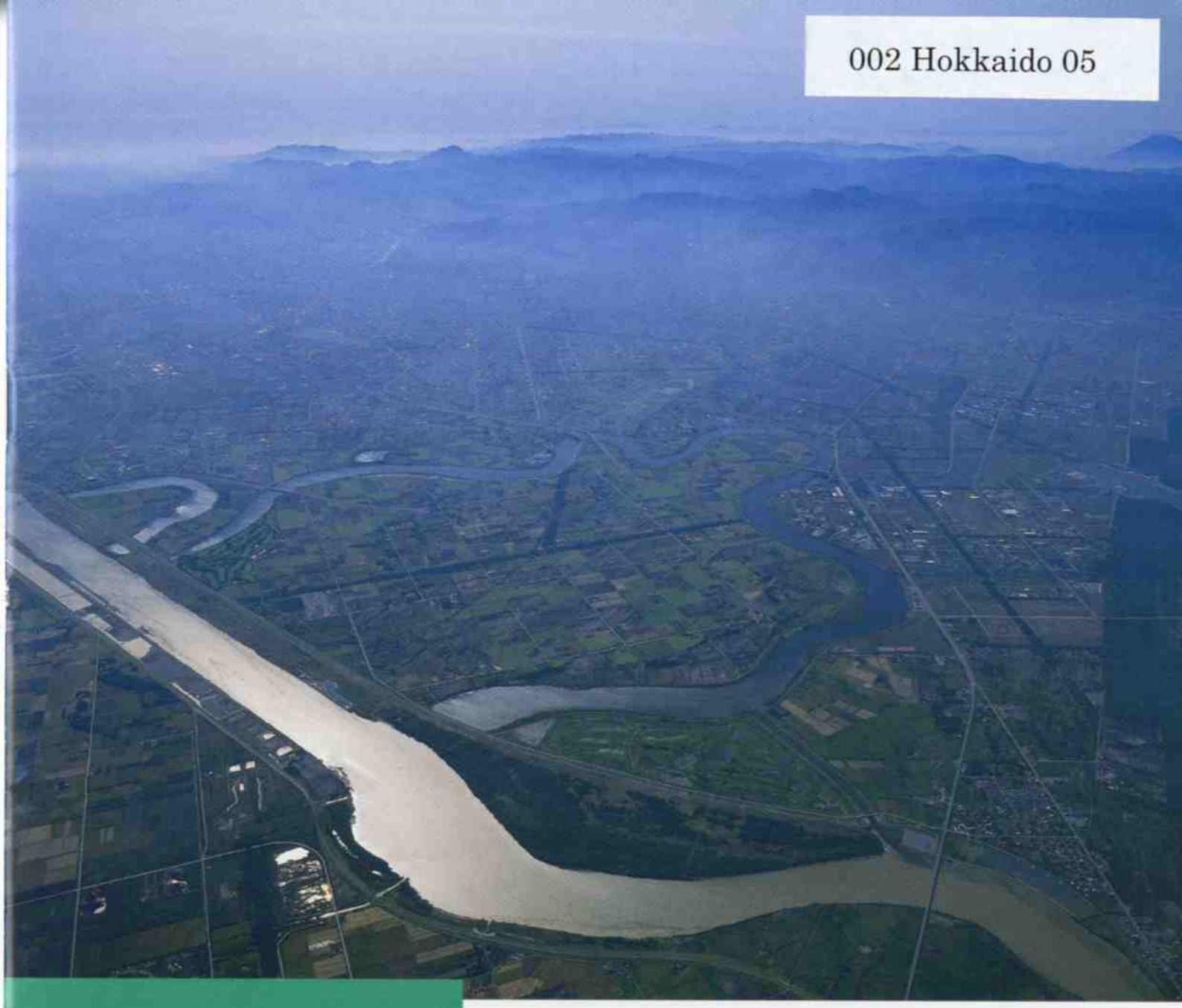
002 Hokkaido 05



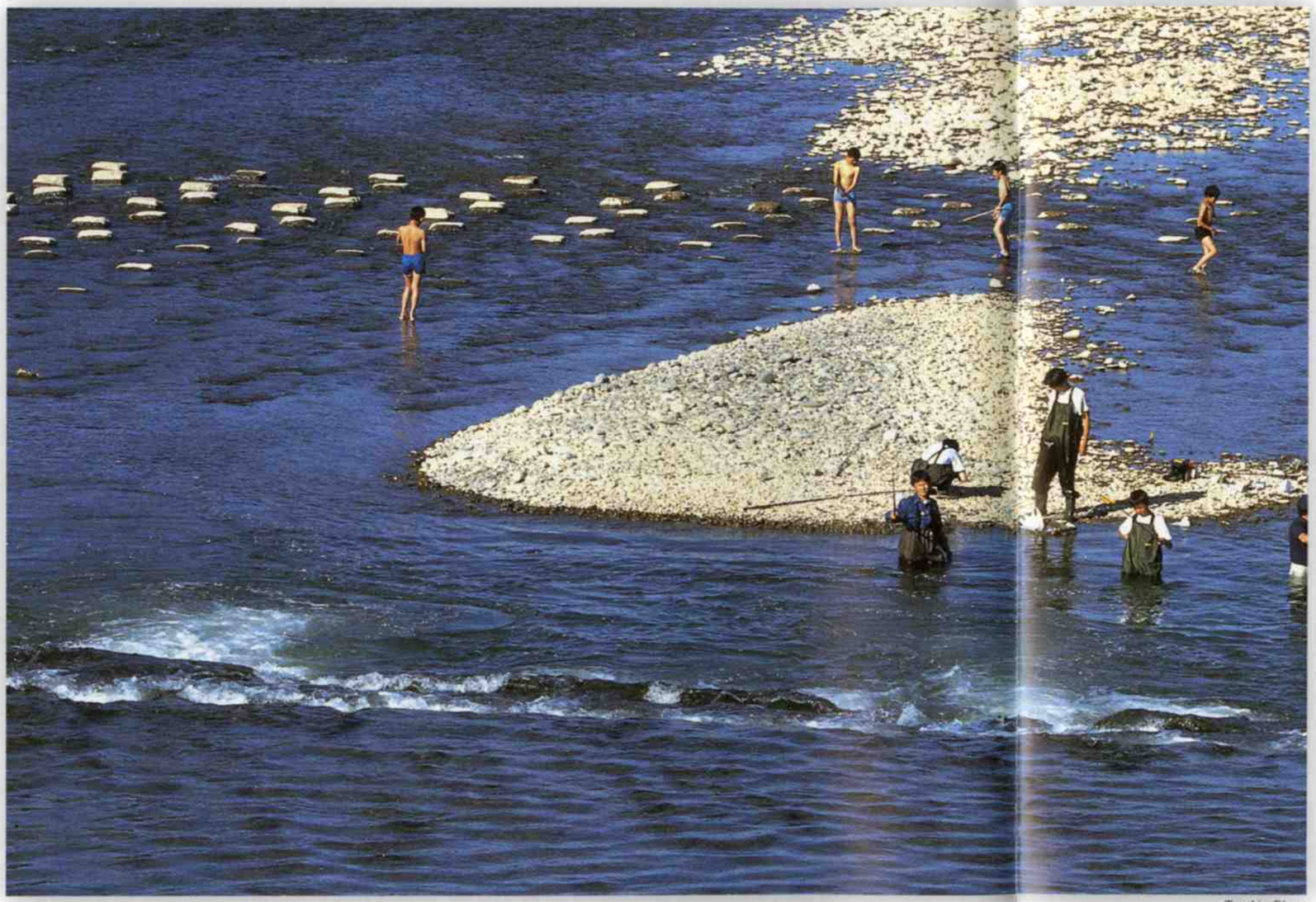
Seeking the Richness of Tomorrow in the Flow of Rivers

Sapporo River Work Office

Profile of river projects within the jurisdiction of the Sapporo River Work Office

OUTLINE OF THE SAPPORO RIVER WORK OFFICE

River improvement aimed at coexistence with people and the preservation and nurturing of bountiful natural resources



Toyohira River

Before entering the 21st century, society went through many significant changes. The relationship between rivers and citizens are also changing. Although flood control and the utilization of water were formerly the main focus of river projects, people are becoming increasingly aware of the importance of passing down the rich natural environment to future generations.

In the New River Law, which provides guidelines for river improvement projects, "flood control," "utilization of water" and "the environment" are identified as key concepts. Based on these three concepts, the law stipulates that river projects be introduced by incorporating the opinions of local residents and by taking into consideration the conservation and improvement of river environments.

The focus of river projects has been shifted from the control and utilization of rivers to the creation of favorable habitats for living creatures and a treasure trove of natural assets.

To realize harmonious coexistence with rivers as well as with nature, we will begin new river improvement projects that meet the needs of both citizens and the natural environment.

Ishikari River

The "Mother River" supporting the development of the North

Originating from Mt. Ishikari (1,966 m above sea level) of the Taisetsu mountains, the Ishikari River is a Class A river with a catchment area of 14,330 km^2 (the second largest in Japan) and a total length of 268 km (the third longest in Japan). As the "Mother River of Hokkaido," the Ishikari River has developed along with the history of Hokkaido. Its catchment area, which accounts for 20% of Hokkaido's total land area, is inhabited by nearly 50% of its total population. This area therefore continues to play an important role in industries (primarily agriculture), citizens' lives and environmental conservation.

The origin of the river's name is said to be the Ainu word "Iskarpet," which means "greatly meandering river." The development history of Hokkaido is virtually the history of people's struggles with this river. Thanks to flood control measures, the Ishikari River is no longer the violent river it once was. Its environment has been improved, prompting salmon to return to various parts of the river basin. The Sapporo River Work Office has jurisdiction over the 17.9-km section of the Ishikari River from its mouth to the point of confluence with the Toyohira River.

Mouth of the Ishikari River

Ishikari River

OUTLINE OF RIVERS

Name of river	Total length (km)	Total length within its jurisdiction (km)	Catchment area (km²)
Ishikari River	268.0	17.9	14,330.0
Toyohira River	72.5	21.0	894.7
Tobetsu River	72.5	9.5	348.3
Atsubetsu River	41.7	7.5	190.7
Nopporo River	13.4	4.3	43.6
Tsukisamu River	19.5	4.5	49.6
Motsukisamu River	18.9	3.8	21.9
Barato River	20.0	20.2	159.5
Sosei River	14.8	4.7	18.3
Fushiko River	14.8	2.3	99.4
Kariki-Shinkawa River	3.2	3.2	12.4
Ishikari Floodway	2.5	2.5	1.2
Minaminosawa River	3.7	-	6.5
Nonosawa River	6.3	-	6.9
Okabarushi River	5.1	-	9.5
Ananokawa River	9.4	-	8.9

Rivers that bring us comfort and blessings

The Sapporo River Work Office of the Ishikari River Development and Construction Department is responsible for flood control and management projects for the Ishikari River (from its mouth to the point of confluence with the Toyohira River), the Toyohira River and their tributaries. Three cities and one town (Sapporo, Ebetsu, Ishikari and Tobetsu) are located within its jurisdiction, which covers the lowest reaches of the Ishikari River.

1
RIVER FILE
Ishikari River

The "Mother River" supporting life in the North throughout history

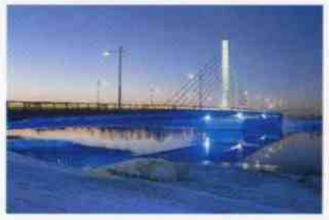
The basin of the Ishikari River, which accounts for 20% of Hokkaido's total land area, is inhabited by approximately 50% of its population. This river, often referred to as the "Mother River of Hokkaido," boasts of being the third longest river in Japan after the Shinao and Tone rivers. It originates from Mt. Ishikari of the Taisetsu mountains, the "roof" of Hokkaido. The office's jurisdiction covers the river's downstream area from the point of confluence with the Toyohira River.

2
RIVER FILE
Toyohira River

Abundant flows providing water for Hokkaido's capital of Sapporo

The Toyohira River runs north and south through the center of metropolitan Sapporo. River improvement projects have been conducted to protect the lives of the city's 1.8 million citizens. With baseball grounds, soccer fields and park golf courses established using high-water channels in recent years, this river now serves as a place of comfort and refreshment for many citizens.

3
RIVER FILE
Barato River



A river with beautiful dry riverbeds and reservoir functions

The Barato River, into which three rivers (Fushiko, Sosei and Hassamu) flow, plays an important role as the "water jar" for the surrounding area. This river has also been used for canoeing by college groups and others.

4
RIVER FILE
Tobetsu River

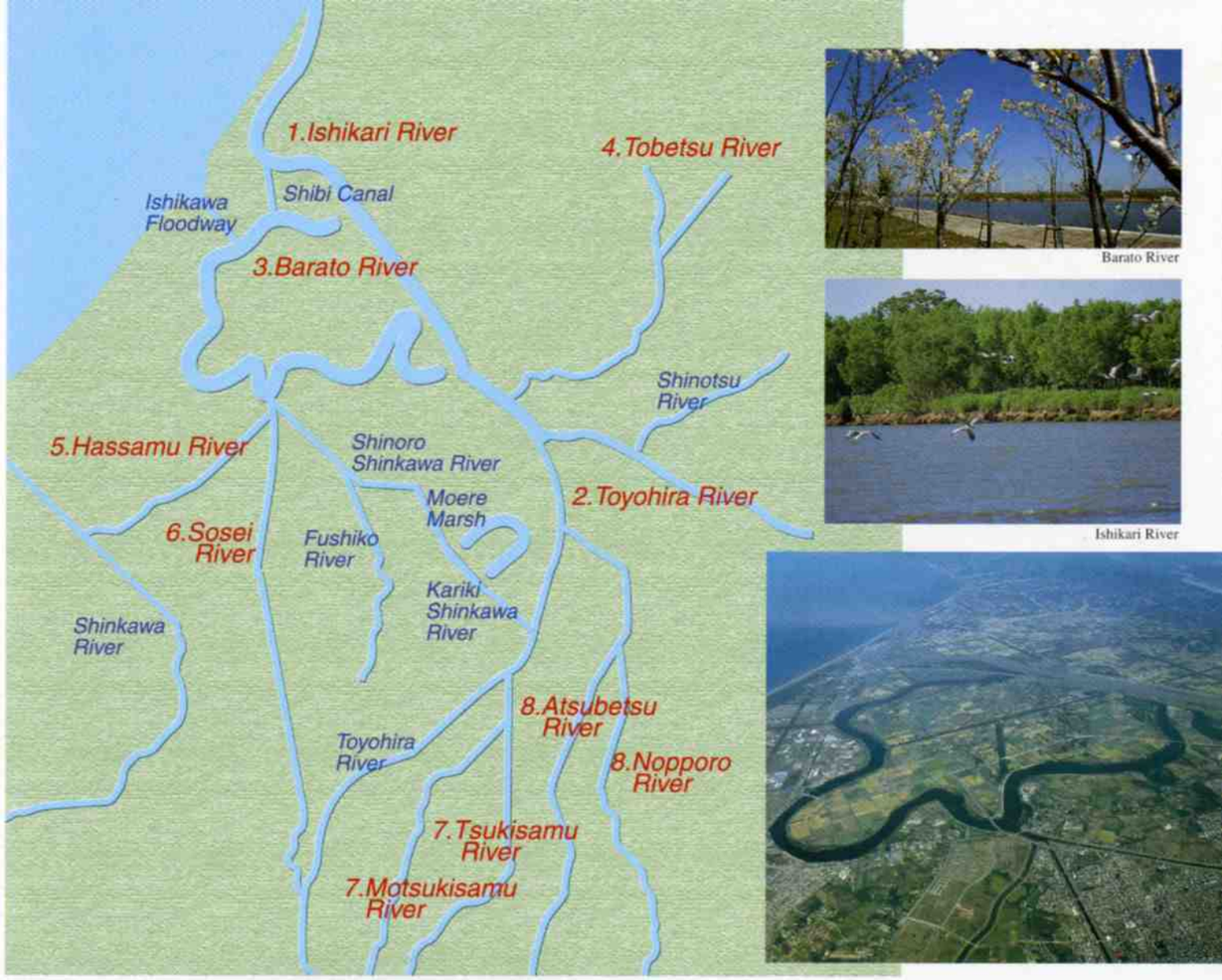
Passing down dry riverbeds abounding with nature to future generations

This tributary meanders through peat soil into the Ishikari River. A plan to construct sports and recreation facilities using high-water channels is under way, attracting great expectations from local residents.

5
RIVER FILE
Hassamu River

Reflecting the ever-developing cityscape of Sapporo

This river flows together with the Sosei and Fushiko rivers into the Barato River. Although it used to flow from Mt. Teine, the length has been shortened because of the excavation of the Shinkawa River.



Barato River

Ishikari River

6
RIVER FILE
Sosei River

An artificial water channel formerly used for transportation

The Sosei River was originally developed as a canal for transportation of commodities by taking water from the Toyohira River. Poplar trees planted on both sides of the river lend poetic charm to the river in every season. Many citizens enjoy fishing along the banks of the river.

7
RIVER FILE
Tsukisamu and Motsukisamu rivers


Tsukisamu River

Featuring serene streams flowing through the downtown area

Both rivers flow through an area that has been developed as a residential district. To protect the lives of local residents, the Tsukisamu River has been equipped with embankments using the parapet system. The AGS Project, a people-, fish- and greenery-friendly project, is currently under way.

8
RIVER FILE
Atsubetsu and Nopporo rivers


Atsubetsu River

Retaining the former appearances of complex water channels

Although the Atsubetsu and Nopporo rivers have undergone improvement works, these rivers still demonstrate the immense power of nature. The two rivers merge and flow downstream into the Toyohira River.

Although rivers benefit our lives in many ways, they sometimes demonstrate the violent aspect of nature. Rivers within the jurisdiction of the Sapporo River Work Office have repeatedly flooded in the past.

Floods in August 1981

In the summer of 1981, when the memory of the 1975 inundation was still fresh in people's minds, the Ishikari River basin was stricken by the most disastrous flood on record to date. Various parts of the river and its tributaries overtopped and their levees were destroyed. The inundated surface area totaled 40,000 ha.

History of floods and flood control

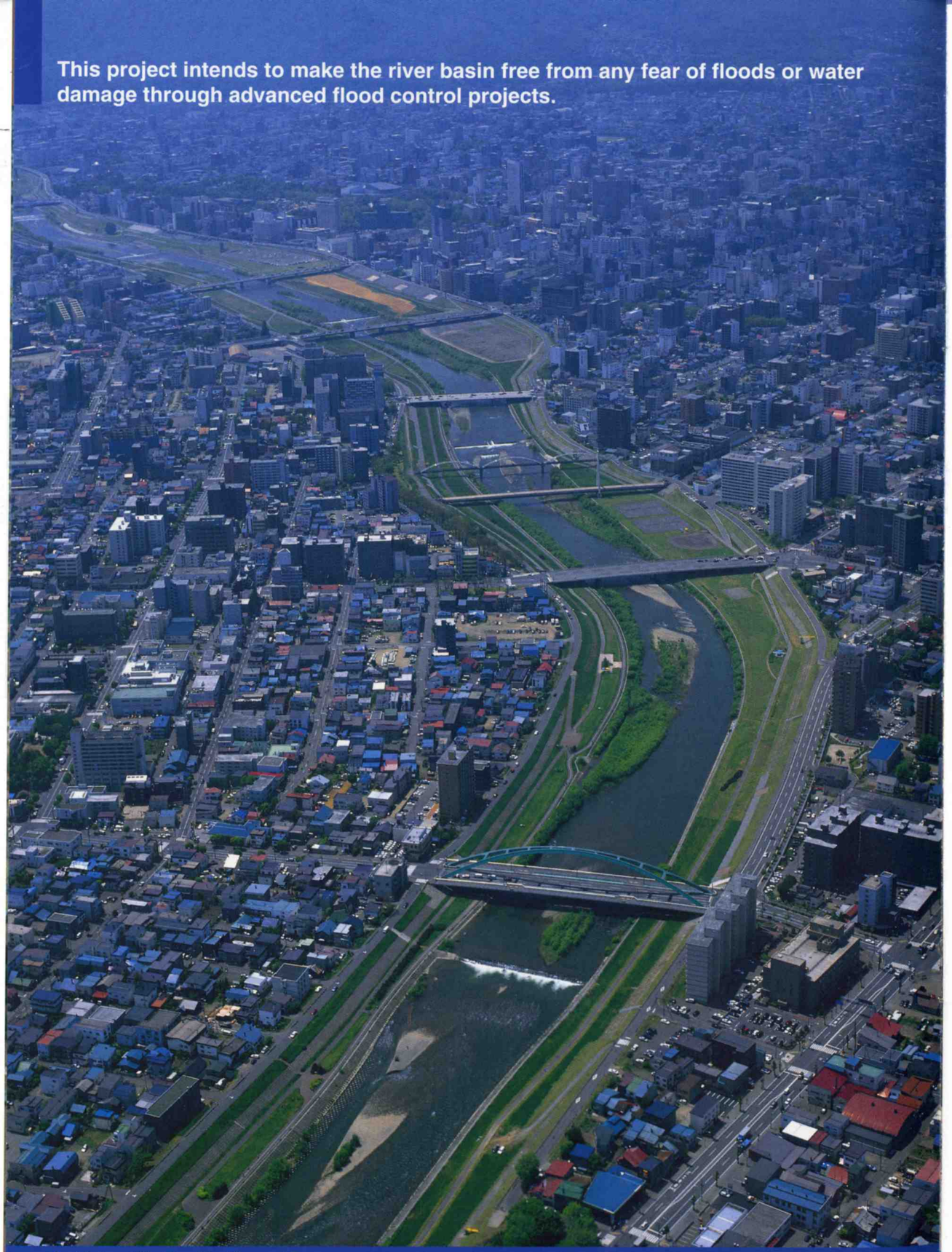
within the jurisdiction of the Sapporo River Work Office

The Ishikari River, the large river referred to as the "Mother River," has brought many blessings to the people of the this area. Meanwhile, the history of the river's basin is virtually the history of the struggles of local citizens with the river. As indicated by the river's name, which means "greatly meandering river" in Ainu, its winding configuration was the primary cause of floods. Recent floods that have occurred there, however, have been the result of snow melting and summer typhoons. Of these floods, the devastating floods in 1975 and 1981 still remain in our memories.

History of major floods of the Ishikari River and flood control works

1898, Sep.	The entire Hokkaido area struck with devastating floods. (death toll: 248, flooded houses: approx. 24,000)
1899	Bunkichi Okazaki, an engineer, starts a 10-year research and measurement project for the Ishikari River.
1904, July	Deluge of the Ishikari River occurs.
1910	Full-scale improvement of the Ishikari River started.
1918	Excavation of Oyafuru's new water channel started. (completed in 1931)
1922, Aug.	Typhoons trigger deluges of the Ishikari and other rivers. (death toll: 117, flooded houses: 21,597)
1928	Full-scale improvement of the Toyohira River started; Tobetsu River improvement started.
1932	Frequent floods occur in the Ishikari River System from August to September. (death toll: 24, flooded houses: 11,035)
1933	Excavation for the construction of the Toyohira River's new water channel started. (completed in 1941)
1934	New water channels completed and service started in Tobetsu and Tsuishikari.
1936	Shibi Canal excavation started and completed; Canal brought into service.
1939	Ishikari Yausuba parallel groyne construction started; Closing levee construction started in Barato.
1942	Kariki River groundsel construction started. (completed in 1941)
1947, Aug.	Embankment between Oyafuru and Tsuishikari nearly completed; Oyafuru's back levee nearly completed.
1950	Heavy rain occurs over the Toyohira River basin. (death toll: 7, flooded houses: 4,303)
1951	Toyohira River groundsel No. 3 construction started and completed.
1952	Toyohira River groundsel No. 7 construction started and completed.
1954	Toyohira River groundsel No. 1 construction started and completed.
1955, July	Toyohira River groundsel No. 4 construction started and completed.
1959	Localized torrential rains occur in Chitose, Oiwake, Yuni and Kuriyama. (houses flooded above floor level: 134, houses flooded below floor level: 986)
1961, July	Toyohira River groundsel Nos. 6 and 7 construction started and completed; First Kariki Bridge completed.
1962, Aug.	Heavy rain over the catchment area of the Ishikawa River (death toll: 19); Toyohira River groundsel No. 5 construction started and completed.
1963	Flooding of the Ishikari River and other rivers occur. (35 people cited as missing)
1967	Benchmark establishment project for the Ishikari River started.
1970	Construction of Hoheikyo Dam started. (completed in 1972)
1971	Damage to Sapporo and Chitose caused by low atmospheric pressure occurs on Sep. 17-18. (houses flooded above floor level: 23, houses flooded below floor level: 139)
1972	Environmental projects started; Erosion control and river environment improvement under the direct jurisdiction of the Hokkaido Development Bureau started.
1973	Sapporo River Work Office founded.
1974	Toyohira River groundsel No. 8 construction started and completed.
1975, Aug.	Fushiko river improvement started. (completed in 1978); First phase of the Tsukisamu drainage pumping station construction started. (completed in 1976)
	Damage suffered by entire basin of the Ishikari River as a result of Typhoon No. 6. (death toll: 3, houses flooded above floor level: 4,943, houses flooded below floor level: 10,370); Particularly devastating damage occurs in the lower reaches of the Toyohira River and the basins of the Sosei and Fushiko rivers.
Sep.	Low atmospheric pressure and a front trigger a deluge. (death toll: 2, houses flooded above floor level: 256, houses flooded below floor level: 1,816); Construction of the Zaimoku River water gates started. (completed in 1977)
1976	Full-scale construction of the Ishikawa Floodway started. (completed in 1982); Emergency measures project started.
1977	First phase of the Bitoi drainage pumping station construction started. (completed in 1980); First phase of the Setagaya drainage pumping station construction started. (completed in 1980)
1978	Barato River Cleanup Project started; Construction of Jozankei Dam started. (completed in 1989)
1979	Comprehensive Flood Control Project for Fushiko River as a specially designated river started.
1980	Construction of the Atsubetsu drainage pumping station started. (completed in 1984)
1981	The most devastating flood on record for the Ishikari River System occurs between August 3 and 6; Torrential rains triggered by a front and Typhoon No. 12 cause the most devastating flood on record for the Ishikari and Chitose rivers (death toll: 2, houses flooded above floor level: 4,819, houses flooded below floor level: 15,443); On August 23, a deluge occurs due to Typhoon No. 15 (death toll: 1, houses flooded above floor level: 1,024, houses flooded below floor level: 5,415); Construction of the Barato and Sosei drainage pumping stations started. (completed in 1984)
1982	Toyohira Erosion and Sediment Control Project under its direct jurisdiction started; Construction of the Kariki drainage pumping station started (completed in 1984); Construction of the Moere retarding basin started (completed in 1994); Ishikari Floodway goes into service.
1985	Construction of the Yamamoto drainage pumping station started. (completed in 1988)
1986	Construction of the Zaimoku River drainage pumping station started. (completed in 1989)
1987	Construction of embankment for the hilly mounds of the Ishikari and Toyohira rivers started; Construction of special levees for the Tsukisamu River started.
1988	Damage occurs due to a front from August 17 to 24. (houses flooded above floor level: 3,143, houses flooded below floor level: 2,881)
1989	Jozankei Dam completed.
1990	Construction of special levees for the Motsukisamu River started; Skunk cabbage conservation project started.
1991	Munich Bridge completed; River improvement using nature-oriented river construction methods started.
1994	Water Garden completed; Fishladders constructed at Toyohira groundsel Nos. 3 and 4.
1995	Horohira Bridge completed.
1997	Expansion of the Kariki drainage pumping station completed; Rack change of the Shinoro Railroad Bridge started.

This project intends to make the river basin free from any fear of floods or water damage through advanced flood control projects.



Aerial view of the Toyohira River and Sapporo

Sapporo's population, which was 300,000 in 1960, exceeded 1.8 million in 1998, making the city one of the largest in Japan. The Toyohira River running through Sapporo's central area has given unfathomable benefits to citizens' lives and industries since the days of old.

THAT ARE FILLED WITH COMFORT

River improvement project profile No.3

River Information Board

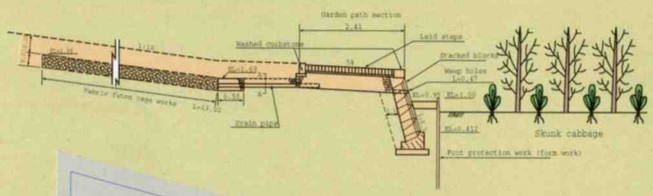
The Toyohira River leisurely runs through Sapporo by reflecting the streetscape of the capital city of Hokkaido. Since the population of its basin is increasing annually, it has become necessary to collect a variety of information that can be used to take adequate measures in the event of a disaster and to promote effective use of abundant river space. Under these circumstances, the Sapporo River Work Office has established a River Information Board on the left embankment of the Toyohira River 200 meters downstream from the Horohira Bridge.

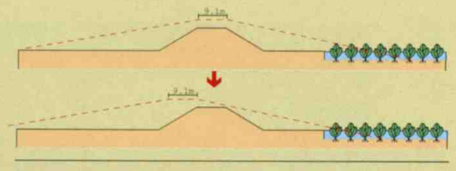
River improvement project profile No. 4

An example of a project that is in harmony with the natural environment

Ishikari River Skunk Cabbage Conservation Project

In constructing hill banks in the downstream area of the Ishikari River where soft ground extends over a large area, the office decided to employ a gradient of 1: 5 to 10 after taking into consideration the reinforcement of the levee, enhancement of the sense of security of local residents and the facilitation of flood prevention activities. In promoting this project, special attention was paid to the preservation of the skunk cabbage that grows naturally along the river. To this end, large-scale transplantation of this plant has been conducted and skunk cabbage protection projects have been introduced. Having started in the autumn of 2000, this project was completed three years later.





Regression of the normal line of the embankment

The gradient of banks (1:10) makes it inevitable that many of the skunk cabbage growing areas will be submerged. To prevent this, the normal line of the embankment has been moved back as far as possible.

COLUMN

Father of the Ishikari River flood control project

Bunkichi Okazaki

Flood control knowledge passed down to the present

Bunkichi Okazaki, who served as the director of the Ishikari Flood Control Office, endeavored to stabilize the river channel of the Ishikari River, which was still virtually in a primitive state around 1910, by developing Okazaki-style single flooring blocks and introducing short cuts based on natural hydraulics concepts, thus greatly contributing to the development of the rivers flood control activities.

Information on

Water Management Systems and Facilities

Drainage pumping stations within the jurisdiction of the Sapporo River Work Office

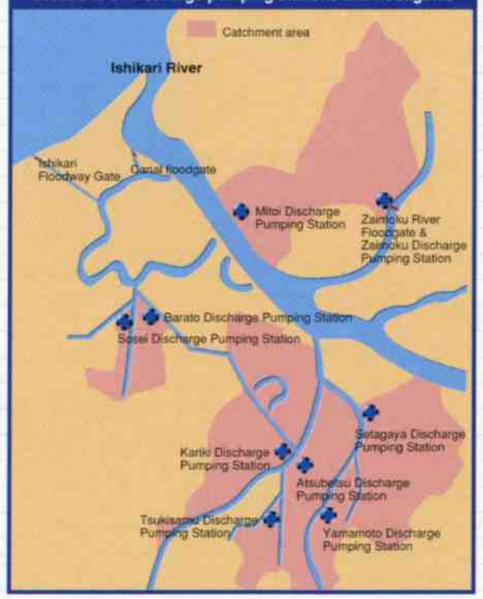
To pump out water pooled within the inland area, the drainage pumping station has a pumping system at the sluice established across the levee to discharge internal water into the rivers. The sluice gate is closed during times of flooding to prevent river water from flowing back into the inland area.

Name of drainage pumping station	Name of river	Location (km)	Planned discharge volume (m^3/s)	Year of completion
Mitoi	Ishikari River	11.90	15.0	1980, 1987
Kariki	Toyohira River	6.10	20.0	1986, 1997 (expansion)
Atsubetsu	Toyohira River	6.60	16.0	1984
Sosei	Sosei River	0.70	10.0	1984
Barato	Fushiko River	1.20	16.0	1984
Tsukisamu	Motsukisamu River	0.30	15.0	1976, 1986
Setagaya	Atsubetsu River	2.50	20.0	1980, 1986
Yamamoto	Atsubetsu River	7.00	8.0	1988
Zaimoku River	Tobetsu River	7.70	15.0	1989

Floodgate within the office's jurisdiction

Name of water system	Name of inflow river	Name of diversion gate	Planned discharge volume (m^3/s)	Floodgate section	Year of completion
Ishikari River	Zaimoku River	Zaimoku River Floodgate	70.0	4.0X11.0 2 gates	1977
	Barato River	Canal floodgate	130.0	18.5X6.52 2 gates	1981
	Ishikari Floodway	Floodway gate	500.0	25.0X7.3 2 gates	1981

Locations of discharge pumping stations and floodgates



Disaster prevention system and flood forecasting

The Sapporo River Work Office forecasts floods based on the latest data sent from weather satellites to prepare itself for handling emergencies (floods). Also, to smoothly cope with emergent situations, the office has thoroughly set up communication systems.

RIVER'S PROJECT 2

River Environment Improvement Project

In cities that have lost greenery in recent years, river spaces, which offer open spaces with water and greenery and serve as places of comfort, have come to play an increasingly important role in various events and citizens' lives. Over the past few years, people have become more aware of the necessity to develop waterfront areas as part of measures to produce attractive urban spaces. Thus, river improvement projects taking water amenities, safety and river landscapes into consideration have begun to attract greater expectations from citizens.

River channel improvement project

This office has been promoting projects to improve high-water channels and revetments since 1971 to secure the discharge capacity of river channels that run through urban areas and to realize the fusion of cities and rivers, as well as harmonious coexistence between people and rivers.

Water purification measures

The Fushiko, Sosei and Hassamu rivers flow through Sapporo's residential area and into the Barato River. Therefore, the deterioration of water quality and the increase of sludge sedimentation due to the rise of urban waste have become serious problems in recent years. In 1973, a massive number of water blooms were generated in the river. As a countermeasure, in 1978 the office started dredging sludge that had accumulated on the riverbed with weather pump dredgers to improve the environment of rivers flowing through urban areas.

COLUMN

An open space of water and greenery

Facilities using high-water channels of the Toyohira River

The high-water channels of the Toyohira River have sports facilities (baseball grounds, soccer fields, tennis courts, park golf courses, bicycle paths, etc.) and recreational facilities (water gardens, open spaces with lawns and wild grasses, etc.), all of which are widely used by citizens throughout the year.

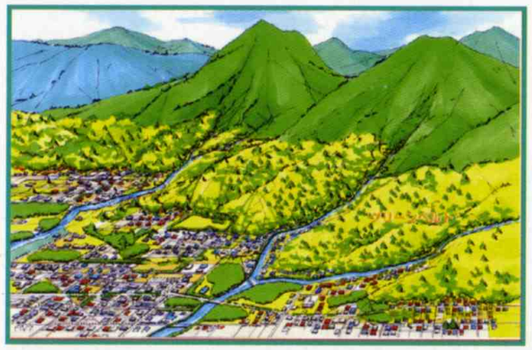
RIVER'S PROJECT 3

Erosion control projects

under the direct control of the Sapporo River Work Office

The erosion control projects aim to create comfortable living environments by establishing various facilities to control the discharge of sediment, which can cause damage to riverside areas. In these projects, emphasis has come to be placed in recent years on the importance of preserving bountiful natural assets to pass down to future generations.

The erosion control space created in consideration of environmental conservation and the amenity orientation of rivers have been used as a venue for events and other purposes, thus serving as a place of comfort for citizens. To promote city planning while at the same time ensuring citizens' safety and comfort, the Sapporo River Work Office is implementing projects to create greenbelts through the planting of trees. These projects strive to ensure the safety of slopes around cities and to conserve the natural environment by taking advantage of the diverse functions and effects of forests.



Objectives of the greenbelt improvement project

Prevention of sediment disasters

This project aims to protect residential areas from sediment disasters by establishing erosion control forests to prevent the discharge of sediment.

Creation of green environments in the urban area

This project is focused on creating green environments in urban areas by planting trees and protecting forests, i.e., by creating a biotope that provides comfort to local residents and serves as a habitat for various creatures.

Nonosawa River

Construction work on Nonosawa River Dam No. 1 started in 1982. Currently, construction work for a new watercourse is being conducted at the former river channel, which flooded in the urban district along National Route 230 in the downstream area of the river. Along with this work, the office also intends to complete the sand-retarding basin in the upstream area to improve the groundsel construction safety level. The completion of these works was planned for 2000.

Minaminosawa River

The population increase in the upstream area of the Toyohira River is particularly conspicuous along the Minaminosawa River. The watercourse improvement works for this river were started from the river's downstream area near National Route 230, and the sand-retarding basin was established in the urban district as a countermeasure against sediment discharge. Groundsel construction has already been completed in the downstream area, and are now being constructed in the upstream area. In the regulating reservoir surrounded with verdant greenery, local residents are now able to feed ducks. This place has firmly established itself as a place of comfort for citizens.

Ananokawa River

To prevent the discharge of sediment from the Ananokawa River, a sand control dam was built in the upstream area of the river and a sand-retarding basin was established in this urban district. Upon completion of these measures, the construction of groundsels has been promoted in the urban district in the downstream area of the river.

Currently, a new sand-retarding basin is being constructed at the point of confluence with the Ozawa River, an area where sediment inundation once occurred. The construction of groundsels has also been promoted in the upstream area of the river to ensure the safety of urban districts in its lower reaches. Facilities for ecological conservation have also been established. For example, the "Herb Trail" was built around the groundsels to produce a space that is both environmentally and people friendly.

Ananokawa River Sand-Retarding Basin

Okabarushi River

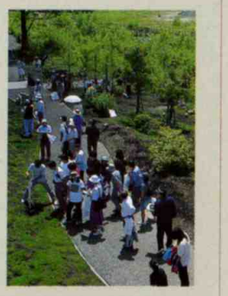
In the upstream area of the Okabarushi River, groundsels, head prevention devices and sand-retarding basins have been established. Along with these facilities, measures have been taken to prevent sediment from discharging into the downstream area. Although abundant natural assets are found along the river, residential areas have been developed and the local population has been on the rise in recent years. The office has therefore positively employed construction methods that help preserve the valuable natural assets and create comfortable space for citizens.

Locations of erosion-control projects under direct control of the Sapporo River Work Office

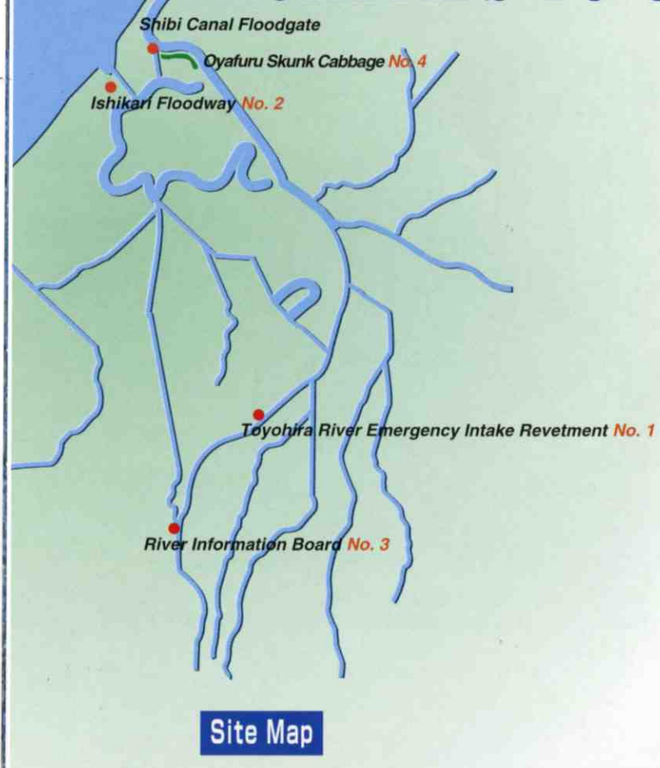
COLUMN

Groundwork

"Groundwork," which refers to practical activities for the improvement of the local environment, is a key concept in the Ananokawa erosion control projects. A concept originally developed in England in the 1980s, "groundwork" is focused on promoting local revitalization through unified efforts by the government, local residents and companies, as well as by sharing ideas among them. The Herb Trail established along the Ananokawa River is a good example of groundwork conducted with the positive participation of citizens.



FACILITIES TO CREATE RIVER SPACE



Site Map

River improvement project profile No. 1

Toyohira River Emergency Intake Revetment

To cope with the possible occurrence of disasters in a large city, intake and other facilities to be used in the event of a fire have been established in the Toyohira River Emergency Intake Revetment, which is used by citizens as an open space during normal times.

River improvement project profile No. 2

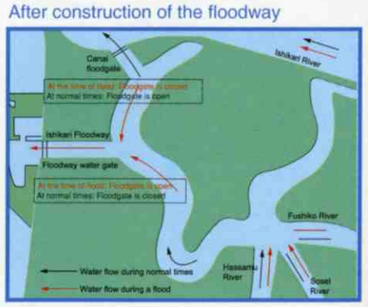
Barato & Ishikari Floodway

The construction of the Ishikari Floodway began in 1974 as an effective measure against floods in the low-lying area downstream from the Ishikari River. This floodway was completed in 1982, with the exception of the improvement works for the surrounding area. Established between the Barato River and the Sea of Japan, this floodway disconnects the Ishikari and Barato rivers with a floodgate built at the Shibi Canal and directly discharges floodwaters into the Sea of Japan.

As a result of the completion of the floodway, the design water level of the Barato River was significantly reduced from 4.52 m to 1.85 m, leading to a marked increase in the safety level against flood damage in the basin.

Before construction of the floodway

After construction of the floodway



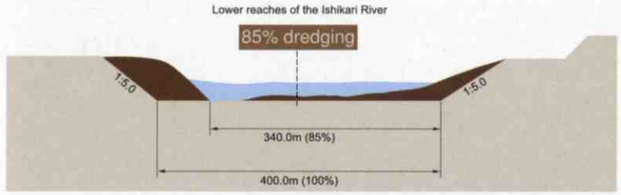
RIVER'S PROJECT 1

River Improvement

The area under the jurisdiction of the Sapporo River Work Office includes Sapporo, the capital of Hokkaido. In this area, the development of residential areas has progressed year by year and social properties are steadily increasing. The Sapporo River Work Office is promoting flood control projects to prevent the rivers, which frequently inundated in the past, from overflowing.

Dredging of the Ishikari River

The Ishikari River improvement project has been under way for the river's downstream area to create an affluent and safe basin community. As part of this project, dredging of the Ishikawa River has been conducted since 1977. Through this dredging, 85% of the width of the targeted river channel has been excavated, in careful consideration of the urgency of this project, the impact on the surrounding environment and financial aspects. This level of dredging is sufficient enough to secure a cross section that can cope with floods of a level equivalent to that which occurred in 1981. In the future, the office intends to conduct 100% dredging to ensure complete safety.



Reinforcement of levees along the Toyohira River

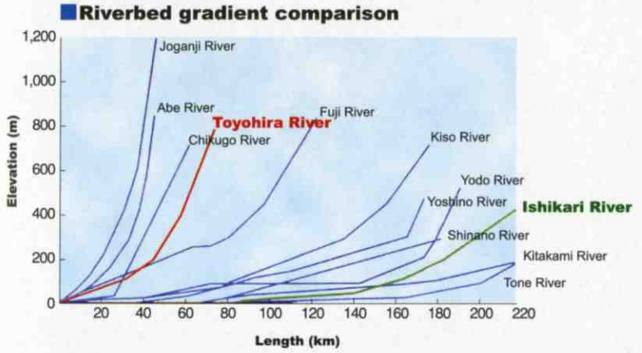
The Toyohira River frequently flooded in the past, causing significant damage. When it flooded in late August of 1981, in particular, its dry riverbeds were scoured, probably because of the rapid flow over the dry riverbeds.

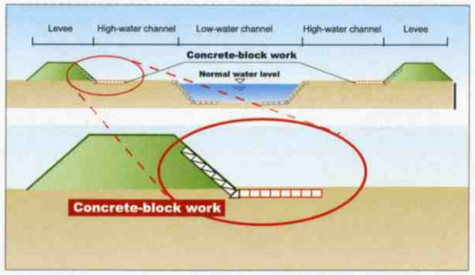
It is feared that, should a flood of a projected scale occur, it could cause the scouring of the dry riverbed near the levees and the destruction of the revetments, thus leading to the collapse of the levees. Given this possibility, the Sapporo River Work Office has implemented measures to reinforce the levees along the Toyohira River.

Gradient of the Toyohira River

There is a 50 meter difference between the height of the riverbed at Azuma Bridge and that at Moiwa Bridge.

Riverbed gradient comparison





Projects to improve the river environment for creating comfortable local communities and enhancing water amenities

Water Garden

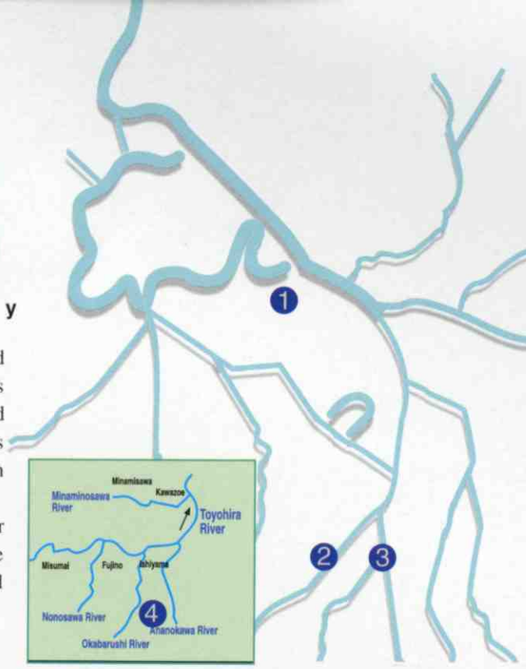
Advancement of urbanization also leads to the reduction of places where children can play. The Toyohira River Water Garden is a paradise where children can enjoy playing in the water even in this urban center. Many families visit this garden on holidays.

A G S

A q u a G r e e n S t r a t e g y

The Sapporo River Work Office is promoting flood control projects based on the "Aqua Green Strategy (AGS)," a strategy used to make rivers friendly to fish, birds and people. These projects aim to preserve and restore the waterfront environment, as well as to realize a harmonious coexistence between people and nature and to ensure the safety of rivers in the 21st century.

With this strategy, we endeavor to plan, implement and manage river projects by maximizing our previous achievements in research, studies, the development of new technologies and model projects to create a rich and comfortable living environment for local residents.



Major AGS projects

within the jurisdiction of the Sapporo River Work Office

1 *Left bank of the Barato River (Sapporo)*

Objectives and focal points of the construction method

Although some parts of the forests along the Barato River are in good condition, it is believed to be necessary to further improve riverside forests to produce comfortable spaces and enhance the potential of the Barato River.

2 *Fishladders at the groundsels of the Toyohira River (Sapporo)*

Objectives and focal points of the construction method

Groundsels have been constructed at seven locations on the Toyohira River. These groundsels, however, are hindering salmon and other fish from ascending the river and swimming around. To enable fish to inhabit an extensive area, the office has built fishladders at five of these groundsels to allow salmon to go upstream and other fish to freely travel through these ladders.

3 *Tsukisamu and Motsukisamu rivers (Sapporo)*

Objectives and focal pointsof the construction method

The grating crib works were employed for the slopes of the Tsukisamu River to ensure its safety. In addition, to enhance its amenity orientation and scenic beauty, soil covering and tree planting were conducted on its revetments. These methods aim to realize a harmonized balance between the natural environment and urban life, as well as to ensure the safety of the Tsukisamu River by strengthening its anti-flood functions.

The safety and amenity orientation of the Motsukisamu River have been enhanced by creating waterfront areas through the planting of aquatic plants in its low-water channels and by strengthening its slopes with grating crib works, soil covering and tree planting. Fish nursery blocks were also installed to produce a favorable habitat for fish.

4 *Okabarushi River (Sapporo)*

Objectives and focal points of the construction method

Environmentally friendly facilities have been established along the Okabarushi River so that it can serve as a place of comfort for local residents and as a habitat for fireflies and other invaluable creatures. The conservation of the natural environment has been given top priority in each of the construction methods employed here. For example, to ensure that birds can feed themselves and live comfortably within the vicinity of this river, a certain amount of water is designed to flow from groundsels into the former Okabarushi River.

RIVER-WATCHING 1

Facilities on the dry riverbed ensuring the comfortable life of citizens

Originally constructed for safety, the high-water channel (dry riverbed) also serves as a place of comfort for citizens, with playing grounds, soccer fields and waterfront parks constructed on it.

1 Tennis courts

Young people and families refresh themselves by working up a sweat on the courts.

2 Gateball grounds

Gateball has gained popularity among senior citizens who come here to play in a relaxed manner under the beautiful blue sky.

3 Baseball grounds

People can fully enjoy a game on these grounds under the big blue sky.

4 Soccer fields

Soccer is popular with both children and adults.

5 Relaxation square

Why not lie down on the grass and watch the river flow by?

6 Takino Kaminopporo Bicycle Path

Enjoy a comfortable ride on this 40-km path between Takino and Kaminopporo in the refreshing wind.

7 Golf driving range

Fully equipped with nighttime lighting facilities. This practice range is filled with a sense of openness.

8 Golf practice range

Refresh yourself by swinging the club with all your might on the expansive green lawn.

9 Putter golf course

A place that anyone (both children and adults) can use at his or her leisure.

10 Street basketball court

This outdoor basketball court is very popular with children.

11 Cycling course

Take time to cycle along the river while enjoying the wind as it blows across the surface of the river.

12 Event square

This square is used as the venue for the River Festival and many other events held in an attempt to familiarize citizens with rivers.

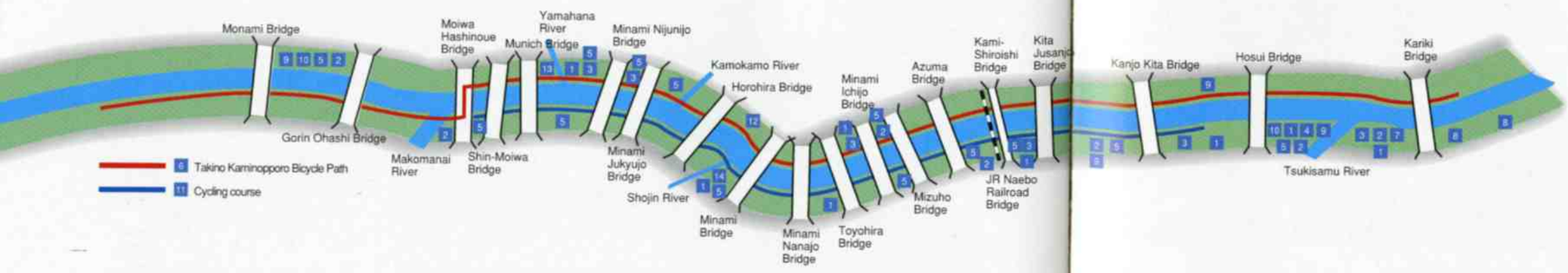
13 Water Garden

Children light up with joy when they play with water.

14 Salmon Memorial Square

A square established to commemorate the 10th anniversary of the Come Back, Salmon campaign.

Location of sport facilities on the dry riverbed of the Toyohira River



RIVER-WATCHING 2

Events held on the stage of this dry riverbed

- Send-off Party for Salmon Fry Released into the Toyohira River
  Hokkaido Salmon Friends Society / Late April / Minami Juichijo Event Square (left bank)
- Nikkan Sports Sawayaka Spring Marathon
  Nikkan Sports News / Late May / Upstream of Moiwa Bridge to the upstream of Azuma Bridge (right bank)
- Sekisui Sakura Ladies Marathon
  Doshin Sports / Early May / Upstream from Minami Nijunijo Bridge (right bank)
- Doshin Cup Cycle Road Race
  Sapporo Automobile Sports Association / Late May / Cycling course (right bank), from Shojin Bridge to Moiwa Bridge

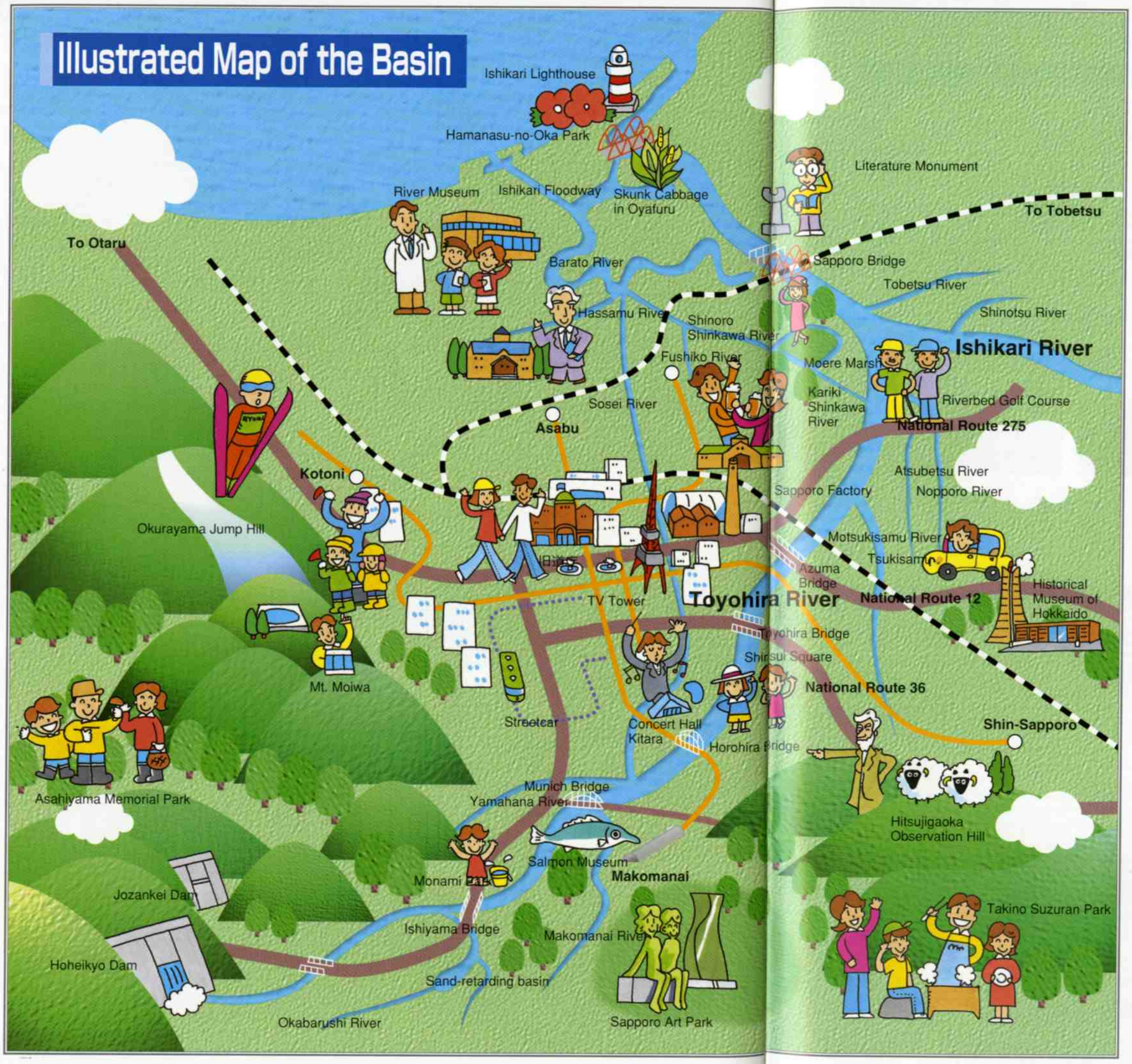
- Tour de Hokkaido Memorial Sapporo Race
  Tour de Hokkaido Association / Late June / Cycling course (right bank), from around Minami Nanajo Bridge to the downstream area of Horohira Bridge
- Sapporo River Festival
  Sapporo River Festival Executive Committee / Mid-July / Minami Juichijo Event Square (left bank)
- Tug-of-War Competition at Kawanakajima on the Toyohira River
  Tug-of-War Competition Executive Committee / Mid-July / Downstream area of Horohira Bridge

- Toyohira River Rafting
  Rafting Executive Committee / Mid-July / Downstream area of Horohira Bridge to Kamishiroishi Bridge

- Doshin Noryo Pageant
  The Hokkaido Shimbun Press / Late July / Upstream area of Minami Bridge
- Asahi Shimbun Fireworks Festival
  Asahi Shimbun / Early August / Upstream area of Minami Bridge
- Erosion Control Fair
  Ishikari River Development and Construction Department / Late August / Okurubashi River
- Cycle Road Race
  Sapporo Cycling Federation / Late August / Cycling course (right bank), from Moiwa Bridge to Shojin Bridge
- Suntory Family Marathon
  Hokkaido Shimbun Press / Late August / From Makomanai to Minami Nijunijo Bridge (right bank)
- Toyohira Salmon Ekiden Road Relay
  Sports In Japan / Mid-September / From Horohira Bridge to former Moiwa Bridge (right bank)
- Sapporo Marathon
  Sapporo Marathon Executive Committee / Early October / From Ekimae-dori St. to Makomanai
- Hokkaido Road Race
  President of the Marathon Club / Late October / From Makomanai to Mizuho Bridge (right bank)

The venue and period of these events are subject to change each year.

Illustrated Map of the Basin



Riverside Area Sites of Interest

Monument of the Origin of Ishikari River Flood Control

This monument was constructed in 1973 to commemorate flood control projects for the Ishikari River, which were started in 1918 with the Oyafuru new water channel project.

Sapporo Salmon Museum

A place where you can pleasantly learn about the ecology of salmon, the symbol of nature in the Toyohira River, and about the natural environment.

Monami Park

This park has an adventure square, tennis courts, baseball grounds, etc. The precipice on the right bank shows outstanding layers of Sapporo soft stone.

Jugoshima Park

Located along the Toyohira River in Fujino, Minami Ward, this park is a favorite destination for school cooking excursions. The name of this park is derived from the many rocks in the river that look like islands.

Barato Park

Located near the Barato Bridge where the Hassamu and Fushiko rivers join the Barato River, this waterfront park serves as a large-scale leisure area where people can enjoy boating and other activities.

Skunk Cabbage in Oyafuru

Skunk cabbage colonies, which bloom from late April to May, are formed at the Oyafuru Embankment near the Ishikari Kako Bridge.

Flora

Various species of plants growing on the fertile land

The area within the jurisdiction of the Sapporo River Work Office is roughly divided into the mountainous area upstream from the Toyohira River and the lowland area. In terms of the distribution of vegetation on the mountain, at 1,300 meters or higher above sea level, an Erman's birch zone mixed with mountain ashes, Japanese stone pines and alpine roses can be observed. For altitudes between 600 and 1,300 meters, many Ezo spruces, sporadically mixed with water oak, can be seen in the coniferous forest zone. Areas lower than that in elevation are primarily home to water oak and Sakhalin firs.

Low mountains and hills even lower in elevation have deciduous, broadleaf forests common to the temperate zone, primarily consisting of colonies of painted maples and other trees. Sakhalin firs are also found here and there, with Japanese elms growing among them.

The crescent-shaped lake and ponds produced by the meandering and shortening of the Ishikari River have colonies of aquatic plants and hygrophytes (water chestnuts, spatterdock, etc.). Sand dune plants (Japanese roses etc.) grow in belts along the beach near the mouth of the Ishikari River.

A guide to the creatures living in the waterfront area

Fauna

Many animals can be found in the upstream area that retains traces of prehistoric days

With the advancement of urbanization in this area, large- and medium-sized animals, such as bears and deer, have decreased in number in recent years. Nonetheless, it is still reported from time to time that people have seen such animals in or at the foot of mountains upstream from the Toyohira River. Red foxes, which can easily adjust to environmental changes, are seen in an extensive area within the jurisdiction of the office and even within the city of Sapporo.

As for birds, this area is inhabited by a large number of waterfowl (primarily shorebirds, but also wild geese, ducks and gulls) and prairie birds because of the tidelands and wetlands formed along the rivers within the jurisdiction of the office and the existence of grasslands close to the beaches.

Almost all species of fish inhabiting Hokkaido's rivers, lakes and ponds are found in the Ishikawa River System. Of the more than 44 species of fish that are said to inhabit the rivers, salmon, pond smelt and Japanese lamprey (lamprey) have long been the target of fishermen within the jurisdiction of the office. Large numbers of aquatic insects and butterflies also live along the rivers here. The basin of the Toyohira River is a particularly important habitat for several species of butterflies that are exclusive to Hokkaido. This area is also the northern limit for some species of butterflies.

We are working to initiate river project proposals to pass down the rich natural environment to future generations.

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