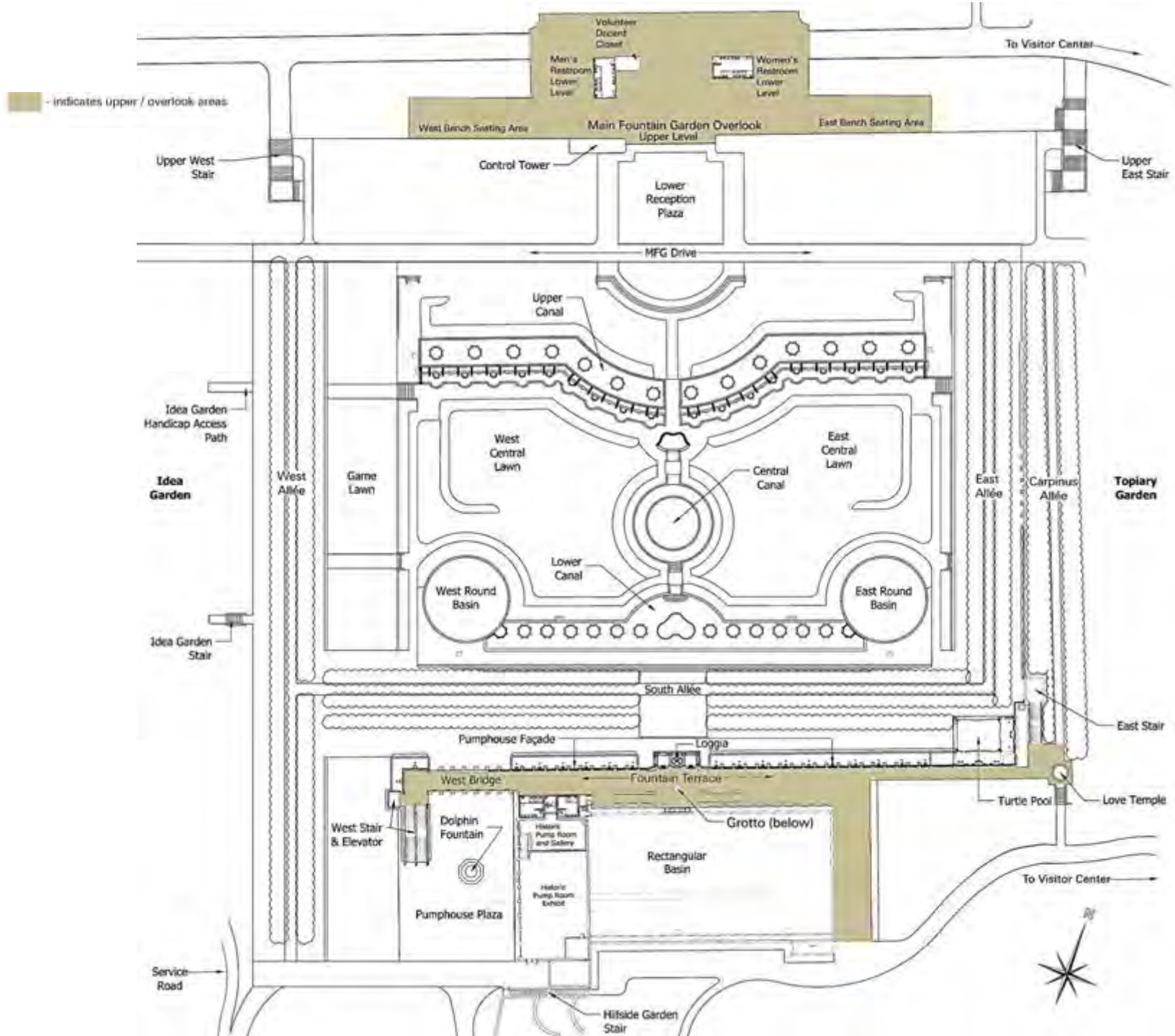




Main Fountain Garden Quick Facts



Garden Comparison	Original Main Fountain Garden	Today's Main Fountain Garden
Cost	Cost 52 million thru 1970 (in today's dollars)	Cost 90 million
Lights	724 marine glass incandescent (red, blue, green, yellow and clear)	1014 colored & 375 white = 1389 LED Lights in six colors (red, blue, green, amber, cyan, lime diodes) 1700 architectural lights
Jets	386 jets and streams No height control	1,719 jets and streams (1200 basketweave nozzles) Robotic nozzles, height control, taller jets
Hydraulic Systems	One hydraulic system and Pump Room	Four hydraulic systems and Pump Rooms
Sumps/reservoirs	Two sumps - one each under the Eye Of Water, and Pumphouse, fed by the Pear Shaped Basin reservoir	Four Sumps - one for each MFG system, one for the Eye of Water, and the Pear Shaped Basin reservoir
# Pumps	18 pumps	61 display pumps + 7 filtration pumps = 68 pumps
Gallons of Water	600,000 gallons in all the systems 10,000 gallons per minute at peak	338,000 gallons in the MFG 40,000 gallons of water per minute at peak Note: 200,000 gallons are in now separate Pear Shaped Basin and Eye of Water system
Tunnels	none	1,400 feet of tunnels, two story underground structure
Trees	90 Norway Maples along allées	186 Linden Trees along allées
Architecture	Loggia Stone plaza on the SW corner East staircase leading to Love Temple	Loggia with new Grotto hidden behind West Bridge, Elevator and Pumphouse Plaza

Timeline

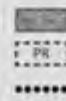
1870	Pierre du Pont born January 15th in Wilmington, DE at family home, Nemours
1902	He becomes treasurer of the DuPont Company
1906	Pierre du Pont purchases Peirce's Park in Kennett Square to save the century old Peirce arboretum.
1907	He plans and plants first garden along Flower Garden Walk
1913	Open Air Theatre built at Longwood.
1921	Conservatory is completed
1921 – 1928	Planting of major landscape components, including boxwoods, maple allées and large scale trees
1925	The Water Garden constructed, now called the Italian Water Garden.
1927	Illuminated fountains at the Open Air Theatre debut.
1929-31	Construction of fountain infrastructure and Chimes Tower
1931	Illuminated Fountains debut in the Main Fountain Garden
1931- 36	Italian stonework designed and installed in the Main Fountain Garden
1937	The Longwood Foundation is incorporated
1954	Pierre du Pont dies, buried in du Pont family cemetery
1956	Longwood opens as a Public Garden
1965	Original metal trellis on west end of Pump House Façade removed; stone extension and plaza completed in 1970
1968	Eye of Water built
1980s	Fireworks & Music added to Fountain Shows; fountain computer control system integrated for the first time
1990s	Deteriorating stonework led to some water features being turned off, and limited access to the Loggia, Pumphouse Facade and walkway above.
1990- 1992	Italian Water Garden restoration
1995 -1996	Conservatory Orangery and Exhibition Hall restoration completed
2010	Longwood creates an ambitious Master Plan, with the Main Fountain Garden revitalization a key component
2012	Planning and design begins for New Heights: The Fountain Revitalization Project
2014	Revitalization construction begins
Summer 2017	Main Fountain Garden reopens

REPAIR WORK KEY

STONE REPAIRS



Replace Unit
Dutchman
Resurface



Patch Repair
Replace Existing Patch Repair
Point



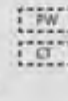
Crack Repair
Pinned Crack Repair
Fixing Removal

CLEANING



Biocide
Chemical
Desalination

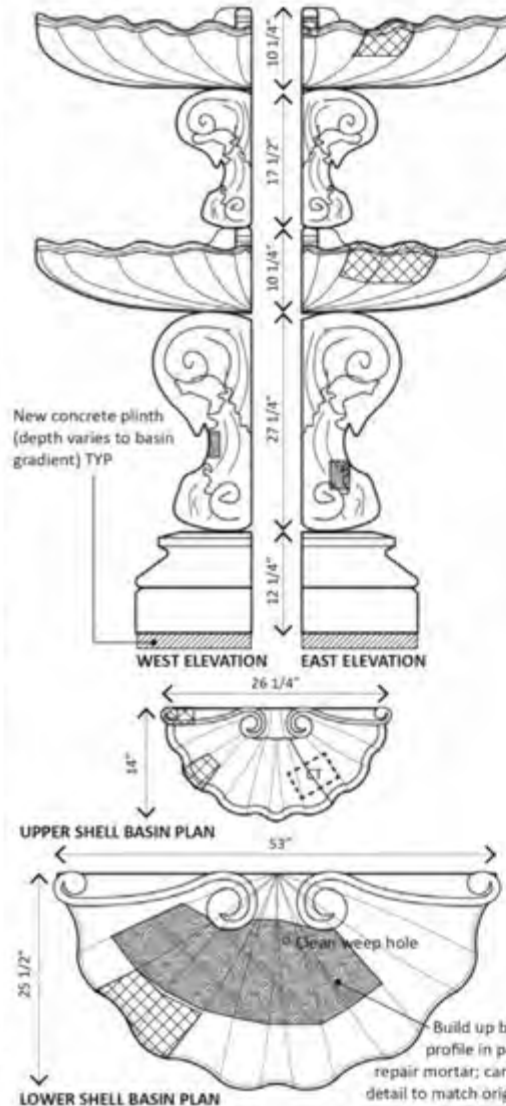
PROTECTIONS



Pressure Washing
Crust Tooling
Weather Tooling
Weathering Fillet



DOUBLE SHELL BASIN



MATERIAL: Italian Limestone

New stainless steel fixings elements and back to wall structure.

- General Clean in situ prior to dismantling.
- Remove existing mortar.
- Bed & point stones on reassembly.
- Biocide to 100% weathering surfaces
- Consolidant & Water Repellent to 100% surfaces.



LONGWOOD GARDENS
MAIN FOUNTAIN GARDEN RENOVATION

LIMESTONE ORNAMENT RESTORATION



FEATURE	PW-	PUMPHOUSE WALL
ELEMENT	SB	SHELL BASIN
COMPONENT	15	
REFERENCE	PW-SB.15	

Conservators analyzed and documented what kind of repairs each piece needed

Stone Restoration



- Over **5,000** pieces of stone were repaired and restored in the process of revitalizing
- Flat stone pieces are **Indiana limestone**
- The green stone in the Loggia is Vermont Verde Antique **Serpentine**, which was discovered under the concrete during the deconstruction, and then restored.
- **Italian limestone** is used for ornamental stonework
- Pennsylvania **Blue Marble** is in the Decorative Round Fountain, also known as the Dolphin Fountain
- The rough stone below many features is **Tufa**
- The conservation process for the Main Fountain Garden stonework took approximately **27,500 hours of labor** to complete



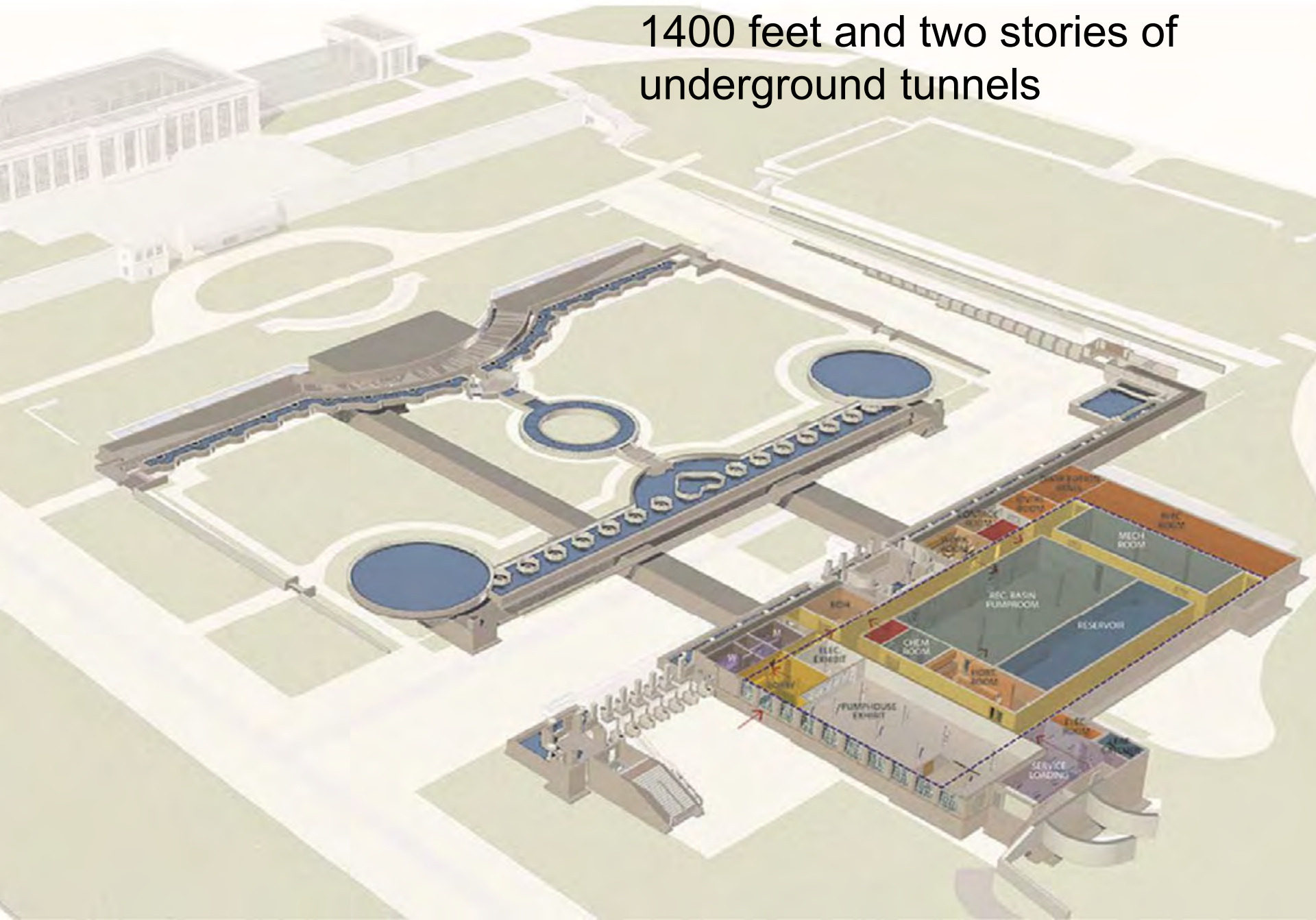
Octagonal Basins: The basins were taken out in pieces to be conserved off-site, removing years of dirt as well as algae and other biological growth.

Flower Bouquets: The originals were nearly all destroyed, so new pieces were hand carved in several distinctive floral patterns selected by our staff.



The Grotto was built from the ground up by local stone masons. Arched ceilings were layered over a wood form and then cemented in from above. The finished ceiling wasn't revealed until the form was removed!

1400 feet and two stories of
underground tunnels



An underground view of the pipes and connections going up into an Octagonal Basin

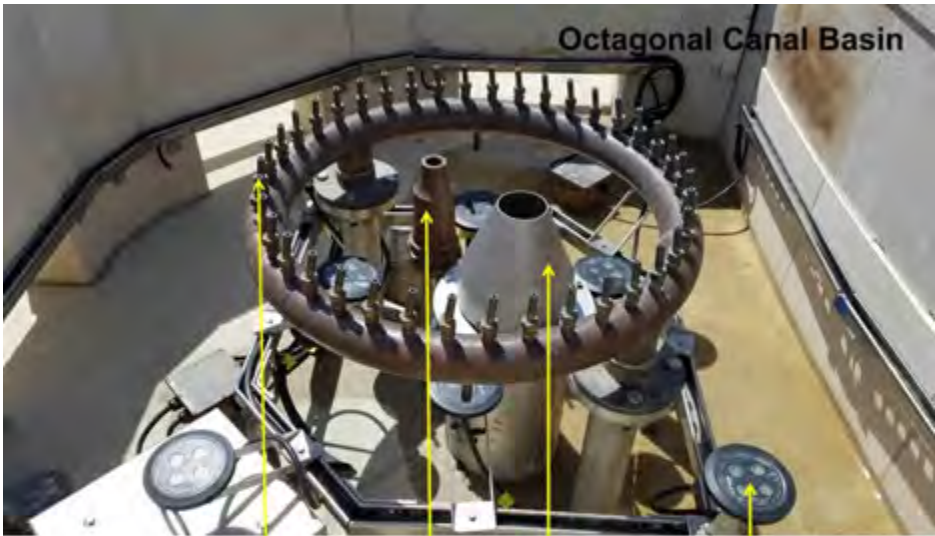


Upper Canal Pump Room



Rectangular Basin Pump Room





Ring of
basketweave
nozzles

Legacy
Mist
nozzle

Flame
nozzle

LED lights



Garden Grow Robotic Nozzle Fountains

Rotating 5-jet nozzles provide five streams that elegantly rotate in a circle. The height, speed, and direction are all controllable with a maximum height of 35 feet.



Garden Grow Robotic Nozzle Fountains



Dancers on a Stage Robotic Nozzle

11 Two-Axis Moving Jets moves side to side and front to back for a spherical range.
Location: front of the Rectangular Basin.

Titan Jets

Row of Titan Jets running along the back of the Rectangular Basin

At the switch of a valve, water flows into each five gallon titan water reservoir.

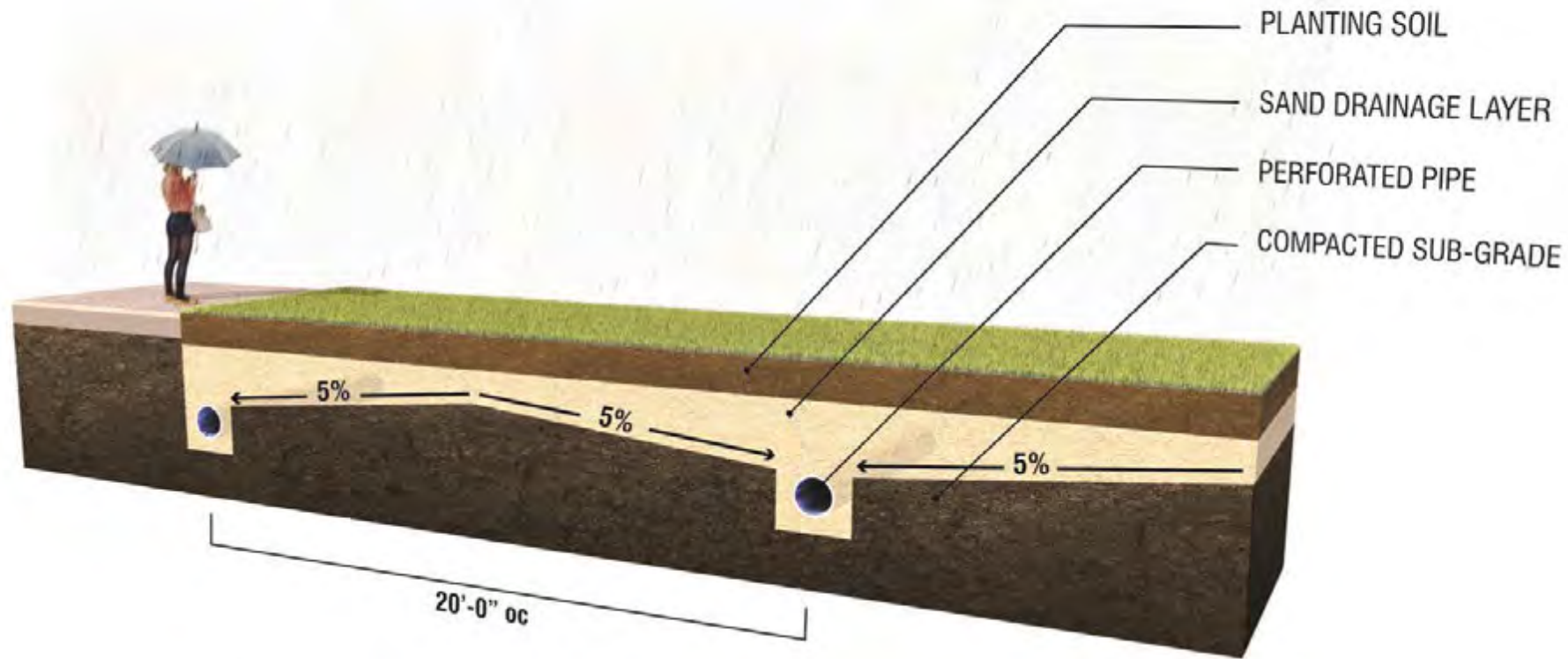
A valve also controls the release of air under high pressure (100psi) from air compressor tanks below ground which can rocket five gallons of water up to 80 feet in the air!



Row of "Dancers on a Stage"



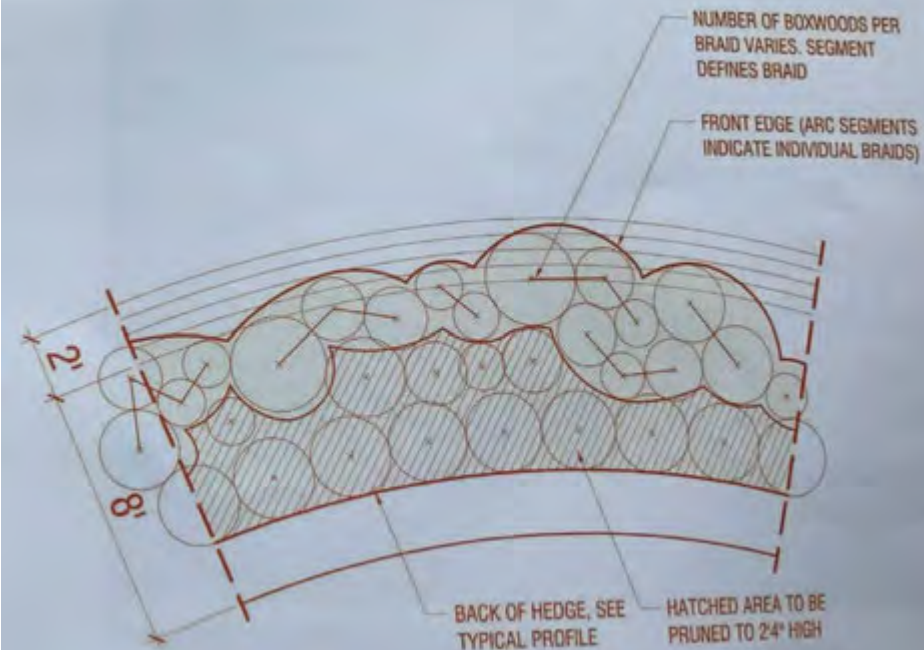
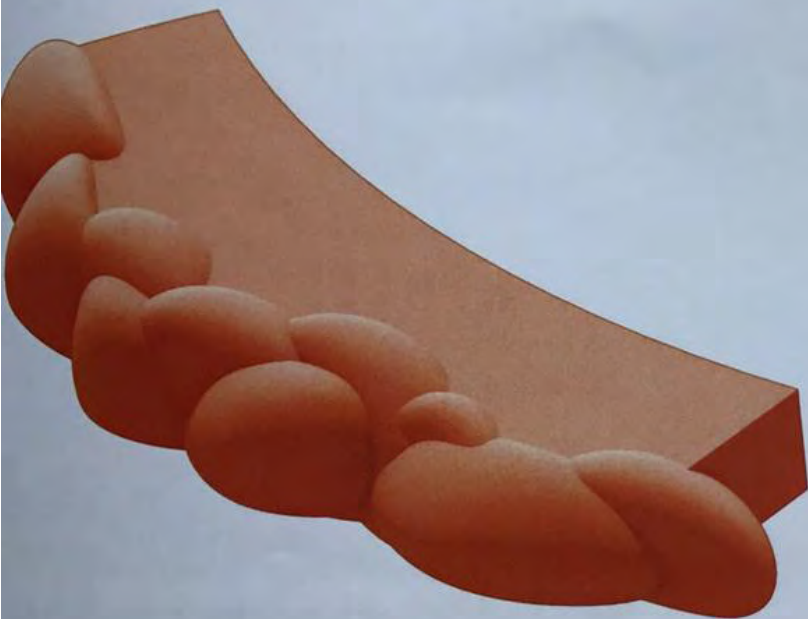
The height and sound of the Titan air jets depends on how long the valve is left open, and how much water is released. The titan sounds range from a gentle pop to a gun-like report to a loud blast.



Soil is engineered to withstand root compaction and offer excellent drainage

2 – 3 feet of planting soil is composed of 80% medium and coarse particle size sand and 20% topsoil

- The particles of sand pack together but create large pore spaces for water and air infiltration even when compacted. Tightly compacted soil without space for air and water is the #1 reason soil systems fail.
- 7,000 cubic yards of topsoil from the Main Fountain Garden were removed during excavation and saved to become part of the new design mix



Design for shaping and shearing
planned boxwood hedge





Green Beauty

Buxus microphylla var. *japonica*



Littleleaf Linden

Tilia cordata 'PNI 6025' Greenspire®



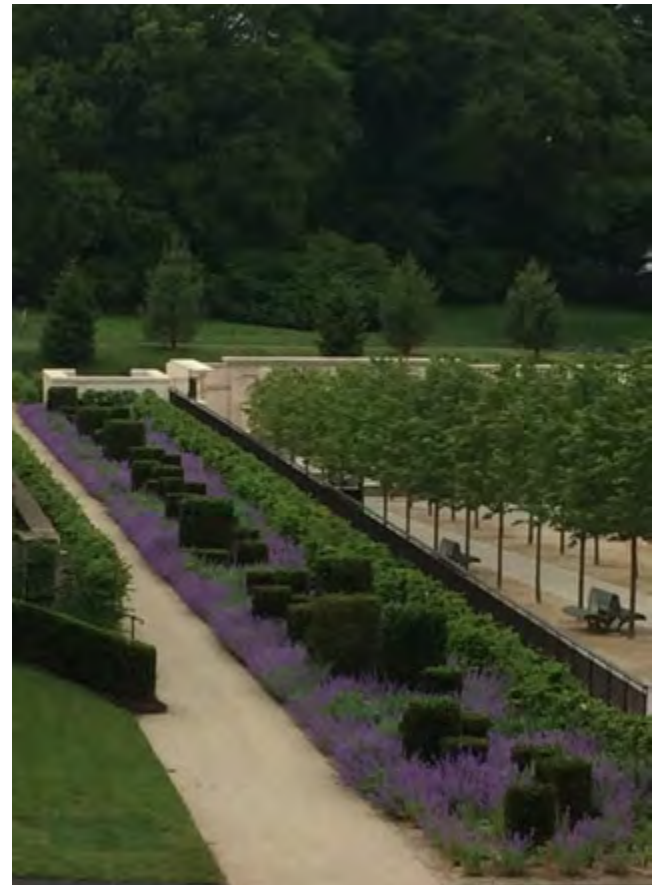
Blackberry-Lily

Iris domestica
Summer bloom



Catmint

Nepeta racemosa 'Walker's Low'
Early summer bloom



Anglo-Japanese yew

Taxus x media 'Moon'
Shaped evergreens

European hornbeam

Carpinus betulus
hedge on left

Side Plantings



Papyrus
Cyperus papyrus

Boston Ivy
Parthenocissus

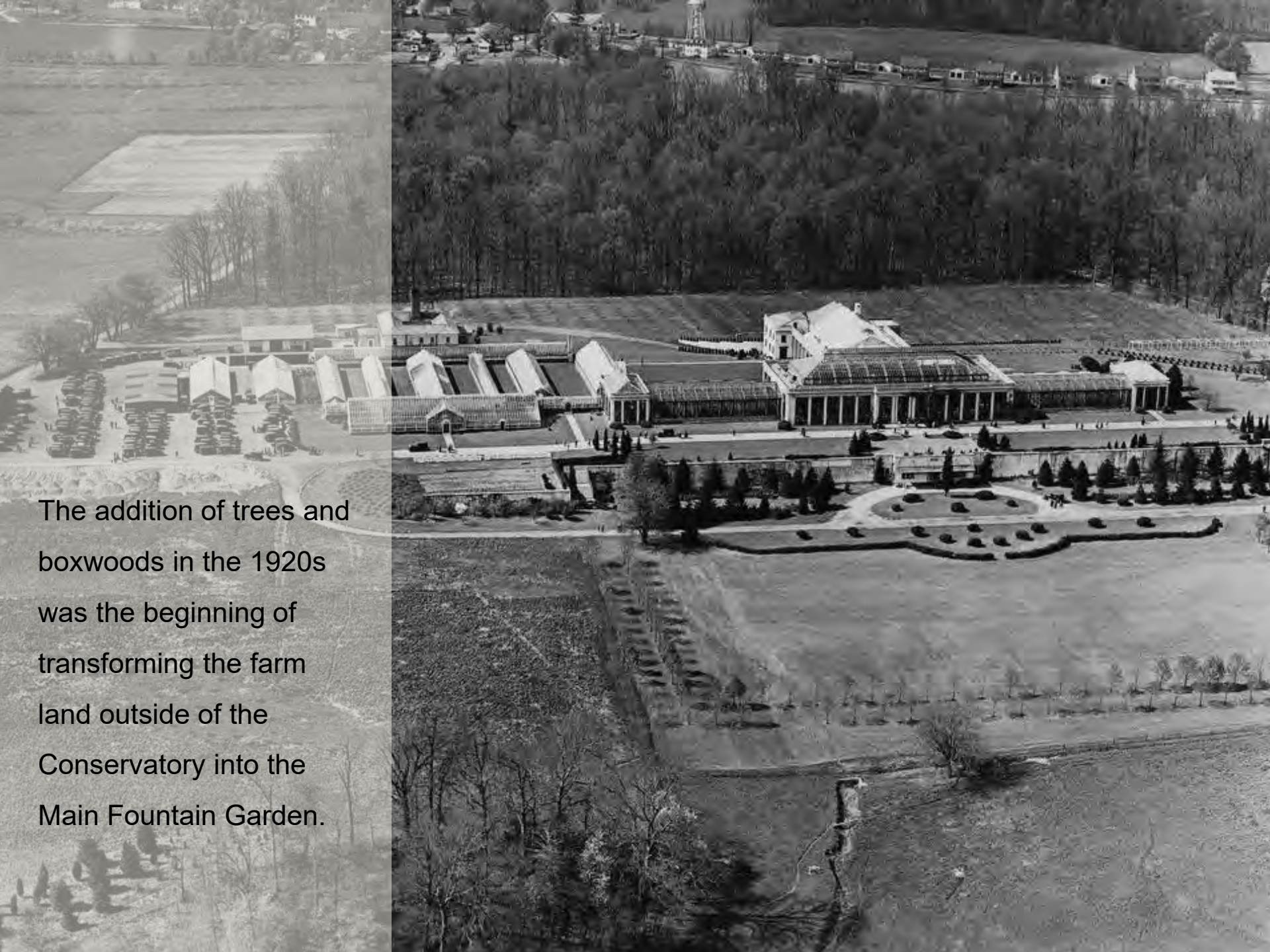


Papyrus
Cyperus papyrus

Elephant Ear
Colocasia



Wisteria



The addition of trees and boxwoods in the 1920s was the beginning of transforming the farm land outside of the Conservatory into the Main Fountain Garden.



Main Fountain Garden Plantings 1939 with specimen boxwood, maple allée

Historic
Pumphouse
without finished
floors and walls.
Every pump is in
the same location
as it is today.



Stone, plantings, and infrastructure were temporarily removed during the Revitalization Project to restore and update the Main Fountain Garden.





Food Service

For meals & snacks:

1906 Fine Dining Room

Summer Menu debuts Monday, May 15th

Beer Garden

4:00 – 9:00 pm Thursday – Saturday; Fireworks 12:00 – 9:00 pm

Live music every Thursday(weather dependent)

NEW *Wood Fired Pizza & Barbeque Grill* stations

Twenty-five additional picnic tables (weather dependent)

For snacks:

Pump House Plaza

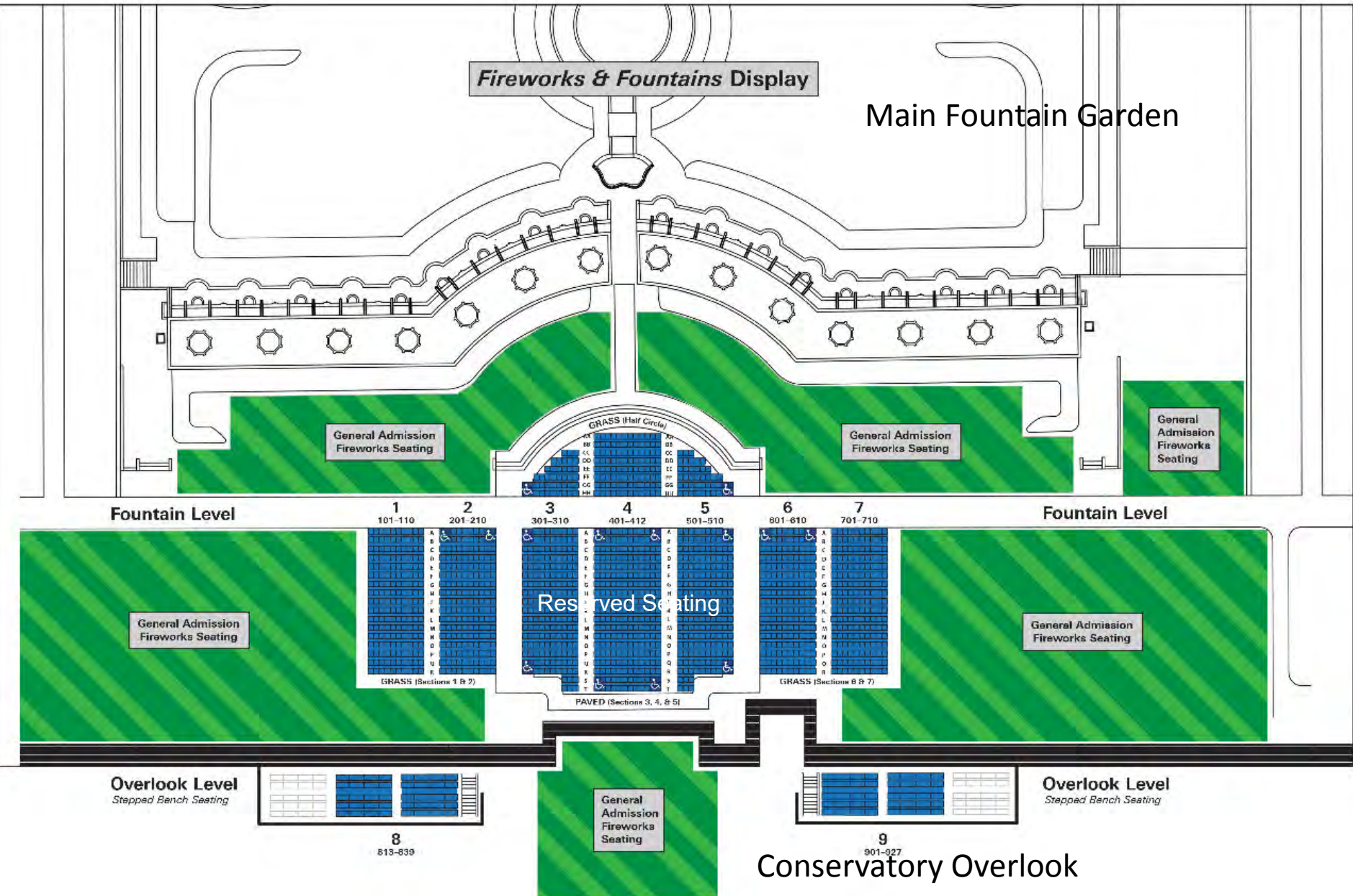
NEW “Tuk Tuk” vehicle offering wine, beer, soft beverages & *light* snacks. (Weather dependent)

Concessions Tricycles

NEW Duo of tricycles at Italian Water Garden & Five Points offering wine, beer, bottled water & ice cream sandwiches
(Weather dependent)



Fireworks & Fountains Event Venue Seating



Fountain Performances

Sunday - Saturday

11am: Narrated Fountains Then and Now

1 pm: Classical

3pm: Narrated Fountains Then and Now

5pm: A Fountain Surprise

Thursday-Saturday

7pm: Fountains then and Now

9:15pm: Illuminated Fountain performance

Fireworks

July 2: Star Spangled Spectacular

July 22: A Night at the Movies

August 12: Divas of Dance

September 2: Pictures of a Fountain Exhibition

September 16: Over the Rainbow

Main Fountain Garden Insider Tours

Nearly every day at 11am and 2pm meeting at the Overlook



This modern water feature sits above a 90,000-gallon reservoir that supplies the Waterfall and Main Fountain Garden. An initial surge of 3,000 gallons per minute at 9:00 am drops back to a smooth flow of 5,000 gallons per minute for the rest of the day. Longwood's first director saw this fountain in Agua, near San Jose, Costa Rica and was inspired to have this one built here in 1968.

Noteworthy plants: redbud (*Jacaranda mimosifolia*), hinoki false cypress (*Chamaecyparis obtusa*), weeping redbud (*Prunus subhirtella*)

[Search for Plants Near the Eye of Water](#)

The Eye of Water runs from 9:00 am until 6:00 pm, and is closed to the public during closing from mid-April until mid-October.

