ago. It made us wonder and a bit wary.

Otto started putting in fill, and Earl put planks in the chute to equalize dam pressure on both sides. When the water reached a height of nine feet, some of the spring followed a crevice, coming out in a nearby dry creek bed approximately 900 feet east of the spring.

#### *The Control Dam*

Earl and Otto next built a concrete control dam with slots for planks to lower or raise the spring's flow. Before the control dam was completed we got rain, and

the spring came over the top of the 12 foot dam, washing out some of the fill. The two 30 inch tubes couldn't handle that much water. Now we knew the spring flooded, but we had no idea how much it would flood in the future. The dam was raised another 6 feet, bringing it to 18 feet as planned.

A rock formation at the top of the hill above the spring was perfect material for constructing pond walls and buildings. A couple of extra men were hired to quarry and haul rock with a team of horses. Earl laid a rock wall along the end and side of the big fishing pond, and around the inside walls of the six rearing ponds to protect the pond banks from erosion by wave-action. I learned to "mix cement," and helped lay rock wall.

Otto and Earl each earned fifty dollars a month, working from daylight until dark. Later that summer both got a pay raise to 75 dollars a month until winter.

Otto dug the big fishing pond, six rearing ponds, and completed the dike along the river before winter. The hatchery was partly built, but it got too cold to finish it. Through the winter Otto quarried rock and hauled it down the slope to be ready for spring.

#### ***Water Assessment***

Mr. Hershey, from the Iowa Geological Society, came again in the spring of 1939 to reassess water flow at the spring. It was flowing more heavily than in 1938. This time it measured 10,000 gallons per minute. The spring was measured again three different years with normal flow rated approximately 10,000 gallons per minute. Mr. Hershey acquired the nickname "10,000 Gallon Hershey" at the Iowa Geological Survey.

In 1939 the hatchery was completed, along with an office and shop. All were constructed of rock laid edgewise in cement to blend with the rock surroundings. A concrete outlet was constructed from the fishing pond to the Turkey River. A twelve inch iron pipe was laid from the spring along the six rearing ponds. Four inch pipes from the large pipe fed each individual rearing pond. Excess spring-flow was routed to the river by way of the concrete outlet.

#### ***Open for Business***

The fishing and rearing ponds were filled that fall. Earl brought trout from his Mederville ponds to stock the new fishing and rearing ponds. A federal trout hatchery remodeling its buildings sold us hatching tanks for one dollar each. They also gave us surplus trout eggs when we picked up the tanks. The eggs were set in the new hatchery.

#### ***Promotion***

Walter Ames was on the road promoting the fishing club and selling memberships. The grand opening was set for April 10, 1940. One week later we got muddy water for over a week. The spring couldn't flush out, unconfined as it had been before the dam was built.

#### ***Floods***

Two months later, July 25, 1940, we were completely flooded out after receiving 12 inches of rain. The Turkey River overflowed the entire project. An

---

**Otto dug the big fishing pond, six rearing ponds, and completed the dike along the river before winter.**

---

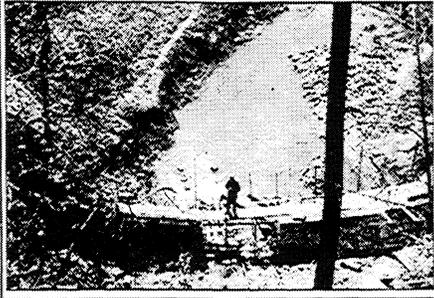


Otto and Bob Cheeseman quarried and moved rock for the fish hatchery building in 1938.



Hatchery building, completed in 1939, of natural rock laid edgewise in concrete to blend with rock surroundings of Big Spring.

## New Cold Elkader Spring Development Under Way



An early newspaper clipping on Big Spring dam construction set water temperature at 47 degrees, said to be the largest Iowa cold spring.



Otto and Mary Bankes in front of a 12x16 foot one-room cabin built in 1938. Their home for 18 years!

**Though this was during the depression years, fishermen came from as far away as Waterloo, Cedar Rapids, and Clear Lake to trout fish.**

unbelievable amount of silt came through the spring. The spring deposited 33,000 tons of silt in the big fishing pond. It was 13 feet deep at the end of the pond. That enormous amount of silt would have to dry before it could be excavated.

Every time high water hit it was a new experience. We didn't even know the spring could get muddy until the dam was being built, and we were certainly not prepared for the flood of 1940. Nothing had been built yet to handle floods except the two 30 inch tubes.

The time of year and farming practices both contributed to silting problems during that first flood. Both could have ended our hatchery project. Few farmers in northeast Iowa used buffer strips or terraces then, and farmers would often plow right to the edge of the creek banks. Heavy springtime rains combined with no vegetation to hold the dirt in place, caused constant silting problems. The amount of rain didn't contribute to our difficulties as much as the time of year when the rain came.

After being flooded out and seeing the huge clean-up task ahead of us, we weren't too sure we would go ahead with reconstruction. A lot of time, work, and money had gone into the dam and hatchery. The flood was a huge set-back. Due to the flood there was no business income in 1940 or 1941. In the fall of 1940 there were no funds for wages. Otto and I stayed on, cleaning out ponds and caring for the few remaining trout and fingerlings. We made do by fishing, hunting, trapping, and canning vegetables from the garden. My dad loaned us a cow, some chickens, and feed so we would have milk and eggs.

### ***Problem Solving***

It was during the fall of 1940 that Earl and Otto figured out how to divert excess spring flow during floods. They thought by closing area sinkholes, sediment to the spring would be controlled. In August they started looking for sinkholes in the area carrying silt to the spring. We asked Extension Service for help after the flood, but found out we could receive no direct funding because we were a private enterprise.

Someone always had to be at the hatchery, so sometimes I hunted sinkholes with Otto while Earl stayed at the spring. Other times I would stay and Earl would accompany Otto. We established a kind of a network with area farmers. We started out by asking a farmer if he knew of any sinkholes. He would tell us about his, then send us on to neighbors with sinkholes on their property. When word got out we were hunting sinkholes, people started contacting us. Meanwhile I kept rainfall records of the area noting how long it took before water flow and turbidity at Big Spring were affected.

Mr. Walker put up money for finding and capping area sinkholes washing into Big Spring. Otto and Earl asked permission to cap sinkholes on farms from the Postville/Monona area all the way to the spring. We saw dead farm animals, trash, and old DDT and other pesticide containers in those sinkholes that really scared us.

Before closing a sinkhole, Otto and Earl cleaned out the trash and placed boards across the holes for a form. Next they poured in concrete, forming a cap.

After a few years of capping sinkholes we found they often opened up again at the same location or nearby. We finally gave up capping sinkholes as the work and expense seemed useless.

During the winter of 1940 we got eggs from a federal hatchery and set them at Big Spring, even though we still were not sure the hatchery would reopen. We had more muddy water and some extremely cold runoff after a thaw that winter, and did not have very good luck with hatching. Cold water runoff makes eggs take longer to hatch.

### **Revisions**

Mr. D.J. Walker, a Waterloo businessman and uncle of F.P. Walker, came to our rescue in the spring of 1941. A loan allowed us to re-dig the fishing pond, dig a bypass through the hill behind the buildings, and construct a spillway carrying excess water to the Turkey River during floods. Through 1941 and the summer of 1942 we completed the overflow bypass, re-dug the fishing pond, and used dirt to raise the height of the dike. The dam was raised another six feet, bringing it to a height of 24 feet.

On October 11, 1942, we finally reopened the fishing pond for business. Earl felt he had taught Otto and I the trout rearing business. In November 1942 he left Big Spring to manage the Backbone State Fish Hatchery near Strawberry Point, Iowa. Walter Ames agreed to sell memberships at Big Spring instead of on the road. He also agreed to help out in the office. Otto and I had built 23 rearing ponds and the big fishing pond, a total of 24 ponds.

### **War Years**

Despite rationing of gas, tires, and food during the war years, fishermen still found a way to get to Big Spring to fish. While the project was just getting started Mr. Walker insisted we use the word "farm" in our name. It paid off when the war rationing board agreed we were producing a food product, trout. Because we were considered a farm we were eligible for a special stamp to purchase inedible meat from packing plants to help feed the trout.

The packing plants were also in short supply and couldn't always fill our order. For a few months we resorted to buying blood for a "filler" with what meat we could buy. Meat was purchased once a week. Through trial and error we designed a fish diet for a faster-growing, more flavorful trout. We used shrimp meal to produce the pink colored flesh favored by fishermen. State and federal hatcheries were helpful in sharing trout diets and growth rates. We also got some help from F.P. Walker's brother-in-law, Ira Gabrielson, who was Secretary of the Interior at that time. Mr. Gabrielson came to visit Big Spring several times and sent me lots of literature on trout rearing.

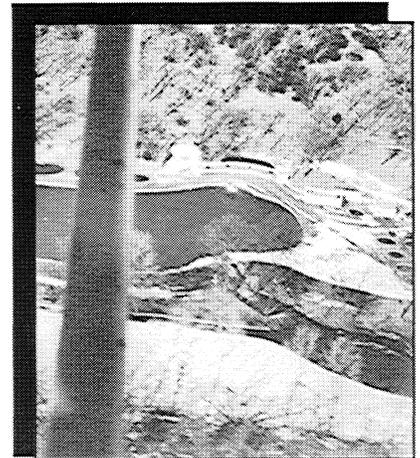
### **Trout Rearing**

There was not commercial trout feed available in the 1940s. Small trout (called fry), were fed ground beef heart with all the fat trimmed off. Heart was ground 10 times to get it fine enough for fry to eat. As the trout grew, meal and ground liver were added to the ground heart. Next, ground liver and spleen were added to a steam-cooked mash. In summertime Otto got up at 4:30 a.m. to steam-cook the mash and

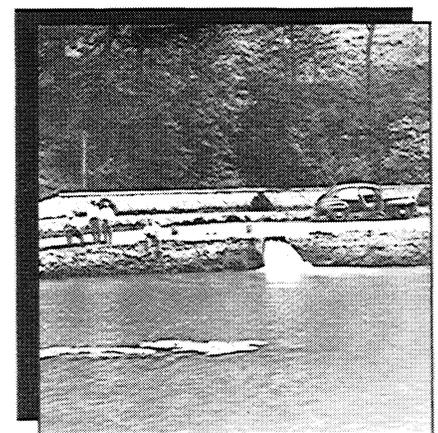
---

**The time of year and farming practices both contributed to silting problems during that first flood.**

---



Aerial shot of large fishing pond and smaller rearing ponds at Big Spring in the early 1940s.



Despite rationing of gas, tires, and food during war years, fishermen still arrived at Big Spring.

---

**For 35 years I hated rainstorms. It meant we would be up most of the night.**

---



Otto Bankes with prize trout at Big Spring Trout Farm.

cool it. The mash was mixed with the ground meats. Before we had electricity Otto used to mix the mash with a shovel. After electricity was installed in the fall of 1944 the feed was mixed in a bakery-sized bread mixer. Electricity made a big difference in the operation of Big Spring Trout Farm.

For us, trout rearing was a 24-hour-a-day job. In late fall brood trout were spawned and the fertilized eggs were put on wire trays in hatching tanks. The eggs were not touched or handled for 18 days or until they reached the eyed stage. Next the dead eggs were removed. Trays could now be moved around as long as the eggs were kept moist.

Dead eggs were removed by using a syringe with a glass tube. They had to be sucked up one at a time. This was a very time consuming job. It was done every couple of days to keep a fungus from growing on dead eggs that could envelope surrounding good eggs. It took eggs longer to hatch at Big Spring because the water temperature was so cold. The ideal temperature for hatching is 54 degrees. Hatcheries now days hatch the eggs in incubators at a controlled temperature with a drip medication to control fungus. This was a far cry from the way it was done in the past.

I remember nights as the spring was flooding when we stayed in the hatchery, continuously moving trays of eggs from one tank to another, keeping them up out of the silt coming through the spring. If covered too long in the silt, eggs would smother. Silt was our big bugaboo. It killed all the un-eyed eggs. Prolonged silting caused gill problems in the fry and fingerlings. Lots of years we got through the hatching season with very little silting.

For 35 years I hated rainstorms. It meant we would be up most of the night. We had to hand-pull planks from the control dam, opening it to release excess water. When flood water slowed up we had to replace the planks, keeping the spring at an operational level for the ponds.

#### ***Pond Cleaning***

Cleaning ponds was also a continual process important in rearing trout. Each of the nine round concrete rearing ponds had to be cleaned approximately every 10 days with a scrub brush. Every month or 6 weeks trout in the dirt rearing ponds were seined into a holding tank built in each pond while the pond was washed down using water pressure from a water pump.

If fin-rot treatment was needed, we dipped the trout briefly into a tank of water in which a mixture of copper sulfate, acetic acid, and salt was added. Timing was critical. If left in treatment too long, the trout died. This treatment wasn't needed very often.

#### ***Flood-free Business***

From October 1942 through 1944 we had good fishing years with no business closings. In August of 1945 we again had heavy silting through the spring and closed the fishing pond for two and a half months. The pond had to be re-dug. The silt was used for a dike to shorten the big pond for another rearing pond. We reopened on October 29, 1945 for fishing. Big Spring Trout Farm was in-

corporated on February 2, 1946, and with the help of F.P. Walker, Otto and I started buying into the corporation.

### ***Licensed Business***

Big Spring Trout Farm applied for a trout hatchery license in April of 1938. Open 24 hours a day year-round, we were, at the time, the seventh registered private trout hatchery and fishing club in the United States. A lifetime family membership was thirty-five dollars. Extended family and friends were welcome. A two dollar rod-fee assessed each fishing guest became the first trout stamp later charged by the ICC (now the IDNR) that bought the trout farm.

### ***Members and Guests***

Members and guests alike paid for trout by the pound. Otto cleaned all the fishermens' freshly caught trout and packed them in ice. During the first winters, ice was cut by hand from the Turkey River. After a few years, a special rearing pond was left to freeze and used for making cleaner ice. Ice blocks were placed in an ice house and packed in sawdust. Relatives and neighbors helped with the "annual ice harvest." The ice pond was also used as a large ice skating pond. Many people came from Elkader and the surrounding area to try out the ice. We had electric lights for night skating.

Fishing club members came from a 300-mile radius of Big Spring. We thought the club brought a lot of additional business to the area. Guests slept in a small cabin on the river bank that had four bunks. There were also two bunks in the office whenever fishermen wanted to stay over. Even though our only advertising was one fisherman telling another about the pond, membership grew. Many well-known people came to fish at Big Spring, and they were the greatest. They came just to relax, fish, and enjoy the outdoors.

### ***More Floods***

On January 7, 1946, the Turkey River flooded all the ponds. It happened again in March. Many times through the rainy years of 1946, 1947, and 1948 we saw floods. On June 28, 1947, the Turkey River flooded and rose seven feet in 45 minutes, flooding all the ponds. It flooded again on February 29, 1948. River stage was 28.8 feet, a record for February, It flooded the entire area. There was heavy loss of fry and fingerlings as the river flooded the hatchery. Even though we used hardware cloth to fence the ponds, the river went over the fencing, mixing up trout of all sizes. They all had to be hand-sorted, a big job in cold weather.

### ***Business Successes***

1949 was a good year. Big Spring Trout Farm was becoming a successful enterprise despite many setbacks. Walt Ames' dream of a club house never materialized though because flooding problems used all available funds.

### ***Silting Problems***

In January of 1950 heavy silting caused a large loss of eggs and fry. Because of increased business we bought additional trout between 1951 and 1954 to keep the fishing pond well-stocked. Adult trout were purchased from catch-out ponds across Minnesota and Wisconsin, supplementing Big Spring stock.

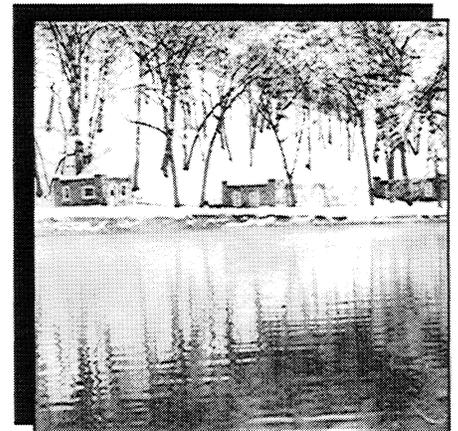


During winter at Big Spring ice was cut by hand from the Turkey River.

---

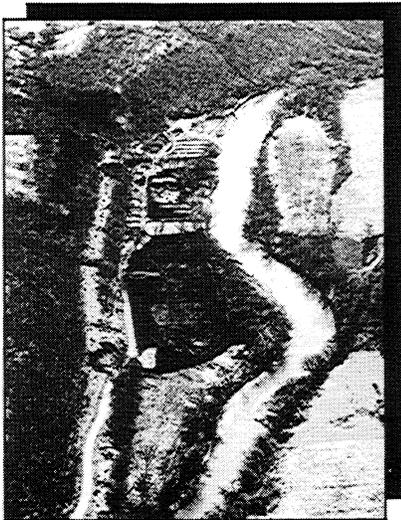
**During the first winters ice was cut by hand from the Turkey River. Ice blocks were placed in an ice house and packed in sawdust.**

---



During the winter the large pond was used as a skating rink by people from the surrounding area. Electric lights were provided.

**The spring flooded many times between 1955 and 1959. The overflow spillway caved in and had to be rebuilt. Each flood brought more silt which caused problems in the hatchery.**



1963 aerial view of back-up pond construction at spring entrance.



Membership at Big Spring trout Farm increased throughout the late 1950s despite repeated flooding.

### ***More Flooding***

The Turkey River flooded again in August 1953, higher than the 1940 flood. The entire pond area was flooded causing trout to wash into the river and mix all sizes together. The spring was high, but did not deposit as much silt in the large fishing pond as it had during the 1940 flood. This was because the hardest rain fell in the upper Turkey River basin, not in the Big Spring basin. Farmers were also using more buffer strips in their corn fields, and it was past corn plowing time.

### ***Business Expansion***

In December 1954 Otto's brother Orville moved to Big Spring to help with the business. We built a house for he and his family during the winter. In the fall of 1955 and through 1956 he helped Otto build a new home for us before his health forced him to stop working.

1955 and 1956 were very successful years. In late fall 1956 the fishing pond was drained and re-dug to clean out silt from the spring. In late 1956 Otto and I finished buying out our business partners. We began to use our new home as sort of a club house. Membership was increasing along with trout production. After Orville left we hired part time help. Walter Ames again agreed to help out during summer months.

### ***Worries***

The spring flooded many times between 1955 and 1959. The overflow spillway caved in and had to be rebuilt. Each flood brought more silt which caused problems in the hatchery. Silt continued to accumulate in the big fishing pond as well. Sinkholes in the area were also still a problem. We worried that weed killer chemicals or old pesticide containers would be discarded in sinkholes. With rain, the contaminants could get into the spring's flow and cause a big fish loss.

### ***Sell-Out***

By 1960 we had 1200 members, their families and guests fishing at Big Spring. We considered accepting an offer from the State Conservation Commission (SCC) to turn Big Spring Trout Farm into a state fish hatchery. Over the years we developed a brood fish that grew fast and spawned early. The State Conservation Commission wanted them. By late fall 1960 we decided to sell. It was the smartest decision we ever made.

On March 1, 1961 the State Conservation Commission took possession of Big Spring Trout Farm. Due to the spring's silting problems, Big Spring was used only as a rearing station. Otto agreed to stay on as manager and fish biologist, a post he held for 13 more years.

A couple days after the SCC took over, the Big Spring area had a 36-inch snowfall. The last week of March a rapid thaw caused the Turkey River to flood the entire pond area and hatchery, causing loss of fry and fingerlings. The much desired brood stock were flooded into the Turkey River along with many adult trout.

### ***Fish Kill***

Our fear of sinkholes came true on December 23, 1963. The Gunder Cheese Company emptied a pond used to hold whey and washing chemicals. The ground was frozen and the contents of the pond flowed into a nearby creek, went under the ice in the creek, down through rock crevices and into groundwater exiting at Big Spring. The whey and chemicals took all the oxygen from the water and no amount of pond aeration could save any of the 122,000 trout. It not only killed trout, it also killed all the freshwater shrimp and dark soft-shelled snails unique to Big Spring. The spring eventually flushed itself out. The big fishing pond was drained and left to dry.

Silt in the big pond was used for fill between the new concrete raceways constructed in 1971 where the big fishing pond had been. In 1974 the six rearing ponds were filled, and the original limestone buildings removed. The present day modern building was constructed. Once again the face of Big Spring was completely changed.

### ***Retirement***

Otto retired from Big Spring State Fish Hatchery on December 1, 1973. In 1974 we moved to a farm house on Chicken Ridge, near Elkader. Otto died in 1984. I am the only original member left of the group that developed Big Spring.

### ***Retrospection***

In retrospect one tends to remember the difficult times, probably with more clarity than the many good years. One can never forget all the grand people we met from all walks of life and the friends we made during the 35 years we were at Big Spring. The chance to help develop the spring, a love of our work with trout, the respect of, and for, our business partners, and an opportunity to know a lot of grand people made our life's work all worthwhile.

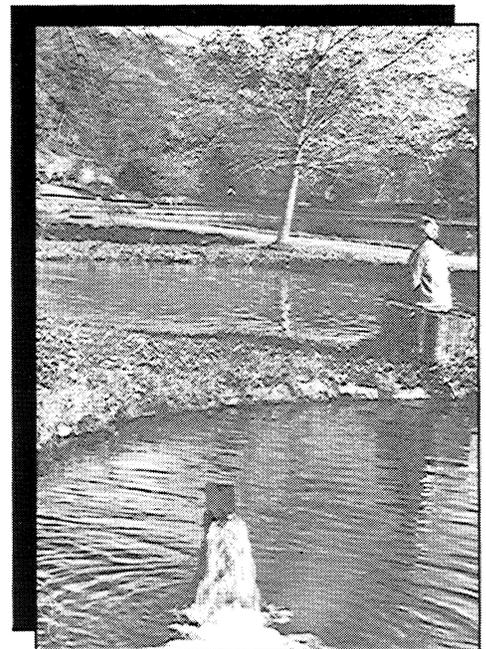


A worthy "catch" at Big Spring Trout Farm. Otto cleaned, filleted and packed the catch on ice for all members and guests.

---

**By late fall 1960 we decided to sell Big Spring Trout Farm to the State Conservation Commission who wanted to turn it into a state fish hatchery. It was the smartest decision we ever made.**

---



A quiet, reflective seat near a small fish-rearing pond at Big Spring.

---

**One can never forget all the grand people we met from all walks of life, and the friends we made during the 35 years we operated Big Spring.**

---



## Addendum

by Jerry Spykerman, *Big Spring Hatchery Manager*, and  
Kathie Bentley, *communication specialist, Big Spring Project*

### **Purchase**

The Iowa Conservation Commission (ICC), now known as the Iowa Department of Natural Resources, took possession of the hatchery from Otto and Mary Bankes, owners and operators of the Big Spring Trout Farm, on March 1, 1961. For a price-tag of \$65,000, the ICC purchased 21.7 acres including:

- a 30' x 48' wood frame home
- two wood frame cabins
- a storage shed built in 1940
- the limestone hatchery building
- 24 rearing ponds covering 3 acres, and  
(9 cement circular ponds, 14 rearing ponds, 1 fish-out pond)
- water control structures around the springs.

Additional acreage was purchased, down river, in 1964 (18 acres for \$650), and upriver, in 1966 (38 acres for \$3,869) increasing hatchery property.

### **Hatchery improvements**

Beginning in 1966 the ICC completed several hatchery improvements and construction projects including:

- building an entrance road with bridge construction - 1966
- raising the main spring wall - 1967
- drilling a new domestic water supply well - 1968
- erecting a hatchery feed area, shop and storage building
- installing inlet water lines to the dirt ponds - 1969
- constructing 24 concrete raceways  
(with water control structures, an inlet and outlet pipeline system with valves, stoplogs and screens).

### **Flood prevention**

In 1972 the ICC constructed a system to prevent hatchery flooding during Turkey River flooding. First a 3.6 acre storage pond was built west of the raceways. Next two pump houses were built. A 10-inch lift pump was installed in the storage pond and an 8-inch centrifugal pump was installed on the raceway discharge line. During a flood, water is deferred to the large pond and raceway discharge water is pumped over the dike.

Construction on a by-pass spillway to handle excess water from the main spring was begun in 1973 and cost \$63,881. It included the concrete and chain link fence seen today and was designed to prevent internal flooding during high spring flows.

In 1986 back spring renovation was started. A 12 foot by 115 foot impoundment wall was constructed at a cost of \$114,000. A spillway to handle excess water, a back spring drain line and water lines to dirt ponds completed the renovation.

Bridge and entrance road renovation was the next major change to the Big Spring Hatchery following extensive flooding of the Turkey River in 1991.

---

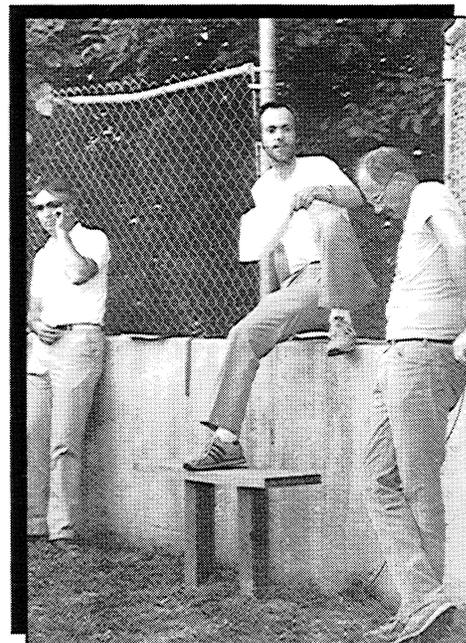
**The Iowa Conservation Commission bought Big Spring from Otto and Mary Bankes on March 1, 1961 for \$65,000.**

---

---

**Construction on a by-pass spillway to handle excess water from the main spring was begun in 1973 and cost \$63,881. It included the concrete and chain link fence seen today and was designed to prevent internal flooding during high spring flows.**

---



George Hallberg, IDNR-Geological Survey Bureau staff conducts a water quality tour from ledge of the by-pass spillway at Big Spring.

---

**One particularly devastating blow to fish production happened on December 24, 1963, when the entire fish population at Big Spring was lost.**

**The Gunder cheese plant let whey escape down a sinkhole causing oxygen depletion at the hatchery. Approximately 122,022 fish, 251,000 fry, and an unknown number of eggs were lost that night.**

---



The Big Spring Hatchery stocks approximately 117,000 fish yearly in streams across Allamakee, Clayton and Fayette counties.

The 87 foot long concrete bridge and asphalt paving of roadway and parking lots cost \$204,000 and was funded by both park and institutional road funds.

#### ***Building removal***

Removal of obsolete hatchery buildings and one cabin was also begun in 1973. In 1974 a new 4,050 square foot metal building was constructed along the raceways. It presently serves as an office, shop, storage, and feed storage area.

In 1993 the second original wood frame cabin built by Otto Bankes was removed. Now the only original property remaining at Big Spring is the residence, the wood frame metal shed, and four dirt ponds by the manager's residence used to rear brown trout.

#### ***Fish production***

From 1961 to 1964 the ICC staff spawned and hatched trout at Big Spring, much like Otto and Mary Bankes had. Usual production was about 250,000 fry per year, except for 1962 when production dropped to 175,000. From 1965 on, however, all spawning activities were moved to the Backbone and Manchester Hatcheries.

During the 1960s fish production varied tremendously because of flooding and bad water conditions. Production was lowest in 1961 with 102,450 trout. Most of the time, however, yearly production hovered at the 150,000 level.

One particularly devastating blow to fish production happened on December 24, 1963, when the entire fish population at Big Spring was lost. The Gunder Cheese Plant let whey escape down a sinkhole causing oxygen depletion at the hatchery. Approximately 122,022 fish, 251,000 fry, and an unknown number of eggs were lost that night.

With the advent of the raceway system, production did increase throughout the 1970s. By 1972, production was up to 248,300 fish. During the late 1970s totals leveled off at about 220,000 fish per year and remained fairly consistent throughout the 1980s. Production was increased to a maximum level of 304,000 fish during renovation of the Decorah Hatchery in 1988 and 1989.

According to hatchery manager, Jerry Spykerman, the 1990s will show an overall production decrease if present stocking quotas stay the same; due to increased capabilities of the Decorah and Manchester Hatcheries. If the trout program is expanded, production capabilities are available.

#### ***Stream stocking***

Fish stocking responsibilities have also changed since the early 1960s. For the last 15 years approximately 117,000 fish are stocked per year in Allamakee, Fayette and Clayton county streams. In the early 1960s Big Spring Hatchery also stocked streams in Jackson and Dubuque counties. The stocking season traditionally runs from April through November.

#### ***Fish food***

Fish food has also changed since the Bankes ran Big Spring Trout Farm. In 1961 and 1962 trout were fed ground beef liver and spleen. From 1963 to 1966

a formulated dry diet was supplemented with liver and spleen to avoid fish anemia from dry diet alone. According to Spykerman, as dry pelleted diet kept improving, food conversion and fish growth rates also increased.

### ***Memorable Big Spring catastrophes***

Besides the total fish kill in 1963, floods and fish diseases have taken a toll on fish production at Big Spring. In August of 1964 there was an "Ich" breakout, one of many during the early years. Low water flows resulting in warm water temperatures triggered disease problems. With development of the raceway system in 1971, this particular disease is no longer a problem.

August 26, 1990, was another memorable catastrophe at Big Spring - the worst flood in history on the Turkey River. The hatchery lost 65,000 stocking fish for 1990, and all of the 1991 stocking fish. Total value of fish lost was \$217,688. Total hatchery losses totaled \$263,295. Hatchery buildings were flooded with 5.5 feet of water.

Less than a year later, on June 15, 1991, the Turkey River flooded again, and again it was the worst recorded flood in history. The hatchery received nine inches of rain in less than two hours. Flood waters in hatchery buildings exceeded 6.5 feet. 151,000 fish, valued at \$137,780 were lost. Total hatchery losses amounted to \$195,803.

The Turkey River flooded again on August 15, 1993, the third worst recorded flood. There were no major fish losses this time, but again there was standing water in hatchery buildings.

### ***Intensive study of Big Spring***

Dye tracing was conducted in the Big Spring drainage area during 1977-1978, as part of a CETA project. The study was conducted by Neil Heitman with findings published in *Proceedings Iowa Academy of Science*. At the time dye tracing was conducted in the Big Spring area, a common belief was that water contamination across northeast Iowa was related to sinkholes.

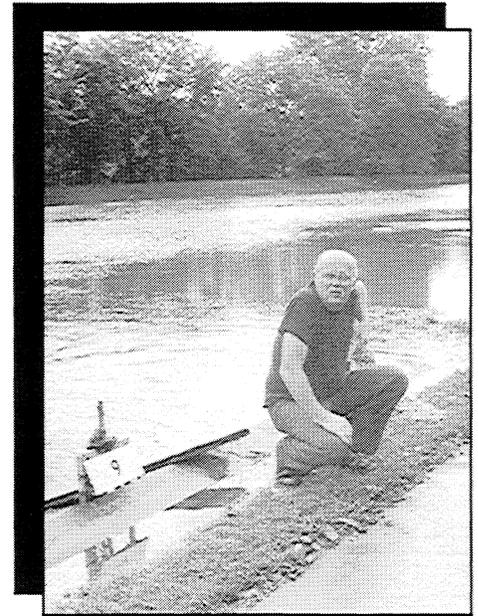
Dye tracing results showed normal infiltration and percolation of groundwater to be the major source of contaminants other than silt. Subsequent interest resulted in a local coalition which eventually evolved as the Big Spring Basin Demonstration Project.

### ***Hatchery managers***

Managers responsible for hatchery operations after the buy-out included: Otto Bankes 1961-1973, Vernon Spykerman 1973-1974, Gene Vaughan 1974-1978, and Jerry Spykerman 1978-present.

### ***Out-of-state and foreign Big Spring Hatchery visitors 1987-1992***

Between 1987 and 1992, over 200 foreign visitors from 50 different countries toured hatchery operations during tenure of the Big Spring Basin Demonstration Project.



Hatchery manager, Jerry Spykerman, stands along raceway #9 during the flood of 1991, the worst recorded in history.

---

**On June 15, 1991 the Turkey River flooded -the worst recorded flood in history. The hatchery received nine inches of rain in less than two hours. Flood waters in the hatchery exceeded 6.5 feet.**

**151,000 fish, valued at \$137,780 were lost. Big Spring Hatchery estimated losses amounted to \$195,803.**

---

**Between 1987 and 1992, during tenure of the Big Spring Basin Demonstration Project, over 200 foreign visitors from 50 different countries toured hatchery operations.**

Countries represented included Algeria, Angola, Argentina, Australia, Banin, Belgium, Botswana, Canada, Czechoslovakia, Egypt, England, Ethiopia, Finland, France, Greece, India, Indonesia, Italy, Iran, Japan, Jordan, Kenya, Malaysia, Mali, Morocco, Mexico, Morocco, New Zealand, Netherlands, Nigeria, Norway, Pakistan, Peoples Republic of China, Philippines, Poland, Scotland, Sweden, South Africa, Spain, Taiwan, Tanzania, Tunisia, Uganda, United Germanies, Uruguay, USSR, Venezuela, Vietnam, West Germany, West Indies, and Zambia.

Likewise, visitors from 35 different states have toured the Big Spring Hatchery including farmers, geologists, scientists, water quality specialists, foresters, educators, legislators, federal agency officials, and students.



Iowa's Governor Branstad touring the Big Spring Hatchery.



**Iowa Department of Natural Resources**  
Energy and Geological Resources Division  
Geological Survey Bureau  
109 Trowbridge Hall  
Iowa City, Iowa 52242-1319  
(319) 335-1575