SOLF Beals Preserve History Tour
Sunday, October 16, 2022, 10 am
Presenter: Whitney Beals

[Standing at the kiosk]

I grew up in the yellow house there through the trees [looking across to Chestnut Hill and Main Street], beginning at age four. That was a long time ago, almost 72 years ago. My folks moved there in December – I and my older sister and slightly younger sister, and mom was very pregnant with my brother. And we were just before Christmas. So I don't know how she did it, how they did it, but there I am. In the 1950s, that was 1950, still in 1950s, my dad was concerned that these 55 acres might become another subdivision. Because a woman named Margaret Leland, who lived in, not counting the barn, the third house down on Main Street – she owned this property, and she owned it all the way out to Flagg Road. And the southern 50 or so acres became the subdivision of Red Gate lane and Hickory Road. And dad was concerned that that might happen to this property. And it also happened to be the pasture for the dairy farm across the street – Charles Donaldson. And Charlie Donaldson, his wife, and one hired hand managed a herd of Ayrshire dairy cattle – I think it was about 40 head. They worked, oh my gosh, like dogs. Running a dairy you don't get a day's vacation. But this was summer, this was pasture for them. And I'll pass this around. It's hard to believe, but all that land to the left – we still maintain two semi-open meadows – that [past] the tree line there [were other pastures]. There were a total of 6 four-acre acre blocks – all that was open land at one time. And not that long ago.

"It was clear?" The cattle kept it open.

"So did your dad buy the property?"

Exactly. He bought it, really as a favor to Charlie Donaldson. And Mrs. Leland actually was kind of unhappy of what happened when she sold [the south 50 acres].

"Was the dairy farmer leasing land or using the land from Leland?"

Yes. I'm sure. And probably for $1, you know, and so my father bought it, so that it wouldn't get developed, and so the Donaldsons still had their pasture land. And let me pass this around. We are standing at the very bottom edge of this photo. And the bridge, which is probably the only private bridge or bridge for private purposes only on this whole reservoir system. It was a long time ago [subsequent lookup -- 1897].

"Did I hear you say that Mrs. Leland was unhappy with having sold her land?"

Yes, she wasn't happy with the outcome. She probably didn't really fully realize what was going to happen to it. And she regretted having done that. "You mean selling the part that became Hickory and Red Gate?" Correct? That's correct. Sorry, I wasn't clear about that.

So the reason the bridge is here, it was before the reservoir channel was created by the Boston Water Authority -- the one at the time, which became the MDC, which then became the Mass Water Resources Authority – was that there was a brook running through here – Stony Brook – and the Water Resources Authority didn't want cattle to get have open access to a brook because it was Boston's water supply. And when I was a boy, all of Boston's water ran under this bridge, every minute of every day. And it was water that came out of the Wachusett Reservoir. It was clear, it was cold, and it had to be disinfected, of course, probably more than once on its way to the taps in Boston. But all that's changed. This is an emergency backup water supply now. If it ever goes online, it's for fire suppression really only. If it has to go to people's taps, it would have to be a boil water order. Because there's a brand new – boy, it's been open probably close to 10 years now – water treatment plant. The Carroll Water Treatment Plant is up behind Kens Foods and Suburban Propane, off Cedar Hill Street, It's still the country's best water. It tests that way, both for taste and purity. So we're very good. We're very lucky as Southborough residents to be beneficiaries of that water supply. It's really extraordinary. "So this bridge was an easement to allow them to get to their land?" Not an easement. It was just built so that the cattle didn't wander through the water of Stony Brook.

I grew up, just coming over here every day in the summertime before we went to summer camp. And when I got home, or before I went to summer camp, my brother and I just spent hours and hours and hours over here and fishing off the bridge, which was great fun. And every once in a while the MDC police would come along and spot us. And we just run off and hide somewhere and they never caught us, which is great. "So you are not allowed to fish?" Now you are, yes. At the time, no, because it was the water supply for all the communities east of here, which is over 40.

"What year was that photo taken [old photo showing the open pastures and riding ring]?

Oh, that's a good question. But you can see the riding ring – we're going to go up through the riding ring – that circle there. And just beyond the riding ring, just to the south of it is the ice pond.

"But it looked like this when you were here?"

Yes, when I was growing up. It really did. But you take the herbivores away, and boy, mother nature wants to take over really fast. I mean, I was in the land conservation profession for many years and trained as

a forester, and colleagues from other parts of the country often asked, 'well, what do you plant after you do a harvest in the woodlands, in New England?' I'd say 'we don't plant anything, unless we want to convert some acreage to a totally different species.' And which the industrial landowners tend to do, but so we just wait and see what comes up, and then manage that well. Now the first thing unfortunately are a lot of different invasives, and I'll point those out during our walk. But that's what it looked like – there are scattered trees on this hillside to the west of the pond. And it's just amazing to me. The cattle went away. The Donaldsons retired from their farming operation in the early 60s. But dad leased the land to another farmer who brought heifers over here. That was Cameron Bradley with Wolf Pen Farm on Sears road – all now built up. And so I think the last cattle were here in the late 60s. So all his new growth you see is since then. So it's remarkable how things change and how fast they change. But when you get to see the photo, the riding ring didn't have a tree in it. The cattle would just chew it down.

So I'm happy to answer questions now and as we go along. So let's start our walk.

"How many head of cattle are we talking about?"

I think I do recall that there were about 40. They would congregate at the end of the day at the top of the lane where that creaky metal gate is – that's original – that gate – original to me. And the Donaldsons – Augusta and Charlie and their one hired hand and sometimes their daughter – would have to stop traffic on route 30. And they walked east on route 30 for what maybe 50 yards and then went up a lane to the dairy barn. And they had to do the reverse every morning – stop traffic. So they would bring them back here. So it was quite an operation.

"Did you want to talk about the gates here?"

The gates are there because my sister once pastured a horse over here – that was a long time ago as well.

"You used to run some cattle up there."

My wife and I had three pet steers that were kept in these two pastures, which is why you'll see barbed wire in some places. But then that got to be a bit of a chore – bringing water down. I had a big plastic 100 gallon tub down here. And the three steers in the summertime would drink 10 gallons of water a day each. So that water supply was depleted every three days and I'd have to come down. Did you see the cube? Did you walk by the big water cube by the pollinator garden? Well, I had one of those I'd put in the back of the Gator. And I'd run 100 gallons into it and come down and just gravity drain it into the end of the trough. And that got tiresome, so we stopped doing

that. And now they're on the hills [on Chestnut Hill property]. They're in a pasture just to the left, to the west of that red barn. I live in the house to the right of that red storage barn.

[Starting walk through the Lower Meadow/Pasture]

We're gonna go here in what we call the Lower Pasture. And mind you those three big steers kept it grazed down to the point where there were no shrubs in this block of land. We stopped bringing them over I'd say about five years ago.

"Did you say how old you are?""

Oh, I'm sorry. I'll be 76 next month. So I've known this land, oh, my parents probably let me start wandering around when I was six, I would guess.

"So you mentioned your parents came here. What brought them to Southborough?"

My mom was pregnant with my brother – that would be child number four. And they wanted more room. We lived in Shrewsbury for a short while. When I went home from the hospital, it was Shrewsbury. The house was small. And my dad – he found this wonderful old gentleman's farm that I still live on a small portion of.

Let's stop here for a second. You'll see on both sides of us a lot of native shrubs that like their feet damp, if not entirely wet. They're mostly viburnum and dogwoods. And they grew up after we took the three steers out of here about five years ago. So these are all self-seeded. We also have some of the very problematic invasive shrubs in here, which we keep working away at by pulling them out of the ground. This one here with the with the bright green leaves, still photosynthesizing – that's glossy buckthorn. And it's ubiquitous and invasive. I've seen it all the way up into New Brunswick, central New Brunswick.

"Where did it come from?"

It's European in origin. It was brought to this country to grow hedges, and boy does it grow hedges. It loves to be cut. You cut it, and it just comes back and the root mass just grows like crazy. And it's very invasive. And one of the qualities of invasive species is that they often leaf out earlier in the spring than our native plants do. And look, it's still growing.

"And when did it come here?"

Boy, that's a good question. Probably, I would guess at least 30 years ago, probably longer. And like many invasives you know, it's sort of

under the radar and grows just fine. And all of a sudden it explodes and becomes a problem. But these wetland shrubs are going to provide, probably already do, what unfortunately is an increasingly rare habitat for songbirds that are shrub nesters. So though it's a very small area, it probably will help add to the biodiversity of this property and in others, so that's why we're letting it go. For a while I mowed it and then I realized what was happening and I said, 'Oh no, don't mow it anymore. Let it grow up to be beneficial.'

I should explain the ownership of this property now. My parents didn't want to see it developed; they didn't want to pass think knowing that it might be vulnerable to more development. So they donated a conservation restriction to the Sudbury Valley Trustees on the entire acreage. And then several years later, they donated the fee interest in the land, the actual ownership to the Southborough Open land Foundation. And where you parked in that four and a half acre piece – that was part of the original 60 acres that my folks purchased on Chestnut Hill Road and Main Street and Northborough Road. And that also was subject to a conservation restriction donated to the Sudbury Valley Trustees. I think it was down to 55 acres because route 30 was rerouted when 495 was built. So they changed the location, right through acreage that my folks owned. That took something like five acres away or close to it. So now this is owned and managed by the Southborough Open Land Foundation. Sudbury Valley Trustees manages the conservation easement by coming and walking the property once a year to make sure that the [Southborough] Open Land Foundation is adhering to the principles and restrictions in the deed of conservation restriction.

So you can see a lot of milkweed here, Let's hope that it's raising monarchs like crazy. That's why I don't mow this part. I may mow it later in the season after all the seeds are dispersed. But it looks like I don't really need to, which is good. I like that.

[Whit was asked about the family.]

I have one sister who lives in Lincoln. My brother died in 2000 at age 49. And the other sister is in California.

[Standing at at pile of wood chips at the top of the Lower Meadow]

Behind this gentleman, you'll notice some wood chips. Those are left over from the art installation that was here from June until September, called Art on the Trails. It's the brainchild of a wonderful artist who lives here in Southborough – Catherine Weber. And I think this year was the sixth consecutive year of Art on the Trails. So there were a dozen installations all around the property, on the trails. The prize winner was here – it was a giant bird cage, with a bird in it. I would say an artistically creative looking work. [laughter] It was really interesting. But I hope that some of you at

least have come in and walked the trails when the installations are in there. Some of them are just fabulous. And there was a closing event in September, and there is a privately published booklet with poetry inspired by each installation. So it's really a wonderful thing to be doing on this property. I'm happy for it.

Now one of my personal goals, and my fellow trustees agree with it, is to uncover some of these walls again. They're magnificent. And Mother Nature just hides them pretty quickly. So I come along with a tractor and beat up that vegetation. Where I can, I pull it out of the ground, sometimes have to do that by hand, which is fine. But eventually some of these other walls will be exposed again.

"What's the long range plan here? You're gonna let it go to trees?""

No, we don't want to let it go to trees. We want to maintain that shrub-land habitat, which is helpful to nesting songbirds. And it's a habitat that is dwindling across the state. As forests move in to those kinds of habitats and trees grow up – if we left it alone, pretty soon there would be probably mostly red maple, maybe black birch, probably some white pine trees growing up in that area. But that's what Mother Nature likes to do. She likes to like to occupy those spaces. The shrubs would keep would keep the trees out for a while but not for long.

"How do you keep the trees down and not mow the shrubs?"

Just yank them out by hand. "That's labor intensive." Yes, it is. Oh, it's labor intensive, controlling the invasives whether they're natural as the trees would be – I would consider that they would be invading that shrub-land habitat. We don't want to see that happen.

[From a SOLF trustee]"That's why we're always looking for volunteers." That's right.

"Whit, how old are these stone walls?"

Oh, boy. They're very old. This was like most of Southborough, farmland from settlement days. These walls probably go back to the 1800s. I understand that a lot of wall building was done across New England in the beginning and I guess the first half of the 19th century. Because sheep suddenly became king. And until that point in time, the farmers used trees that they did utilize for other purposes as barriers, then they use the stumps of those trees, and eventually all that material rotted away. And they needed to have something more permanent. So stones which in many cases were piled into the areas where there were pastures or cultivated areas. They took those piles apart and then made walls from them. I think that's roughly how things happen.

"Do you think that anything on what is the Beals Preserve was used agriculturally or was it all for sheep and cattle?"

I don't think there were any crops grown here, that would be my guess. "Was that an orchard over there?" No, there's no orchard over there. There may have been a few apple trees planted. But unless you protect them, boy, cattle will chew them right down. Perhaps before the cattle came, there might have been some apples over there. But I'm not sure.

Any other questions? Okay, let's go on.

This lane between the blocks of pasture land was open [not clear to the wall to the west]. Because there are two more blocks as I said before, on the other side of the walls on the west side of these two blocks here. So they had free range. Now the soils in those other two blocks over there were not very good. They would dry out. And the two we're walking through now really were the two best pieces of pasture. But the cattle had free rein of the woodland.

[Looking back to Main Street from the Upper Meadow] We've got a nice view back north. And thank you for using the parking lot. It's new, and I did notice there were, from time to time, cars, you know, just parked there for people coming to walk. So we're we're already justified in the expense of putting up that fence. We're going to put down wood chips on the whole area just to buffer it a little bit.

"I love it."

Well, that's good because the only other way to do it was from Red Gate, or park at Chestnut Hill Farm and walk down Chestnut Hill Road, or take your life in your hands and park at the kiosk on the north side of route 30 and the intersection with Northborough Road, and then walk across route 30. That's just not safe.

So I'm gonna mow this whole entire field later this fall. The reason for that, again, is to keep down the invasive species. You can see here they're coming in with a vengeance, mostly buckthorn but also some native. But again, we want to keep this area open to maintain a little bit of biodiversity for butterflies and our native bee species that frequent this particular meadow. Wow, just can't get over what a beautiful day it is. And the colors we're looking at. It's remarkable.

So I'm gonna give you a little bit of demonstration of my scant knowledge of forestry. But you see the lead shoot in this white pine tree right here. It's dead. And if you look at it closely, you'll see little tiny holes in it. And the reason for that is that there's an insect called the white pine weevil. It's native. And what the white female white pine weevil likes to do is to lay her eggs in the sunshine, and when the eggs hatch, the larva chew around in the cambium and kill this lead shoot. So what do you think's going to

happen after that tallest one dies?

"It goes to the next tallest one?"

Yes, and what's going to happen is likely the one in back here or this one or both will take over the dominance of this stem. And that's what when you wind up white pines that look like cabbages in the end – they're no good for turning them into lumber. Not that this would ever become, you know, a harvested tree anyway. But look at the growth on this tree. Look at how much it grew this one year – each whorl of branches represents one year of growth. So that's one year, that's another year. Now it's going to turn into, you know, a misshapen tree. But we don't care so much about that here on this property. If you're trying to grow white pine trees for a landowner, you want to keep them in the shade as long as possible – and they are shade tolerant – and get them to grow straight without any weevils until they're at least 12 or 13 feet tall, for a 12-foot log. And then you can open up around them and you don't mind so much about the weevils. The heavy weevil infestation will actually come in and infest the side branches before they come to dominant shoot.

"So what's your plan for this tree now?" I think, why not to let it grow? "Did the drought affect the growth? It doesn't appear to." Well, that usually happens in the next growing season. It's later.

So, this is such a great view here that we have an Eagle Scout candidate, Cassie Melo, who is building us two benches. One will be installed here to take advantage of the view – wooden benches – and the other one will be in the riding ring, which we're going to show you later in the walk. Okay.

[In the Lone Wolf Area]

This piece of of land from here down to the Ice Pond, was very sparsely treed when the cattle were in here. There were a lot of low growing Juniper sharp shrubs. Not so many here as there were were in the other two blocks to the west. But now it's all grown up. And again, Mother Nature takes over. This is known as the Lone Wolf Tree, this big, gnarly white oak [dead]. And it succumbed to probably a combination of [three] factors: old age, drought a few years ago, and the Gypsy moths, now called sponge moss, infestation. It was defoliated, and then a lot of trees around here, when they put out that new set of leaves the same year – those leaves are eaten by the winter moth, which were here in profusion as well. Combine that with at least one very dry spring and a lot of trees didn't have a chance. Some survived. Others didn't. You'll notice behind it on the other side of the wall is a dead tree. Same thing happened to that I think, not so much old age but the other factors.

"That tree is all dead, right?" This tree is dead, dead, dead. "Does

it post any risk of falling over? Sure. So we will move quickly. [laughter] But I think the incidence of hikers and walkers getting hit by falling limbs is really remote. But, you know, then again, if we didn't do something about that tree and somebody did get hurt, we'd be liable. Because we know it's dead. And we know it's a hazard right? Not so not true if a tree falls into somebody's yard, maybe damages a car or fence. If you don't know that that tree is damaged and it's just an act of God that it came down, then the landowner is not liable for that. Here in Massachusetts, the person on whose land that tree falls is the one responsible for cleaning it up.

[Moving on, still on the Lone Wolf Trail]

I'm standing on the location of one of the art installations this summer. And we had quite a storm – I guess it was a Friday, when it finally rained and rained buckets. I think it was August. And I walked the trails with some friends the next morning and the installation was a white plaster, maybe, person lying on its side. And there was a mirror right underneath and some sets of eyes suspended on a string here. And it was really interesting. I wish I could remember the title of it. It was an interesting title to the piece. ['Please hold me'] And I came out here the morning after that storm, and that piece of wood right there, I think, yes, or this one over here, had fallen off the dead black birch behind you and fell square, right across the torso, not the shoulders, not the legs, bang. It was an unbelievable statement by Mother Nature. It highlighted the importance of this piece. And Catherine Weber called the artist and said, 'gee, a dead tree fell across your piece' and sent him a picture. And he said, 'oh wow, leave it, it's perfect.' So it was really quite exclamation point.

So we are standing here in what's predominantly a stand -- foresters call groups of trees 'stands' – so we are in a stand of predominantly, especially in that direction, black birch. And that gives me a chance to say that to me every piece of forest land is a bunch of trees competing like crazy for light, for moisture, and, somewhat less, nutrients in the soil. So it's the species that are best suited to that particular site that wind up prevailing. But for them to get started, there has to be a seed source, right? They just don't sort of spring from the earth. Unless you happen to be a couple of things like raspberries and choke cherry or fire cherry where the seeds just last forever in the soil. I mean decades. And after a clearing, boom, they pop up. But here, the black birch, like all birches, have very small seeds that are wind dispersed – they just fly. So there must be a mother black birch around somewhere for all these birches to be here. We do have some oak seedlings – that's a white oak seedling – from the big dead tree over there, and maybe one that a squirrel forgot about or a blue jay dropped. That's often how those acorns are dispersed – by mammals and by birds. So I find it fascinating. And I think all the white pine in here – not much on the other side of the wall, but they

can blow long distances as well.

So now let's get down to the white pine stand down here [at the Ice Pond]. It's planted. The white pine trees down here were originally planted trees.

[At the Ice Pond]

"I have a list of questions, like Allan's about the weeds here. Was it because of drought?""

I have no idea. First we'll talk about the white pines that are overhead. They were planted here. If you look at that aerial photo, I think you'll see that they're roughly in rows. And they were pretty big when I was a youngster. They've grown a lot, especially the ones on the edges. And they were planted here, I believe, to provide shade in the afternoon for the ice. This was an ice pond used by more than one dairy, not just the Donaldson dairy. But the farmers would come up and cut ice at the right time of year, temporarily stored in a shed, which is where you can see those two broken pieces of concrete over there. And then take it to back to their farms, probably in wagons drawn by horses. So it was quite an operation. I actually have some some of the ice block handling tools that used to be used on here – just poles with very sharp spikes on them. And I really should give a couple to the Historical Society and I will.

"When was the dam put in, Whit?"

My dad put that in, I think sometime in the 60s. But it really doesn't function all that well. But that's okay. "Where was the dam?" It is over there by the broken concrete – it runs all along there. "And that's to keep more water in the pond?" Yes.

But a lot of youngsters have learned how to ice skate on this pond. I'll never forget, you know, pushing an old kitchen chair around with my little tiny skates on. And that continues when we have ice. Which doesn't happen very often. I remember going to prep school in New Hampshire, and wondering at Thanksgiving time whether or not I should bring my skates home. Because, you know some years there actually was ice that was good enough to skate on. Those days are long past. We are lucky to get ice by Christmas now.

"Except you had to go retrieve a chair this year." Oh, I had to retrieve a couple of plastic chairs out there. Yes. Somebody took them out. "How did you get them? I used to walk by and worry about that." I just made sure that somebody else was here. And I went out to the ice. One was on top of the ice that had been put out recently. The other one had melted in a little bit and I couldn't get it out. So I waited a few more days, sunny days. And then again with somebody here, I went out and got it. It's not very deep. I mean, this pond is no more, I

think, at the deepest point probably six feet. In most places, it's probably like four. But I didn't want to get wet.

"I've noticed, I been coming her many years, and I have been struck by the lack of wading birds, herons, egrets, or whatever, but often see them along the canal."

Occasionally one is in here, but you're right, not very often. When I was a boy this was a pickerel, horn pouch, brown bullhead pond. Really fun to fish. And then my dad got it in his head that he wanted to convert it to a large mouth bass fishery – they like warm water. So he did with the help of a fellow names Bill Pollock who lived on Flagg road, just a little bit west of where Bob Ross, in the plaid shirt, lives, he and his wife, Marion. And that was great until there was a leak in the barrier, and the pond just shrank and shrank and shrank and shrank, to the point where the fish couldn't survive. Dad really wanted to repair the dam. And I said, 'Dad, it's really complicated these days with the Wetlands Protection Act, and it drains to a public water supply, and you'll wind up with the Army Corps of Engineers involved in the permitting.' And so on and so forth. And so I discouraged him from doing it. And it never happened.

And Bob's wife Marion, produced a beautiful picture calendar a few years ago, of the pond in various months of the year. And then I think in the calendar, the pond was full, wasn't it? Okay. So this was long after dad passed, which was 14 years ago, I was walking by the pond one day and I said, 'hold it, it's full, what's going on, what happened?' And all I can assume is that the leak self sealed, you know it just enough sediment or leaves, you know, were pulled into that leak, that now we've got a full pont again. And it's magnificent.

So these are native cattails here – typha latifolia. For the botanists among you, you can see that the flower heads – sort of hidden down here – they look like long brown carrots. You know, there are millions of acres of cattails in this country in different places, a great wildlife habitat. And those fluffy seed heads – these are not ready to start getting fluffy – were actually used to put in life vests for our naval and marine military personnel in World War Two, when there was shortage, and we hadn't invented a lot of other things that are used now. Because it's very buoyant. Apparently. I never tried it out. But these cattails have come in just in the last couple of years. "They've never been as thick as they are now." No, they're very happy. And they're light seeded, probably blew, you know, maybe there was an east wind and they blew from the cattail stand on the other side of the pond.

"Whit, do you think, if there is no intervention, this pond will fill in?"

Eventually, it would, that's the nature of shallow ponds, whether

natural or man-made, like this one is – it's called eutrophication. And eventually it gets filled up with enough natural materials from the forest surrounding them, that they will fill in and, you know, first it become a marsh, which is open, you know, and then after that the red maples would move in and it would become a swamp. So..... but that's going to be a long time.

"Is this water fed by the wetlands?"

Oh, thank you. Good question. This is a spring-fed pond. It comes from springs on the hillsides around here and augmented by runoff from both Hickory and Red Gate Lane that head in this direction – not directly – but you know, it's funneled in in this direction.

"Are there still fish in there?"

There aren't except little tiny, some sort of little tiny fish. So the big fish died. And there are tons and tons and tons of bullfrogs and other frogs as well. But it's fun to come up here and neighborhood children love to come up here and catch. "So is it the lack of fish that explains why the egrets and herons aren't coming?" That could be, it could well be. "Although they eat frogs, too." They do eat frogs. And we've got a great blue heron that for over a month comes into the meadow below our house and hunts for mice. Yes, it's learned to eat meat. We've got a meat-eating heron. It is fun to watch it – it just will stand there stockstill and I don't have the patience to watch until it strikes and it just is moving ever so slowly towards where it thinks the mouse is. The mouse is probably long gone, but it's really funny.

Let's backtrack just a little bit. [Starting to leave the pond.] This is one of our invasives, this is locally invasive here. I'll show you other examples. Flowering crab apple. "How do you tell it's invasive?" You just have to know a little bit about botany, that's all. It doesn't belong here.

[In the small clearing by the ice pond]

"I'm curious, have you ever seen a black bear in your time here?"

I have not seen a black bear. I have seen signs of a black bear. Both their scat, which is quite distinctive – it's generally large diameter and full of seeds or whatever else it's been eating on. And then in the first trail in the lower pasture, that lower block that we walked in, just 40 feet into there, I was with a wildlife biologist friend. And we saw this almost perfectly round plug of sod that was like that big. It had been plucked from the soil and set aside. And I looked in there with the remnants of a couple of little pieces of paper, natural, you know, nature's paper, which was a yellow jacket nest. And black bears, skunks, maybe even possums, when they find them, they

will actually go after them and dig them out and eat them because of the larva that are in there. So my friend said, 'look at how precise that circle of sod is, that plug. Only black bear could do that with his claws.' And, you know, I wouldn't do that. I mean, I got stung four times by yellow jackets earlier this summer and they itched for 10 days and drove me crazy, but apparently the bears are just impervious to it.

"We had a black bear for few years at our house just a little bit west of here. Yeah, he took down Eileen's bird feeder three or four times. And the steel post was bent almost 90 degrees. So it was not a skunk."

Yeah, they are incredibly strong. A friend of mine who is a bow hunter goes into Brunswick and Maine to to bow hunt for bears. He said he was in his stand one morning and a bear came along. And it was a sow with a cubs, so we didn't want to shoot it. So he watches the bear go over to this log on the ground and just, you know, cuffed it like that so it turned over and it was feeding on insects underneath that log, which is one of the mainstays of their diet, the larva. So when it was too late for another bear to come along, Steve got down out of his stand, went over and tried to push that log back in place. And he's a big rugged guy. Oh my God, he's built like a professional football lineman. He said he had to get down on both knees and push like crazy to roll that log over. Whereas when he watched the bear, it just went 'boop.' That's how strong they are. They are amazing. "What's the recommendation if you come across a black bear on a trail?" Not to turn and run from it, just to confront it and make a lot of noise. Yes, because they rarely, rarely go after a human being – the only ones that do are young and curious males apparently that are finding new territory, because their parents kicked him out. 'We're not going to support you anymore.'

So that brings up the subject of hunting. We do allow bow hunting for deer on this property. There are three permits issued for the property – one for the son of the Walters who live at the end of Red Gate. If you go out that way, their house is the first one on the left. Very responsible hunter. And the other is a Framingham police officer named Chris Montouri who lives in Northborough. And this year, we issued a permit for his daughter who's just graduated from college. And so the three of them hunt. You would never see them out here unless they were coming or going. You wouldn't notice them. They're in places where there really aren't any trails. Which is one of the one of the rules – is you can't really an arrow across the trail. And they are successful from time to time. Southborough has a very large deer population. Those of you who live in a neighborhood where you have shrubs, you probably have noticed the damage. And the success rate for bow hunters is actually pretty low. But they love the sport. They love to be out in the woods for the relative quiet and observing nature, other parts of nature. Usually then if they're lucky, a deer comes along. "Anyway, so do you wear orange when it's not Sunday?" You don't have to, we've

got attention signs up at all the entrances. If you want to. Absolutely, I mean, as a precaution. But with these three hunters, if you were bushwhacking through the woods, you probably still wouldn't see them. They're very cautious people. And there's never been a non-participant, in other words, a non-hunter, injured by an archery hunter here in Massachusetts in all the years there's been archery hunting, that's how safe it is. So one would think there'd be the odd accident, but there hasn't been yet, you know, knock on wood.

So I keep this little vest pocket meadow open by mowing it once or even twice a year. And just to provide a little bit of diversity, and a place for critters other than the woodland critters to come and live, feed, and so forth. But every time I look at the hillside up there, I go, 'There weren't many trees there when I was a boy.' It's really quite remarkable. Nor here. The older I get, the more amazed I become.

[Walking down the main lane towards the Riding Ring Trail]

Another invasive species here; this has escaped from the neighborhood, probably from the Red Gate subdivision. It called burning bush, or euonymus alatus, winged euonymus, because it's got these little cork-like wings on the branches. It shouldn't be here. I've watched cardinals feed on it. And then they carry the seeds around and poop.

And let me get another one. And this is a really pernicious invasive all over eastern North America. Now, this is climbing bittersweet, Asiatic bittersweet, I guess it's called. "Some people are allergic to that". Wow, it's very allergic to me whenever I see it. But it'll get – I've cut it this big in diameter. "What's the best way to kill it?" Pull it up by the roots, there's big ones you can't pull out [easily]. "I have big ones coming up from the same spot every year." You have to get every little tiny root if you can.

We've got tons and tons of Japanese Barberry. And we're probably looking into having a contractor come in and spray that – there's tons of it. If you go back out this old cart road towards Red Gate, you'll see it on both sides of the of the path. And it's just – tons of it on the on the east side of the pond and all the way up the hill. I mean, it's really bad. And a lot of conservation organizations take the time and spend the money to control it using herbicides. There are other ways. It's multiple stemmed. It's really hard to kill it by pulling it up because of the multiple stems and deep roots. "And it goes through gloves." Letting it alone, you're just preventing other natural species from growing, and it also is known to harbor the black legged deer tick – the one that carries lime and other nasty diseases. So it's good idea to control it.

Here's another example of an invasive – this is the flowering crab apple. This one looks like it didn't flower and set fruit here in the

shade. But it's nasty. It grows these great big thorns – this little branchlets will turn into sharp thorns -- it'll go right through your sneaker. And the branches grow intertwined, it's really miserable to handle, oh my gosh. You know, and it's not on the list of invasive species, in Massachusetts yet, but I've talked to one of the botanists in charge of that, and I gotta send him some pictures.

But looking back here, one of my goals is to make open up that view so that people walking up the path can see where the pond is, and actually see the pond itself. So I'm doing these these little mini aesthetic improvements where I can – just to sculpt it, but the only thing I'm going to remove in there are those crab apples. Otherwise, you know, whatever's native is going to stay. Alright, let's move on to the riding ring.

[On the Riding Ring Trail]

Some of us are inside and some of us are still outside the old riding ring. And here's a cement post hole where a post came up for one of the gates to the riding ring. You will see we are right here at this point [looking at old map with the riding ring]. If you look over in that direction, you'll see remnants of the old chestnut fence. And you'll see this was bare as a hound's tooth up until the late 60s. And all these trees seeded in, my guess is predominantly from the trees next to the pond. And this is how fast they can grow. These are all white pine trees and you'll notice most of them are really pretty crooked. So they've got weevils. But it was dry ground. I've got a photograph of a family dog posing on the big boulder over there – from ,oh gosh, when was that? That was the late 60s. There still wasn't a single tree seedling in here. It's so hard to imagine.

"Did your father own the ring?"

No, the Lelands were horse people. And I forgot to mention that the Lelands home here on the reservoir channel was a summer home. This is part of the Leland ownership. He was a horseman. I think he owned trotters. And so he had this beautiful cinder [surface] – if we dug down here, we'd find cinders underneath what's now the top layer of soil. So they lived either on Beacon Hill or in Chestnut Hill. And would move from there to Southborough, the western edge of civilization for the summertime. Amazing. "So from where we are standing right now, where was the writing ring?" Right here. In front of us. On both sides of the trail. "When you were a boy, did you use it as a riding ring?" No, but I had a motorcycle once and I came up here. I think my sister did with her horse. "You say there's some remnants of the fence over here?" Yes, right there. "Oh, yeah." All American chestnut.

"How did the pines come to be here?" They blew in, probably from the trees by the ice pond. "But it's interesting they're only in the

riding ring." Because it was wide open. And white pine, if there's a seed source, is one of our early pioneers of open land, just like the black birch is, and the black birch came into that pasture on that hillside because there was a seed source and the winds predominantly from the west. So the pine seeds came this way instead of going up the hill – that's my theory anyway.

[Looked at a multi-trunked pine tree].

Really weeviled pine tree. It got weeviled when it was real young; it had competing chutes that took over very low on that tree. And then it got, weeviled, you know, that crook there is another weeviling spot, and another one up there where it splits again. So a pine tree like that is great for chips. Great for wood chips. Not good for anything else. Good for wildlife tree actually.

So the greenery we see on the far side of the riding ring was another one of those blocks of pasture. We don't need to come much farther here. But I will point out for those of you who don't know, there's still some wonderful trails on the far side of this riding ring. They divide, and one goes up the hill, one cuts across and joins the trail which comes down from the end of hickory. And you can also go to the left and go down to the reservoir channel. And it's legal now to walk along the reservoir channel. It has been for quite a while.

Here comes a whole pack of dogs, wow. [Talking about coyotes.] So if you walked across the bridge this morning, there was some sort of squashed [scat], full of the hair – I didn't pick one up, but it's interesting to pick up a dry one. There's hair, there are seeds in therm – they're omnivorous. When I grew sweet corn, they go into my gone-by sweet corn, the sweet corn corn that I hadn't picked, and they would gorge on that. They'd make a big pile, you know, scattered pile of corn cobs. They are opportunistic feeders, for sure.

So we're not going to go all the way through, but I will point out that, well, here's another buckthorn, so this stuff will grow in the shade. But there are places where – there is a dead flowering crab apple. So it will not grow in complete shade. It actually gets shaded out by the pines. And here, it's tough for any other tree to get to get started with such a dense canopy here.

"What was the diameter of the riding ring?" Oh boy. I don't know. Probably 150 yards, it is about the size of the pond. So it's pretty big. Maybe a quarter mile track possibly. Something close to that, I guess. Yeah. So it was good to exercise, you know, horses pulling a practice sulky.

So buckthorn fortunately is very shallow rooted. And if you walk these trails and see small ones and pull them right on the ground, we'd be just delighted. And if it's hard to yank up, it means it probably was

cut at one point because the root mass can double on a small one and it's harder to pull up.

So let's go back down to the main carriage trail which actually went from Chestnut Hill Road all the way to Flagg, way back, before Red Gate was built.

[Back on the main lane, the original carriage trail]

Here's glossy buckthorn. I know it's been cut at least once because of the large diameter of this part of the root, and look at all the shoots that come off it. Thus the reason it's a great hedge plant. But they're shallow rooted, sort of reddish roots, so don't feel bad about pulling them up, please.

I have noticed that this has a kind of a pruned look, this euonymus [burning bush] here. Anybody venture a guess as to why? "Deer?" Yes, deer love to browse euonymus, thank goodness. It wasn't Eileen or Larry coming along and pruning it. It was deer eating it. So they are helping us a little bit.

[Talking about crab apple] Most of them are the flowering crab apples. They will get this big. I've made a lot of firewood out of it. Have to wait like two years for it to dry. Very dense. Any apple wood is really really dense.

So, we are standing under an oak tree. Anybody know what species of oak tree this is? This is a white oak, and farther down, you can see the big oak in the back down there, and actually we passed by one just on the left before we got to the riding ring. Those are swamp white oaks. Another species that likes to have its feet very moist. And it's one of two species of tree species that I know of that have virtually horizontal branching characteristics, right angles to the trunk. The other one is black gum, or sourgum, or pepperidge, or beetlebung tree they call it on the Cape. It's a much smaller tree and tends to grow in little clusters, and again with their feet wet, damp anyway.

This is the corner of one of the clear cuts that we did 11 years ago. We just whacked it back under a grant that we got -- a federal grant administered by the state DCR – in an effort to create some good wildlife habitat, especially for the American woodcook, which is a species in decline. They came in here nesting like gangbusters after the clear cut. There were some source trees in there – aspen, poplar – and the tall straight trees you can see through there – I think all of those are poplar or aspen. They are the ones with the leaves that shake in the slightest breeze. Anybody know why those leaves are so wiggly? If you look at a leaf – most leaves like these -- you can spin them easily in your fingers – right, they [the perioles] are round – that's called the petiole – that part of the leaf that connects the leaf to the stem. Well, in quaking aspen, they are flat! So that makes

it really easy for them to wiggle. Whereas the round is much stiffer and resists the breeze. Somebody showed me that just a few years ago.

We do have some sugar maples coming in right here. Oh, this could be a Norway. Probably not. Definitely not a red maple. The difference between sugar and red is that at this [spot] here where the sinus in the leaf is – to form the lobes – is a v on the red maples, also know as soft maple or swamp maple. Whereas sugar maple or hard maple is a u. That's the easiest way to determine the difference. "And what about Norway maple?" It looks a lot like a sugar maple leaf. When it turns, it turns later in the season, and all it turns is sort of a yellow color, sort of a pale yellow. "If you've cut the leaf off a Norway maple, it has a milky stem, the only maple that will do that." "A Norway maple is invasive, isn't it?" It can be, yep. There's the big Norway maple on the lane going up to route 30 on the left. And maybe one on the right as well. But it's not considered to be invasive, because, you know, it's mowed all around it all the time. So the seedlings... you know. Maple Leaves don't disperse that far. They are samara – dual leaf with the with the wings that spin. So that's as far as they can go. Their distance of travel depends upon the strength of the wind.

We'll talk about this tree. Somebody mentioned the name of this tree earlier when we were looking at the big white oak. That's a pin oak. And my son and a cohort, both arborists, were here several years ago. I think it was at the opening of the of the Preserve. And they trimmed all those lower branches off this oak. Look what happened. They're always latent buds underneath the bark. And they want to grow. They don't want to grow clear. They want to grow all branchy from the top down. But it's a magnificent tree. Look how straight that tree is. "What about the lumber from pin oaks?" The lumber I'm sure is used in structural beams and things like that. But it wouldn't make good lumber unless you want a lot of little black knots. That's what it would be. So you wouldn't get any clear wood out of that tree for cabinets or flooring. That tree is pretty tall. That's 70 feet up, maybe 80.

"All those pines at St. Mark's?" They are good city trees. They resist drought and they resist pollution, air pollution, which isn't much a factor now as it used to be.

[Looking at the WHIP area, clear cut in 2011 but now thick with trees.]

But look at the aspen in there. There's lots of it. So we're thinking we're gonna do some searching to see if there's a grant to do that all over again. Just grind all that up. Because when it reaches this age, it's no longer good habitat for nesting woodcock. It's too crowded, the stems are too crowded, and the woodcock won't go in there to nest. Right after we did that clear cut 11 years ago, there were tons of

woodcock in here, as these aspens were growing up. But now they're very crowded and they grow not just by seed but by root runners. By rhizomes. So if you see an aspen stand, it could be very, very old, if you can find the original tree. Aspen typically don't last that long – 50 or 60 years for a big one. Because they're just not long lived and typically they will get shaded out by other trees, and when they're in the shade, you know, they die, just like gray birch, which we don't have much of. There's two more pin oaks right there, aren't there. Well, we might thin it in corridors, we might just whack it back to where it was 11 years ago. It depends. The source for reforestation is right there.

"What's this tree?"

That is a swamp white oak. You see the shape of that leaf? Whereas the larger one up there has lots of lobes. The swamp white leaf has much shallower lobes. Yes, that's Quercus bicolor. Two-colored oak. Why it's two-color oak, I have no idea. But there it is. Boy, and this one doesn't have that characteristic 90 degree branching sort of thing, but not exclusively. But they can be absolutely 90 degrees. Maybe because it was growing in the open and it didn't have to reach out.

[At intersection of the main lane and the path between the meadows]

Here's another one of my little aesthetic improvements. A couple years ago you could not see into this meadow when you walked this [main] trail. And I wanted to open that up some so you could actually look into it. And same for this side here. It was all grown in. "And what trail is this [pointing to the path]?" We're on the main trail. This old trail here – it doesn't have a name. It's just a link to the trail across the two meadows. "We should have a naming contest, Whit." That's a good idea. "Beautiful asters in there."

Anyone know what this might be? "Is it a burning bush?" Not a burning bush – doesn't have the corky ridges on the on the bark. That's about as big a blueberry bush – highbush blueberry bush – as you'll ever see. And there's another one coming up on the left. A brilliant red color. "Does it produce berries?" Probably. But the birds get them. It probably would produce a lot of berries, if we ever pruned it. You need to prune blueberries to keep them productive.

[Looking at a shrub] There's a lot of it in Southborough and around. I'll think of it in a minute. [Pointed to another shrub[This is the very invasive multiflora rose. [Back to the first shrub] And this is [non-native] honeysuckle, lonicera, bad news stuff. And it's very hard to kill. But, it grows in a shallow root mass. This one here, I could take it out with the bucket of my tractor and then run over it with a bush hog and it would disappear. But it's very invasive in these parts. Bad news. [Some other non-native] honeysuckle or Morrow's honeysuckle, there may be a slight difference. I don't know. But

again, it's imported. And I'm sure it was put in as an ornamental around people's houses and then it grew, and there was suddenly enough of them out there that they said, 'oh, we can go wild.' And they did.

Blueberry is native. The highbush blueberry. "Looks like an ornamental tree." Doesn't it?

"Whit, you say you can take it [honeysuckle] out by tractor. How can you be so selective with a tractor?"

There's nothing else right here, nothing desirable that I'm going to harm by using the tractor bucket to dig that out. "But you're digging everything else around it, too." Well, yes, but, goldenrod, other things [like Joe-Pye weed] are easily going to come back and come back quickly. If I happen to pull up a Joe-Pye weed – all this tall stuff with the brown flowerheads – that's all Joe-Pye weed, the native that's tremendously helpful to our both our native bees and honeybees. So, but I would try to spare this native plant here. This is one of the, yes, I think that's dogwood. Yes. See that? The little panicles of what used to be berries and the birds came along and ate them all, which is terrific. Or, in the case of this one, you know what I might do is back the bush hog right over it, mow it down, and then come back and pull the roots out. We've got a tool called a puller bear or weed wrench that can yank stuff like that out of the ground.

When I first started working here and controlling the predominantly large flowering crab apples, Bob Ross happened to walk along one day when I was working away. And Bob said, 'Why are you doing this?' And I said, 'Well, Bob, number one, these crab apple trees are invasive, and they're a seed source to keep spreading.' I said, 'Number two, we can't see the walls, you can't see into the meadow.' And it was almost covered canopy – it was like walking through an arbor – there was so many of them. And right here in this section, it was like walking through a green tunnel. So now it's opened up and Bob hasn't beaten me up yet so...

People know what that tree is there with all the seeds hanging off? It's an ash, probably a white ash. And ash trees in the Northeast here have two main sources of mortality these days – one is a sub-viral disease called 'ash decline' that's been around for a long time. And you'll see a lot of dead standing ashes in places. So it kills them eventually. And sometimes you'll see them break out into what are called 'witches brooms,' where a whole cluster of small branches will start growing. That's because they're under stress. And that disease is killing the tree. And you can have a healthy one standing there, and one, you know, 10 feet away, and it's dying. It's quite amazing how selective that particular disease is. And it's also got the emerald ash borer, which is imported from Asia, and was first detected in the state of Michigan, and has wiped out most of the mature ash trees all the way to New England. They're just gone as a forest

component in many places, which is a huge shame. And I think the hope among the foresters is that that little beetle will not attack small saplings. And if the beetle keeps moving east, and runs up against the Atlantic Ocean, it then has nothing more to feed on. And maybe it will just die off. And that the saplings will survive and will, you know, bring back the ash as a natural species again.

...That [Main Street Field] had a conservation restriction. I think I mentioned that. And then, when my mom passed six years ago, my siblings and I got together and said, 'Gee, it's already protected against any building. So the logical new owner would be the [Southborough] Open Land Foundation.' So we donated it to the [Southborough] Open Land Foundation – 2017. And you'll notice I'm mowed in there yesterday, and mowed down a lot of the goldenrod. And there is a lot of that invasive wetland species that the bees love – loosestrife, purple loosestrife. But I didn't mow it at all, because in places there was still goldenrod in bloom, and still the purple aster here that we see is scattered in bunches in that meadow. So I left that and I'll come back and get that all later. So it's all you know, mowed flat.

"You said you worked in land conservation."

I retired three years ago. "What inspired you to get into that?" Good question. We're walking in what the source of my inspiration was. "It became your career." It became my career. I went to school, forestry school, for a master's degree, thinking I might go into international, industrial forest management. Because I happened to be...I was gifted with a knack of picking up foreign languages pretty easily. And then I got to school in the fall of '68. And the whole environmental awareness, interest – that wave was just really gathering steam, and I said, 'Oh, I'm gonna have a little switch here and what I want to do for a career,' and I got into mostly environmental studies, instead. I did take some basic forestry courses. So I can talk forestry with anybody – may not be up to snuff. But my family has owned wood lots in Massachusetts and in Virginia. So I always had a hand in sort of directing their management. So it was fun. But I got into land conservation, working for nonprofits. I worked for the state of Connecticut, my first job for three or four years, I think. Ran a nature center for a year in Connecticut, and then worked for The Nature Conservancy for a while, five or six years. And then Sudbury Valley Trustees, the area land trust here. And then New England Forestry Foundation for the final 20 years of my career. Retired three years ago.

"Anyway, how many people do you have helping you here today?"

" Oh... well... Eileen and her husband Larry are two of the biggest helpers. Rick [Ellis], he's on the board of the [Southborough] Open land Foundation. And Bob [Ross] was. And we have a number of other

volunteers all summer long when it wasn't too hot. We gather and have little discreet projects around here pulling up mostly buckthorn or doing other things too. And so, as you can tell, or imagine, it's a constant. It's absolutely constant work. Trying to keep things under control. I mean, we know we're not going to eradicate the buckthorn, until science invents some sort of, you know, species-specific insect to go beat up on it, which would be terrific. But I don't think any...there's no known pest that affects it in its homeland in Europe, or hasn't been detected yet. So, anyway, it's a constant. I wouldn't say struggle – it's constant activity, to try to keep things in check.

[Looking at autumn olive]

Of our bad invasives in Massachusetts, and I'm sure other eastern states, not so bad on his property. This was distributed for free by the Connecticut Department of Natural Resources. To plant for producing wildlife food, for berries. And I have a friend named Russ Cohen, who's a great forager, and he figured out that you can make fruit leather from this plant from the berries in the fall. But like many of the invasives, or non-natives that were imported for wildlife food, it turns out that the birds didn't evolve with a shrub. Right? So to the birds, it's like junk food. They don't get a whole lot of nutrition from this. This is Elaeagnus – the Latin name – or autumn olive. And if you want to see a lot of autumn olive, just look around if you're ever headed out west on route 2. And you see the intersection with 290 that goes down to Worcester – all those embankments were planted with autumn olive to control the erosion. It controls erosion, all right, but, boy, this is bad news. It's got a silver underside of the leaf which is makes it easy to tell. But, yeah. Look how green this is – this plant still thinks it's the middle of the summer. It's growing like crazy. Again, that's the advantage that some of these invasives have over our native species – makes them very aggressive.

[Looking at clematis]

This is native. Anybody know the name of this one? This vine with all the Dr. Seuss-like hairdos. This is Virgin's Bower or clematis. It's just the native variety or native species for the wonderful big ones that you can plant in your garden. "I have not noticed the flowers that I associate with that name. Does that plant flower the way I have associated in my mind – clematis?" In miniature. Each blossom is much much smaller than what you would plant in your garden.

[Standing back at the kiosk, looking at the channel]

"This water was some how from Wachusett reservoir?"

Yes, and it still is. Although this channel is also augmented by a lot of local streams running into it. "It was Stony Brook." It used to be

Stony Brook, that's right. That was the original watercourse. "So the Quabbin doesn't feed through here anywhere?" No longer. The Quabbin feeds Wachusett, and then Wachusett feeds this, and the MWRA is legally obligated to release 2 million gallons of water a day into this channel, which is really just a trickle – a small amount of water, believe it or not, but it's not much.

But all the water from Quabbin goes to Wachusett through an aqueduct, a gravity aqueduct. From Wachusett, it used to be gravity-fed into Boston – that's why this is Boston's water supply. And then for health reasons for the most part, there was a new aqueduct called a 'high pressure' aqueduct – but it's not pressurized – it's just the pressure of the flowing water – built, called the Cosgrove Tunnel, I think. Which went all the way to the Fayville Dam [with a stop at the Carroll Water Treatment Plant] in Southborough, across from the school bus depot, on route 30 just before you cross into Framingham on the left – that big dam in there. And then, subsequently, thanks to, I guess, requirements of the Federal Clean Water Act, [since] all that water was exposed at one point in time through open reservoirs, like in Weston – the Norumbega Reservoir, and the Chestnut Hill reservoir, it had to be disinfected before it got to the taps, the customers' taps.

So MWRA water is wholesaled. It's sold at the town line, then from there on, it becomes the municipal water authorities' responsibility to maintain, to create and maintain the distribution system.

But the new federal rules said, 'Hold it. You can't expose any water to the open air again.' I mean there are birds, there are all kinds of other things. So, the new MetroWest Tunnel was built. It goes right under Chestnut Hill Road all the way to what's a huge underground storage tank in Weston. If you're driving east on the Mass Pike and you look to the right, you'll see some flagpoles and it's lit at night. There's an enormous underground concrete reservoir there. And all that water comes through the Carroll Water Treatment Plant, which is a mile up the road, upstream from here. I think I mentioned that. And that was built in conjunction with the new MetroWest tunnel, which is like 300 feet down. "It's in bedrock. It's drilled right through the bedrock."

An interesting anecdote there – the engineers anticipated that people's private wells around here would go dry when that deep rock tunnel was put in. And that's why they extended the public water supply lines up Chestnut Hill Road a short distance, and they extended them along Bigelow road – because of people's private wells. And sure enough, a lot of those wells went dry. The one on the farm went dry, because the water was intercepted by the tunnel. And then when the tunnel was completed, and it was sealed in place – it's essentially a concrete pipe that's made by pressing concrete up against the walls of the tunnel – so it's a 'make the pipe as you go along' – an incredible process – the wells came back because there was no longer any way the

water could leak into the then new tunnel.

"Which is the Hultman aqueduct?"

The Hultman aqueduct is the one that goes under Chestnut Hill Road. And that was a cut and cover aqueduct. And originally, it was meant to be a dual backup. And it got to be too expensive and World War Two came along. So they nixed the second backup tunnel. And the MWRA is now in the process of creating as many redundancies to its existing system as possible. So if there is a failure somewhere, the whole system, you know, from that point on, won't go down – there will be an alternative route. "But the Hultman aqueduct is part of the existing system?" Yes, it is, about 80% of the water going east goes through the new MetroWest tunnel, and about 20% goes to the Hultman because they need to keep it active in case something should happen to the new tunnel. They'll have an active system that isn't stagnant.

I am in awe of the delivery system, going back to the creation of Quabbin. I mean it kept going west. The original water supply was Cochituate. Well, originally there was a reservoir on top of Beacon Hill – that was Boston's water supply way back when – and then Chestnut Hill, and then it kept marching westward to Wayland. And the whole Lake Cochituate system. And there's a picture in the archives that shows a barge in Lake Cochituate with the intake pipe for the aqueduct that went eastward above the elevation of this barge. And this barge has, I think another barge either on it or next to it with coal, so that a coal-fired pump on this barge would pump the water from the dwindling pond up into that aqueduct so that Boston still had water – all the while that this part of the system was being built.

Ashland was part of the system, the Sudbury Reservoir was part of the system. That's the one that comes down to Ashland and Framingham. And I mean, it's just incredible what these engineers figured out way back then. And thank goodness they did because could you couldn't do that today. It would be too expensive. And the environmental rules and regulations would be just too, you know, they would be roadblocks. Think of that. It's incredible system. Really a model system.

"Planners who actually do long range planning and then do them."

Right. Whereas in California, they can't figure out what to do, though, well, not just California, seven western states – they can't figure out what to do with the Colorado. California is out of water. And they're just beginning – has been for a while – they're just beginning to realize it. Anyway, it's a mess.

Well, thank you very much. I enjoyed this walk. [Applause] You're welcome. I'm happy to share my knowledge. It's only 70 years of history of this land, a little less. But it's fun. It's fun to look back. Fun to think forward too.

"Do you do this every year?" Yes.

"I mean, there was a COVID interruption, but we did have one last spring also, when we opened the pollinator, not we, when Freddie [Gillespie] opened the pollinator garden."

There's this wonderful, very, very energetic woman in town named Freddie Gillespie. I'm sure many of you know her. She's the impetus behind the pollinator gardens. One at the library, the one at the Breakneck Hill Conservation Area, and this one here. So she's really – this is terrible but she's – got a real bee in her bonnet doesn't she? [laughter] And she gets things done. She's very effective.