Measures to make Horikawa River Limpid

Implementation by Nagoya City

Feb. 17th 2018

Greenification & Public Works Bureau
River Planning Division
Waterworks and Sewerage Bureau
Sewerage Planning Division

Points of the Report

Topics

- Covering Riverbed with Sand
  (From Habashita Bridge to Sakura Bridge)

- Removing sludge at downstream of
  Shin-Horikawa River

- Undertaking construction at Gojo Bridge Area
  by registering 100mm/h Anshin Plan

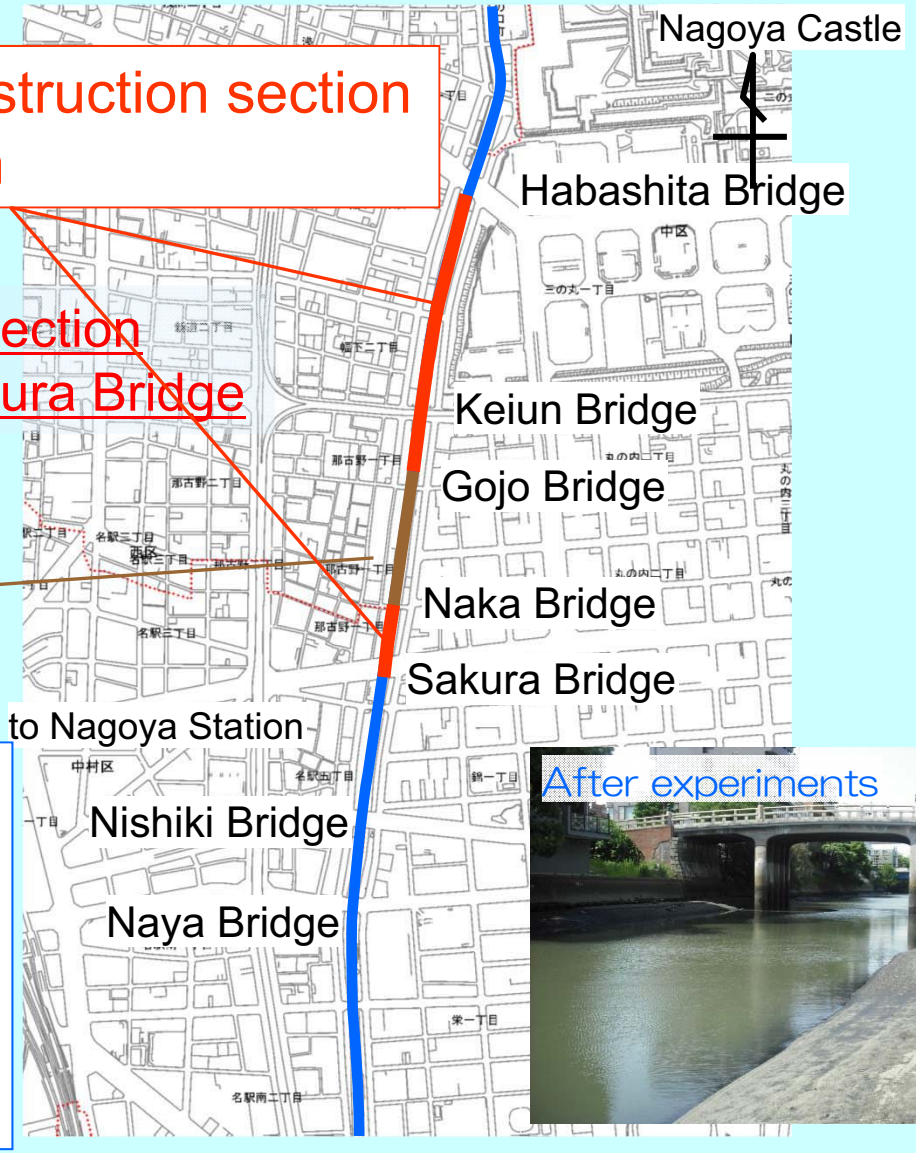
Covering Riverbed with Sand

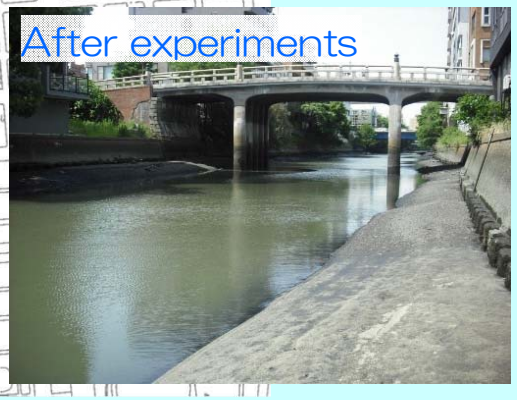
Expansion of covering sand section

Scheduled construction section
Lentgh：1,100m

Expansion of covering sand section
from Habashita Bridge to Sakura Bridge

Clarification experiments
section in 2014
（Gojo Bridge～Naka Bridge）
Length：300m





Check point
- Restraint of hoisting of sluge at covering part
- Transparency of the waterside
- State of living things

Covering Riverbed with Sand

Covering Riverbed with Sand

Before

After

Effect of overlaying sand
(Report of Horikawa Sen-nin Chosatai(HSC))

Cofirmed and reported a various wildbird ,fish

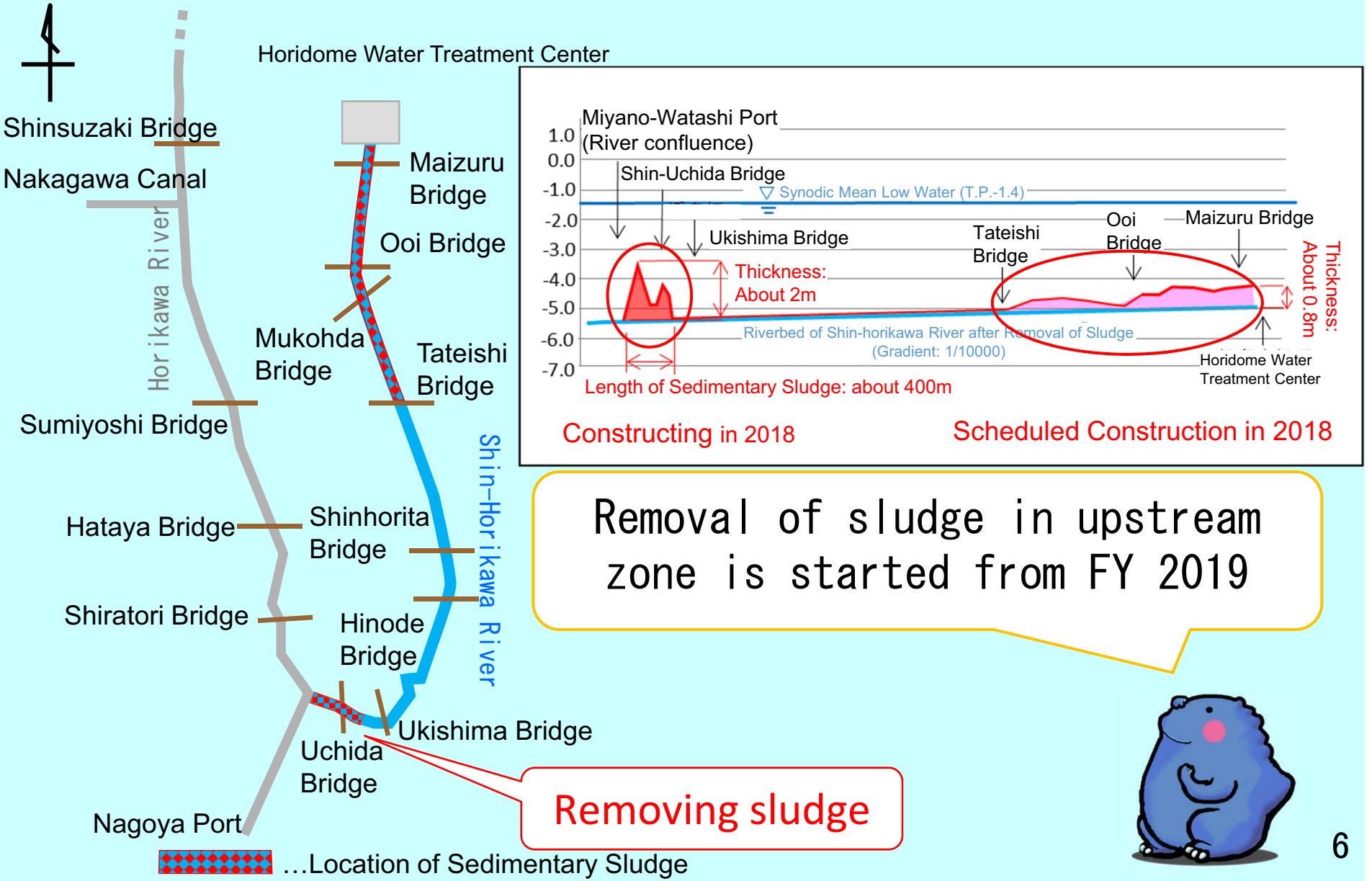
Egretta

Green-winged teal

mallard

A school of striped mullet's fry

Measures against Smell of Shin-Horikawa River



Measures against Smell of Shin-Horikawa River

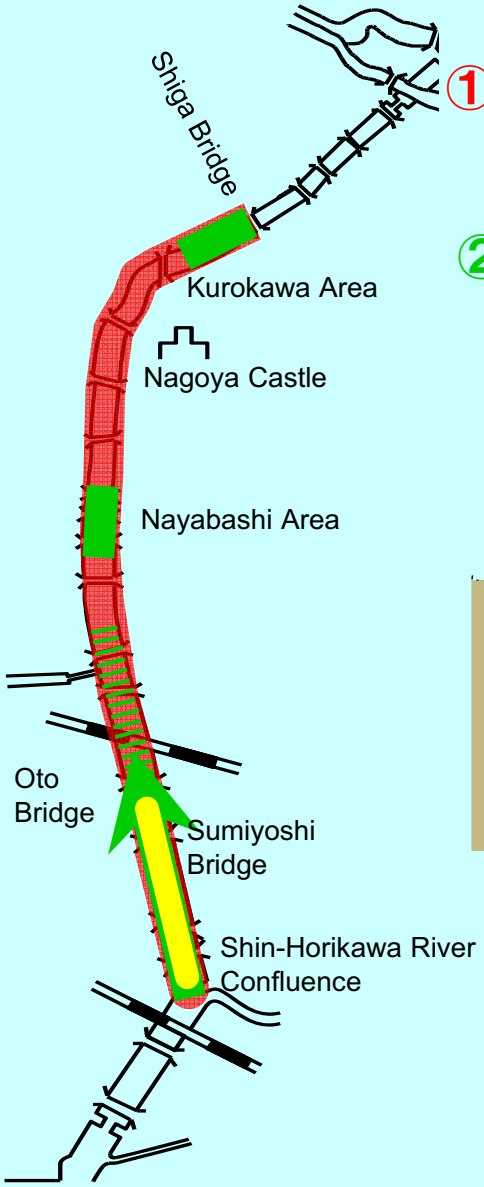
State of dredging→

←Dredging of sludge

Bank Protection Works of the Horikawa River

Improvement of Water Quality

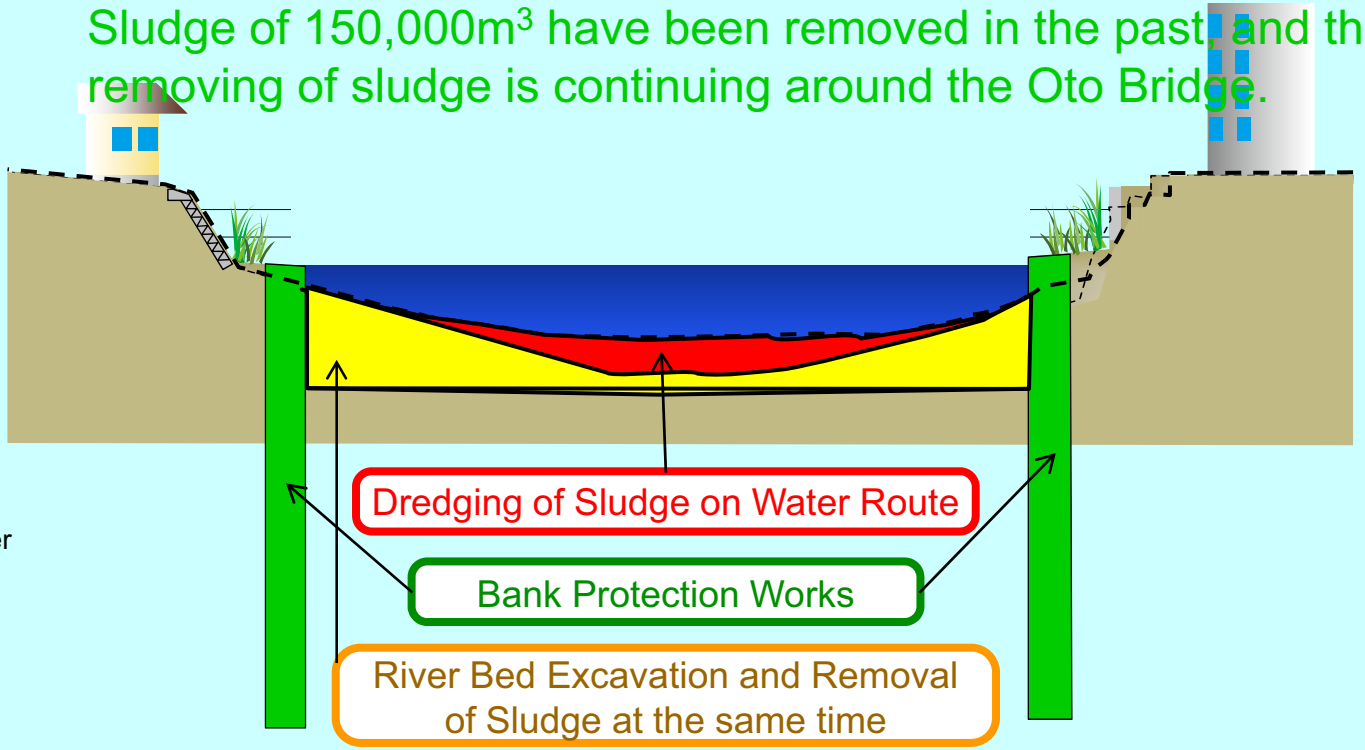
◆Removal of Sludge



① Sludge have been dredged only on water route between the Shiga Bridge and Shin-Horikawa River confluence (1994-2007)

② River bed Excavation and removal of sludge are implemented after bank protection works toward upstream from the river confluence.

Sludge of 150,000m^3 have been removed in the past, and the removing of sludge is continuing around the Oto Bridge.

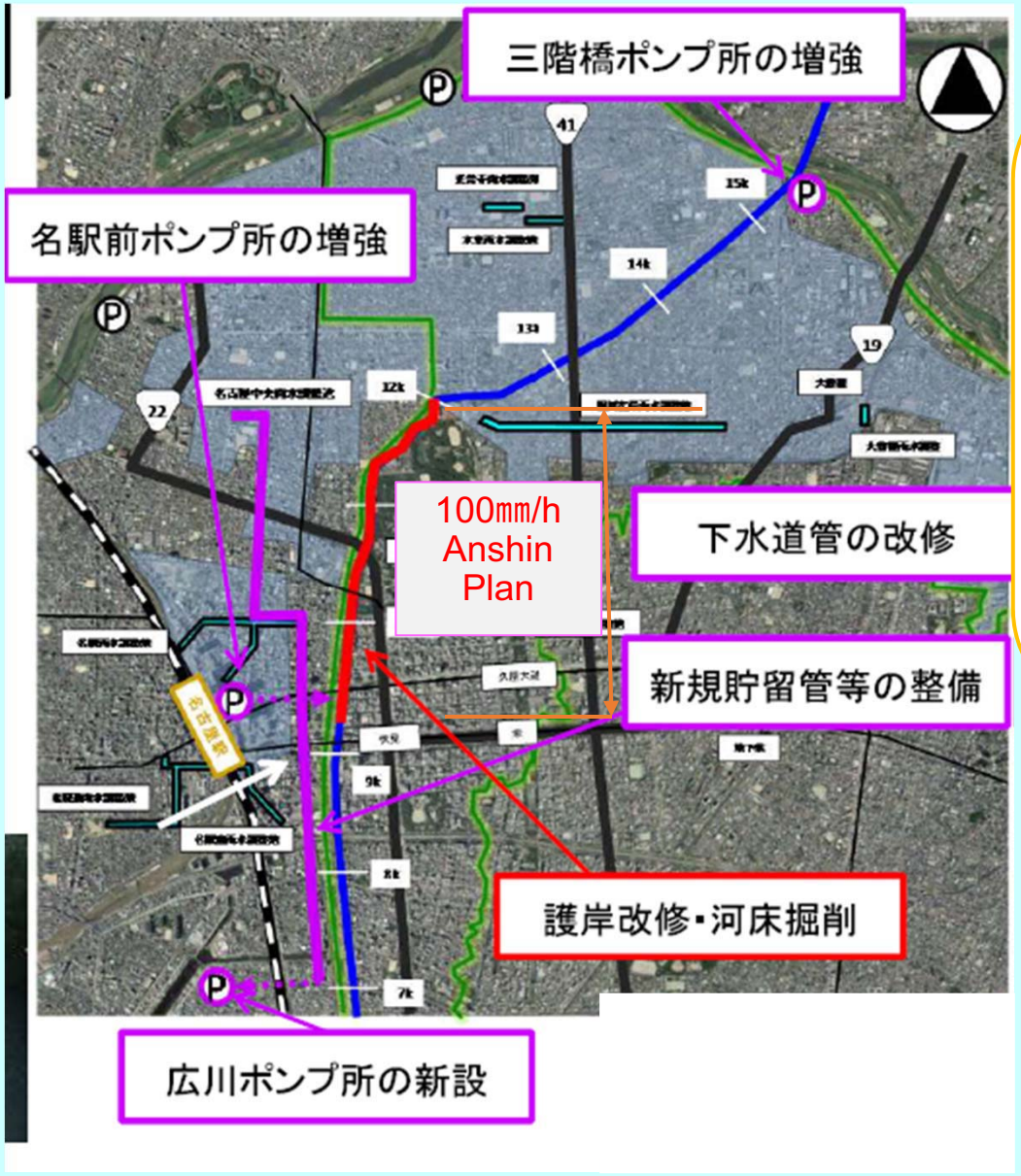


◆100㎜/h Anshin Plan

- **This plan describing efforts for secure lives of residents to reduce flood damage in residential areas and urban areas triggered by torrential rains, implemented by River bureau and Sewage bureau cooperatively with the participation of residents, the private sector and so on.**
- **21 plans registered in Japan by Jan. 31st, 2018**

Upsteram of Horikawa river was registered on Jan. 31st, 2018.

◆100㎜/h Anshin Plan



Newly, The interval from Nishiki bridge to upstream of nakatsuchido bridge was registered.

The launch of constructing bank protection from Tenma bridge to Sakura bridge is scheduled in the next fiscal year.

◆100㎜/h Anshin Plan

名駅周辺 国が集中整備へ

リニア見据え水害対策急務

全国でも浸水被害が起きる危険性が高いとして、国は名古屋駅周辺などの名古屋市中心部を、早急に水害対策をする地区に登録した。堀川の河川改修や、雨水をためる施設の整備、ポンプの新設などを集中的に進める。駅一帯を訪れる人が増えると予想される二〇二七年のリニア中央新幹線開業も見据え、高い危機管理能力を備えた都市づくりを目指す。

（中尾吟）

水害対策が進められるのは、名駅周辺と、名古屋城から南の堀川流域の市中心部。ゲリラ豪雨などの水害対策を集中的に進める国土交通省の「一〇〇ミリ安心プラン」の対象地区に登録された。プランには一三年から全国二十一地区が登録されており、対策費用が重点的に交付される。名駅や堀川周辺は、名古屋市が登録を申請していた。

登録された計画によると、名駅周辺では名駅の東と南に雨水をくみ上げるポンプを増強、新設するほか、雨水をためる貯留管を整備し、下水道管を改修する。堀川では護岸改修と川床掘削をして雨水の流入に備える。

ハザードマップを配布したり、防災アプリを使って想定される浸水の深さを示したりするなど、ソフト面の対策にも力を入れる。

名駅や堀川周辺は海抜が低く、雨水が集まりやすい地形のため、〇〇年の東海豪雨などたびたび水害に見舞われてきた。同じ地区は一四年にも同プランに登録され、下水道の整備や堀川の改修などが進められてきたが、ゲリラ豪雨が頻発するようになった近年では、さらなる安全性の強化が必要と判断された。

国交省の担当者は「リニアの開業を控えた名駅周辺は都市機能が集積し、浸水が起きれば大きな被害は免れない。早急に対策を取っていきたい」と話している。

名古屋駅周辺や堀川で進められる水害対策

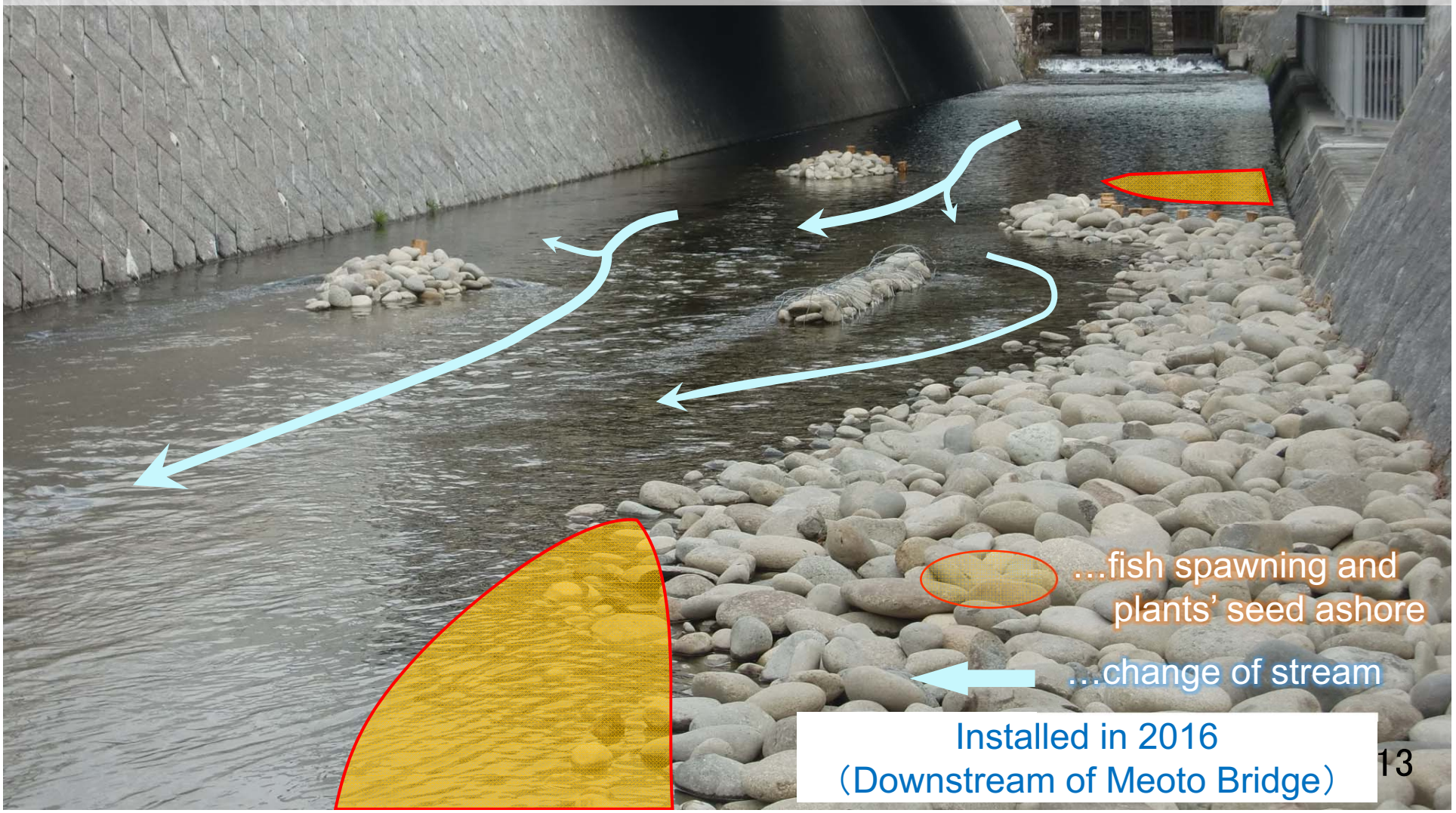
↑Chunichi Newspaper
Feb. 7th 2018

↓Feb. 13th 2018

Improvement of water quality

◆Making shallows and deeps

Setting wooden piles and ripraps generates variable stream on the river for enforcing river's self-purification function and creating habitats with growth of plants.



Improvement of water quality

Installed in 2010

Installed in 2012

Installed in 2013

Installed in 2015
(Downstream of Ruriko Bridge)

Installed in 2016
(Downstream of Meoto Bridge)

Some of the creatures seen in the upstream of Horikawa River


Japanese mitten crab

◆Improvement

- Variety and amount of fish have increased.
- Benthos have increased.
- Plants have grow up more.

Making Additional water sources

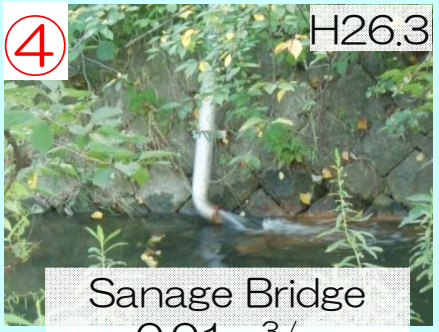
◆Use of shallow ground water in the upstream area

★：Installed by 2017
(Upstream of Kinjo Bridge)

Seko Bridge
0.01m³/s

Tsujie Bridge
0.01m³/s

Kizune Bridge
0.01m³/s



Sanage Bridge
0.01m³/s

Shiga Bridge
0.01m³/s

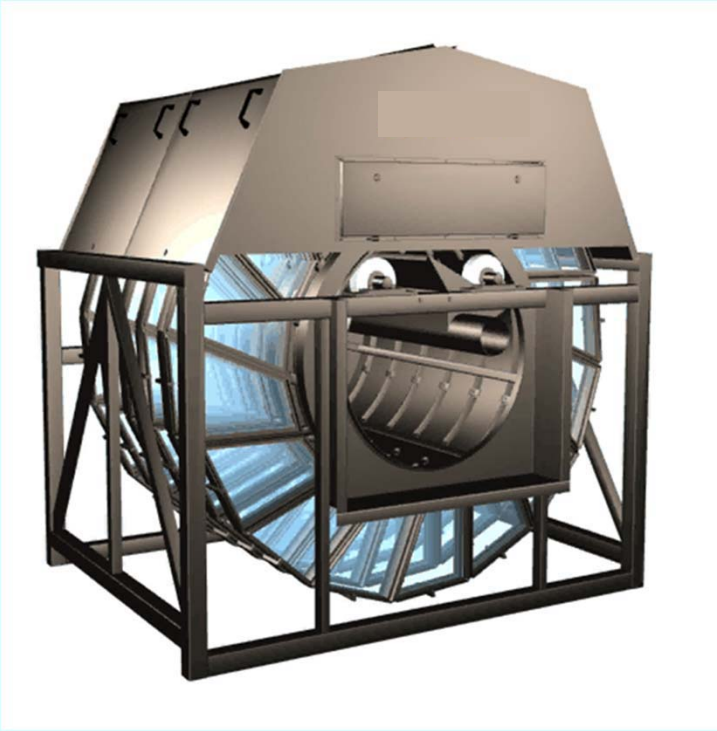
Shimizu wakuwaku
0.0005m³/s

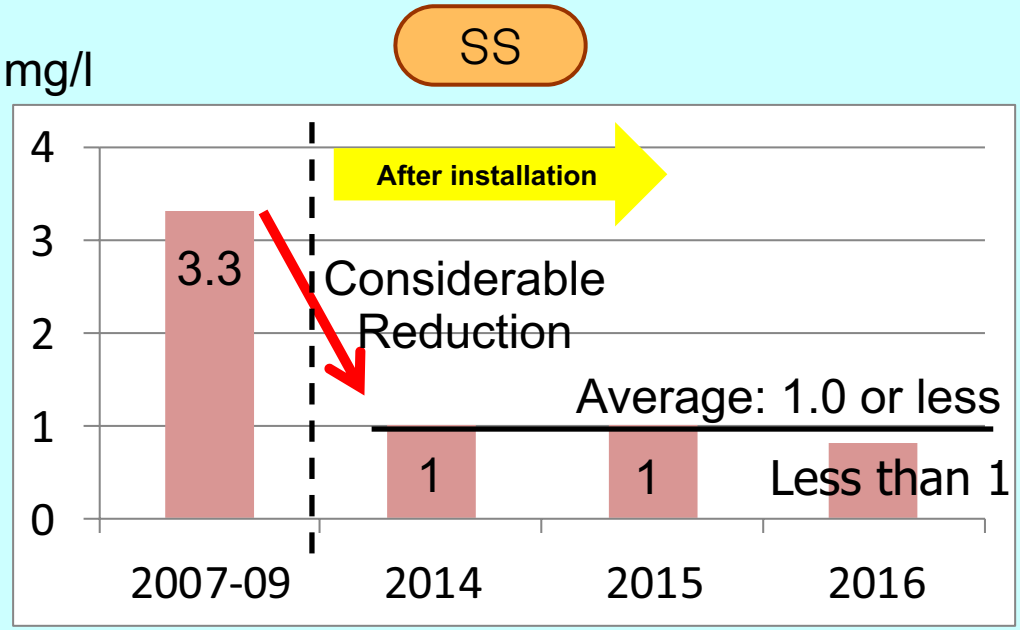
Nakatsuchi Bridge
0.01m³/s

Implementation by Waterworks and Sewerage Bureau

Removal and reduction of inflow pollutants

◆ Advanced water treatment
at the Meijo Water Treatment Center (since May 2010)





Minute Suspended Solids (SS) in treated water are removed more by the filtration devices.

Removal and reduction of inflow of pollutants

◆Control of combined sewer overflow （Installation of advanced primary treatment facility）

Install advanced primary treatment facilities at maintained area by combined sewer system in order to improve water quality of primary treatment to be carried out in rainy weather.

◆Meijo Water Treatment Center

- Started construction in 2017
- Scheduled to start operation in 2019

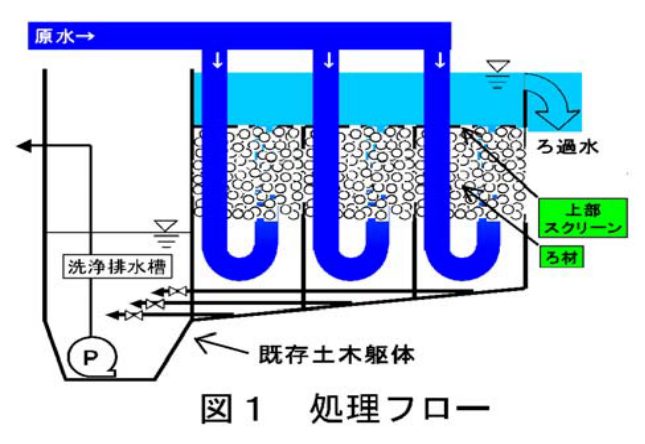


図１　処理フロー

Fig.1 Process flow in Temma-cho Water Treatment Center

写真１　特殊ろ材

Pic.1 Special filter material

■Removal and reduction of inflow of pollutants

◆Control of combined sewer overflow （rainwater storage facility）

Construct rainwater storage facilities to reduce pollution load for Horikawa River in rainy weather by storing high polluted first flush rainwater temporarily.

Ozone Storm water Reservoir for pollution control

Started operation in 2006

（12,000m^3）

Horikawa Ugan Rainwater Reservoir for pollution control

Started operation in 2010

（13,000m^3）

Horikawa Sagan Rainwater Reservoir for pollution control

Scheduled to start operation in 2018

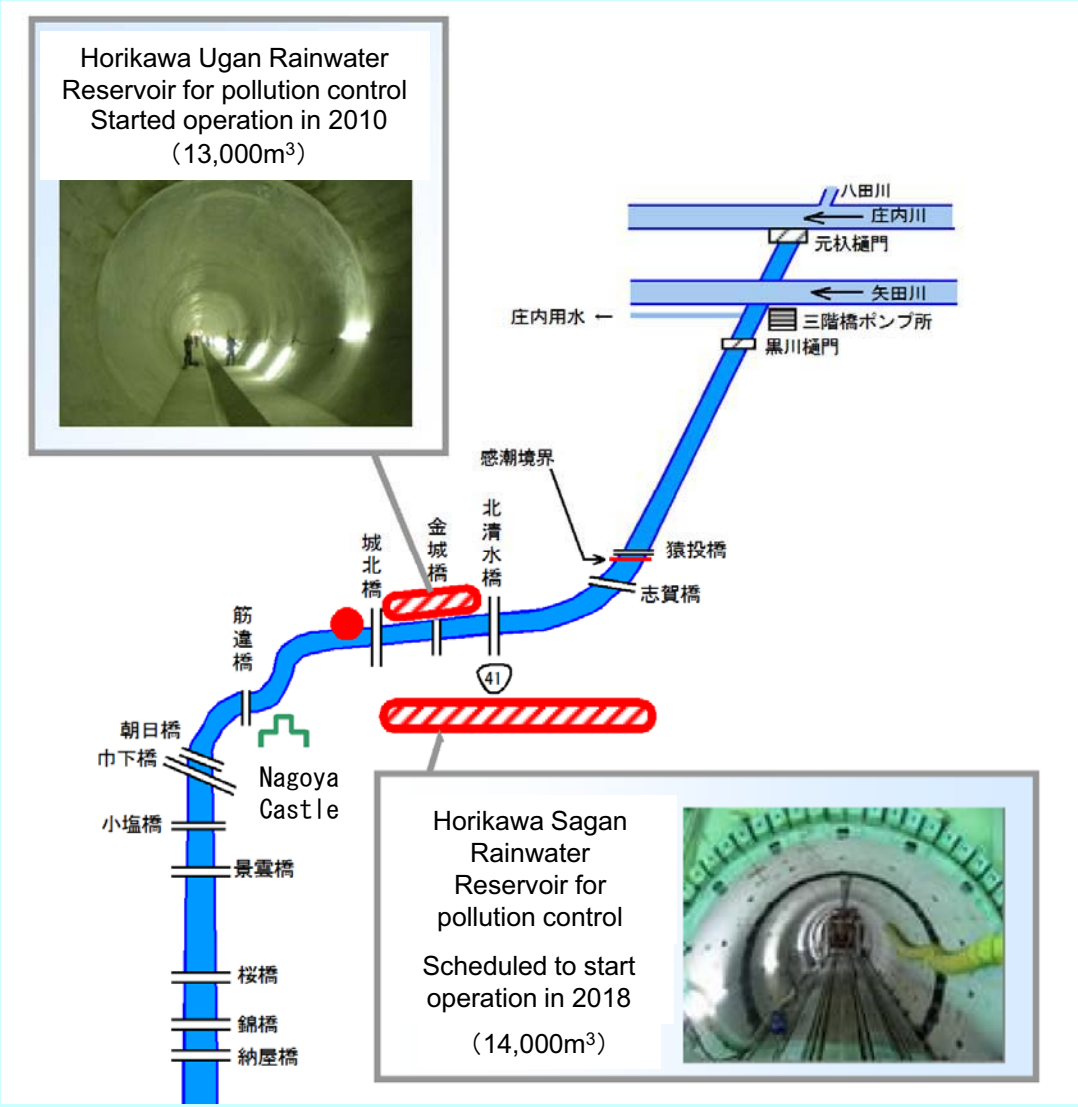
（14,000m^3）

Removal and reduction of inflow of pollutants

◆Horikawa Ugan Rain-water Resevoir for pollution control

- Started operation in September 2010
- About 13,000m3

Cumulative stored water volume in 2016
About 730,000m^3

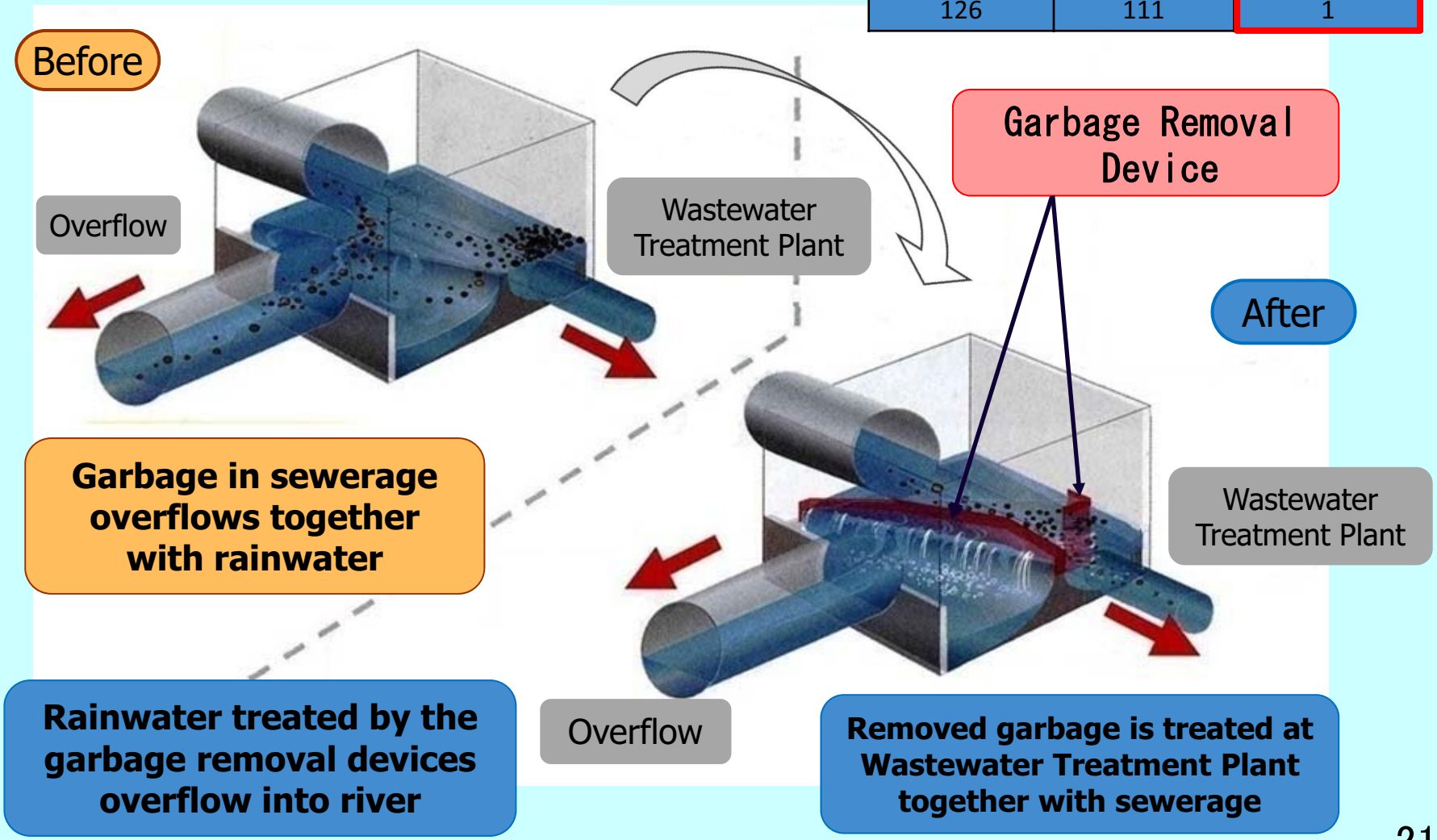


Removal and Reduction of inflow of pollutants

◆Improvement of combined sewer system
(Installation of Garbage Removal Device)

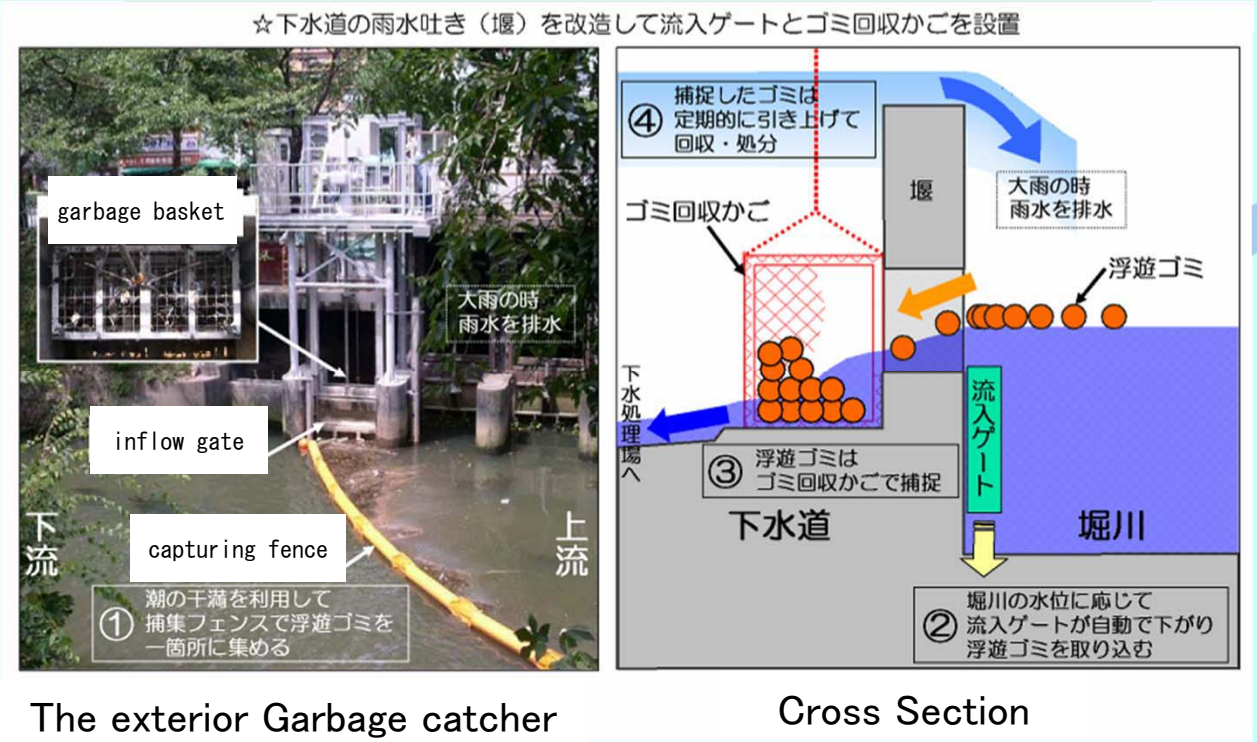
The amount of installation of Garbage Removal Device

Total of Plan	Installed	2017 (Planned)
126	111	1



Removal and reduction of inflow of pollutants

◆Garbage catcher (Near Johoku Bridge) since 2006



The exterior Garbage catcher　　Cross Section

Result of collection in 2014	0．7 t
Result of collection in 2015	1．4 t
Result of collection in 2016	1．3 t
Result of collection in 2017	0．5 t

At the end of December.

Additional Water Resource

◆Utilization of Reclaimed Wastewater (Excluding Winter)

Conducting reclaimed wastewater treated by membrane filtration at the Moriyama Water Treatment Center

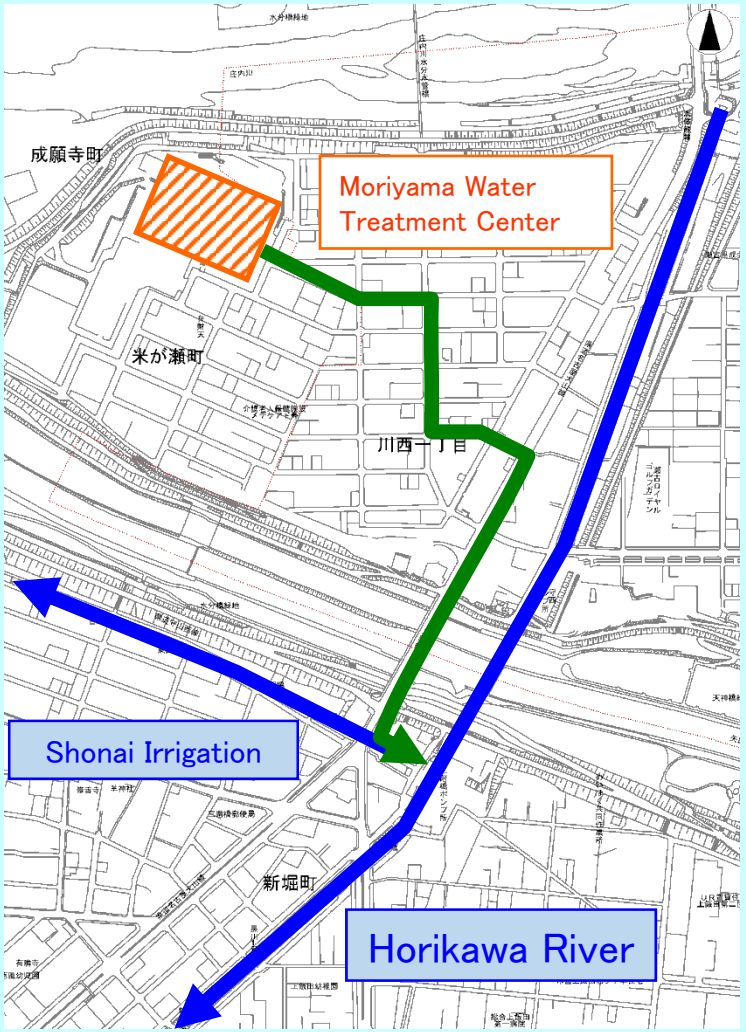
Water Supply: Up to 4,000m^3/day (0.046m^3/s)

Flat membrane unit aerobic tank (400sheets × 12units)

Upper stage embrane case (200 cartridges inside)

Lower stage membrane case (200 cartridges inside)

Flat membrane unit



※Watering period is almost irrigation period (April～October)
(Except the period for Shonai irrigation channel (Novemver～March))