



## Water Garden – A Novel Approach in Landscaping

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### INTRODUCTION

Recently, people's interest in the landscaping has increased with the developments in living standards. The art of landscape gardening sharpened in using natural components like soil, water and air. Among them, water plays a major role as most important element that can be included in landscape design. Thus, waterscaping has started to attract more attention in the living spaces that have become an indicator of fashion.

A waterscape is an art and science of incorporating water features into a of landscape in which the expanse of water is a dominant feature where planting of aquatic and semi-aquatic plants in and around the pool, ponds, streams and other water features.

### History

Water garden is one of the oldest art of gardening in India. It was a customary to have lotus and lilly pools in temples and stupas. Now it became a trend to include water garden in their layouts and in landscaping.

- Emerged in the Mesopotamian civilization, 3500 BCE, was known for its advanced irrigation systems and the creation of intricate canals and waterways. Water as a vital resource for agriculture, and the efficient management of water was crucial for their civilization's survival. They tended to include four water features in the form of a cross, the concept of "flowing to the four corners of the earth"
- Water gardens first originated in ancient Egypt (2950-2770 BCE), when the Egyptians channelled water from the Nile into their palace gardens. They primarily grew lotuses a primary source of medicine

- Persian civilization, particularly during the Achaemenid Empire (550–330 BCE), is renowned for its innovative water management systems. They developed sophisticated underground aqueducts called qanats to bring water from mountain sources to arid regions, enabling the creation of lush gardens and agricultural landscapes
- During the Islamic Golden Age (8th to 14th centuries), the concept of gardens as paradise on earth flourished. Islamic gardens, inspired by Quranic descriptions of paradise, incorporated water as a central element. These gardens showcased elaborate fountains, canals, reflecting pools, and geometric water patterns.
- The Japanese and Chinese created their water gardens as a place of contemplation and reflection.
- Italian Renaissance, water gardens were modernized and were built with stones
- Buddhism, part of Hinduism in India symbolizes the lotus and made its way to China *via* the Silk Road.
- Japan started incorporation of water and the lotus in Japanese garden design.
- In the 20th century, architects and designers began incorporating water features, such as ponds, waterfalls and streams, into residential and public spaces. Modern waterscaping emphasizes aesthetics, sustainability and the ecological balance of water systems.

#### Classification of Water component:

##### Still Water

- The static state of water that complies with the form of the ground with the influence of gravity. Still water is visually soft and uninterruptedly gives encouragement of thinking to mind. Serves as a reflective and calm water mirror, expresses an aesthetic value
- Ex: Pools, lakes and ponds

##### Active waters

- The dominant element is sound that adds life to space. Moving water create a more

peaceful atmosphere by clearing annoying sounds.

- Moving water are divided into two;
  - ❖ Top-Down Active (under the influence of gravity. Here the water actively moves over any object towards various surfaces and forms a top-down order by the influence of gravity. Ex: Streams and creeks
  - ❖ Bottom-up Active (Applied Pressure) Waters. Fountains and jets are the systems that strongly uplift water upwards

#### Types of Water gardens

The artistry and ingenuity of Indian landscape architecture, with their skillful integration of water features, symmetry, and natural elements. They provide visitors with an immersive experience, combining beauty, tranquility, and historical significance.

##### Informal water garden

Any water garden should have adequate water supply. Shallow pond or natural depression which can hold sufficient water and not drying up in summer, thus more or less constant level of water, can go for water garden. These types of pools called as informal pools. The size and shape of pool may depend on area and slope of land. The base of pool should be impervious to water by pudding. Depth should be 30-45cm at the bottom. Clay soil serves as best media. After pudding pond is filled with water.

##### Formal water garden

A formal garden need not to have low lying area; should be situated at a prominent place of garden. Size and shape may depends on size of garden, formal in shape i.e., rectangle or square, round oval, or any other artistic design. Depth should be 60cm. base should be made by concrete and drainage should be provided.

**Ponds and Lakes:** These are natural or artificially created bodies of water that are relatively large and deeper in nature. Ponds and lakes often support aquatic plant and

animal life and can be used for recreational purposes, such as fishing or boating

**Streams and rivers:** Created using channels or watercourses that guide the flow of water, often with the use of pumps and recirculation systems. Streams and rivers can add a dynamic element to the waterscape, providing a sense of motion and creating habitats for aquatic plants and animals.

**Fountains and Geysers:** Fountains and geysers are a great way to add a touch of elegance to any landscape. Involve the deliberate and controlled release of water into the air. They can vary in size and complexity, ranging from small, decorative fountains to large, intricate designs

**Babbling Boulders:** They are essentially a boulder with a water supply inside. Water cascades over the top and down the sides.

**Reflecting Ponds:** The beauty of a reflecting pond is its simplicity of creating a mirror-like effect. They often used to enhance the visual appeal of architectural structures or to create a calm and serene ambiance. Keeping the water clean with basic maintenance and a filtration system to achieve the reflection.

**Waterfall:** They provide all the benefits of moving water but require far less maintenance than a pond. These can be natural or man-made to create soothing and cascading effect of water movement.

#### Method of construction:

- 1. Site selection:** Assessing the site to incorporate water features by considering the basic factors such as available space, soil type, sunlight duration, drainage patterns and existing vegetation and permanent structures. This will help to determine feasibility and suitability of different water feature designs.
- 2. Water Feature Selection:** Based on availability of space, budget, maintenance requirements and compatibility with the site's conditions, selection of waterscaping design or type is decided such as, ponds, waterfalls, fountains, streams, or a combination of these.
- 3. Planning:** Consider the layout size, shape and positioning of the water feature, incorporate elements such as rocks, plants, and lighting to enhance the overall aesthetic. Ensure that the design integrates well with the existing landscape such as pathways or seating areas.
- 4. Excavation and Construction:** Excavate the area where the water feature will be located, proper levelling should be done to create structures such as a pond or stream bed. Install required liners or reservoirs to hold the water, for waterfalls or fountains establish a water source and water circulation and filtration systems
  - **Pool liners of Vinyl sheet:** Shallow pools can be easily prepared by using pool liners (blue vinyl sheet 20-30mm). It is semi-permanent in nature and durability is less compared to other materials.
  - **Fiber glass:** These are relatively sturdy than poly-liners are the best alternative to concrete
  - **Fabricated fiberglass pool containers:** Moulded prefabricated pool containers are available which will fit to requirement. Discarded household tubs, sinks containers can also be used.
  - **Concrete wall:** Plants with concrete wall are permanent type, so planting should be done in proper way according to design and its location.
- 5. Planting:** Select suitable plants by considering basic factors such as water requirements, sun exposure and aesthetic appeal. Choose plants that can thrive in wet or aquatic environments and help maintain water quality and incorporate appropriate hardscaping elements also.
  - **Surface floating aquatic plants:** *Nymphaea*, *Victoria regia*, *Nelumbo lutea*, *Nelumbo nucifera*, *Pistia*, *Nymphaea*
  - **Oxygenators:** *Elodea crispera*, *Callitriche palustris*, *Renunculus*, *Aquatilis*, *Vallisneria spiralis*, *Ceratophyllum demersum*

- **Floating plants:** Azolla, Caroliniana, *Eichhornia speciosa*, *Trapa natans*
  - **Marginal plants:** Cyperus, Iris, Typha grass, *Calla palustris*
  - **Bog Plants:** Japanese Iris (*Iris ensata*), Bog Rosemary (*Andromeda polifolia*), Pitcher Plants (*Sarracenia* spp.)
  - **Ornamental Grasses:** Japanese Sweet Flag (*Acorus gramineus*), Giant Reed (*Arundo donax*), Dwarf Papyrus (*Cyperus prolifer*)
  - **Hardscape elements in water garden:** Bridge, lanterns, stones, pebbles etc.,
- 6. Plumbing and Electrical Work:** The features like fountains or water jets, looks more elegant by installation lights, proper drainage should provide for safety standards.
- 7. Maintenance:** Filtration system and water conditioners used to prevent algae growth. Routine cleaning, plant care, monitor water levels and address any leaks in system. Should construct the pond or water garden at sunlight area, away from big trees, the leaves falling on water will foul the water. The roots of tree run through the wall of pool and causes cracks and crevices. Blanket weed that covers the water surface blocks the sunlight penetration, can be controlled by adding potassium permanganate.

#### Significance of waterscape:

- Waterscaping serves as an attractive spatial component and arouses curiosity
  - Water features, such as ponds, waterfalls and fountains, add beauty and visual appeal to landscapes. They create a sense of tranquility and serenity, enhancing the overall aesthetics of an outdoor space. Water's reflective properties can also add depth and dimension to the surroundings.
  - Creates mobility- Water moving at different speeds adds life to space
  - Waterscaping helps to create a microclimate by cooling the local atmosphere, particularly beneficial in urban areas where heat island effects are prominent
- Provides functional and aesthetic look (The aesthetic purposes of the water are divided into five, which are Visual, Auditory, Psychological, Tactile and Cooling purposes)
  - Healing psychological effects (Noise barrier, changing climate etc.) of relaxation and stress relief
  - Water features support diverse plant and animal life, providing habitats for various species. They can also act as natural filtration systems, improving water quality by removing impurities and pollutants through biological processes.
  - Aquatic ecosystems educate children's and adults, can learn about the life cycles of plants and animals, ecological processes, and the importance of water conservation
  - Well-designed waterscaping can significantly increase the value of residential and commercial properties. The presence of water features adds a unique selling point, making the space more attractive to potential buyers or visitors

#### Best water gardens in the India:

1. Taj Mahal Garden, Agra- garden known as the Charbagh, the garden was divided into four quadrants by water channels, reflecting the Mughal design principles of symmetry and harmony. The central water channel reflects the image of the Taj Mahal, creating a stunning visual effect
2. Nishat Bagh, Srinagar - terraced layout that descends water towards Dal Lake, flowing water channels, fountains, and cascading terraces adorned with colourful flowers, creating a serene and picturesque waterscape
3. Rashtrapati Bhavan water garden, Delhi – flowing water canals most oftenly seen here
4. Brindavan Garden, Mysore, near the Krishnarajasagara Dam in Karnataka, symmetrical design with terraced gardens, ornamental plants and symmetrically

arranged fountains. Highlight of the garden is the musical fountain show in the evening, where synchronized dancing fountains are accompanied by music and colourful lights.

5. Pinjore Gardens, Haryana, near Chandigarh, garden features like several water channels, fountains, and cascades surrounded by lush greenery, creating a peaceful ambiance

#### **Disadvantages/drawbacks in water gardening:**

- ❖ **High Maintenance:** require regular maintenance to keep them clean, balanced, and functioning properly. Failure to maintain a waterscape adequately can result in issues like algae growth, clogged filters, or stagnant water.
- ❖ **Mosquitoes and Pests:** Stagnant water in ponds or other water features can become breeding grounds for mosquitoes and other pests. This can be a nuisance and a potential health concern. Implementing appropriate strategies, such as introducing mosquito-eating fish or using mosquito dunks, can help control populations and reduce breeding
- ❖ **Waterscapes, particularly those with deep water or strong currents, can pose safety risks, especially for children or non-swimmers. It's crucial to take precautions such as installing safety barriers**

- ❖ **Designing and implementing waterscape can be expensive, especially for larger or more complex projects. Costs may include excavation, plumbing, electrical work, equipment installation and ongoing maintenance.**
- ❖ **Factors such as space constraints, soil conditions, or regulations may limit the feasibility of implementing water features. It's important to conduct a thorough site assessment and consider any limitations before embarking on a waterscaping project**

#### **CONCLUSION**

Waterscaping is a versatile and engaging practice that adds beauty, serenity, and functionality to outdoor spaces. As water is an important element that serves as eternal theme of the garden. The natural water could bring dynamic noise, quietness, organize space and attract sights peace and charming reflection that provides us with a living environment. Some aquatic plants play an important role in removing water pollutants and control weed growth. However, it also create challenges such as water resource supply in landscape, cleaning, safety checking, routine check of plants, and overall maintenance. By careful planning, designing and maintenance, individuals can transform their indoor and outdoor places into biodiversity visual captivating spaces that connects with nature.