



IFLA AAPME Awards 2024
Built Category : Flood and Water Management

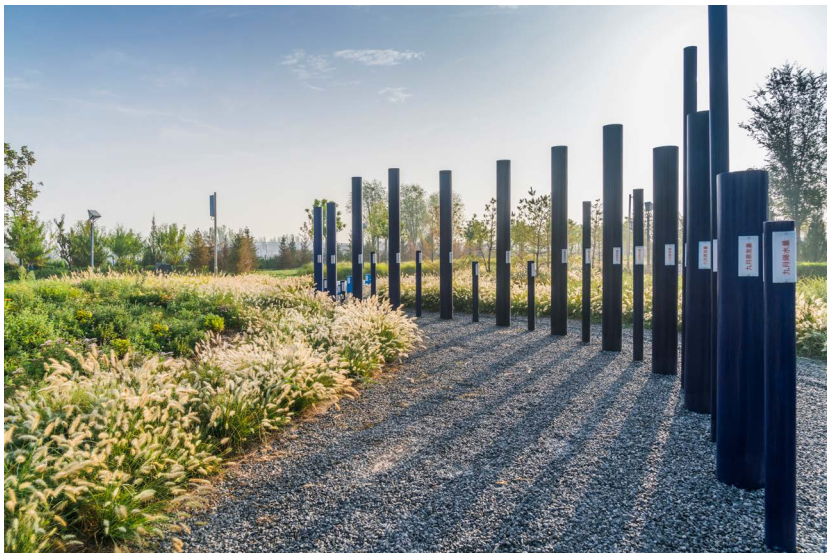
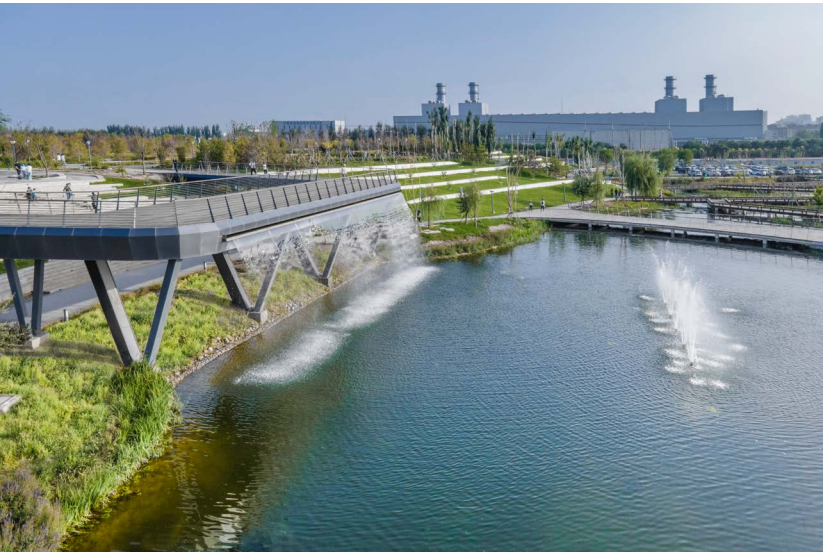
From Grey to Green: The Yinchuan NO. 1 Reclaimed Water Plant

**From Grey To Green:
The Yinchuan No. 1 Reclaimed Water Plant**

Project Statement

The Yinchuan No. 1 Reclaimed Water Plant, located in the city center, has made a significant contribution to solving the local water shortage problem. However, this huge grey facility has also brought many negative impacts to surrounding communities. The landscape architects resolved this issue by transforming the wastewater plant into an urban park above the plant. The design strategies integrated the plant into a public open space that is socially valuable, environmentally resilient and inclusive for the community.

The construction of the park has reshaped people's negative preconceptions about the water plant and has instead become a favorite public activity space for the 400,000 people living in the surrounding communities. Simultaneously, it has been improving the ecological environment at the site, increasing the level of biodiversity, and even enhancing the value of the surrounding land. Through this project, the gray facility has been transformed into a green infrastructure.



LOCATION

Yinchuan City, Ningxia Province, China

SITE AREA

316000 m²

SERVICE SCOPE

Architectural Design
Landscape Architecture

YEAR OF COMPLETION

2022

Project Narrative and Contents
Built Category : Flood and Water Management

From Grey to Green

The Yinchuan No. 1 Reclaimed Water Plant, located in the arid city of Yinchuan, China, was constructed to address water scarcity issues. Its large structure and negative impacts, such as noise and odor, diminished the value of the adjacent land. To mitigate these issues, landscape architects were engaged to design an urban park above the water plant. Inspired by the local topography, the park boasts terraced gardens and sports facilities, using the excavated soil to conceal the plant and minimize its impact. Now, the park provides recreational, conservation, and educational spaces for the community, along with habitats for wildlife, all of these are sustained by the plant's recycled tailwater for irrigation and lake creation.

Concealing the water plant

The largest building in the plant, the A2O biological pool, presented a visual and sensory challenge. Landscape architects ingeniously utilized excavated soil to cover and integrate the 54,000 square meters pool, creating a balanced earthwork design that included a lake, terraces, and landforms. Skylights and tubular daylighting systems were incorporated into the park, not only brightening the underground facility but also offering visitors a unique view of the wastewater treatment process without interfering the plant's operations.

Water recycle

To ensure a reliable water supply for the park's water features, landscape architects collaborated with wastewater engineers to divert treated tailwater into the wetland and lake, achieving a 100% recycling rate for the water used. The tailwater from the plant undergoes a thorough purification, filtration, and disinfection process before cascading through a scenic waterfall, which doubles as an aeration and filtering system. Additionally, rainwater is harvested via 5,000 square meters of designed

Low Impact Development facilities and conveyed into the wetland and lake area, thereby mitigating flooding and pollution risks.

Ecological restoration

The park swiftly restored the site's ecology. Landscape architects drew inspiration from the region's mountain forests, introducing over 100 species of plants, including 4,700 native trees. This has resulted in a 75% green coverage rate, substantially decreasing air and noise pollution and improving the local microclimate. The site now sequesters 86.4 tons of carbon annually and provides a habitat for wildlife.

The Water Conservation Education Center

Water conservation education is a key concept underpinning this project. A program named 'The Journey of a Water Drop' was introduced to the public. It comprises a variety of wetland conservation education, interactive installments, and an environmental science exhibition. This program illustrates the reclaimed water treatment process to visitors and advocates for energy conservation and environmental protection. It draws over 10 visitor groups each week and hosts outdoor science education activities for local schools.

Social Impact

Since its unveiling, the park has emerged as a bustling tourist attraction, drawing as many as 10,000 visitors each day. On weekends and holidays, local residents organize events in the park, capturing photos and videos to share on social media. This online sharing amplifies awareness of the park's innovative design, boosting the city's reputation. Additionally, the park's increasing popularity has driven up local property values, stimulating economic growth and job creation, contributing to the regional development.



A Park on a Water Plant

A high-quality urban park with an ecosystem built on top of the water plant, successfully converts grey facilities into green infrastructure.



- 1 Five-color Terraces
- 2 Shelter Belt
- 3 The Great Lawn
- 4 Terrace Landscape
- 5 Parking Lot
- 6 Constructed Wetland
- 7 Educational Garden
- 8 Feature Gallery
- 9 Children's Playground
- 10 Rain Garden
- 11 Amphitheater
- 12 Waterfall Bridge
- 13 Jogging Trail
- 14 Operation Area Landscape
- 15 Five-a-side Football Field
- 16 Basketball Court
- 17 Skylight
- 18 Feature Water Sculpture
- 19 Central Lake
- 20 Water Stage

0 20 80m
10 40

Aerial view

This project has transformed a water plant in an arid desert region into an 'oasis' that is beneficial to society and environmentally sustainable.

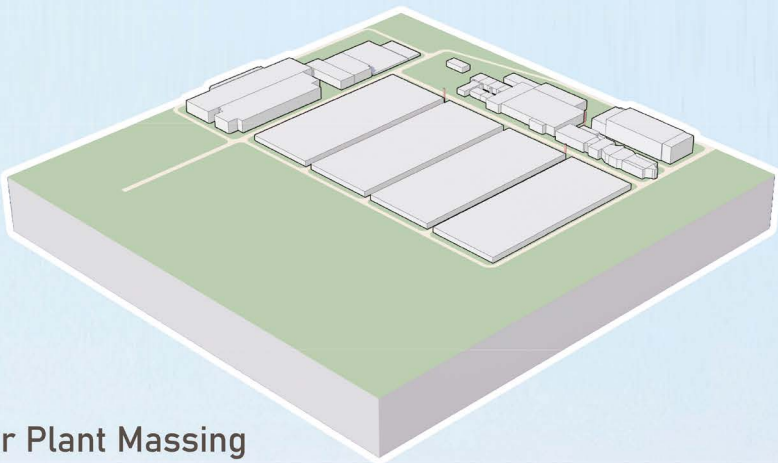


Construction Process

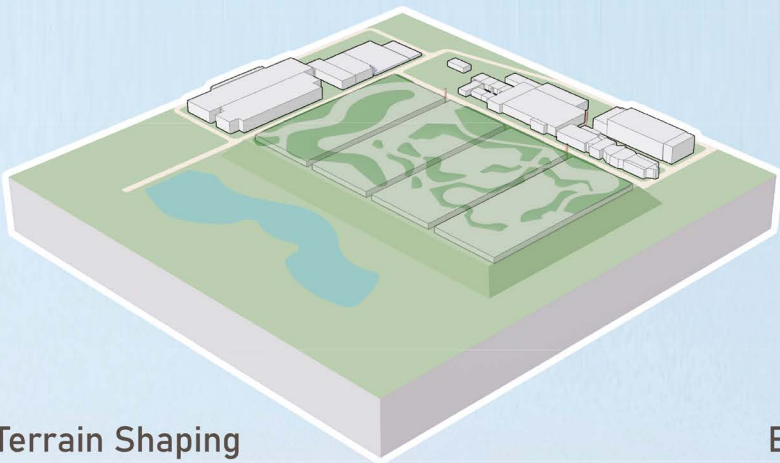
After three years of construction, collaboration between landscape architects and plant engineers has created a lively urban park atop the waterworks.

Earthwork Engineering

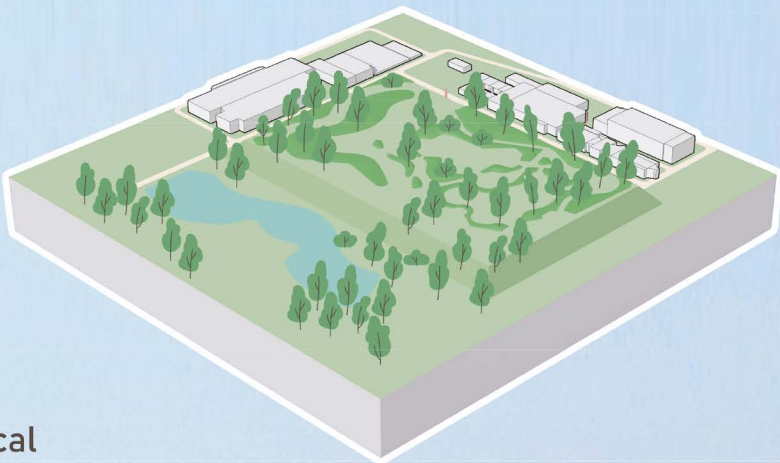
Strategies for concealing water plant



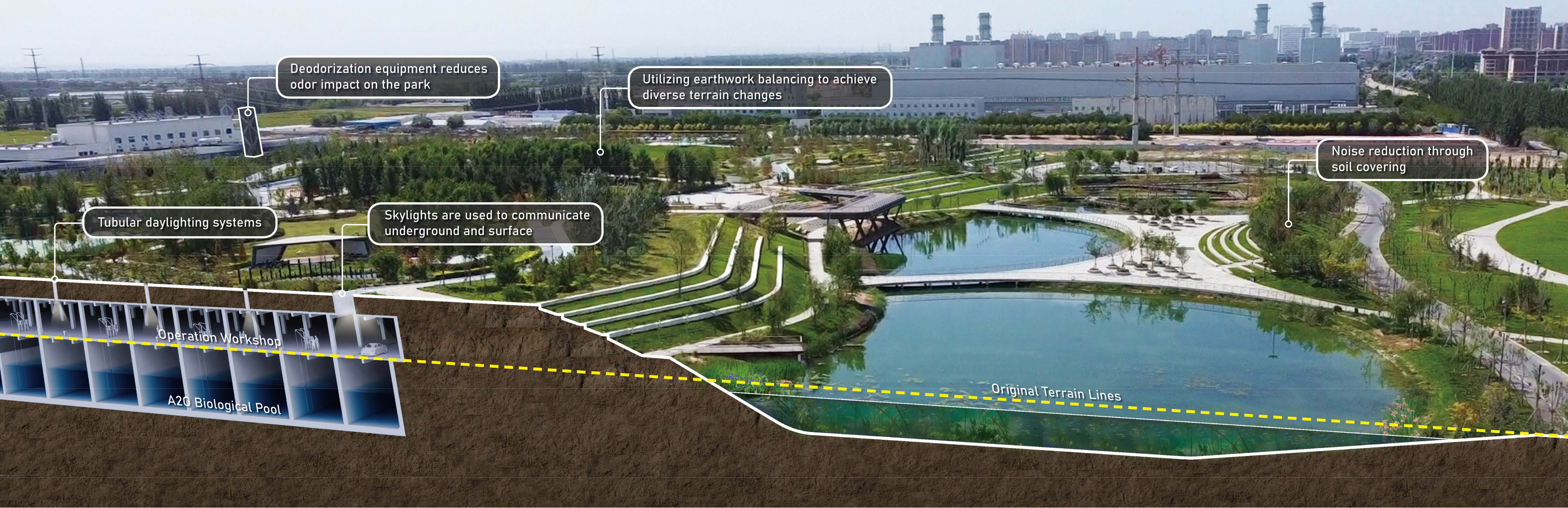
Water Plant Massing



Terrain Shaping



Ecological
Community Construction



Deodorization equipment reduces odor impact on the park

Utilizing earthwork balancing to achieve diverse terrain changes

Noise reduction through soil covering

Tubular daylighting systems

Skylights are used to communicate underground and surface

Operation Workshop

A2O Biological Pool

Original Terrain Lines

Concealing The Water Plant

By utilizing earthwork balance, the excavated earth from the lake and waterworks has been used to conceal the biological pool.



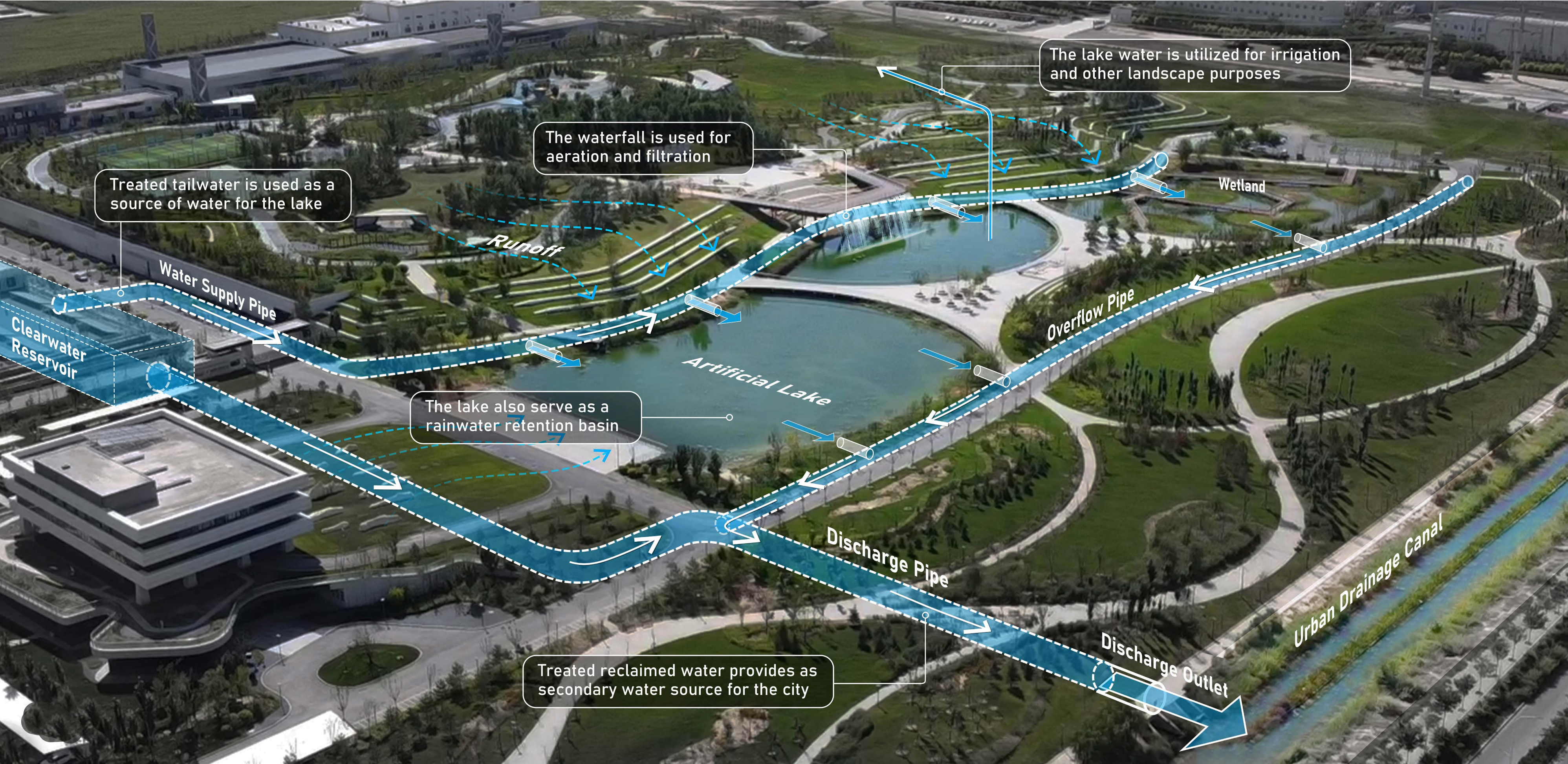
Landform Shaping

Inspired by the local mountainous topography, the designed landform highlights the project's local identity.



Amphitheater

The terrain-formed stepped seating and skywalks provide people with high-quality spaces for leisure, sightseeing, entertainment, and socializing.



Tail Water Recycle

The tailwater from the plant is used as a stable water source for the lake and wetland, as well as irrigations.



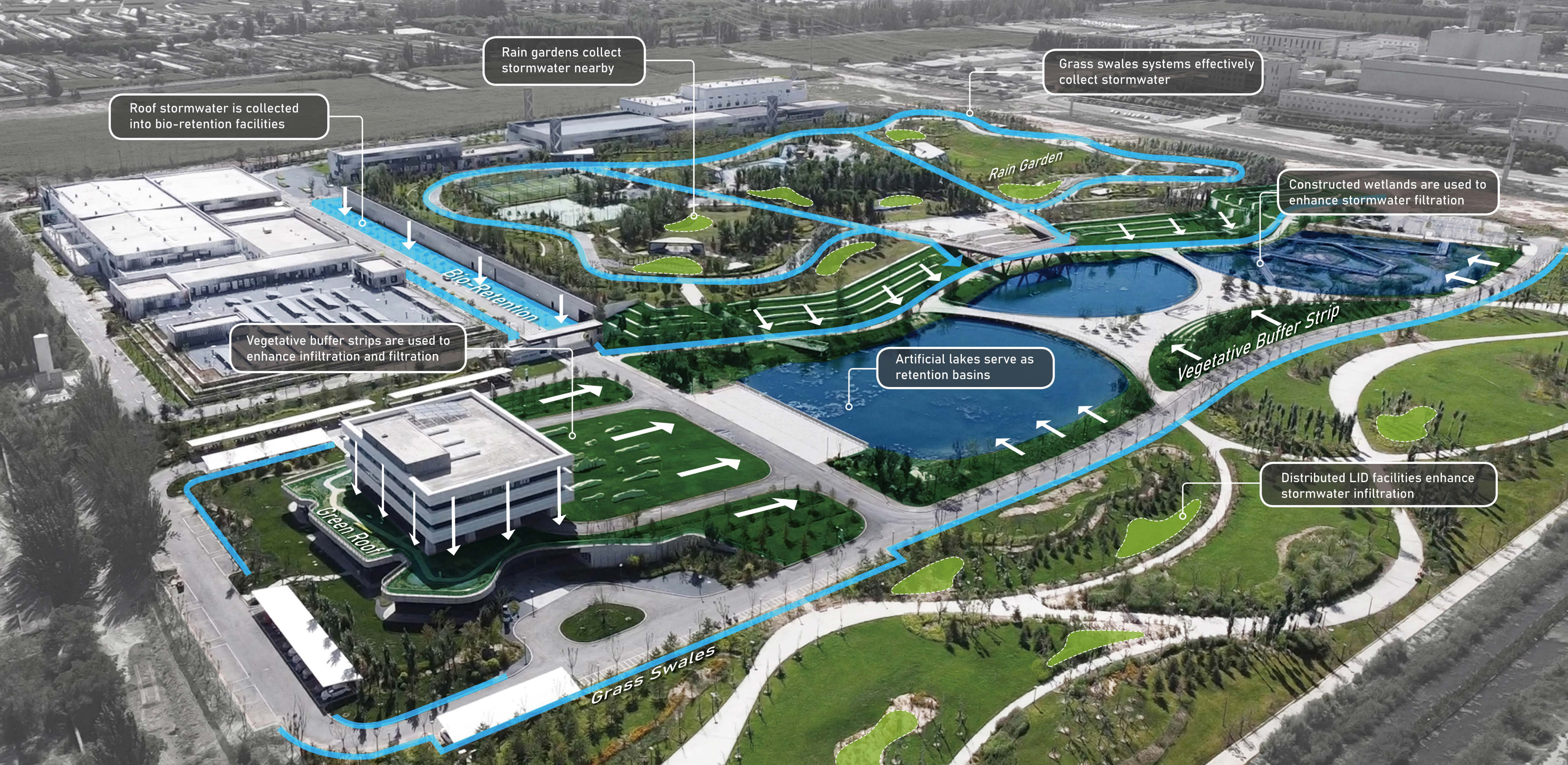
Landscape from Reclaimed water

Reclaimed water is contributing to the improvement of the microclimate, and showing people the potential and value of reclaimed water reuse.



Waterfall as a focal point

The waterfall, which cascades down to the lake, not only becomes a focal point in the park but also doubles as an aeration and filtering system.



Stormwater Management Strategy

Over 5,000 square meters of Low Impact Development facilities are used to collect stormwater, which is then directed to the lake and wetland.



Central Lake

The tailwater from the water plant is utilized as the water source for the artificial lake, creating a scenic and comfortable wetland environment, and the habitat for wildlife.



Wetland

The wetland can further purify the quality of tailwater and treat the stormwater, thereby becoming an amenity for the park.



Playground with Fitness

The “glacier” playground provides diverse activity spaces, including various fitness equipment inspired by the water plant’s purification equipment.



Precipitation and Evaporation Installation



Wave Sculpture



Water Saving Xeriscape

Water Conservation Landscape

The park area adopts low-maintenance, water-saving xeriscape design to cope with the local arid, water-scarce climate.



The Pavilion

The pavilion draws inspiration from the purification equipment of the water plant, providing a space for entertainment or relaxation while making strong connection to the water plant.



Accessible Water Plant

The operation area is open to the public. This plays a big role in educating visitors about sustainable development and water conservation.



Imitating nature

The overall landscape design adopts Nature-based Solutions (NbS), making visitors feel as if they are in nature, without realizing the wastewater treatment plant underneath.



Larus ridibundus



Cyanopica cyanus



Streptopelia decaocto



Zichya alashanica



Aphantopus hyperanthus



Coccinella septempunctata

Dense forest plantations contribute to reducing air and noise pollution as well as improving microclimates.

Elm trees can adapt to the arid climate and improve soil quality.

Composite vegetation communities provide shelter and habitat for wildlife.

Permeable grille paving increases the water retention capacity of the soil.

4,700

New trees planted

112

Native plant species

36

New species introduced

86.4t

Annual carbon sequestration

Ecological Restoration

The planted 4700 trees draw on the patterns of the surrounding natural forests. 36 new species have been found to inhabit here.



Tubular Daylighting Systems



Underground Exhibition



Educational Program



Science Popularization Signage



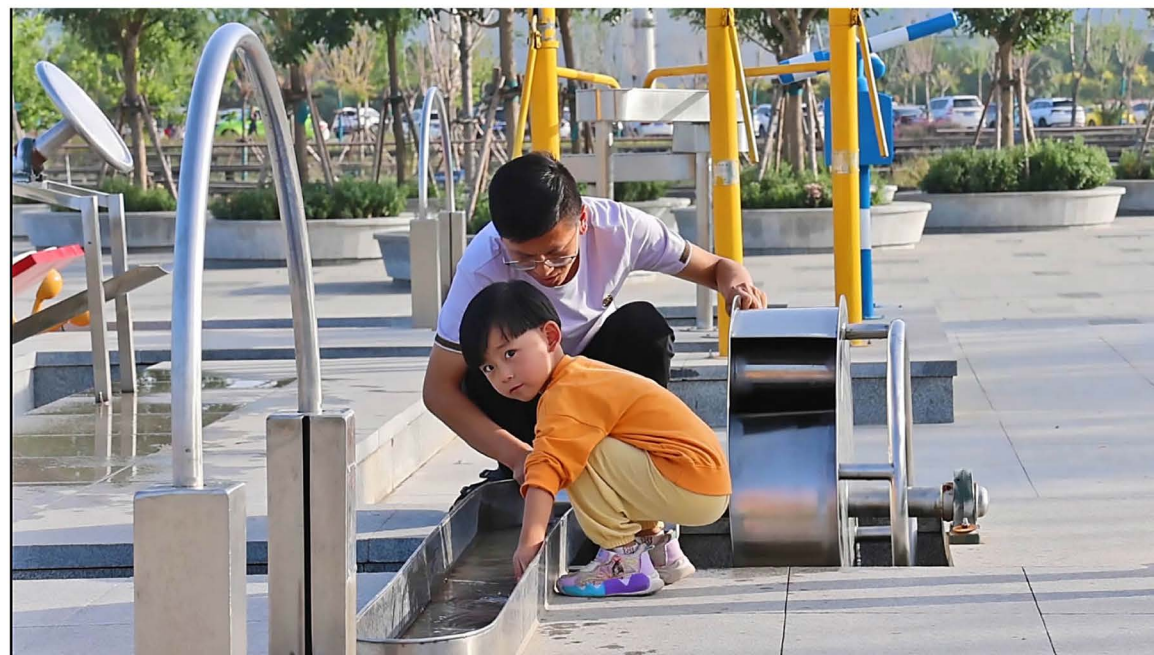
Architecture Model



"Little Drop" Mascot

Water Conservation Education Center

The "Journey of a Drop of Water" educational program offered by the park is very popular, attracting more than a dozen groups to visit every week.



Social Value

Since the park's opening, it has become a phenomenal destination. This has expanded the city's influence and increased the property value.