Horikawa Sen-nin Chosatai 2010
Summary meeting for the 13th stage

The secretariat of Horikawa Sen-nin Chosatai

Sep. 29th 2013

Photos : Goyosui-ato-gaien-aigokai Survey Group
Kojo・Horikawa-to-Seikatsu^wo-kangerukai Survey Group
Kawasemi Survey Group

Horikawa Sen-nin Chosatai(HSC)2010

～Transmission of Raw Water from the Kiso River (TRWKR)～

1.Purpose

To verify the clarification effects of TRWKR with citizens

(1) Develop to new clarifying measures
(2) Asses the influence on an ecosystem
(3) Sustain and enhance citizens' activities.
(4) Develop citizens' awareness in the entire Horikawa river basin

2.Water source and Volume of transmission of raw water

(1) Water source : Kiso River
(2) Volume of transmisission of raw water: Maximum 0.4 m^3/s

3.Pilot project period

(1) Evaluation and Survey term:About 5 years (from Apr.2007 to Mar.2012)
(Including the term of follow-up survey and evaluation after the stop of TRWKR)
(2) TRWKR period:about 3years (from Apr.22nd 2007 to Mar.22nd 2010)

■ Increase of Transmisson Volume from the Shonai River (additional pilot project)

(1) Water Source Shonai River
(2) Transmission Usual 0.3m^3/sec (maxium 0.7m^3/sec)
(3) Experiment Period : 1st Oct-31St 2010
(4) Period of Increased Transmision Volume :Oct .5th-Nov.2nd 2010

Horikawa Sen-nin Chosatai(HSC)2010

☆ The formation of HSC (April 22nd 2007)

With a viewpoint and a sence of citizens, the survey of the clarification effect of TRWKR started

☆ The survey with a view point and a sence of citizens

＊Clearness ＊Transparency ＊Color ＊Smell

＊Garbage ＊ Living things ,etc

The first Nagoya City Environmental practice Prize February.2012
Branch of contribution for Regional Environment Development
Award for excellence

Horikawa River Pilot Project

Transmission of Raw Water from the Kiso River (TRWKR)
Surveys during TRWKR period :Apr.2007～March 2010
Surveys after the stop of TRWKR :Apr.2010～Mar. 2010

～ HSC (Apr.22nd 2007) ～

1) Fixed Point Observation Groups
2) Free Survey Groups
3) Horikawa Cheering Groups

The survey with a view point and a sense of citizens

To verify the clarification effects of TRWKR

- It was confirmed that the water quality tended to improved during TRWKR between Sanage Bridge and Matsushige Brdge.
- Network of citizens who make a wish for clarification and restoration of the Horikawa River was grown.
- Citzens' awareness of cleaning of the river was developed

Method of fixed-point observation

Measurement of COD

Chemical Oxygen Demand. This is an index of water contamination used for sea, lakes and marshes. It is an oxygen consumption required for oxidation of organic matters dissolved in ample water. The higher COD, the more it is contaminated.

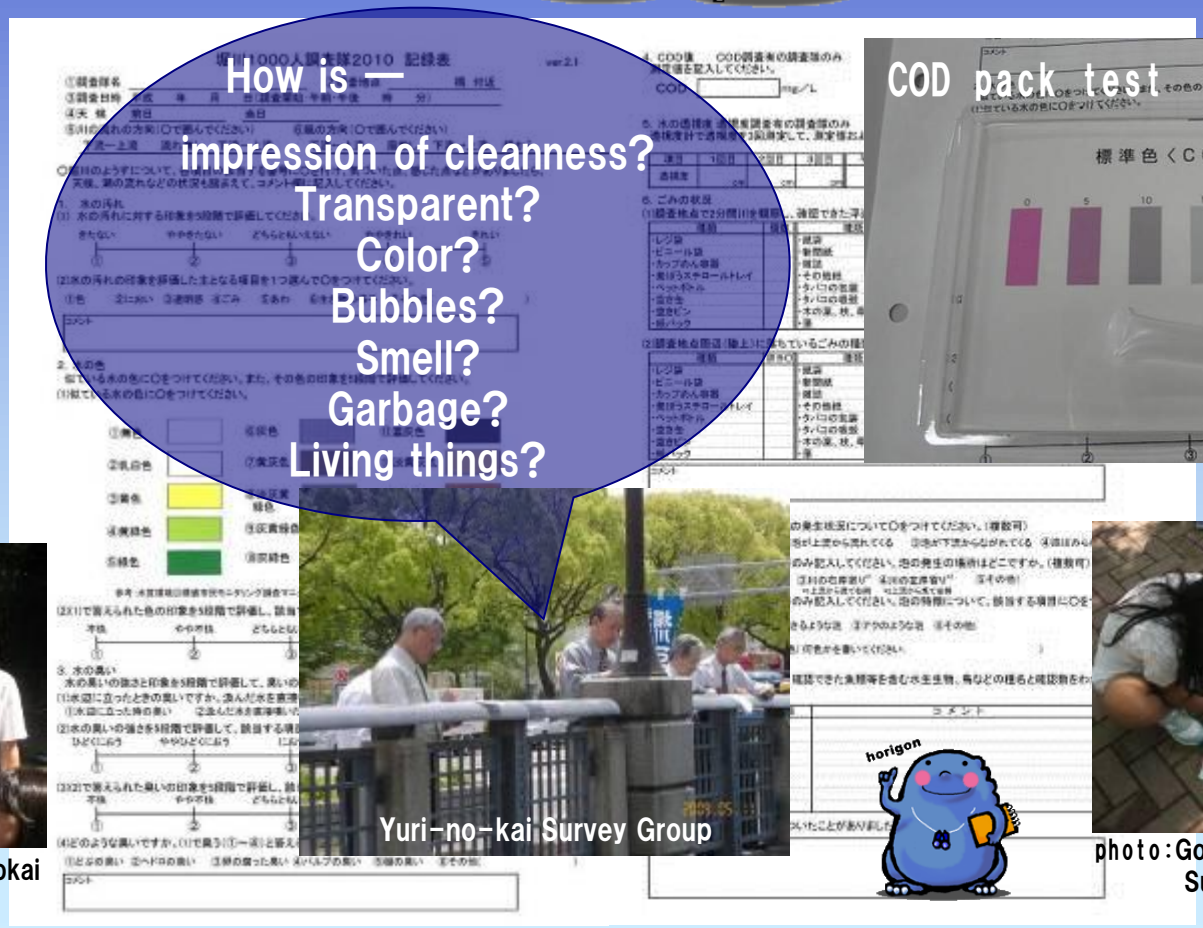


photo:Goyosui-ato-gaien-aigokai Survey Group

photo:Goyosui-ato-gaien-aigokai Survey Group

Horikawa River Pilot Project

Transmission of Raw Water from the Kiso River (TRWKR)
Surveys during TRWKR period :Apr.2007～Mar.2010
Surveys after the stop of TRWKR :Apr.2010～Mar. 2010

■ **Conclusions of Surmmary Meeting for the 10th Stage**

① More surveys shoud be implemented.

- Continuity of investigation,Clarification of the situation of the river,indentifiaction of cause of pollution in the river,are needed.
- We will make a improvement plan and take action to the pollution.
- After that,citizens and public administraion will do what is possible to cleans the river.

②There are many things that citizens can.

- We will expanded the circle of partners who love the Horikawa River and hope the TRWKR.
- We will deepen exchanges with people living in the basin of the Kiso ,Nagara,and Ibi River.
- We will check the effect of pollution removal from domestic wastewater and implement it in each house.

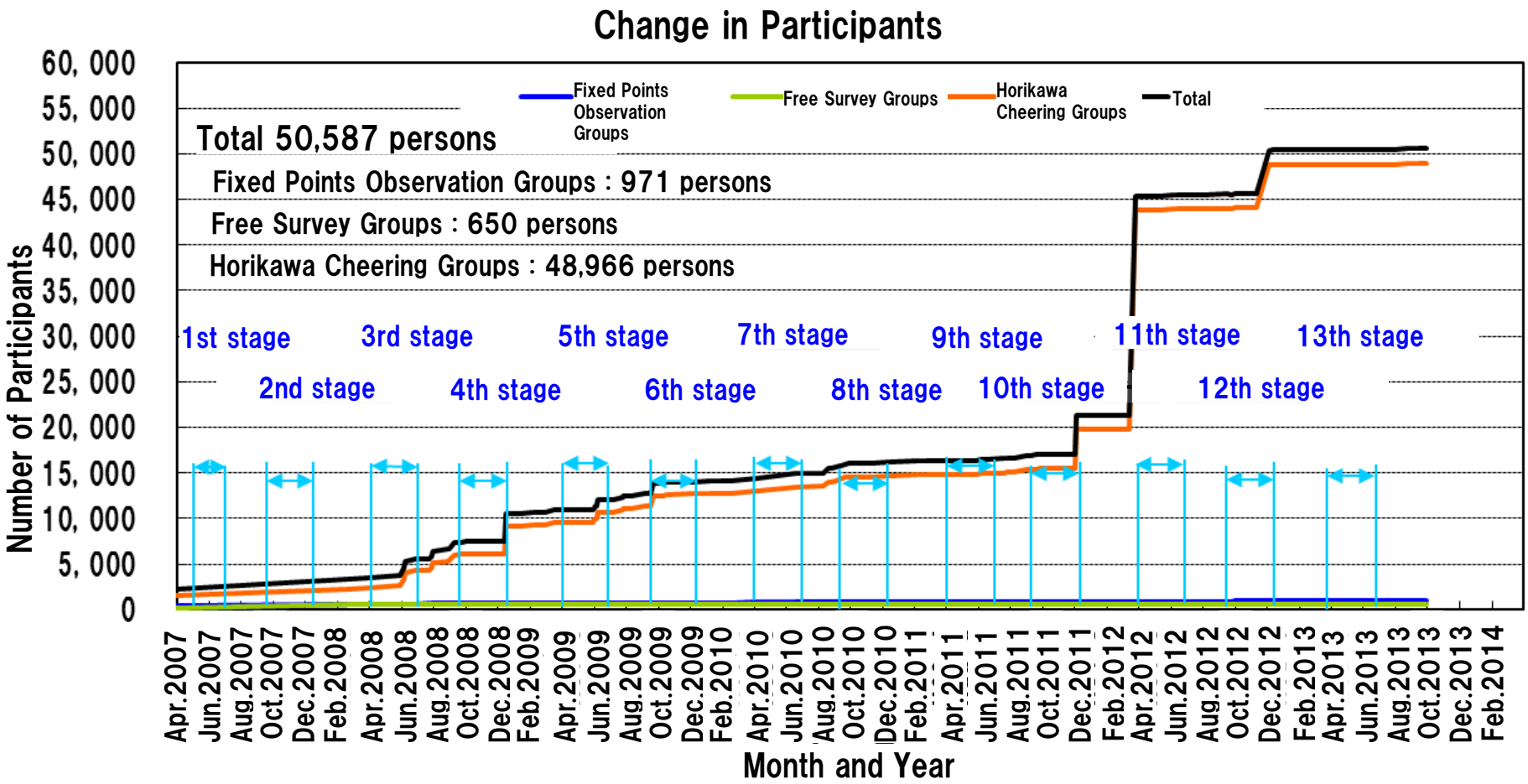
Network of citizens who make a wish for clarification and restoration of the Horikawa River has grown

Number of Participants of Horikawa Sen-nin Chosatai

(Horikawa Sen-nin Chosatai started accepting participation on March 26th. 2007)

	Start April 22nd. 2007		Now September 29th. 2013
Fixed Point Observation groups	55 groups 497 persons	⇨	93 groups 971 persons
Free Survey Groups	22 groups 234 persons	⇨	40 groups 650 persons
Horikawa Cheering Groups	88 groups 1,531 persons	⇨	2,498 groups 48,966 persons
Total	165 groups 2,262 persons	⇨	2,631 groups 50,587 persons

Number of Participants of Horikawa Sen-nin Chosatai



Survey Period and Number of Reports of Survey Results

	Survey Period		Number of Reports
With TRWKR	1st stage	Spring - Early Summer/ Apr. 22nd - Jun. 30th. 2007	258
	interval	Jul. 1st - Sep. 7th. 2007	134
	2nd stage	Autumn - Early Winter/ Sep. 8th - Dec. 16th. 2007	383
	interval	Dec. 17 - Mar. 31th. 2007	103
	3rd stage	Spring - Early Summer/ Apr. 1st - Jun. 30th. 2008	245
	interval	Jul. 1st - Sep. 27th. 2008	64
	4th stage	Autumn - Early Winter/ Sep. 28 - Dec. 16th. 2008	152
	interval	Dec. 17th - Mar. 31th. 2009	100
	5th stage	Spring - Early Summer/ Apr.1st - Jun. 30th. 2009	145
	interval	Jul. 1st - Sep. 26th. 2009	54
	6th stage	Autumn - Early Winter/ Sep. 27th - Dec. 16th. 2009	120
	interval	Sep.17th.2009 - Mar. 31th. 2010	81
Introduction of advanced water treatment at the Meijo Water Treatment Center	7th stage	Spring - Early Summer/ Apr. 1th - Jun. 30th. 2010	111
	interval	Jul.1st - Sep.11th. 2010	44
	8th stage	Autumn - Early Winter/ Sep. 12th - Dec.17th. 2010	104
	interval	Sep.18th. 2010 - Mar. 31th. 2011	72
In-service of Horikawa Ugan Rain-water Reservior for pollution controll	9th stage	Spring - Early Summer/ Apr.1st - Jun. 30th. 2011	112
	interval	Jul.1st - Sep.10th. 2011	42
	10th stage	Autumn - Early Winter/ Sep.11th - Sep.16th. 2011	133
	interval	Dec.17th. 2011 - Mar. 31th. 2012	77
Utilization of reclaimed wastewater from Moriyama Water Treatment Center From Apr. to Oct.	11th stage	Spring - Early Summer/ Apr. 1st - Jun.30th. 2012	148
	interval	Jul.1st - Sep. 21th. 2012	59
	12th stage	Autumn - Early Winter/ Sep.22th - Dec.16th. 2011	135
	interval	Dec.17th. 2012 - Mar.31th. 2013	78
	13th stage	Spring - Early Summer/ Apr.1st - Jun.30th. 2013	129
total			3,083

Investigation spots

Column "To clarify and restore the Horikawa River"

Horikawa Sen-nin Chosatai 2010, which is composed of Fixed Point Observation Groups, Free Survey Groups and Horikawa Cheering Groups, made a start as a place for citizens' activities to clarify and restore Horikawa River on April 22nd, 2007.

Fixed Point Observation Groups survey clarification effect of Horikawa by Transmission of Raw Water from the Kiso River (TRWKR) with a view point and sense of citizens. Free Survey Groups research Horikawa by free theme. Horikawa Cheering Groups support clarification and restoration of Horikawa. These three kinds of groups cooperate each other in the big network for clarification and restoration of Horikawa.

There are 93 Fixed Point Observation Groups, 40 Free Survey Groups and 2,498 Horikawa Cheering Groups, the total is 2,631 groups and 50,587 persons as of Sep 29, 2013. Compared with the number of groups and participants, 165 groups and 2,262 persons, at the start, network of people who wish clarification and restoration of Horikawa has developed.

Fixed Point Observation Groups have made surveys at 3,083 times from 1st stage to 13th stage. Their surveys show that the situation in the area of the downstream from Sanage Bridge variously changes as the tide rises and falls from hour to hour in Horikawa basin. We learned that various surveys at various time, place and tidal situation enable us to understand average and change of water quality in Horikawa. And it was confirmed that water quality was improved roughly between Sanage Bridge and Matsushige Bridge for five years of pilot project. It was also confirmed that artificial garbage was reduced during this period. So it is supposed that citizens' awareness has changed for example cleaning activities are held a lot.

～Pilot project for clarification of Horikawa
"Clarification effect by TRWKR from April 2007 to March 2012 was confirmed"～

【Summary】

■Clarification effect by TRWKR was confirmed between Sanage Bridge and Matsushige Bridge
■Network of citizens who make a wish for clarification and restoration of Horikawa has grown
■Awareness of clarification of Horikawa advanced

After the stop of TRWKR in March 2010, advanced water treatment was introduced at Meijo Water Treatment Center in May 2010 and Horikawa Ugan Rain-water Reservoir for pollution control was launched in September 2010. In August 2011, reclaimed wastewater, which is treated by membrane filtration at Moriyama Water Treatment Center, started to be transmitted into Horikawa. The reclaimed wastewater is transmitted into Horikawa from April to October and also transmitted into Shonai Irrigation from November to March (non-irrigation season) at a volume of a maximum of 4,000m^3/day, 0.046m^3/sec.

The water quality of Horikawa was deteriorated at 7th stage (from April to June 2010, just after the stop of TRWKR). But after 7th stage, the water quality has been tend to be improved at a certain area. It is supposed that the water quality is improved by the new measures for water quality improvement.

Because the number of fixed point observations amounted to more than 3,000 in this stage, we can try to analyze data in the past and to research yearly change (monthly month). It is confirmed again that impression of clearness, transparency and value of COD are bad from Spring to Autumn when people especially gather and play at the waterside.

Also, we tried to research change in impression of clearness compared at spring tide and at neap tide because the water quality of Horikawa is supposed to be influenced by the tide. The research showed that impression of clearness is evaluated by "color", "smell" and "garbage" between Asahi Bridge and Kameya Bridge especially when it is spring tide from Spring to early Summer (1st, 3rd, 5th,7th,9th and 11th stage). Among of all kinds of "smell", "smell of sludge" increases in the downstream from Asahi Bridge.

These researches showed clearly that impression of clearness is bad between Johoku Bridge and Matsushige Bridge, many bubbles occur from the bottom Horikawa and smell is deteriorated between Asahi Bridge and Matsushige Bridge in paticular. It is supposed that the section between Asahi Bridge and Matsushige Bridge is easy to be influenced by deterioration of color, transparency and smell because sludge is exposed and raised and because red tide and blue tide go against the stream by high tide from downstream in the section.

We put data in order on survey activities and survey results on Shin- Horikawa. We don't have enough data now, but we found a few features in the upstream and downstream area of Shin-Horikawa.

～Cooperation with community development of Horikawa basin～

"Horikawa Machizukuri no Kai" started and "1st Horikawa Round Table" was held on July 30th.

Each group and organization will work respectively and also hold "Round Table" about twice a year to share the information and make their connection closer.

Two proposal were made by "Horikawa Machizukuri no Kai" secretariat and both are consented unanimously.

■Secretariat proposed below

1 clarification measures and investigation for bustling

2 pilot project of "Horikawa Navi" in "Horikawa Machizukuri Plan"

Horikawa City Planning Party has started to " Horikawa Machizukuri Plan "
" 1st Horikawa round table " meeting was held . July 30th, 2013

Research for water quality improvement measures and to bring prosperity to the river area

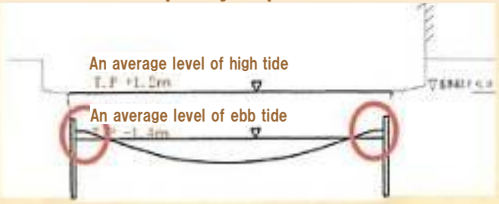
6 Proposed and offered info. by HSC secretariat

For the purpose of improving attractiveness of Horikawa River between the area of Naya Bridge and Nagoya Castle, we will research the heap of sludge in it, and investigate effective water quality improvement measures to progress purifications.

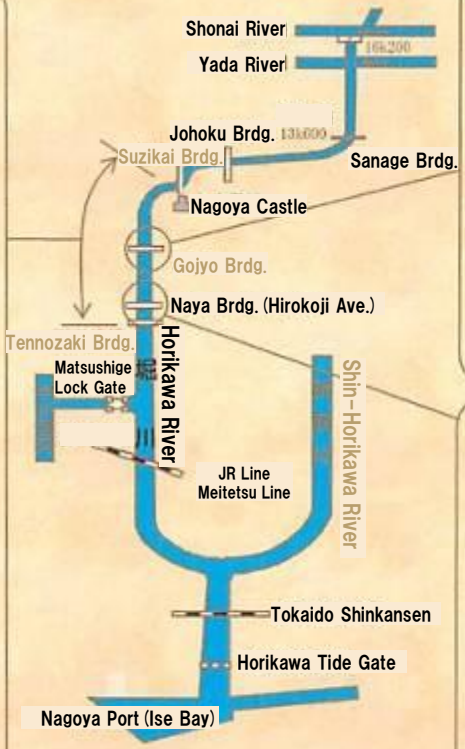
In addition to the water quality improvement of this area, we will also consider using the river space with historical properties around Horikawa River to make this area prosperous.

Research for water quality improvement measures

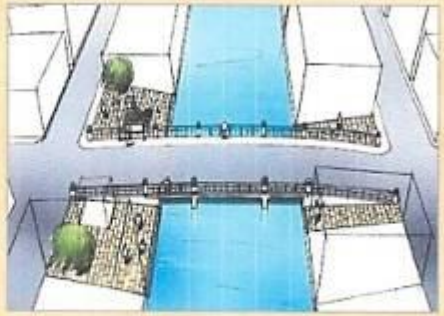
- Research of sludge conditions
- Research of non-repaired banks
- Hearing from specialists, and investigations for water quality improvement measures



Sludge at the edge of banks which appear at the ebb tide



Investigation to prepare public lots around the Shikemichi area for a water-friendly space

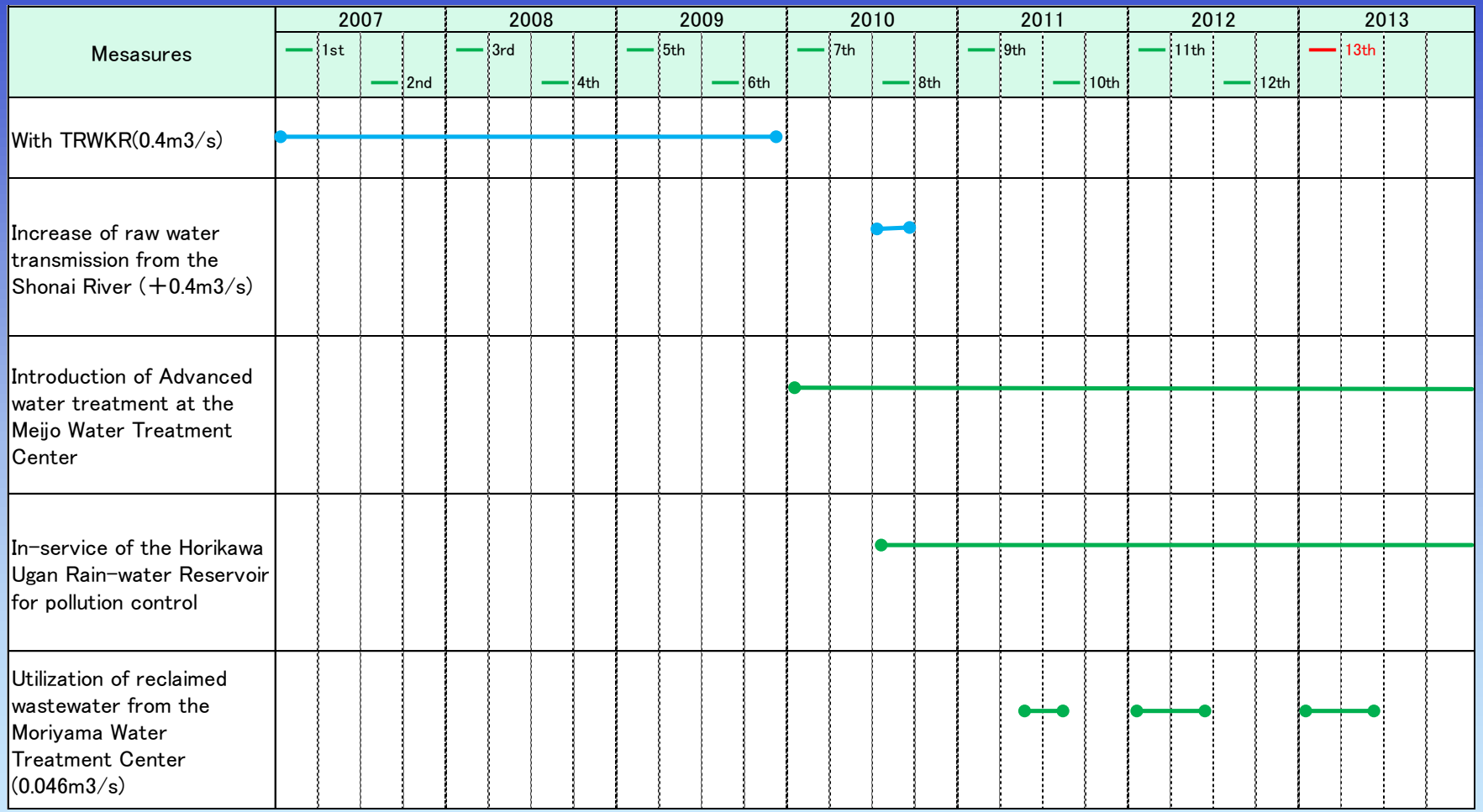


An image of the area around Gojo River

Investigation for facility Improvement in the waterside area around Naya Bridge.

Setting up of guide boards (maps, name boards)

Main Measures for Water Quality Improvement (1)



Main Measures for Water Quality Improvement (2)

Newly launched facilities after the stop of TRWKR

○Advanced water treatment at the Meijo Water Treatment Center

Solution : conventional activated sludge process and rapid filtration

Launch : May. 2010

■For improvement of quality of treated water

Additional filtration of treated water at the Meijo Water Treatment Center can improve quality of water discharging into Horikawa River

○The Horikawa Ugan Rain-water Reservoir

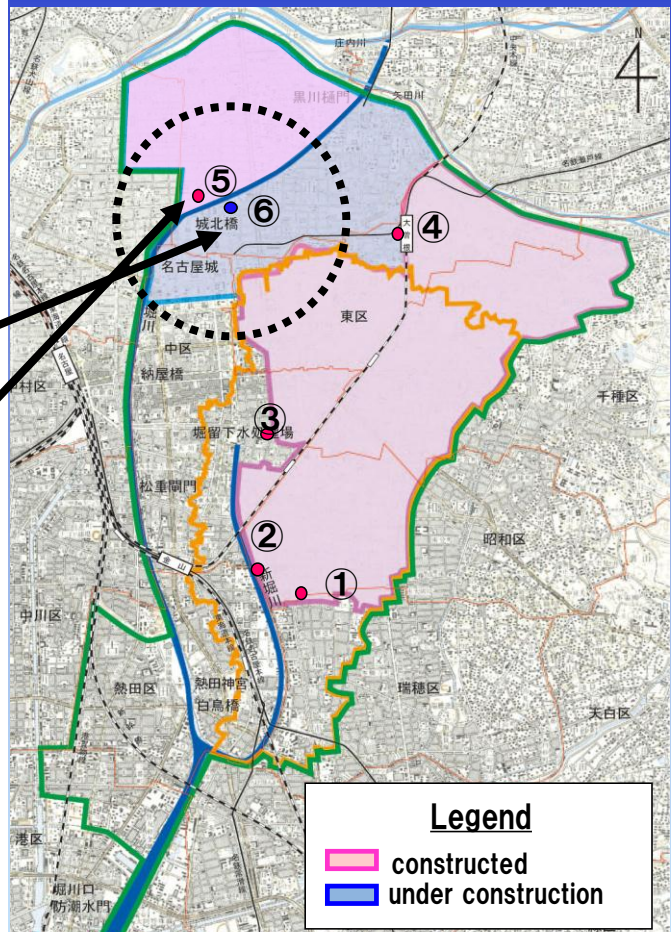
Volume : 13,000m^3

Coverage area : 633ha

Launch : Sep. 2010

■For improvement of combined sewer system

By storing first flush with high pollution load to restrain outflows temporarily, the frequency of overflow from the sewer outlet can be reduced.



Improvement of combined sewer system

Construction of water storage facility

Main Measures for Water Quality Improvement(3)

Newly launched facilities after the stop of TRWKR

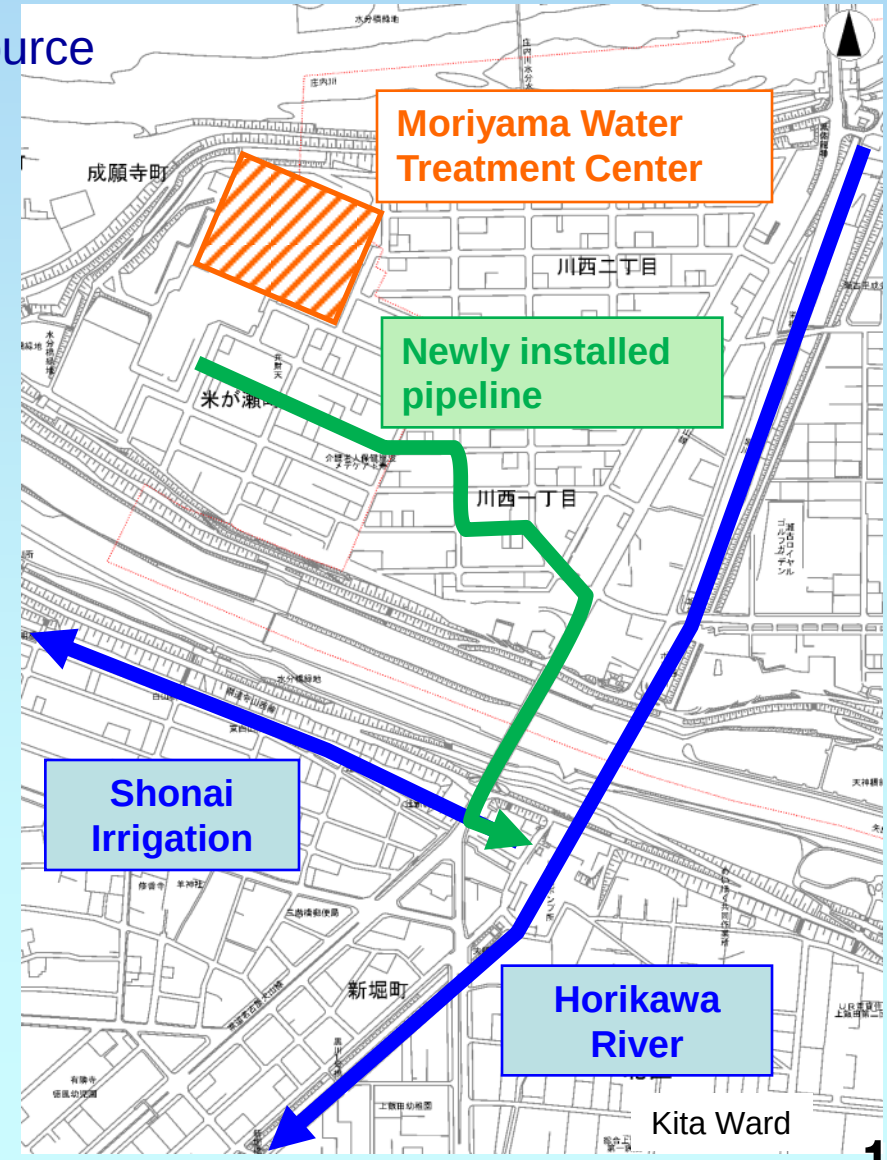
■Securement of Additional Water Resource

Utilization of Reclaimed Wastewater

Conducting reclaimed wastewater treated by membrane filtration at the Moriyama Water Treatment Center up to 4000m3/day is discharged into Horikawa River.

Start to conduct in Aug. 2011

Reclaimed wastewater was conducted during irrigation season (Apr - Oct)



Reference : 10th Horikawa Sennin Chosatai conference

Whether Condition

Data: The Meteorological Agency _ Climate Statistics
http://www.jma.go.jp/jma/menu/report.html

The monthly climate normal

	Precipitation (mm) Total	Temperature (℃) Mean	Maximum	Minimum	Sunshine (Hour) Total
Statistics data period	1971 ~2000	1971 ~2000	1971 ~2000	1971 ~2000	1971 ~2000
Years of data	30	30	30	30	30
Apr.	143.3	14.1	19.5	9.2	188.4
May.	155.7	18.5	23.7	14.0	199.6
Jun.	201.5	22.3	26.7	18.7	145.2
Average	166.8	18.3	23.3	14.0	177.7
Sep.	249.8	23.4	28.0	20.0	141.9
Oct.	116.9	17.6	22.4	13.5	165.6
Nov.	79.5	11.9	16.7	7.6	159.7
Dec.	36.8	6.7	11.4	2.6	169.7
Average	120.8	14.9	19.6	10.9	159.2

About whether condition in April to June of the 13th stage, it was higher-temperature, less precipitation, and long hours of sunshine than normal. The temperature in May and June was especially high, and the precipitation in May was very little.

■Temperature

Slightly higher than normal.
The temperature in April was slightly lower than normal, and the temperature in May and June is higher than normal about 1℃.

■Precipitation

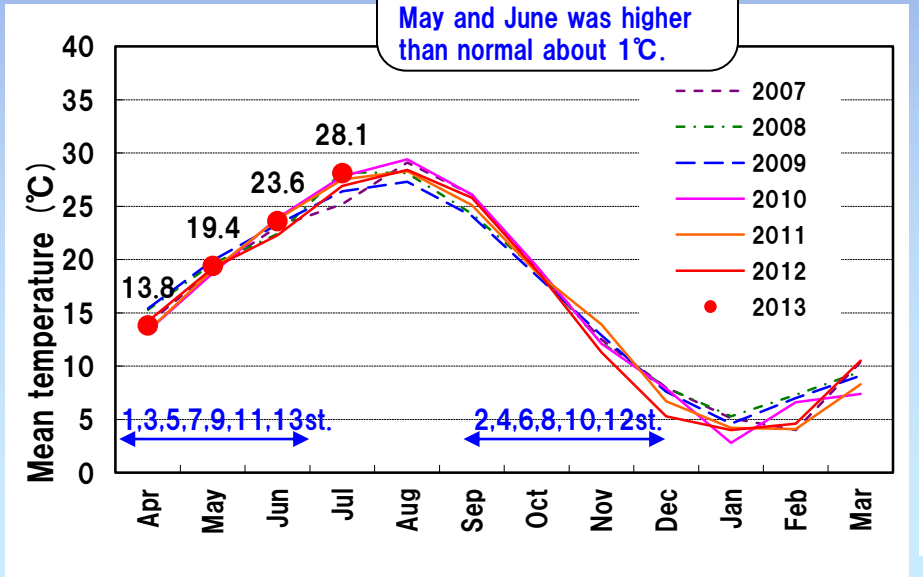
Little as about 70 percent of normal.
Especially in May, there was very little precipitation as 40 percent of normal.

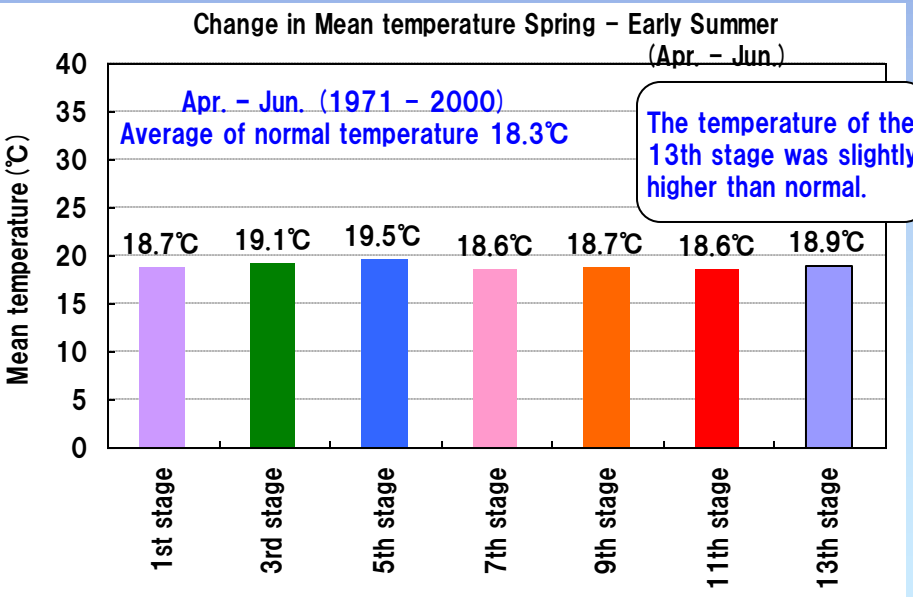
■Hours of sunshine

Longer than normal.
The hours of sunshine in April and May are longer than normal, and in June is shorter than normal.

Temperature

The temperature in April of the 13th stage was slightly lower than normal, and in May and June was higher than normal about 1℃.



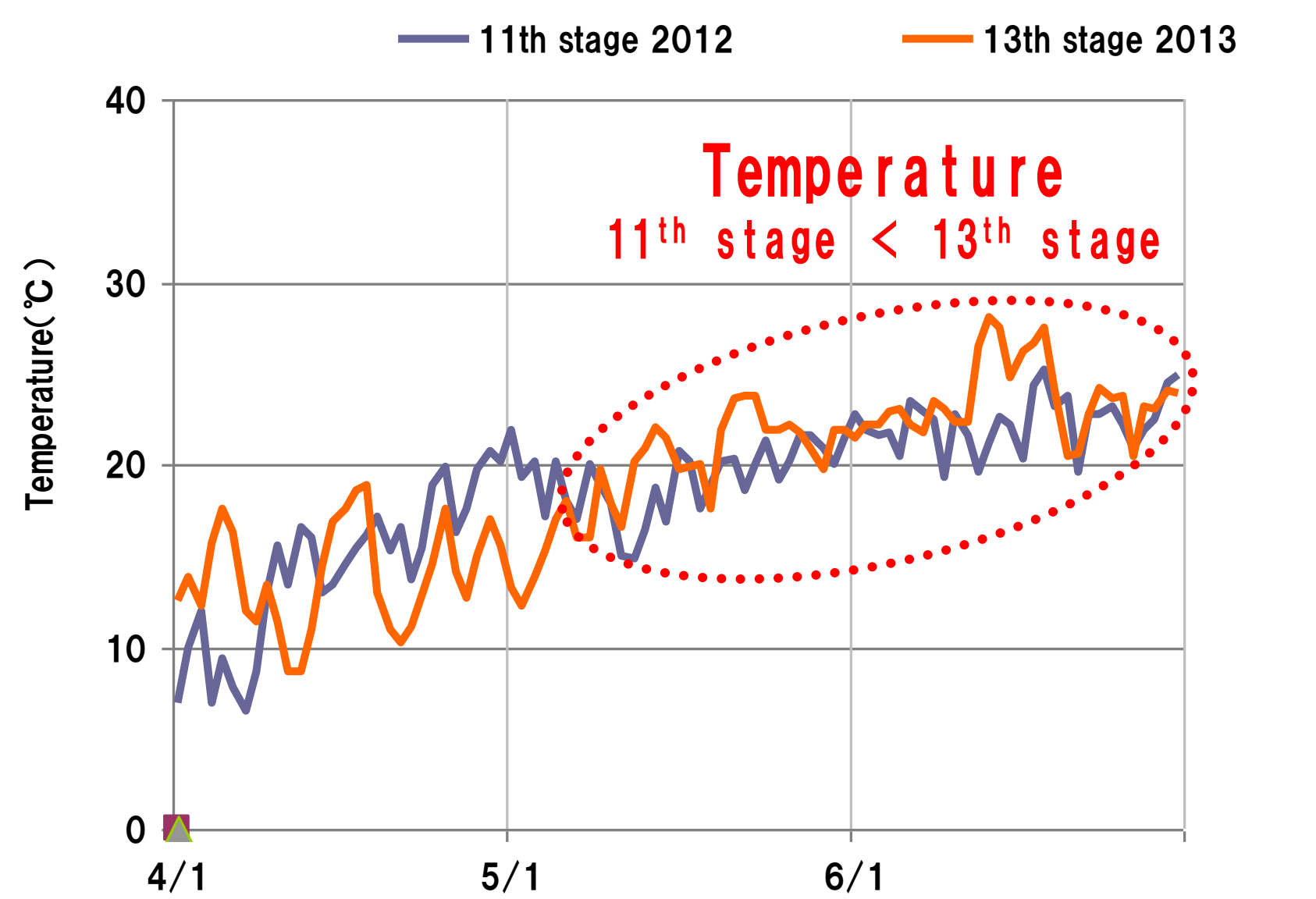


Whether Condition

Reference: Japan Meteorological Agency
http://www.jma.go.jp/jma/menu/report.html

Temperature

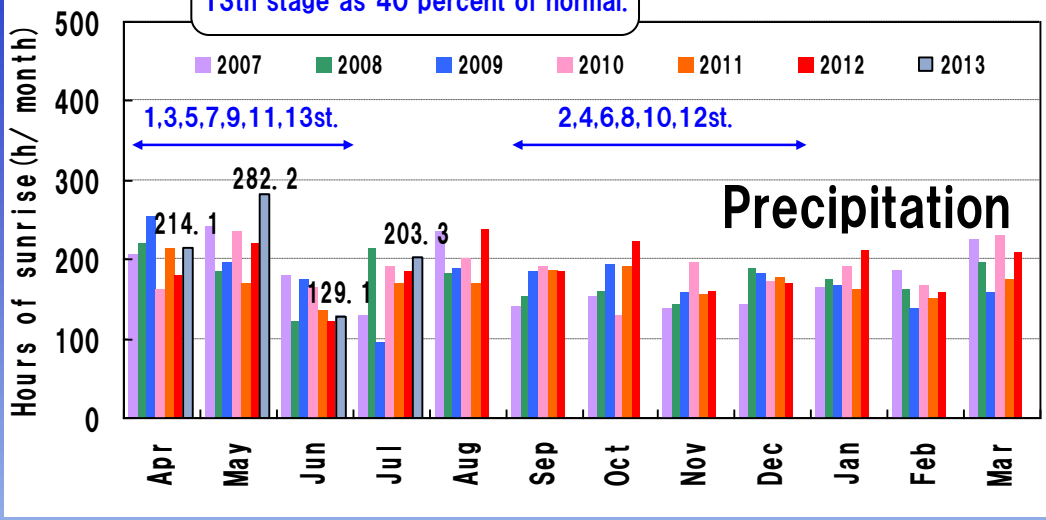
Comparison between 11th stage and 13th stage



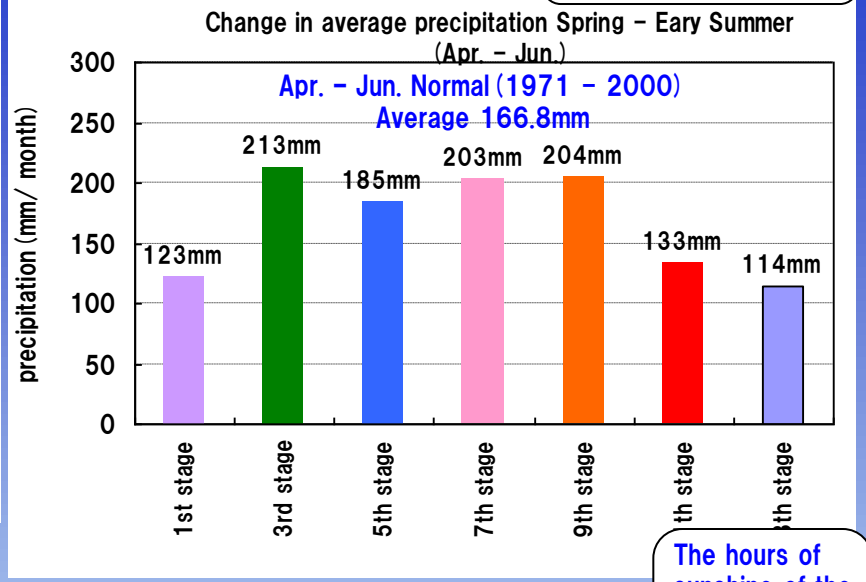
Whether Condition

Reference: Japan Meteorological Agency
http://www.jma.go.jp/jma/menu/report.html

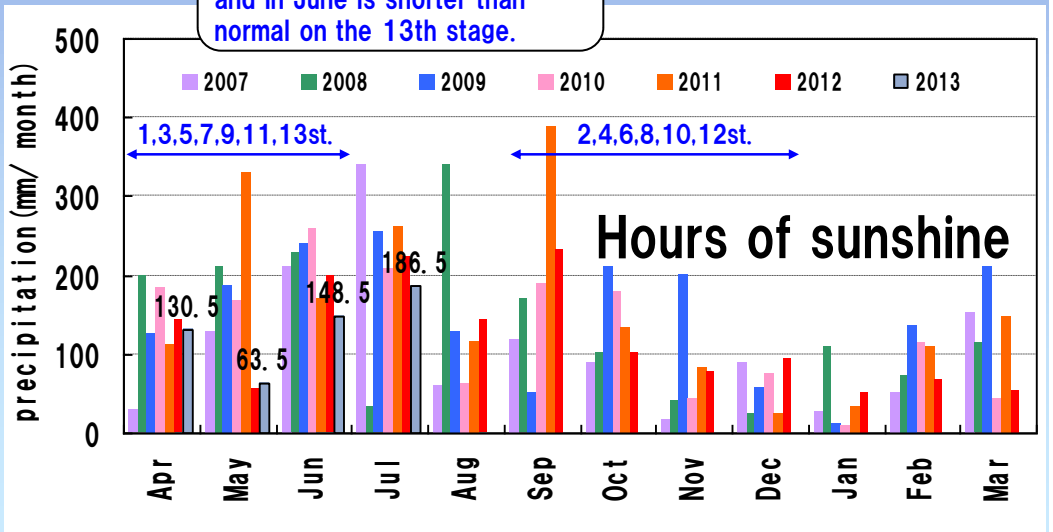
Very little precipitation in May of the 13th stage as 40 percent of normal.



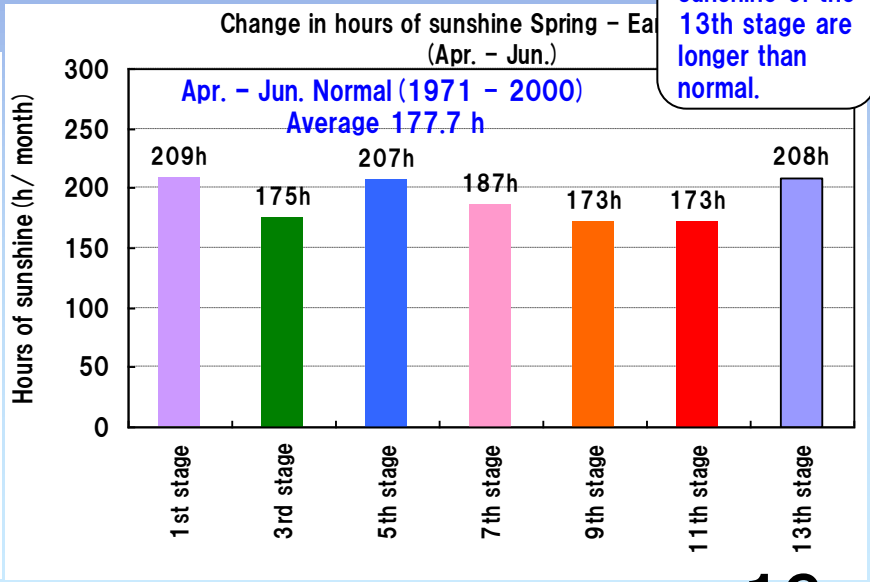
Very little precipitation in the 13th stage as 70 percent of normal.



The hours of sunshine in April and May are longer than normal, and in June is shorter than normal on the 13th stage.



The hours of sunshine of the 13th stage are longer than normal.

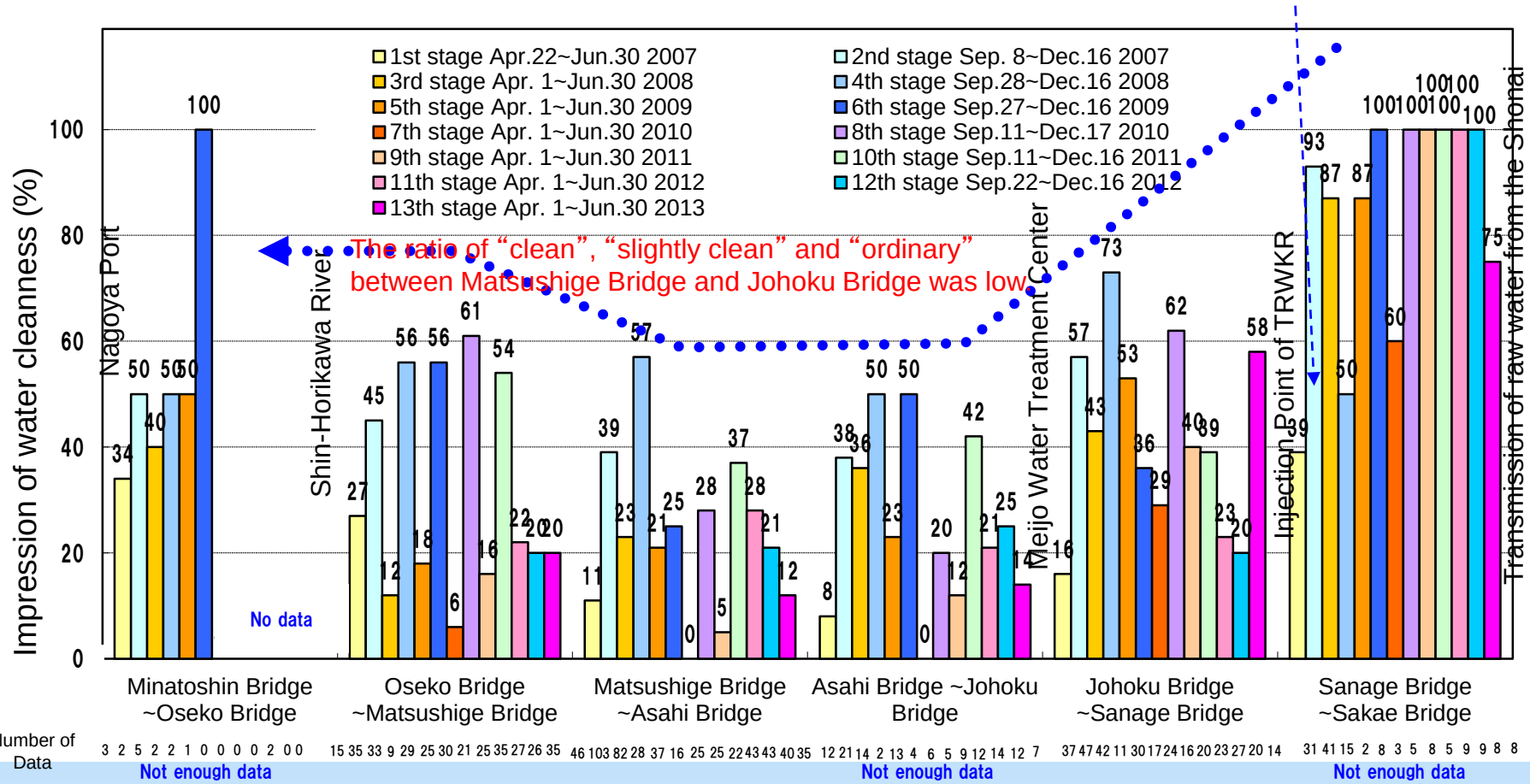


Impression of Water Cleanness

The 1st 3rd 5th stage
・With TRWKR
・No rain on the day and the previous day

The 7th,9th,11th stage
・No TRWKR
・No rain on the day and the previous day

The ratio of “clean”, “slightly clean” and “ordinary”. *



■ How did the impression of water cleanness change?

・The ratio of “clean”, “slightly clean” and “ordinary” between Johoku Bridge and Matsushige Bridge was low.

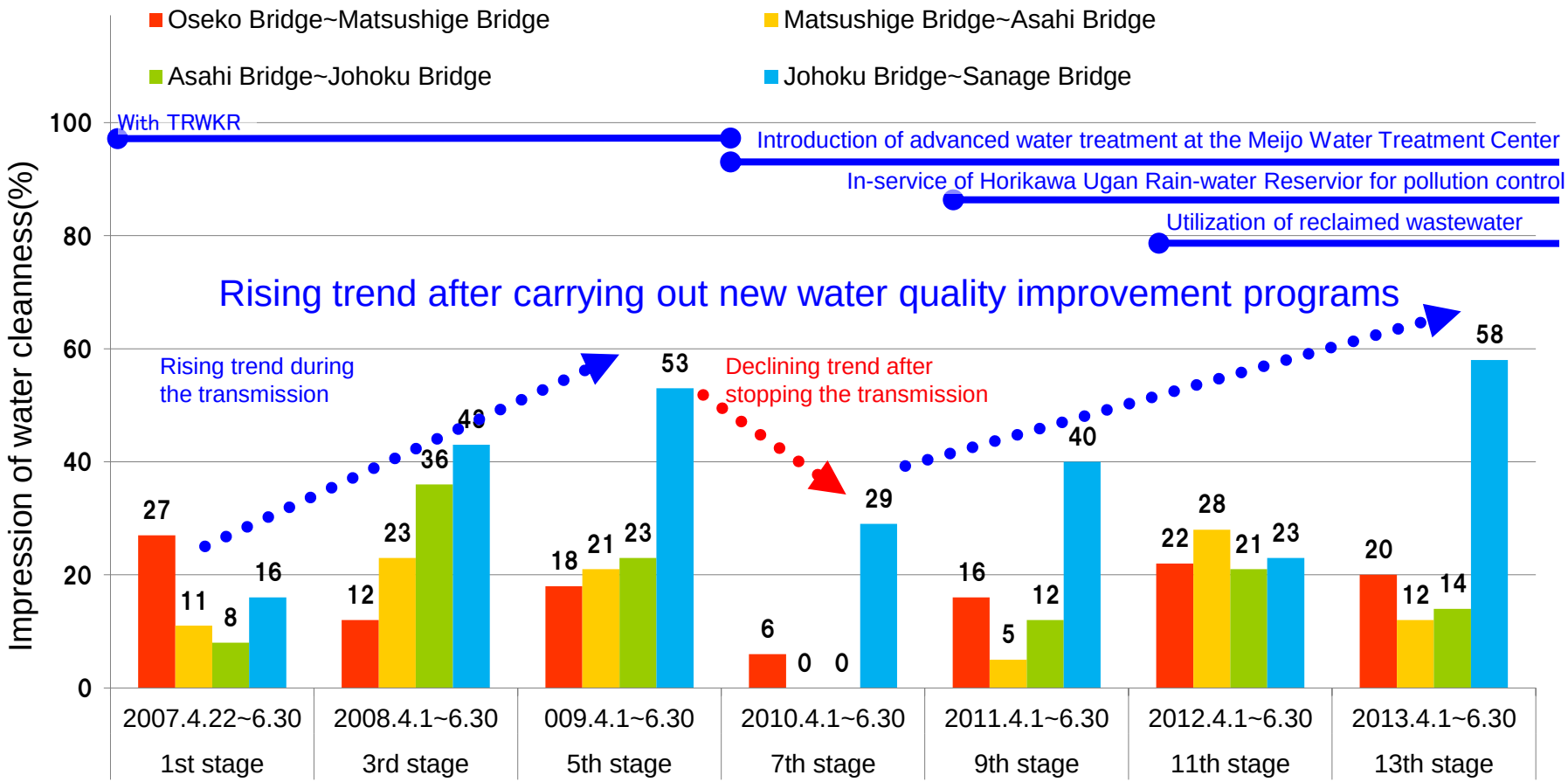
・The impression of water cleanness between Johoku Bridge and Matsushige Bridge was worse than other area.

* “clean”, “slightly clean” and “ordinary” are categorized as the acceptable range for citizens.

Impression of Water Cleanness from Spring to Early Summer

The 1st,3rd,5th stage
・With TRWKR
・No rain on the day and the previous day
The 7th,9th,11th stage
・No TRWKR
・No rain on the day and the previous day

The percentage of people who answered between “clean” and “ordinary”



Note: Data we got from Minatoshin Bridge to Oseko Bridge and from Sanage Bridge to Sakae Bridge are not counted because we got few data there.

■ How did the impression of water cleanness change (spring ~ early summer) ?

→In 7th stage after the stop of TRWKR, transparency was deteriorated. But afterward we have seen the transparency of improvement. This is considered to be an effect of the new water quality improvement measures, especialy between Sanage Bridge and Johoku Bridge.

Change of Evaluation of Impression on Water Dirtiness

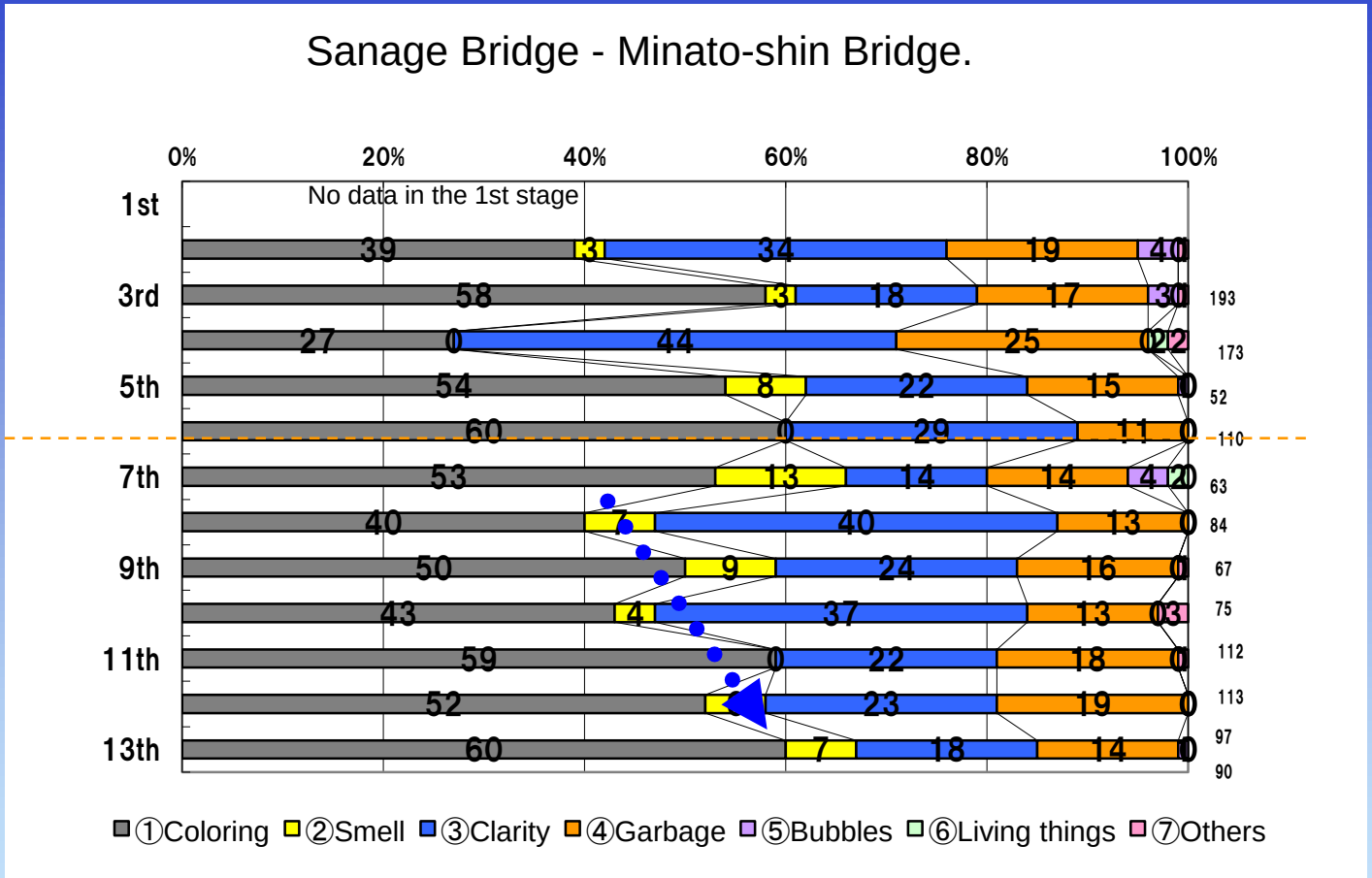
1st stage: No data
2nd to 6th : With TRWKR
No rain of the day and previous day 7th to 12th: No TRWKR
No rain of the day and previous day

With TRWKR

Introduction of Advanced Sewerage Treatment at the Meijyo Water Treatment Center

In-service of Horikawa Ugan Rain-water Reservoir for Pollution Control

Utilization of Reclaimed Wastewater



The ratio of “color” was incleasing.

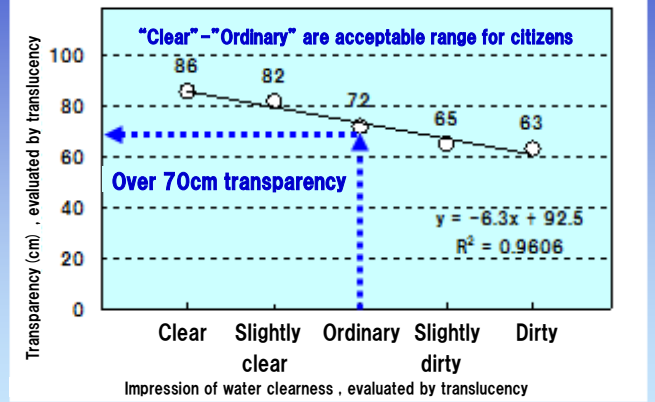
■How did the impression of water dirtiness change ?
→Main evaluation of impression on water dirtiness were “color”, “transparetion” and “garbage”.
After 9th stage, the ratio of “color” was incleasing. This is considered to be an effect of new water quality improvement measures.

2.Transparency

Relationship between the impression of clearness and the average of transparency (translucency)

2nd–9th stage , No rain , Including out-of-period data
Impression of clearness : Evaluated by translucency
All sections (including the upper reaches)

Ralationship between the impression of clearness and transparency (translucency)



Transparency over 70cm can be an indicator to improve impression of water clearness.

Note) The values over 100cm are treated as 100cm.

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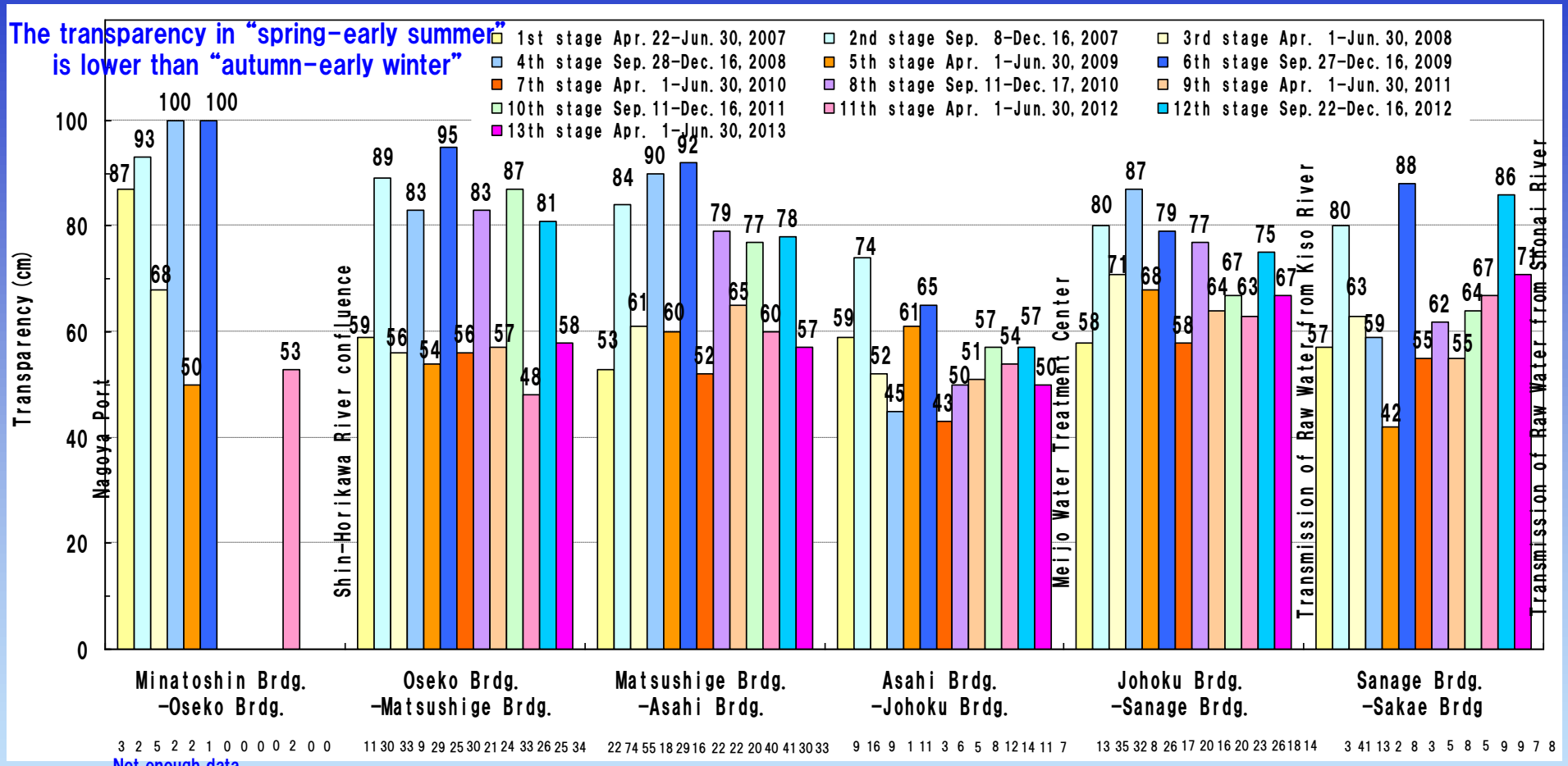
Reference: The reports for the HSC 10th stage meeting

Photo: Survey Group of Team NTT Smile Nagoya

Photo: HSC secretariat

Change of Transparency

1st – 6th stage: With TRWKR
No rain on the day and the previous day
7th–13th stage: No TRWKR
No rain on the day and the previous day



Not enough data
No data for 7th–10th・12th–13th stages for not enough data

Not enough data

Not enough data

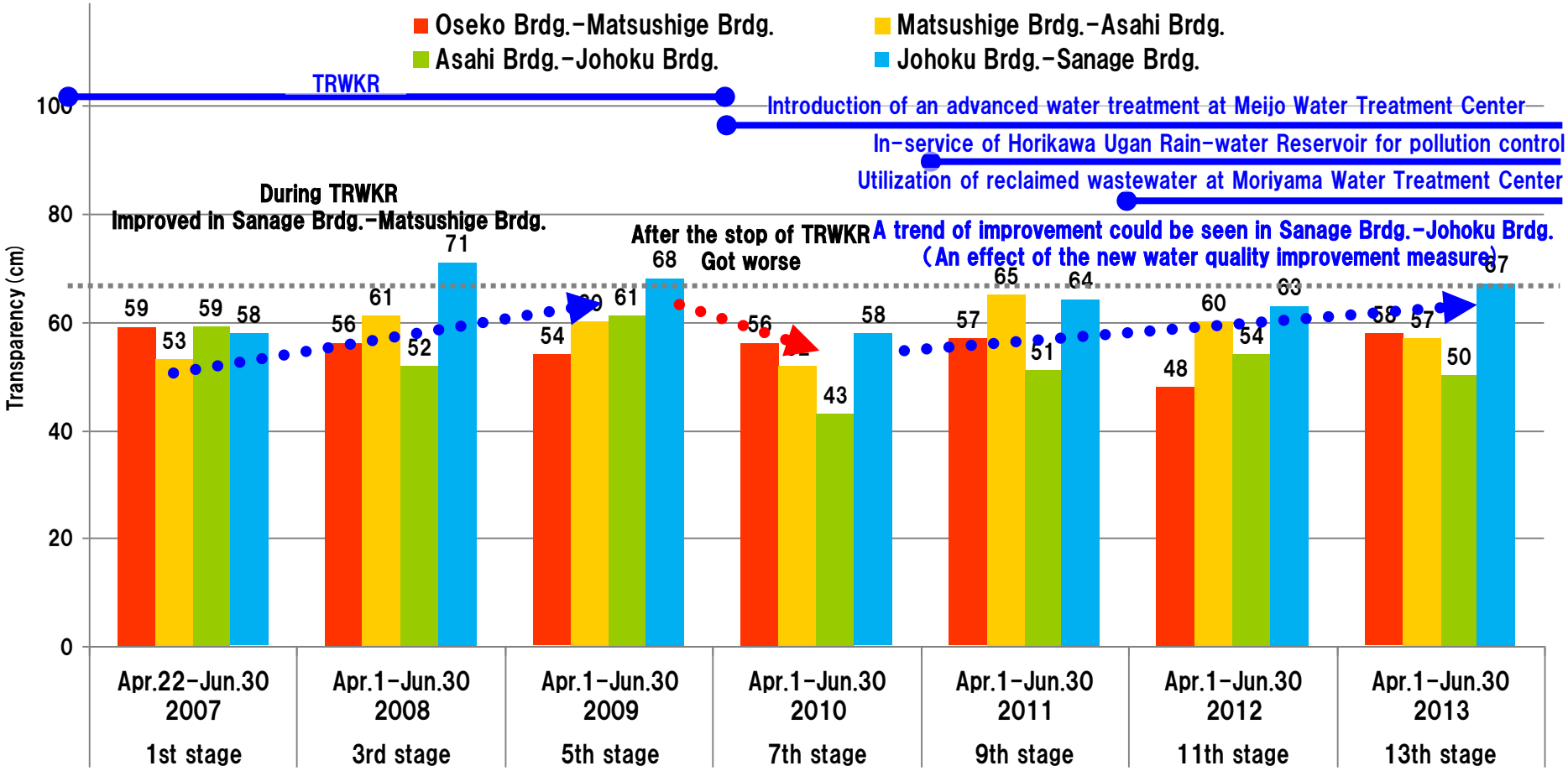
■ How did the transparency change?
→ The transparency in "spring-early summer (1st,3rd,5th,7th,9th,11th,13th stage)" was lower than in "autumn-early winter (2nd,4th,6th,8th,10th,12th stage)", and almost transparency in "spring-early summer" is under 70cm which is the acceptable range of citizens.

Note) The values over 70cm are treated as 100cm.
The answers between "clear" and "ordinary" are categorized as the acceptable range for citizens. (=over 70cm transparency)

Change of Transparency•••Spring-Early Summer

1st•3rd•5th stage :With TRWKR
No rain on the day and the previous day
7th 9th 11th 13th stage:No TRWKR
No rain on the day and the previous day

Note) Except the data of "Minatoshin Brdg.-Oseko Brdg." and "Sanage Brdg.-Sakae Brdg." for not enough data.



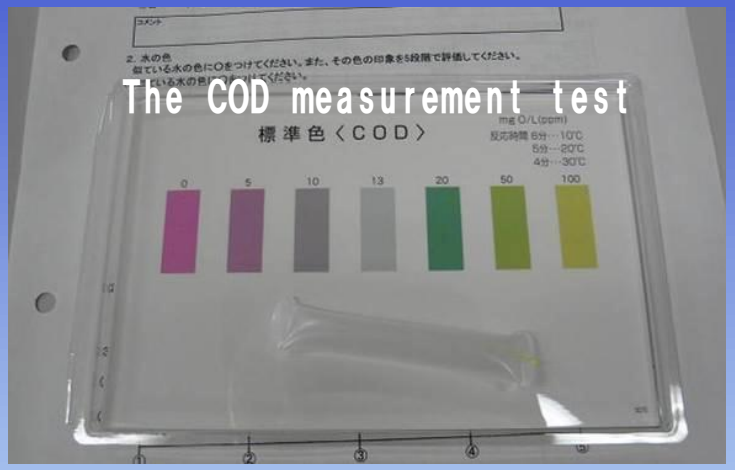
■ How did the impression of clearness (spring-early summer) change after TRWKR stopped?
→The transparency got worse in 7th stage just after the stop of TRWKR.
However, the transparency after that is improving between Sanage Brdg. and Johoku Brdg..
We suppose that it is an effect of the new water quality improvement measure.

Note) The values over 70cm are treated as 100cm.

The answers between "clear" and "ordinary" are categorized as the acceptable range for citizens. (=over 70cm transparency)

3.COD

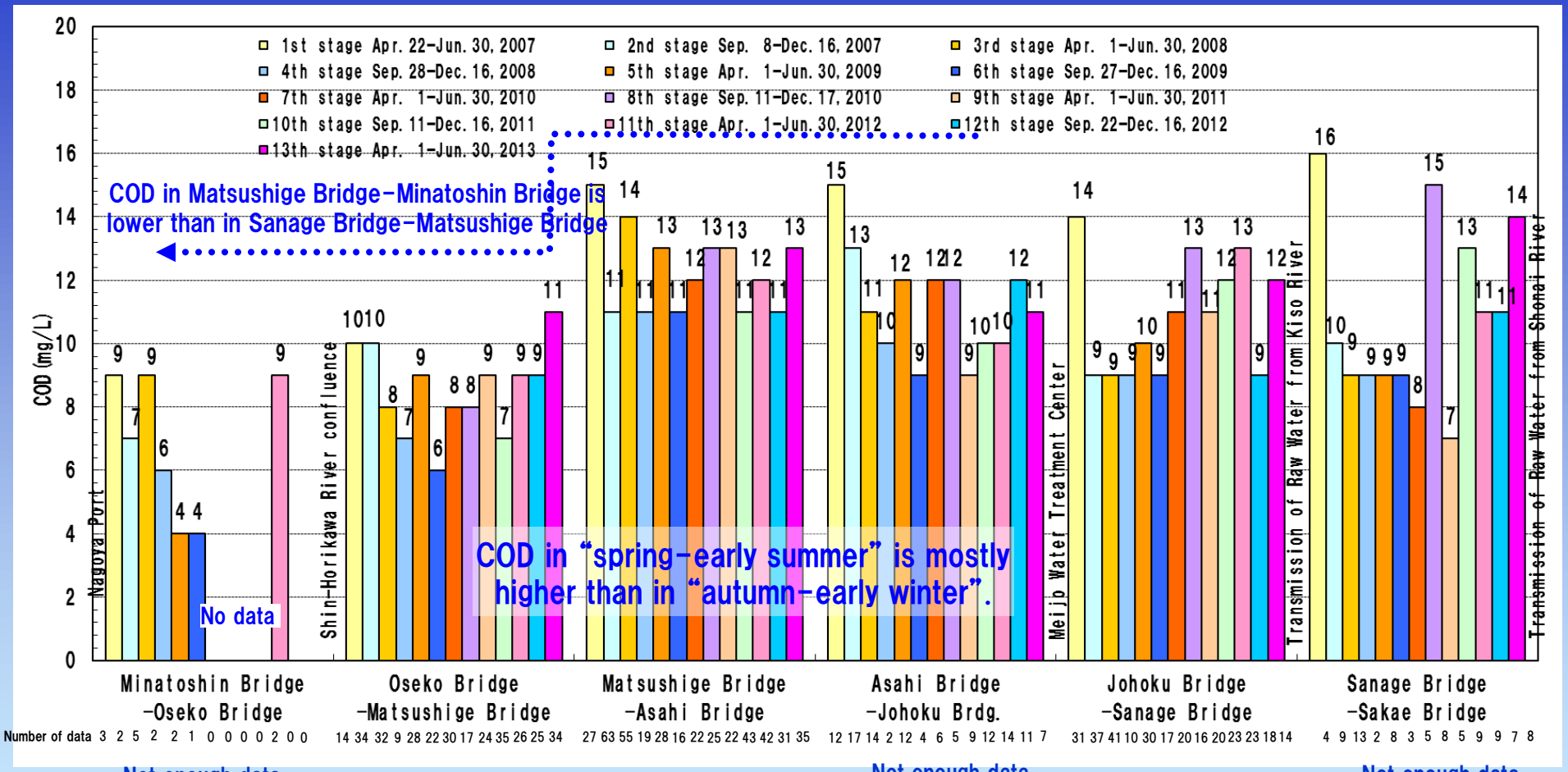
Chemical Oxygen Demand. It shows the organic pollution level mainly at the sea area and lakes. It means the amount of oxygen which react (oxidize) with organic substance underwater. The higher the value of COD, the higher the pollution level.



Photos: Goyousui-ato-gaien-aigokai Survey Group

Change in COD

1st – 6th stage: With TRWKR
No rain on the day and the previous day
7th – 13th stage: No TRWKR
No rain on the day and the previous day



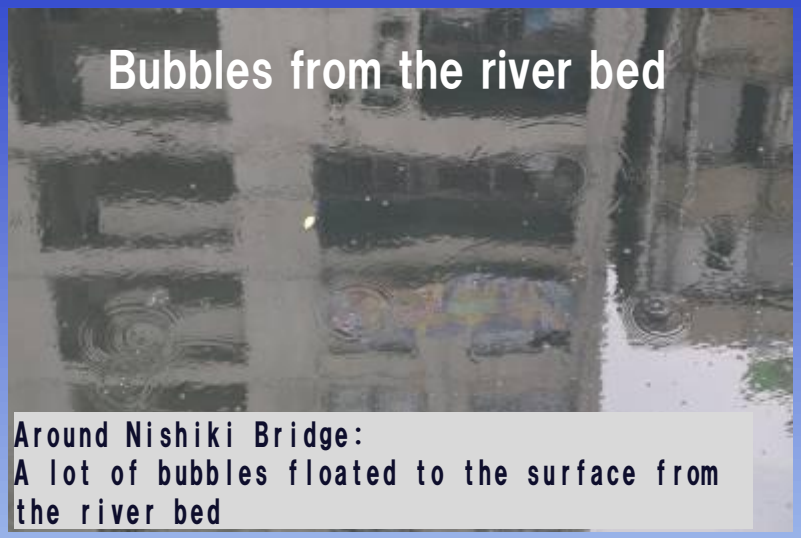
■ How did the COD change?

→ COD in "spring-early summer (1st,3rd,5th,7th,9th,11th,13th stage)" is mostly higher than in "autumn-early winter (2nd,4th,6th,8th,10th,12th stage)".

COD between Sanage Brdg. and Matsushige Brdg. was lower than between Matsushige Brdg. and Minatoshin Brdg..

Note) The values over 20mg/L are treated as 20mg/L.

4.Bubbles



Around Nishiki Bridge:
A lot of bubbles floated to the surface from the river bed

Around Nishiki Bridge:
Sludge floated to the surface with bubbles from the river bed

Photos:by secretariat

Examples of the mechanism of the occurrence of bubbles at the river bed

Smell like rotten eggs		No smell
Water	At low water level and water pressure, bubbles inside sludge get released easily	
Hydrogen-sulfate ionized water (SO_4^{2-})		
Bubbles		Bubbles
Sludge	Bubbles increase	
Sulfide (H_2S, HS^-,etc.)	At high temperatures, bacterium are activated	Methane
Sulfate reducing bacterium (mainly inside bottom mud) ＊anoxia-loving bacterium		methanogenic bacterium (mainly inside bottom mud) ＊anoxia-loving bacterium

Sulfate reducing bacterium produce hydrogen sulfide (H_2S) etc. ,with organic substance decomposed and sulfate ion (SO_4^{2-}) reduced.

SO_4^{2-}(sulfate ion)+Organic substance $\rightarrow S^{2-}+H_2O+CO_2$

$S^{2-}+H^+\rightarrow HS^-$(hydrogen sulfate ion)

$HS^- +H^+\rightarrow H_2S$(hydrogen sulfide)

Methanogenic bacterium produce methane with CO_2, H_2O, etc.

$4H_2+CO_2\rightarrow CH_4$(methane)$+2H_2O$

- Methanic bacterium seem not so much in salt water
- Methanogenic bacterium predominate in waters with little SO_4^{2-}(sulfate ion)
- Energy source of methanogenic bacterium is hydrogen produced through the decomposition of organic substance by anoxia bacterium.

Occurrence of Bubbles

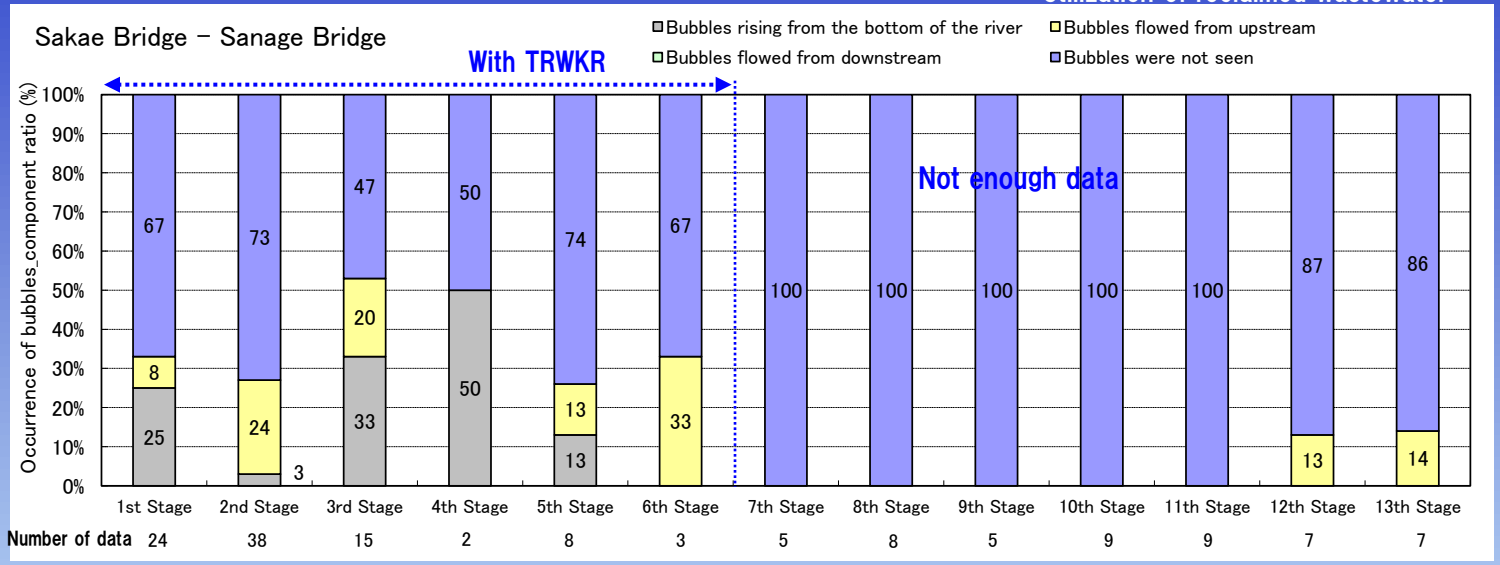
With TRWKR

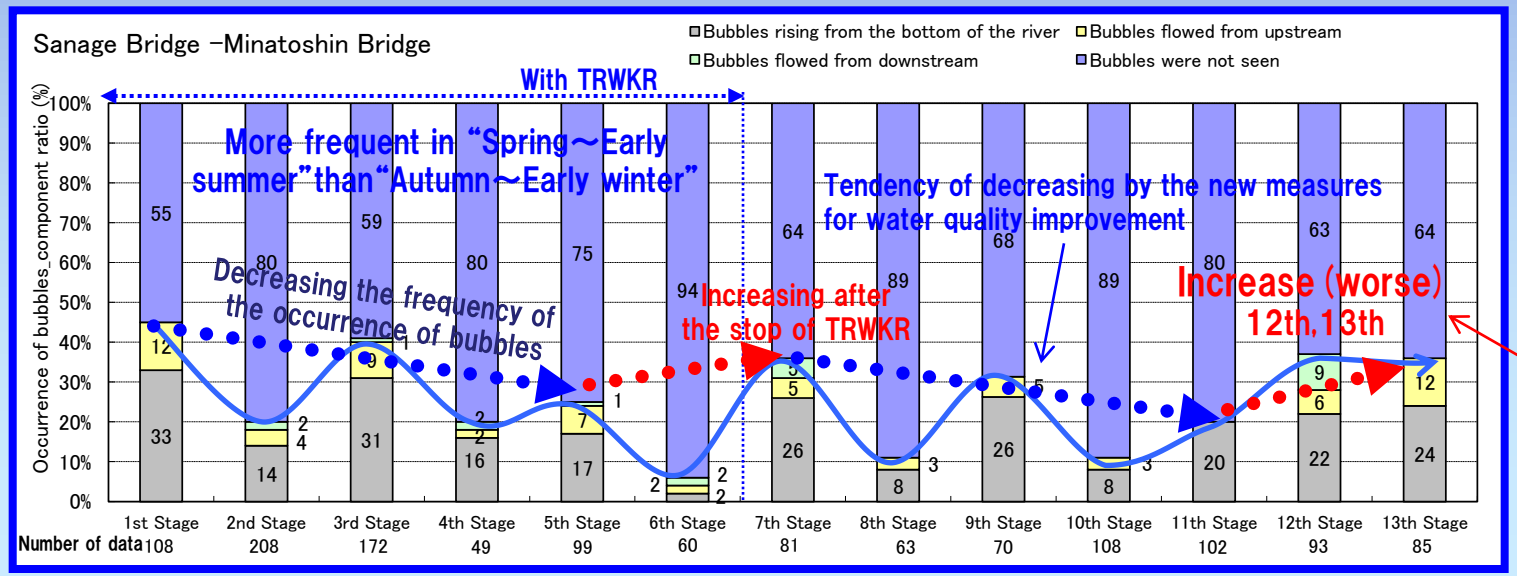
Introduction of advanced water treatment at Meijo Water Treatment Center

In service of Horikawa Ugan Rain-water Reservoir for pollution control

Utilization of reclaimed wastewater

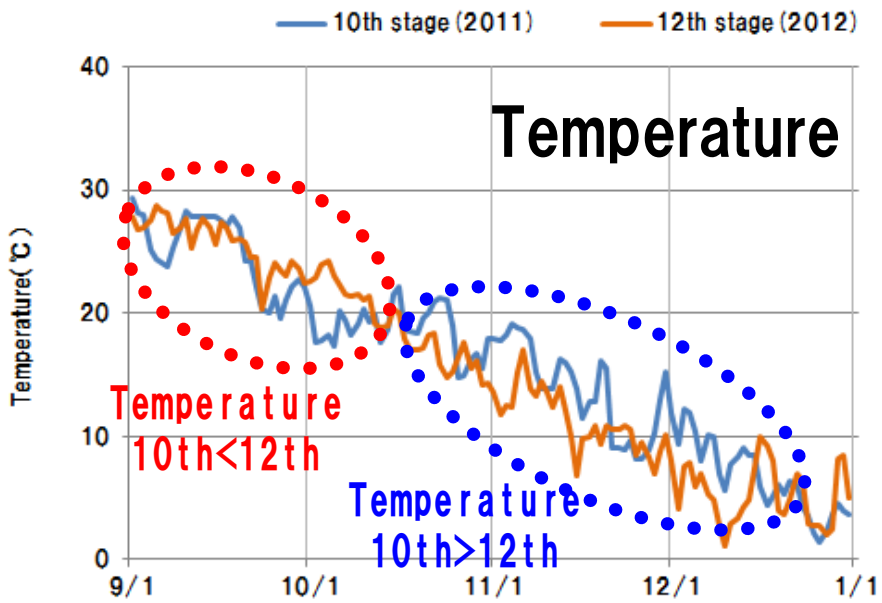
1st-6th stage : With TRWKR
No rain on the day and the previous day
7th-13th stage: No TRWKR
No rain on the day and the previous day





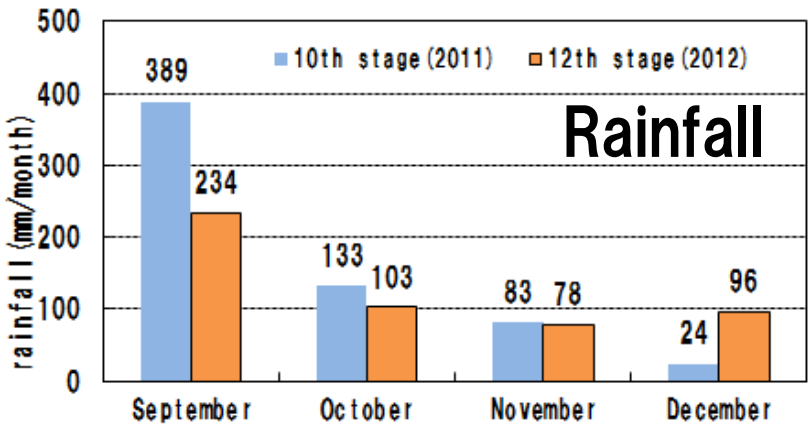
Sludge at the river bed was not at good condition because of high temperature.

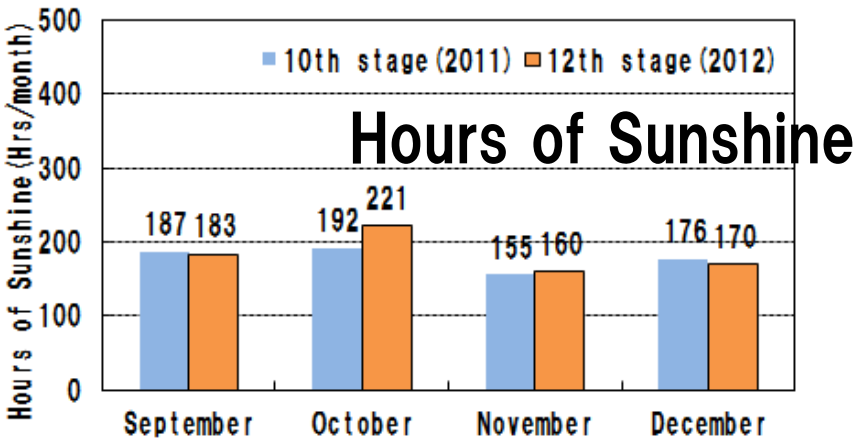
（Reference） Weather Condition Autumn～Early Winter
Comparison between 10th and 12th stages



Why did bubbles increase in the 12th stage?

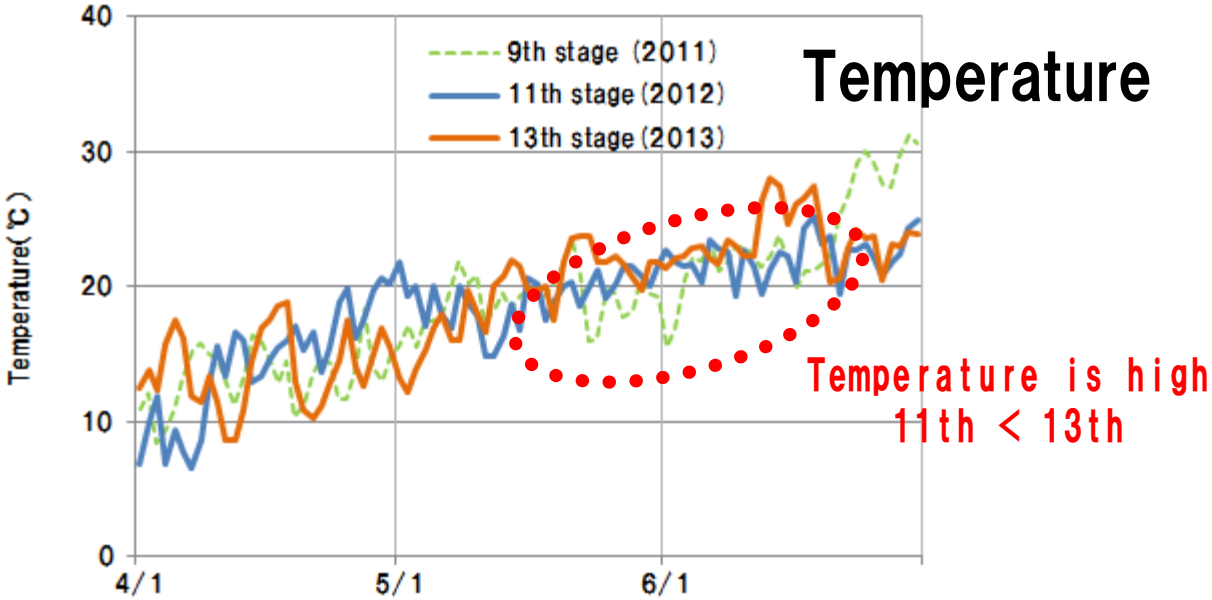
⇒ It is considered that it was because sludge was easily produced at the river bed in high temperature in Sep. and Oct. 2012.

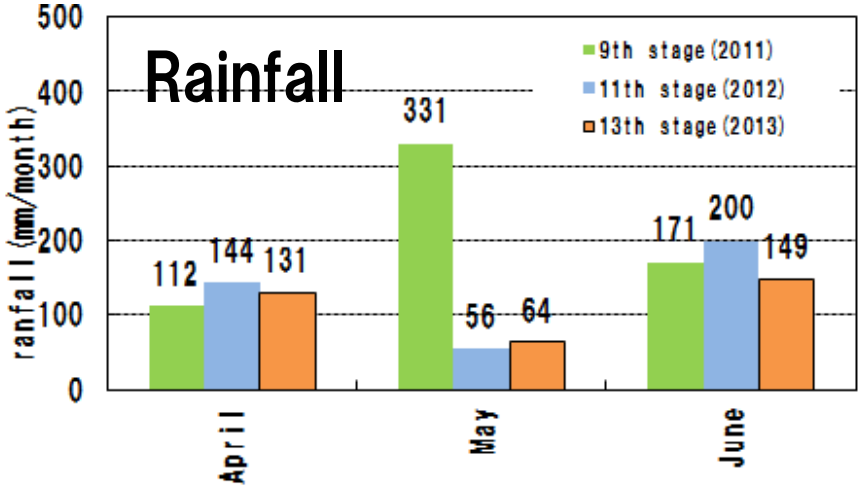


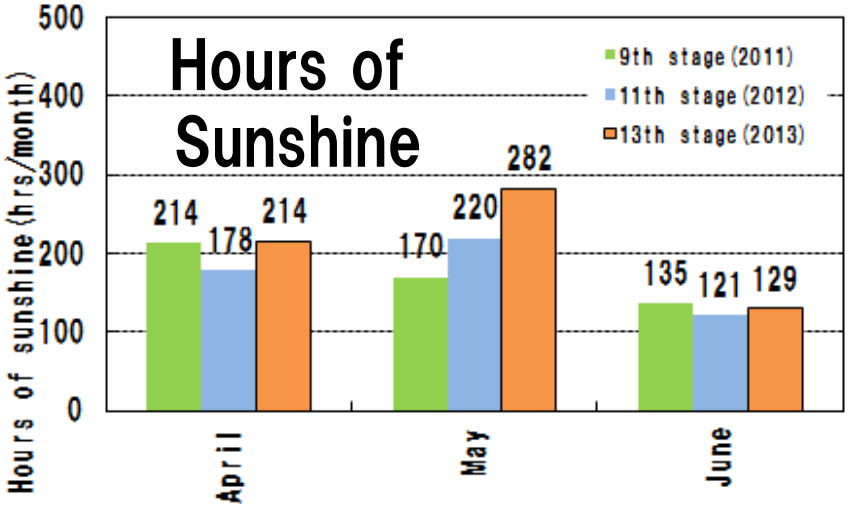


Ref.:The Report of the 11th stage of HSC meeting

（Reference） Weather Condition　Spring～Early Summer
Comparison between 11th and 13th stages



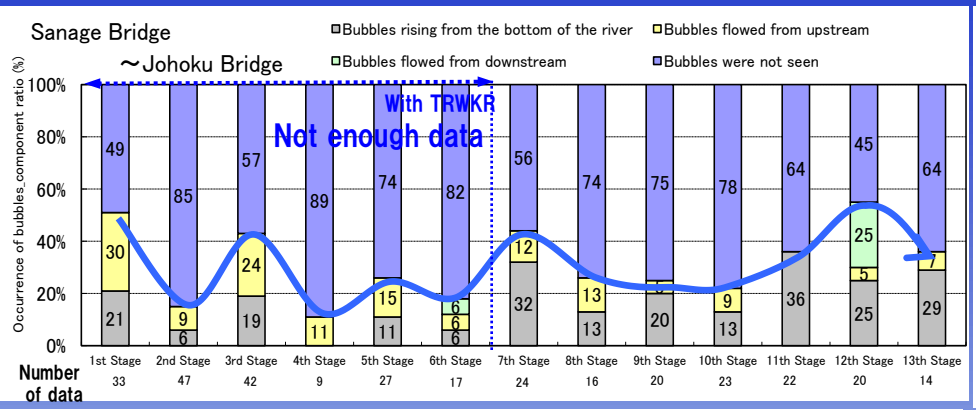


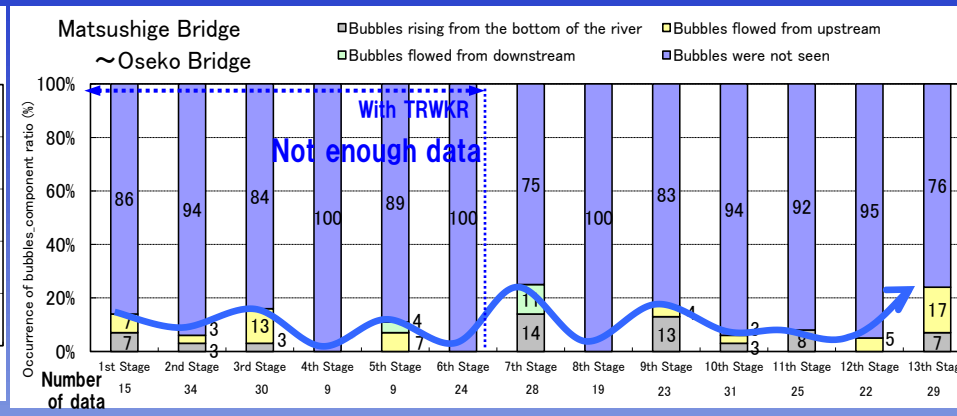


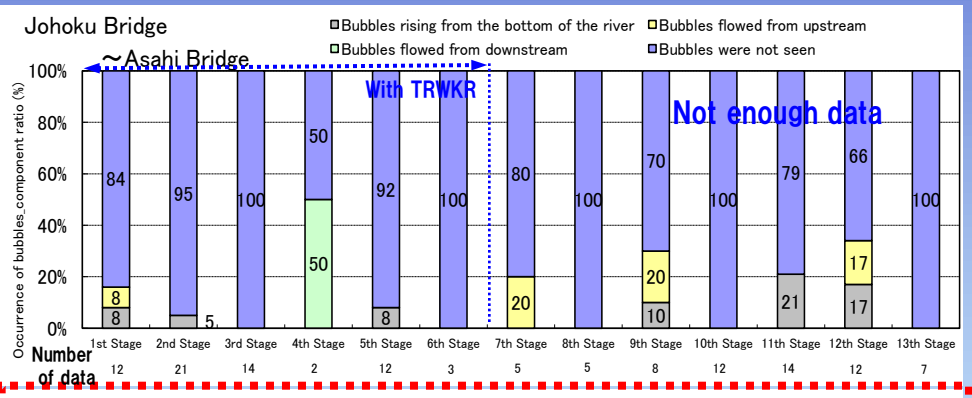
Ref.:The Report of the 11th stage of HSC meeting

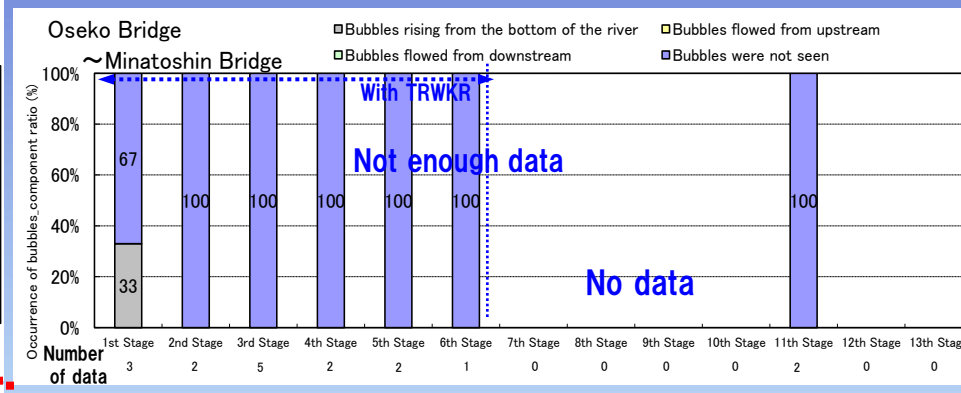
Occurrence of Bubbles
(Sanage Bridge – Minatoshin Bridge, each section)

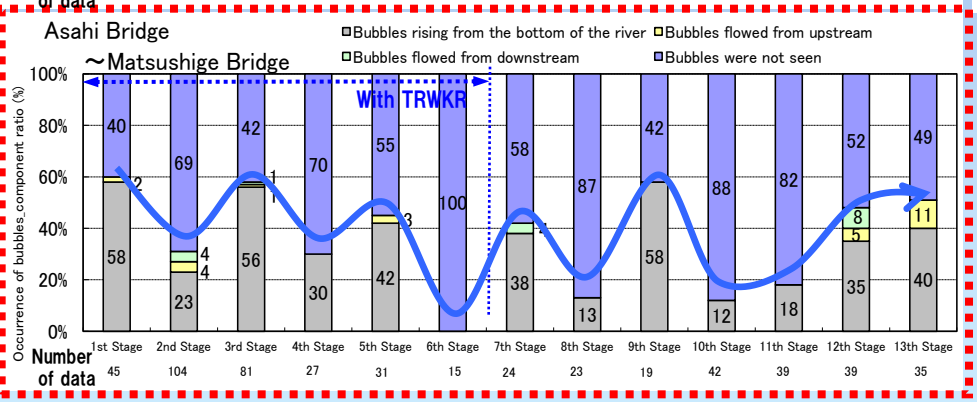
1st ～ 6th stage : With TRWKR
No rain on the day and the previous day
7th ～ 12th stage : NO TRWKR
No rain on the day and the previous day











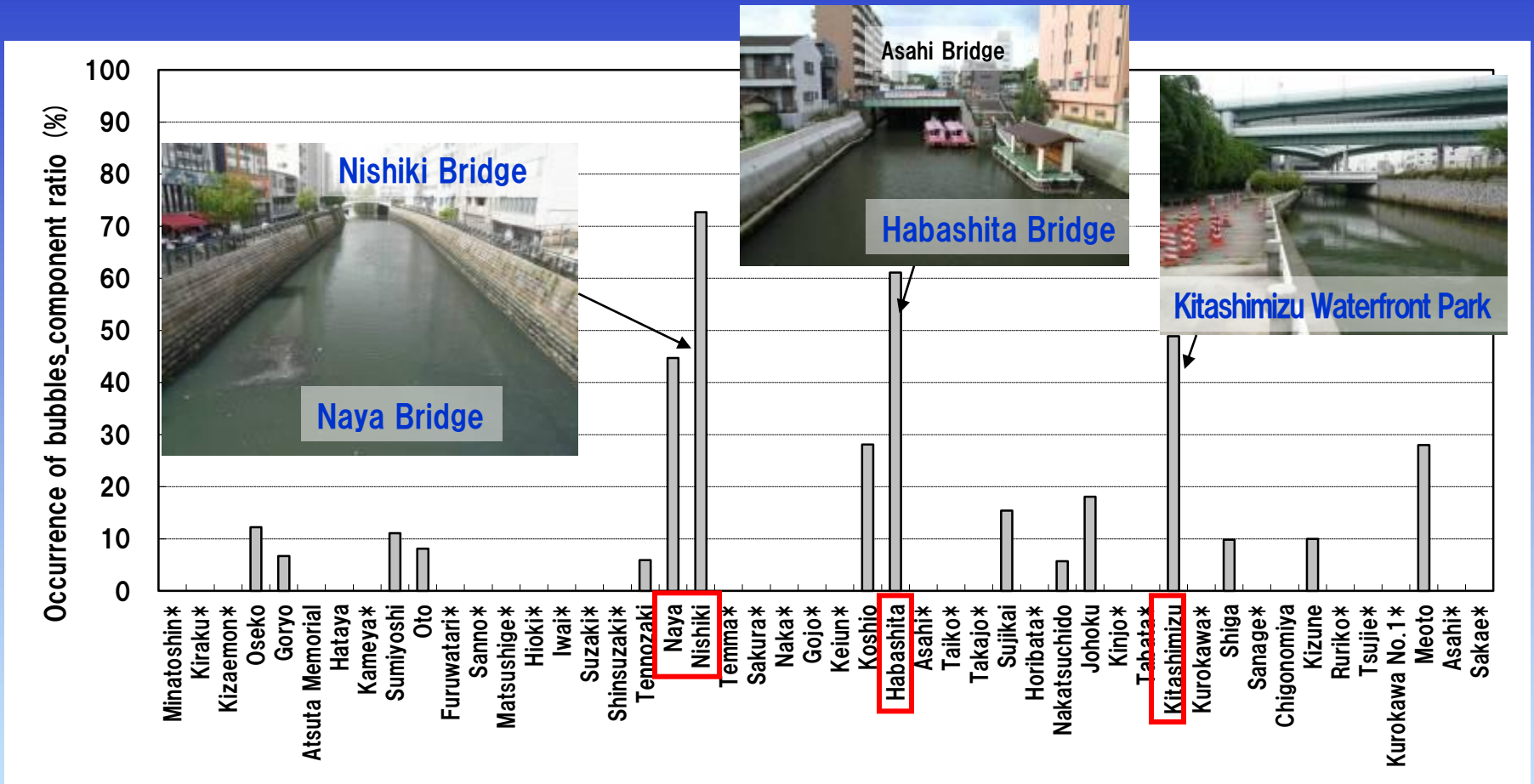
■ In which section are there many bubbles rising from the bottom of the river?

Ratio of "the bubbles rising from the bottom of the river" between Asahi Bridge and Matsushige Bridge is higher than other sections.

There are many bubbles rising from the bottom or the river between Asahi Bridge and Matsushige Bridge

Difference of “bubbles flowed from the bottom of the river” from upstream to downstream•••Spring～Early Summer

1st, 3rd, 5th, 7th, 9th, 11th, 13th stages : No rain



*:10 or less times of investigation

Occurrence of bubbles_component ratio (%)
=Days when bubbles flow from the bottom of the river／All investigation Days×100

There were many “bubbles flowed from the bottom of the river” near Kitashimizu Bridge, Habashita Bridge, Nishiki Bridge, and Naya Bridge in “Spring ～ Early Summer” season.

5.Smell

Occurrence of Smell

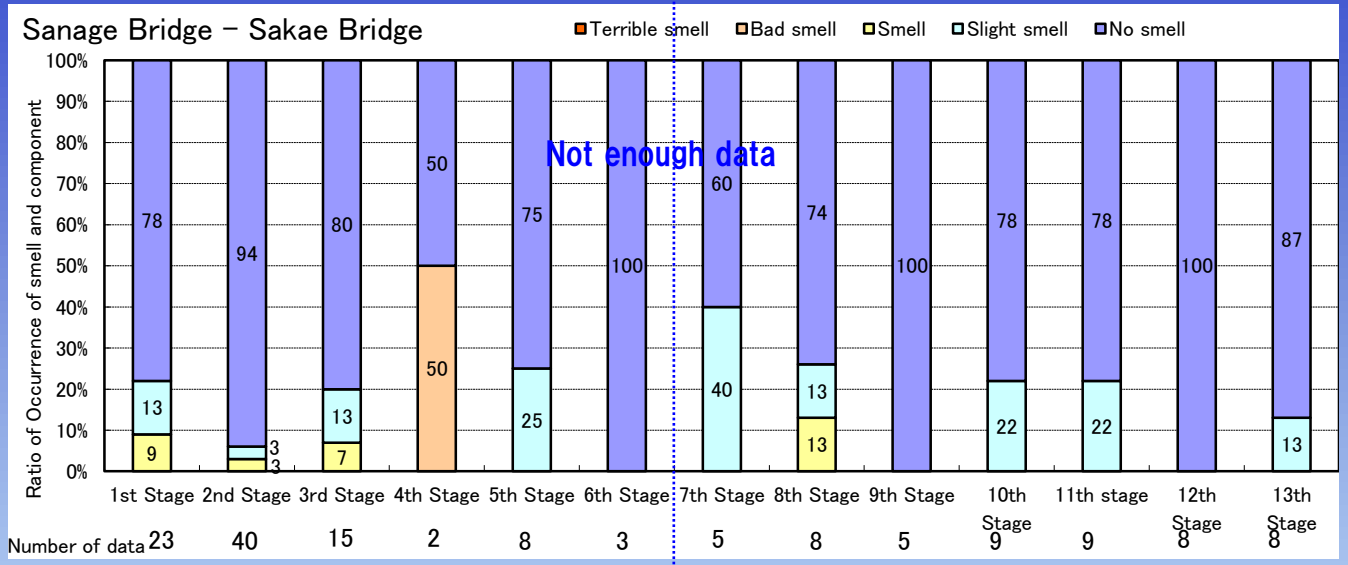
1st～6th stage :TRWKR
No rain on the day and the previous day
7th～13th stage:No TRWKR
No rain on the day and the previous day

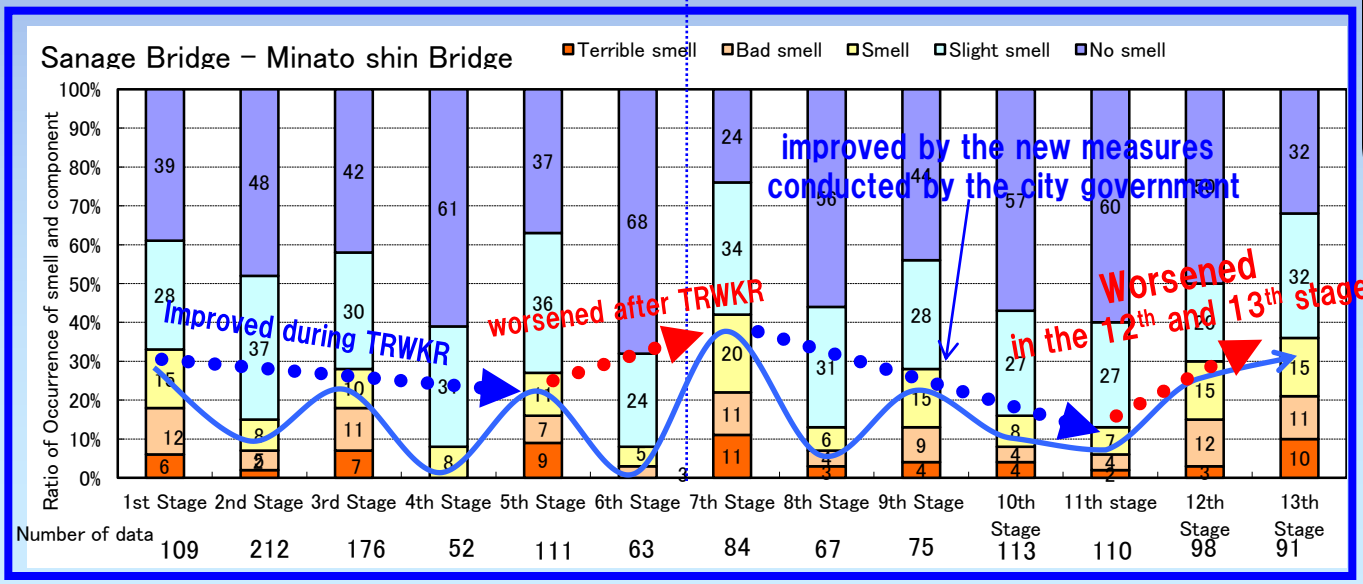
Reclaimed wastewater

Horikawa-Ugan Rainwater Reservoir

TRWKR

Advanced treatment at Meijo Wastewater Treatment Center





■ Change of Smell

→"Autumn – Winter" is better than "Spring – Summer"

It got better during TRWKR. Although smell worsened in the 7th stage, just after the termination of TRWKR, it is changing better after that. We think that measures conducted by the city government worked.

In the 12th and 13th stages the average temperature was high and it made sludge worse and Horikawa River smell bad.

(see 12th report)

Occurrence of Smell

Ratio of Occurrence of smell and component (%)

1st～6th stage :TRWKR
No rain on the day and the previous day
7th～13th stage:No TRWKR
No rain on the day and the previous day

TRWKR

Sanage Bridge – Johoku Bridge

Terrible smell / Bad smell / Smell / Slight smell / No smell

Number of data: 1st Stage 33, 2nd Stage 47, 3rd Stage 42, 4th Stage 11, 5th Stage 30, 6th Stage 17, 7th Stage 24, 8th Stage 16, 9th Stage 20, 10th Stage 25, 11th Stage 26, 12th Stage 26, 13th Stage 35

TRWKR

Matsushige Bridge – Ooseko Bridge

Not enough data

Terrible smell / Bad smell / Smell / Slight smell / No smell

Number of data: 1st Stage 15, 2nd Stage 35, 3rd Stage 33, 4th Stage 9, 5th Stage 29, 6th Stage 25, 7th Stage 30, 8th Stage 21, 9th Stage 24, 10th Stage 35, 11th Stage 26, 12th Stage 26, 13th Stage 35

Johoku Bridge – Asahi Bridge

Not enough data

Not enough data

Number of data: 1st Stage 12, 2nd Stage 21, 3rd Stage 14, 4th Stage 2, 5th Stage 13, 6th Stage 4, 7th Stage 5, 8th Stage 5, 9th Stage 9, 10th Stage 2, 11th Stage 4, 12th Stage 2, 13th Stage 7

Ooseko Bridge – Minato shin Bridge

Not enough data

No data

Number of data: 1st Stage 3, 2nd Stage 2, 3rd Stage 5, 4th Stage 2, 5th Stage 2, 6th Stage 1, 7th Stage 0, 8th Stage 0, 9th Stage 0, 10th Stage 0, 11th Stage 2, 12th Stage 0, 13th Stage 0

Asahi Bridge – Matsushige Bridge

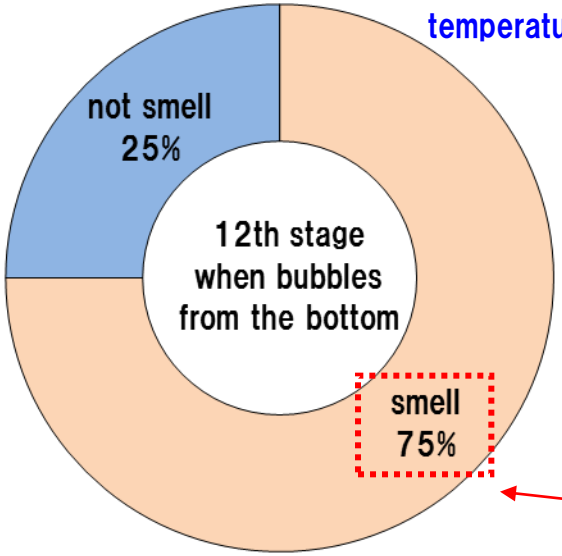
Number of data: 1st Stage 46, 2nd Stage 107, 3rd Stage 82, 4th Stage 28, 5th Stage 37, 6th Stage 16, 7th Stage 25, 8th Stage 25, 9th Stage 22, 10th Stage 43, 11th Stage 43, 12th Stage 40, 13th Stage 35

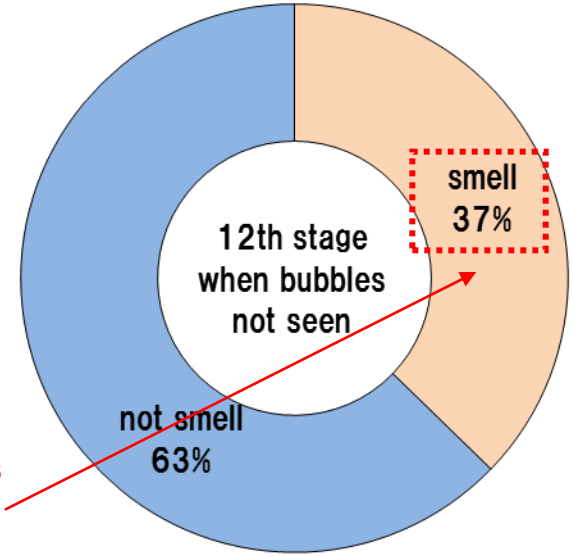
■ Places where smell often
→The ratio of "smell" – "terribly smell" is higher between Asahi Bridge to Ooseko Bridge.

Relation between Bubbles and Smell 13th stage

No rain on the day
and the previous day

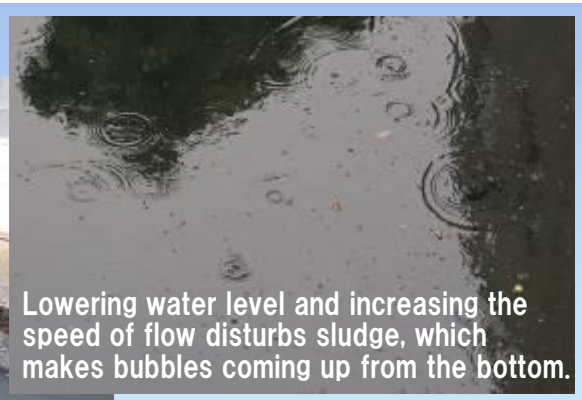
Both bubbles and smell are related to sludge, water level, speed of flow, and weather like temperature, direction of wind.





Horikawa River smells more frequently when bubbles are seen.

near Naya Bridge 23th July 2013


Lowering water level and increasing the speed of flow disturbs sludge, which makes bubbles coming up from the bottom.

■ Relation between Bubbles and Smell
When bubbles appere Horikawa River smells 1.5 times more often than when not.
Bubbles are coming up from the bottom when water level is low.

In the previous reports, we found out that bubbles from the riverbed are also influenced by the tide which changes water level and the speed of flow.

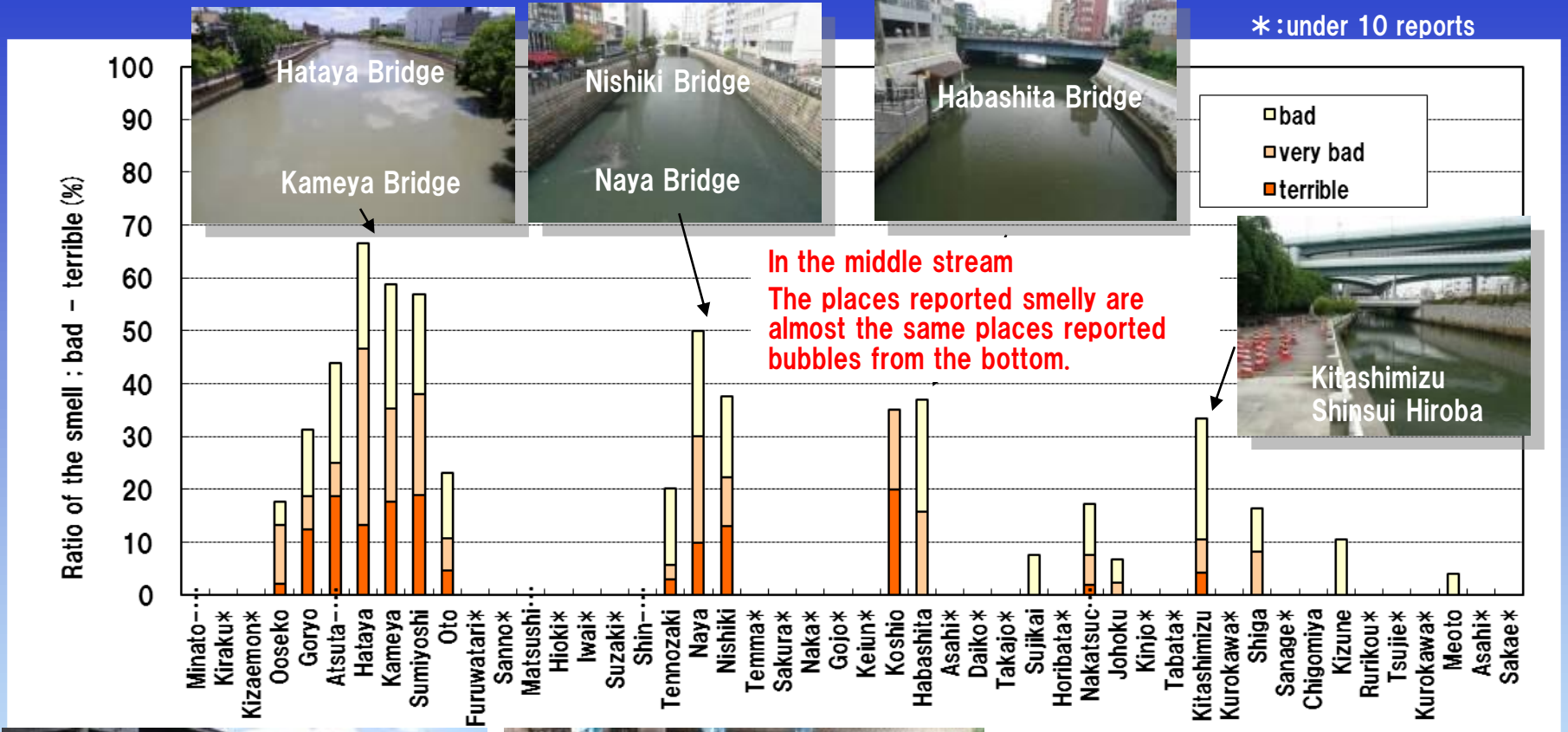
- Lowering water level decreases water pressure.
- Increasing the speed of flow disturbs sludge.

Change of the smell along the river•••Spring - Summer

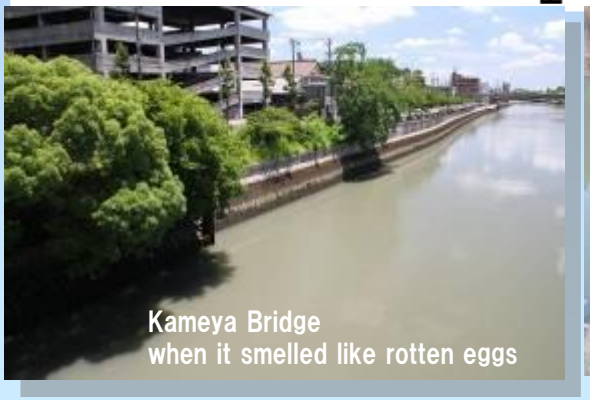
Ratio of the smell ; bad-terrible(%)
= number of days reported bad-terrible
／number of all days reported ×100

Ratio of the smell ; bad-terrible
1st•3rd•5th•7th•9th•11th•13th stages　No rain both TRWKR and no TRWKR

＊:under 10 reports



In the middle stream
The places reported smelly are almost the same places reported bubbles from the bottom.



■ Report by the group of Nagoya Institute of Technology【May 26th 2009】

River water was transparent when water level was high.　But water turned black suddenly and SS rose up quickly when water level started to get down.　Black water came up from the sludge and the smell changed terrible.

Kind of Smell

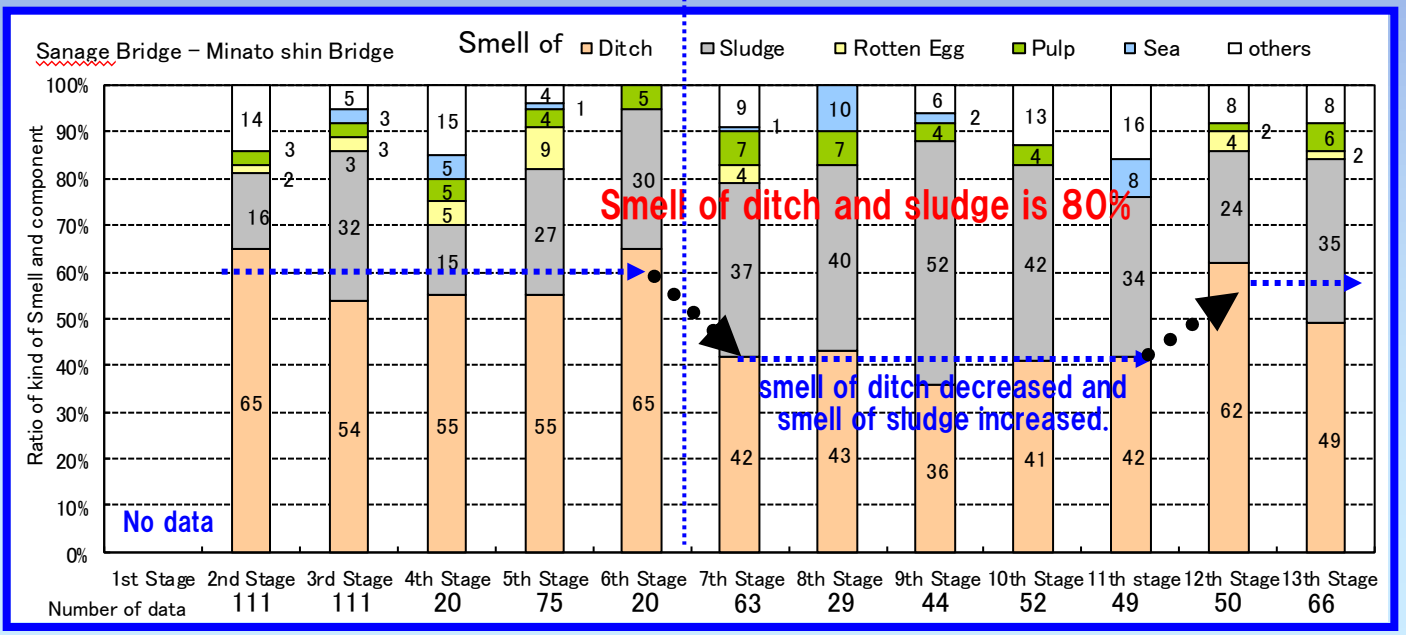
Reclaimed wastewater

Horikawa-Ugan Rainwater Reservoir

TRWKR

Advanced treatment at Meijo Wastewater Treatment Center

1st～6th stage :TRWKR
No rain on the day and the previous day
7th～13th stage:No TRWKR
No rain on the day and the previous day



■ Occurrence of Smell

→ Smell of "ditch" and "sludge" is 80% of all reports.

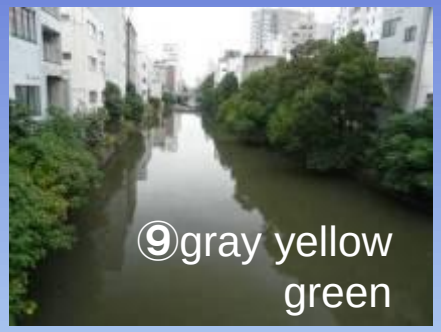
■ Change of the kind of Smell

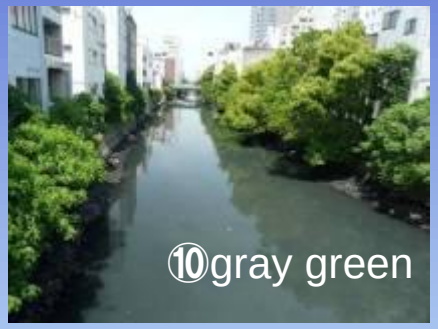
→After TRWKR, smell of "ditch" decreased and smell of sludge increased.
But this turned opposite in the 12th and 13th stage.

・not showing data of 0 %

6.Colors

Photos taken at Nishiki Bridge



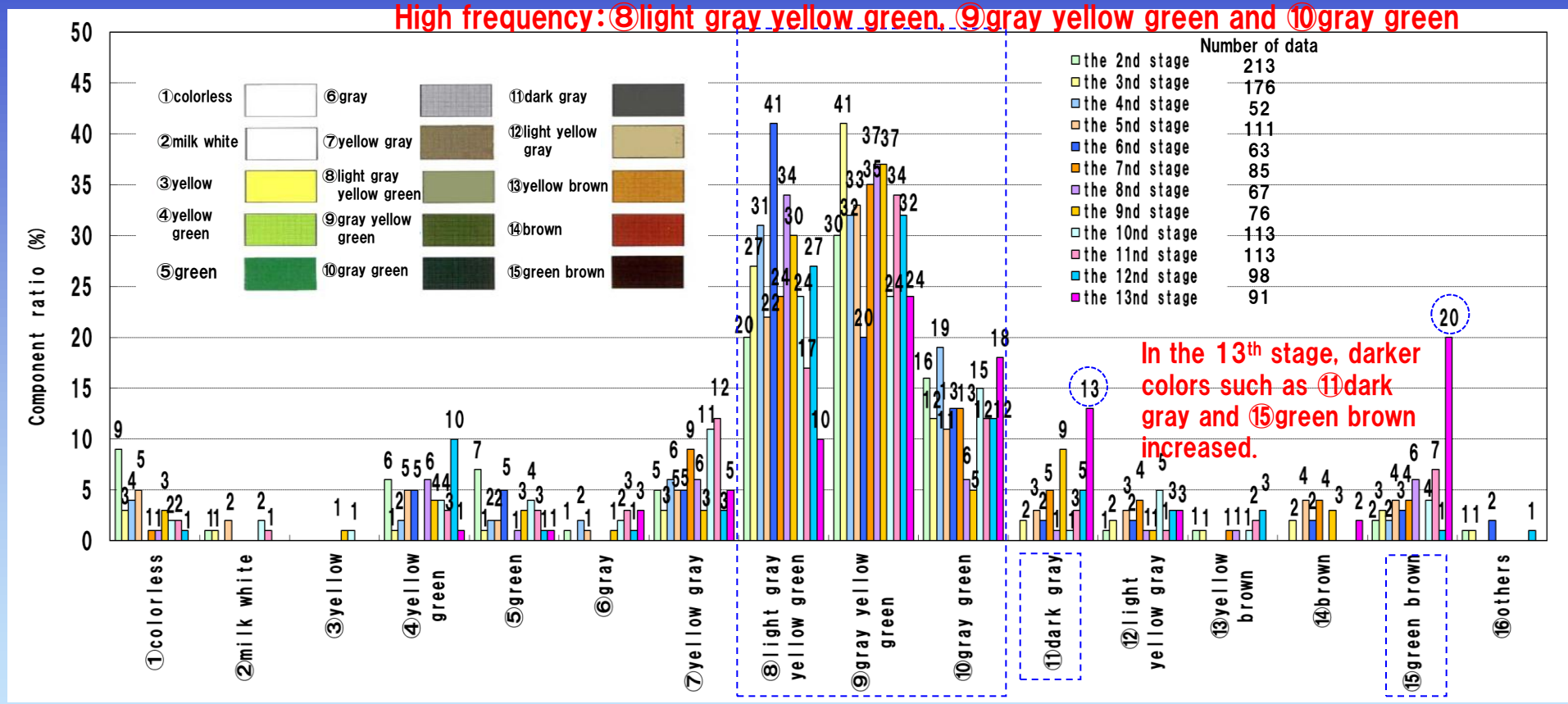


Component ratio of colors

Sanage Bridge～Minatoshin Bridge

2nd ～6th stage：With TRWKR
No rain on the day and the previous day
7th ～13th stage：With TRWKR
No rain on the day and the previous day

The “colors” has been on the survey list since the 2nd stage



■What colors were seen frequently?

→From the 1st stage to the 13th stage, ⑧light gray yellow green, ⑨gray yellow green and ⑩gray green appeared frequently.

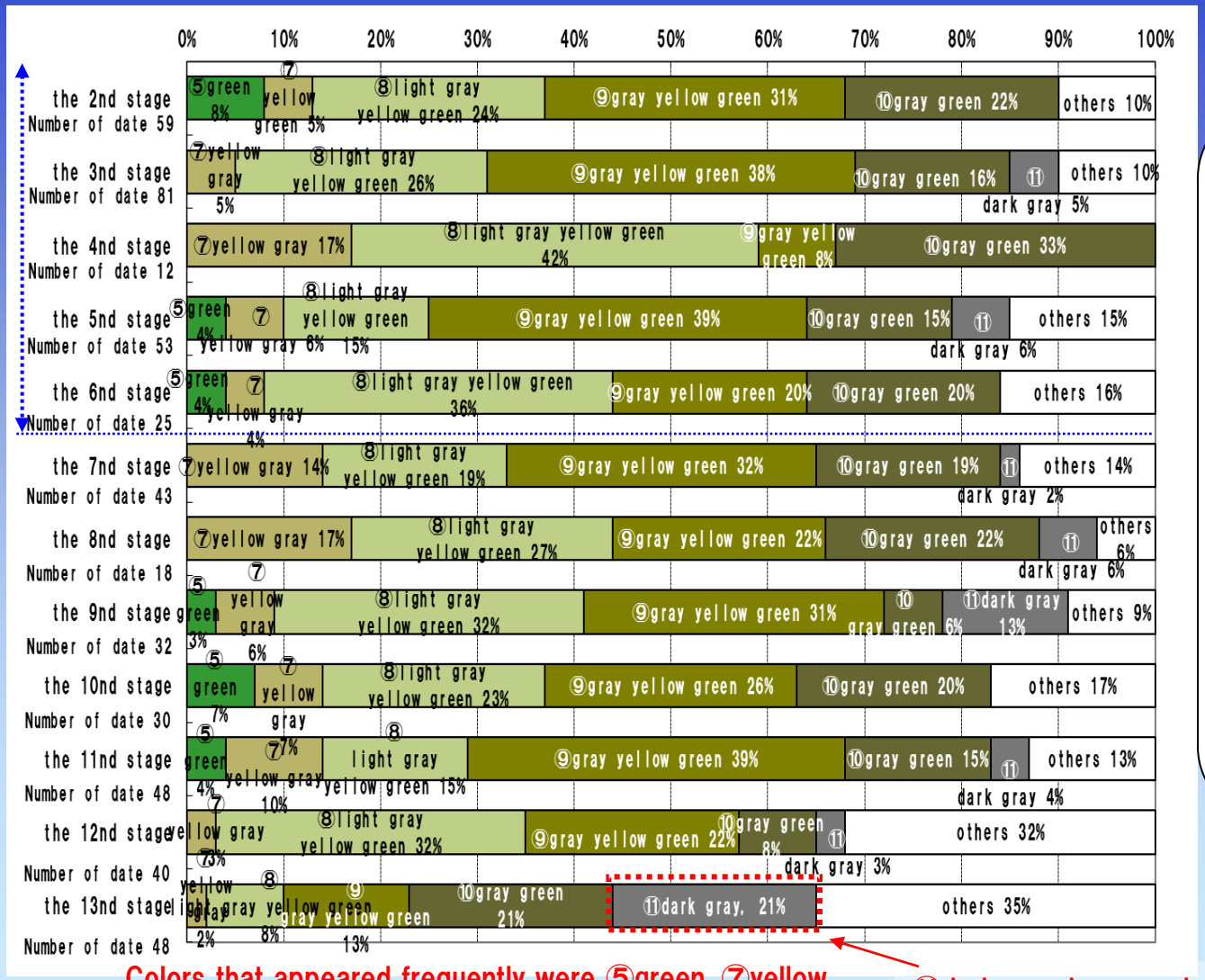
In the13th stage, frequency of darker colors such as ⑪dark gray and ⑮green brown increased.

Colors mainly seen when impression of Water clearness was “slightly dirty” or “dirty”

2nd ～6th stage：With TRWKR
No rain on the day
and the previous day

7th～13th stage：With TRWKR
No rain on the day
and the previous day

Component ratio of colors　Sanage Bridge～Minatoshin Bridge



Colors that appeared frequently were ⑤green, ⑦yellow gray, ⑧light gray yellow green, ⑨gray yellow green, ⑩ gray green and ⑪dark gray.

⑪dark gray increased.
It is considered that existence of sludge affected the impression of “slightly dirty” or “dirty”.

■ What colors were seen when the impression about clearness was “slightly dirty” or “dirty”?

→ Colors seen frequently were ⑤green, ⑦yellow gray, ⑧light gray yellow green, ⑨gray yellow green, ⑩gray green and ⑪dark gray.

When the color was ⑧light gray yellow green, sometimes it smelled like a rotten egg. It may occur with blue tide.

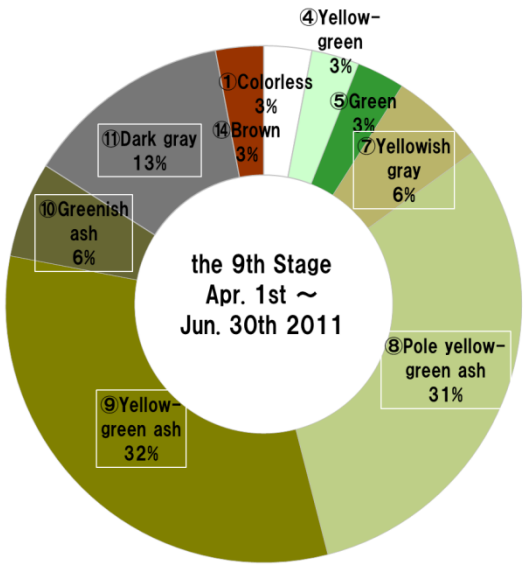
⑪dark gray appeared when sludge raised up.

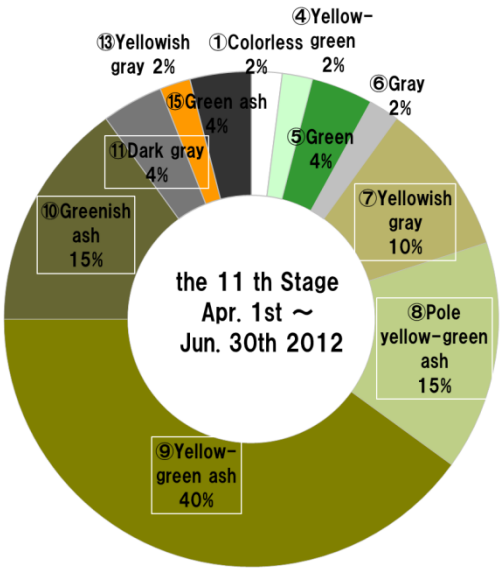
This color was seen in the stages from spring to early summer. In the 13th stage, ⑪ dark gray appeared frequently. The existence of sludge might affect the impression of “slightly dirty” or “dirty”.

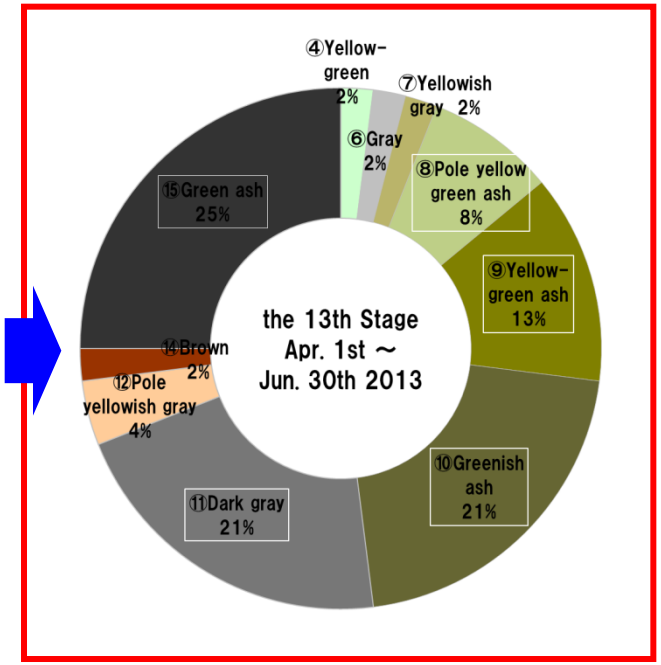
What colors were mainly seen when impression of cleanness was “slightly dirty” or “dirty” ?

No rain on the day and the previous day

Component ratio of colors (Sanage Bridge – Minatoshin Bridge) Comparison among 9th Stage, 11th Stage and 13th Stage







On the 13th stage, darker colors like ⑪Dark gray and ⑮Green ash were increased.

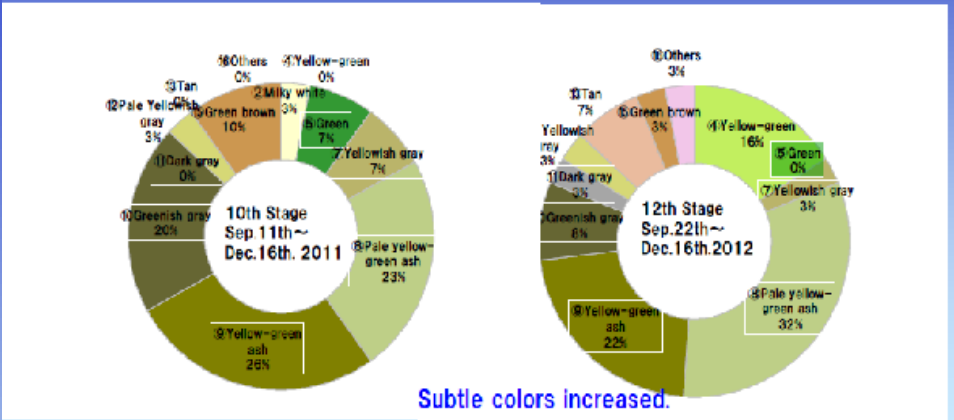
■ What colors were mainly seen when impression of cleanness was “slightly dirty” or “dirty” ?
(Comparison among 9th stage, 11th stage and 13th stage)
→ They were ⑦Yellowish gray, ⑧Pale yellow-green ash, ⑨Yellow-green ash, ⑩Greenish ash, ⑪Dark gray and ⑮Green ash.
On the 13th stage, darker colors like ⑪Dark gray and ⑮Green ash were increased.

(Reference) Source:The report of Horikawa Sen-nin Chosatai 12th conference

What colors were mainly seen
when impression of cleanness was "slightly dirty" or "dirty" ?

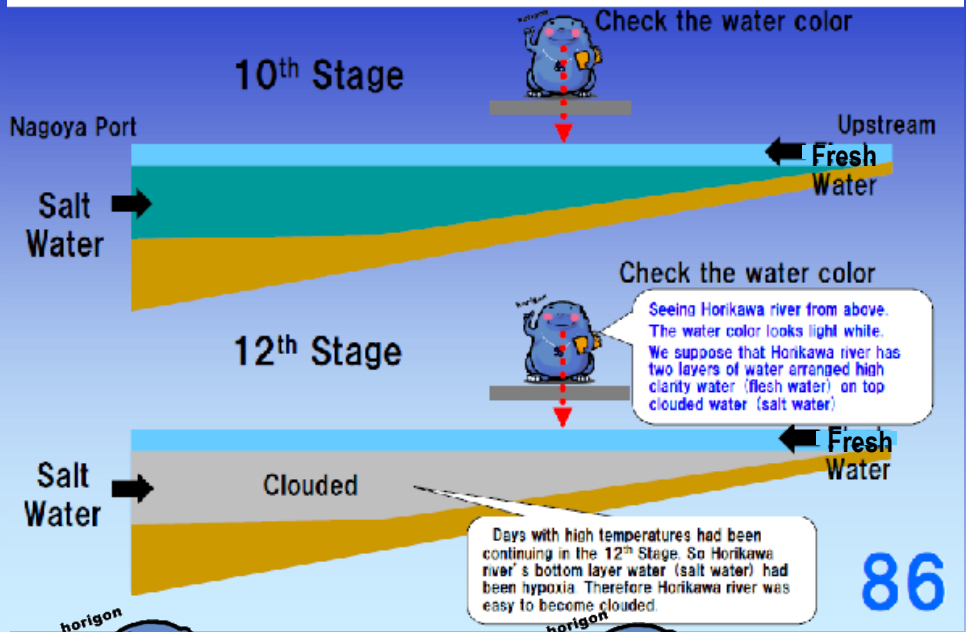
No rain on the day and the previous day

The component ratio of colors (Sanage Bridge – Minatoshin Bridge)
Comparison between the 10th Stage and the 12th Stage



84

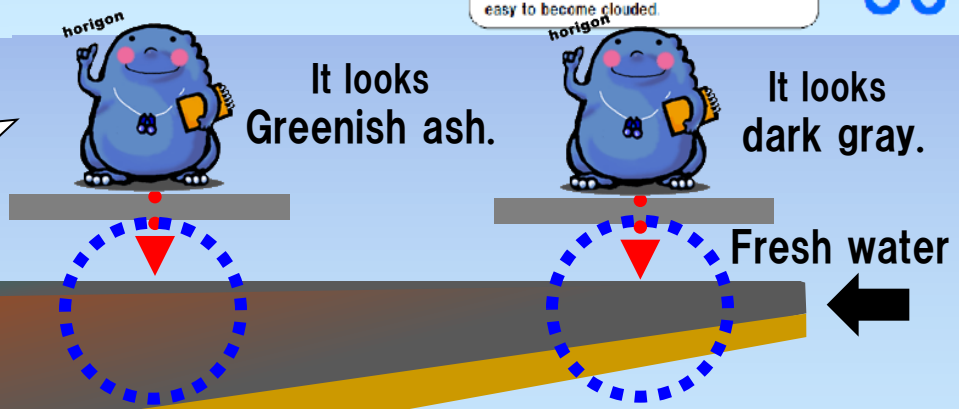
Why was the light color seen frequently in the 12th stage?

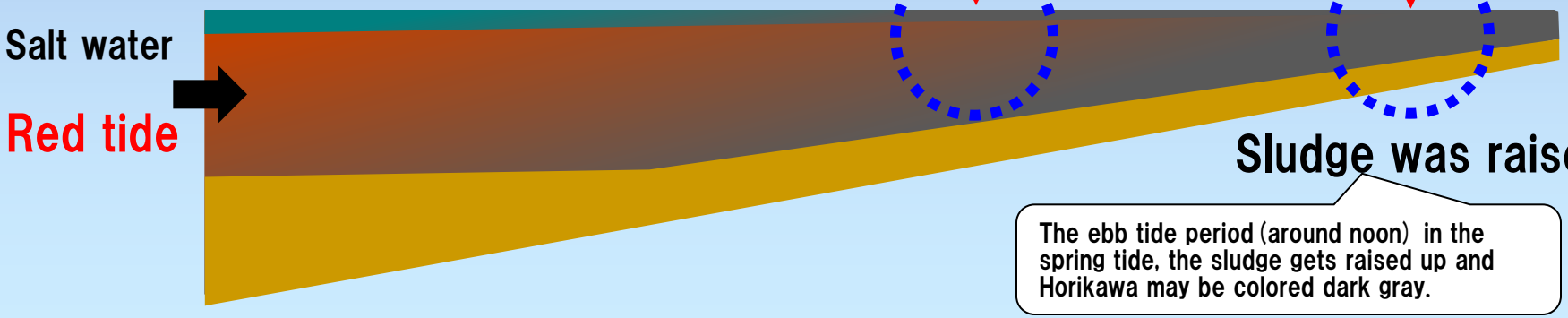


86

Case of 13th Stage

In the 13th stage, high temperatures, little rain and the long hours of sunshine caused red tide (at Nagoya port). Red tide could appear greenish ash color in certain place.





Sludge was raised up

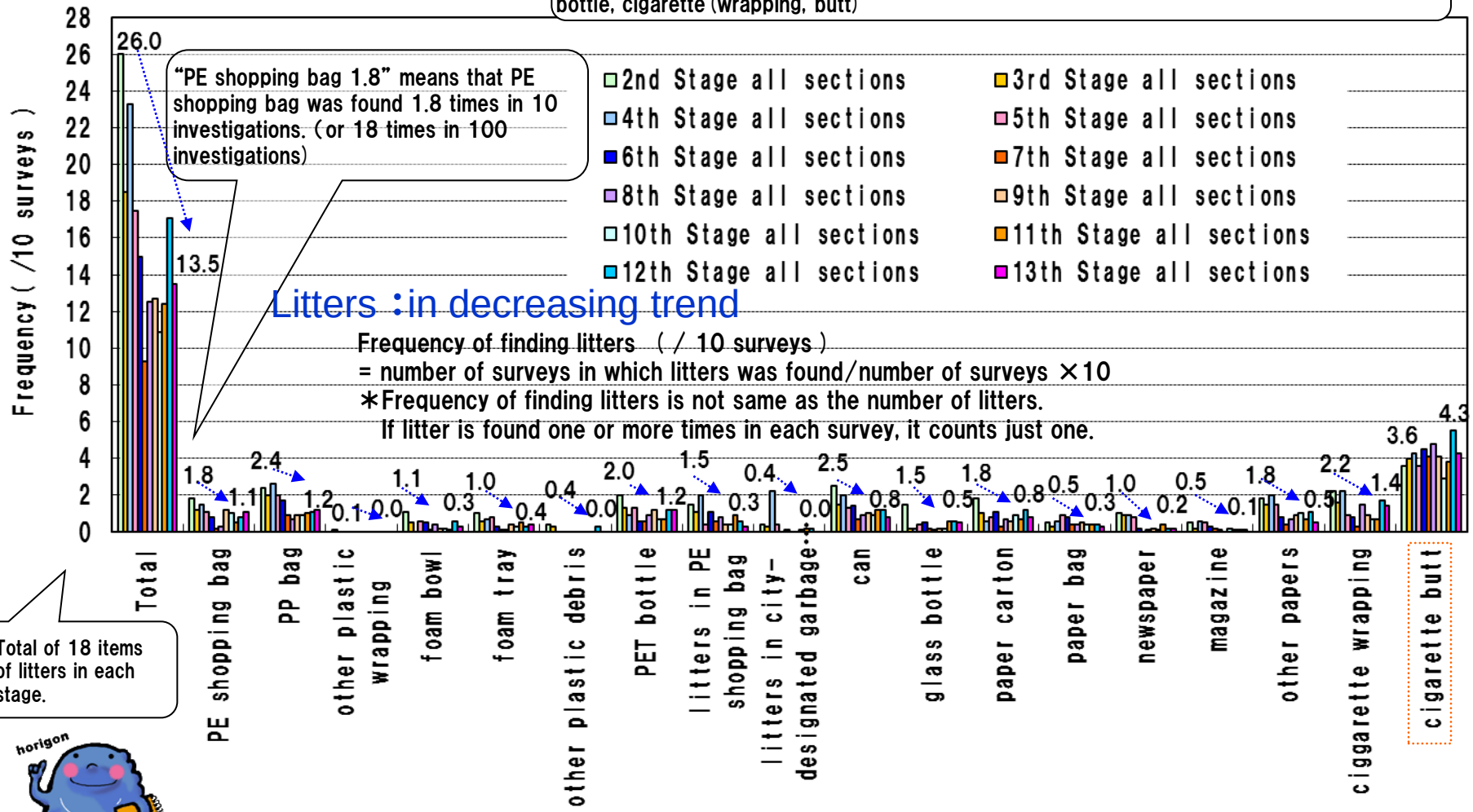
The ebb tide period (around noon) in the spring tide, the sludge gets raised up and Horikawa may be colored dark gray.

7.Litters

From 2nd to 6th stage :With TRWKR
No rain on the day and the previous day
From 2nd to 6th stage :With TRWKR
No rain on the day and the previous day

Frequency of finding Litters
(From 2nd～13th stage, all section)

■Litters component
Plastic wastes (PE shopping bag, PP bag, foam bowl, foam tray, PET bottle, etc.), can, glass bottle, cigarette (wrapping, butt)



"PE shopping bag 1.8" means that PE shopping bag was found 1.8 times in 10 investigations. (or 18 times in 100 investigations)

Litters :in decreasing trend

Frequency of finding litters (/ 10 surveys)
= number of surveys in which litters was found/number of surveys ×10
＊Frequency of finding litters is not same as the number of litters.
If litter is found one or more times in each survey, it counts just one.

Total of 18 items of litters in each stage.

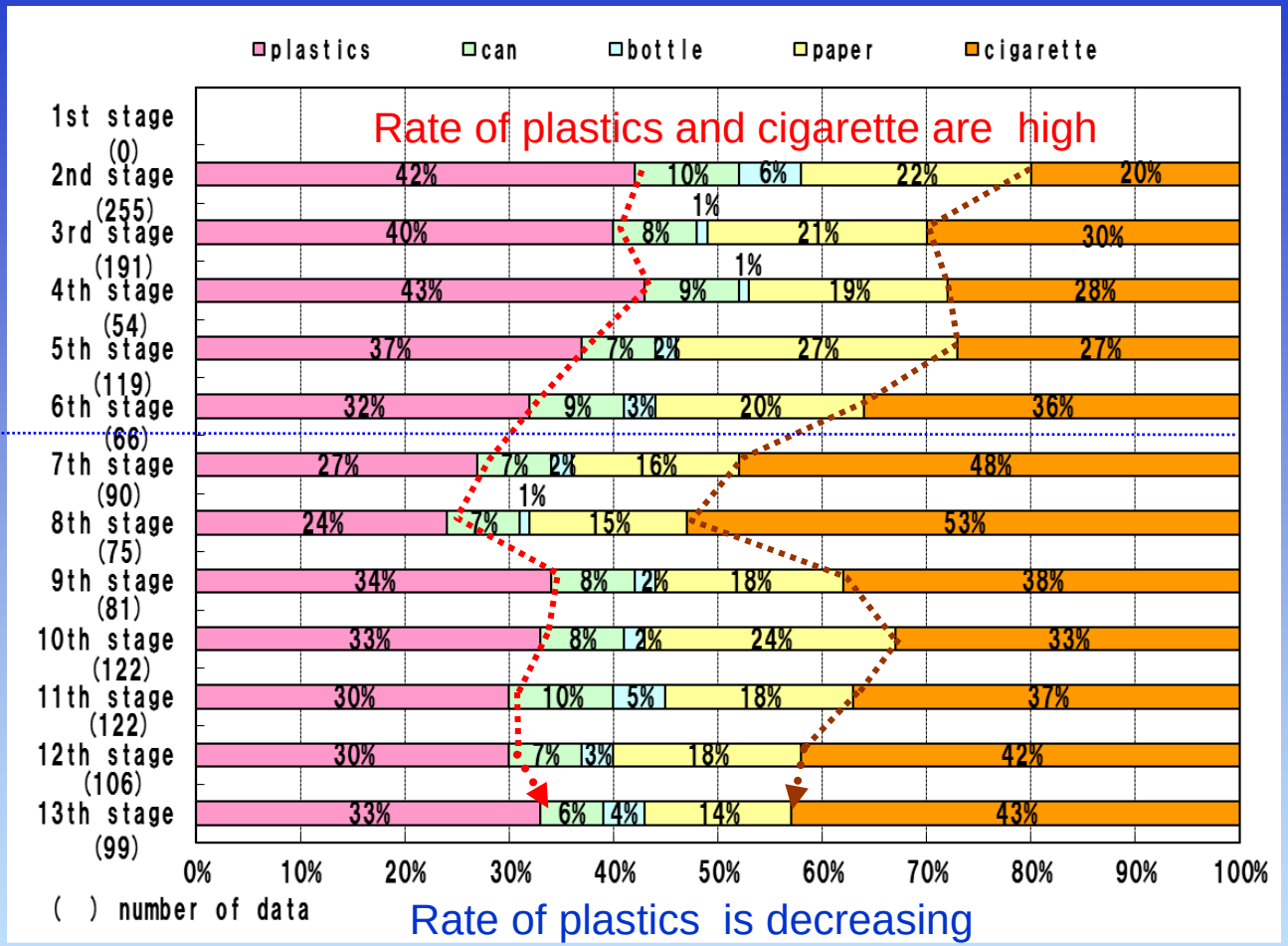
■What trend frequency of finding litters was?
Freqency of finding litters was in decreasing trend. Change of social environment, such as more active cleaning, charging of shopping bag fee and etc. may influence.
The most frequent littered item was cigarette butt.

Litters on Riverside Ways

（2nd～13th stage, each section）

From 2nd to 6th stage :With TRWKR
No rain on the day and the previous day
From 7th to 13th stage :No TRWKR
No rain on the day and the previous day

■Litters component
Plastic wastes (PE shopping bag, PP bag, foam bowl, foam tray, PET bottle, etc.), can, glass bottle,
cigarette (wrapping, butt)



Component ratio (%) =the number of sighting each kind of litter／ the number of sighting all kind of litter ×100
Litter does not include leaves, branches and grass.
The number of sighting is not the number of litters. We count one, even if one litter is sighted in the investigation.

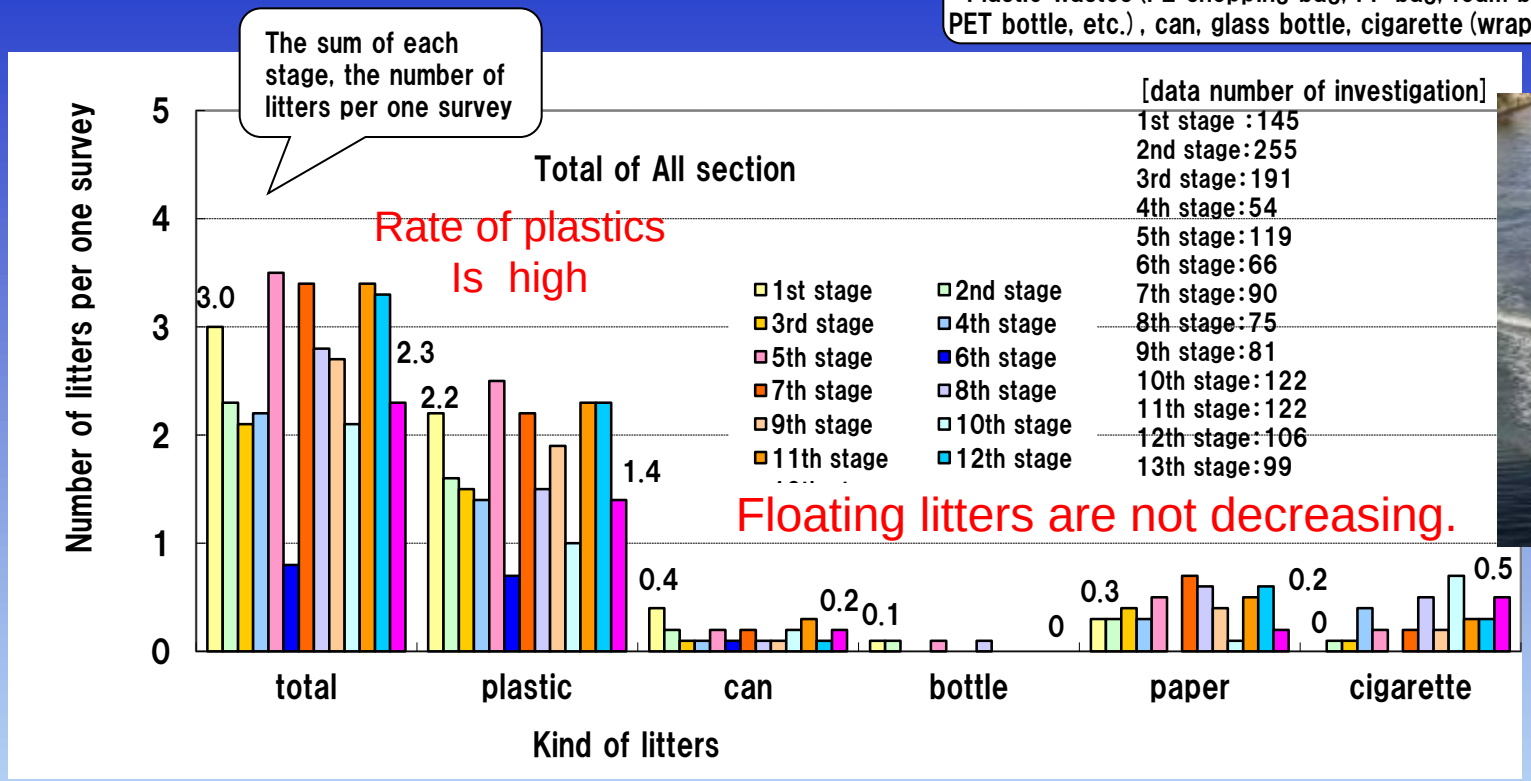
■What kind of litters on the riverside ways was sighted frequently？
→The rate of plastics and cigarette are high.
The rate of plastics is decreasing.

Change in Floating Litters

From 1st to 6th stage :With TRWKR
No rain on the day and the previous day

From 7th to 13th stage :No TRWKR
No rain on the day and the previous day

■Litters component
Plastic wastes (PE shopping bag, PP bag, foam bowl, foam tray, PET bottle, etc.), can, glass bottle, cigarette (wrapping, butt)



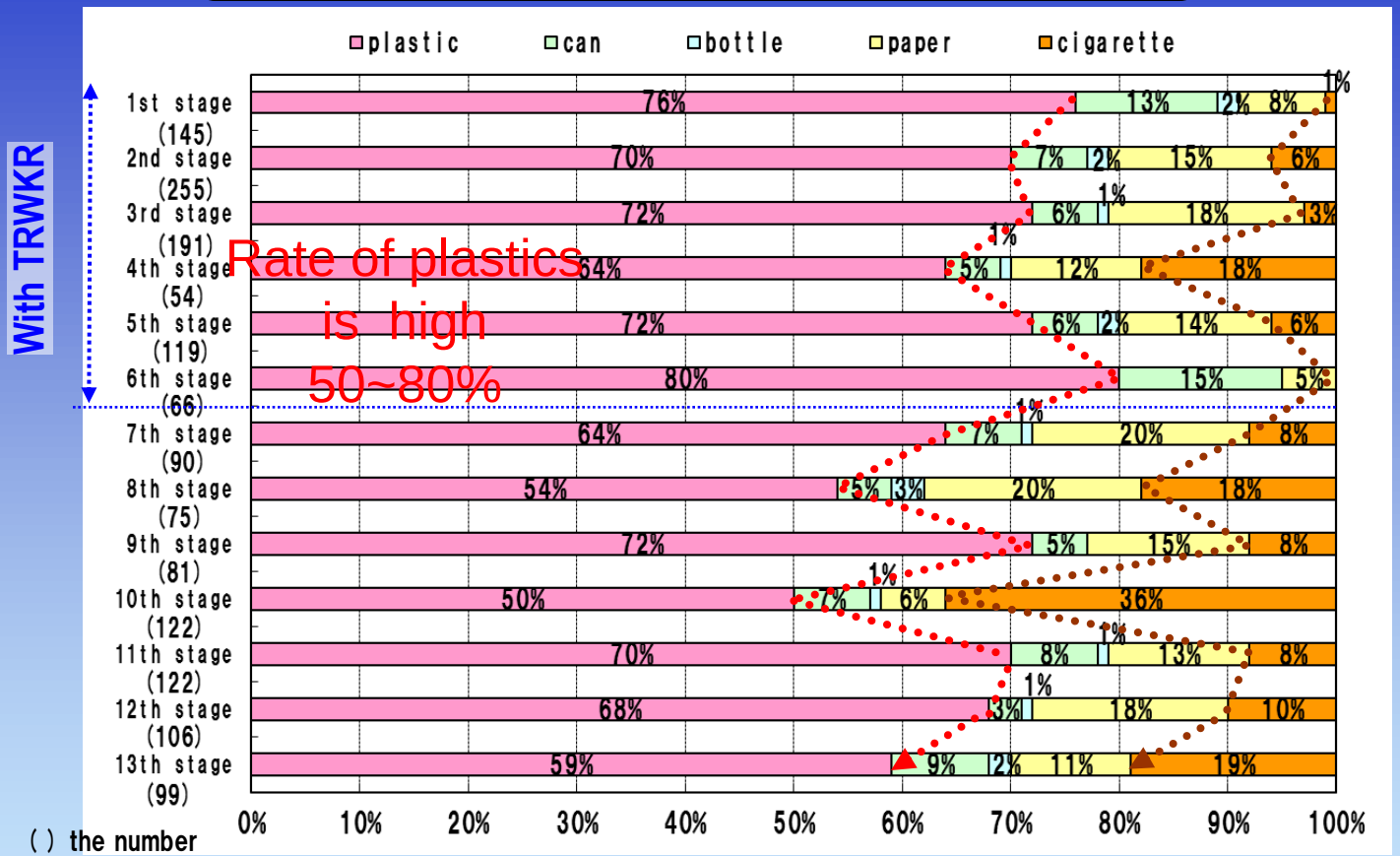
Note: the number of litters per one survey= the number of each litters found in all surveys/ the number of surveys
*the number of litters is the number of litters found through all surveys
"if some kind of litters was found "countless (=***) "in some survey, it counts"10", the maximum number in one survey substituted for the number of "countless"

■What trend the floating litters goes?
→ The litters on the riverside ways are decreasing. But the floating litters are not decreasing.
Cleanup Vessel run regularly, but the floating litters might come and go with the high and low tide in Horikawa liver for many hours. The rate of **plastics** is high.

Kind of floating Litters

From 1st to 6th stage :With TRWKR
No rain on the day and the previous day
From 7th to 13th stage :No TRWKR
No rain on the day and the previous day

■Litters component
Plastic wastes (PE shopping bag, PP bag, foam bowl, foam tray, PET bottle, etc.), can, glass bottle, cigarette (wrapping, butt)



( ) the number of the data

Rate of litters (%) =the number of each kind of litters／ the number of all kind of litters ×100
the number does not include leaves, branches and grass
*the number of litters is the number of litters found through all surveys
"if some kind of litters were found "countless (=***)"in some survey,
it counts"10", the maximum number in one survey substituted for the number of "countless"

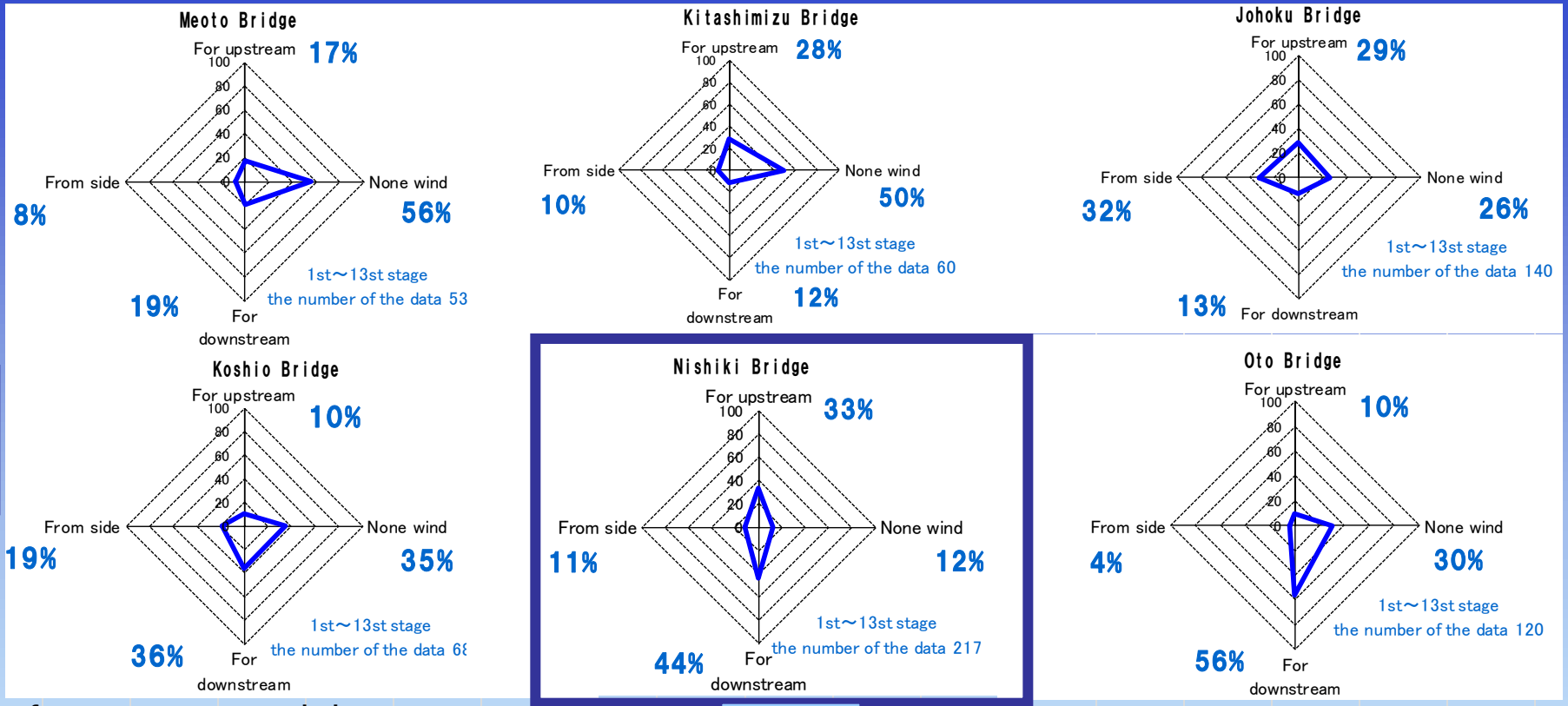
■What kind of floating litters were found flequently？
→ The rate of plastics is high, 50~80%

8. About winds

Direction of wind

Wind for upstream

Wind for side



Winds for upstream and downstream are more frequent than for side

Wind for downstream

■Direction of wind

We organized the data through all surveys (1st stage ~13th stage).

The winds for upstream and downstream are more frequent than the winds for side.

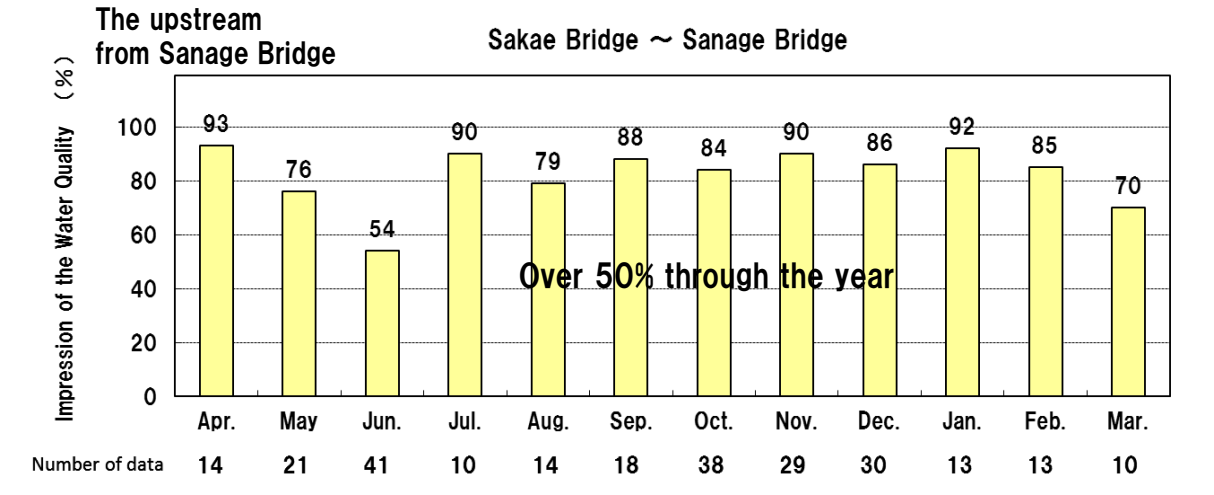
The rate of winds for upstream and downstream is 80% at Nishiki Bridge.

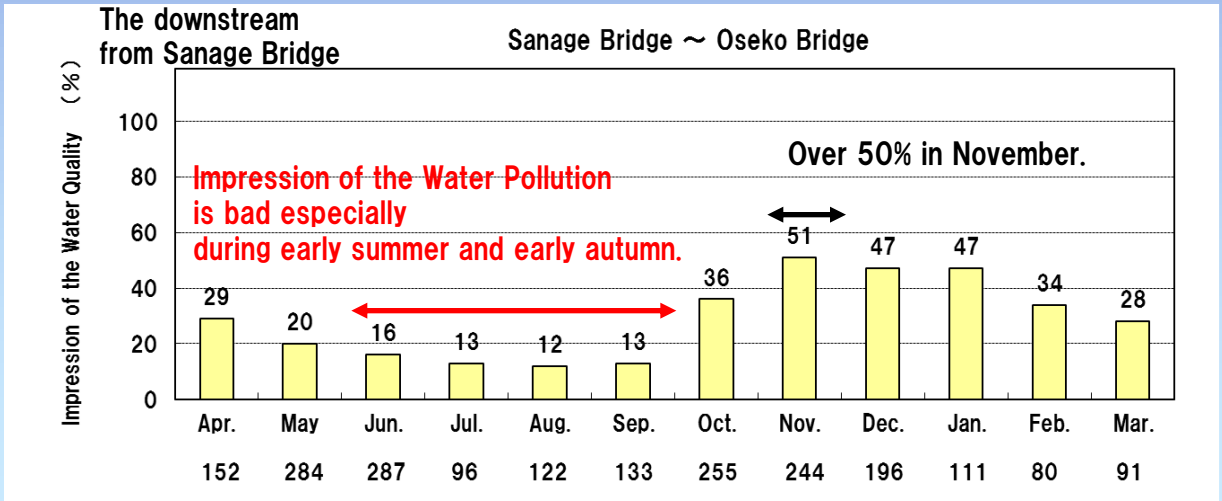
9.Change of Horikawa River

From April 2007 to March 2013
No rain on the day and the previous day

Impression of the Water Quality (annual change)

The percentage of "clean" "a little clean" and "ordinary"





■ How did the impression of the Water Quality change throughout the year?

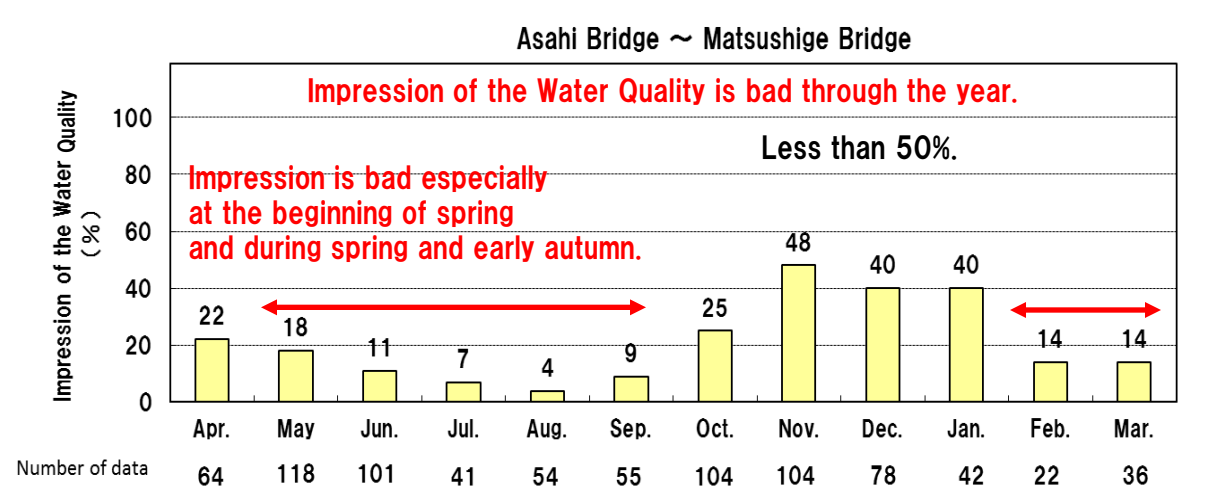
In the upstream section from Sanage Bridge, the percentage of people who answered between "clean" and "ordinary" was over 50% through the year.
In the downstream from Sanage Bridge, the percentage of "clean" "a little clean"and "ordinary" was over 50% in November.
Impression of the Water Quality was bad especially during early summer and early autumn. (the percentage of people who answered between "clean" and "ordinary" was under 20%)

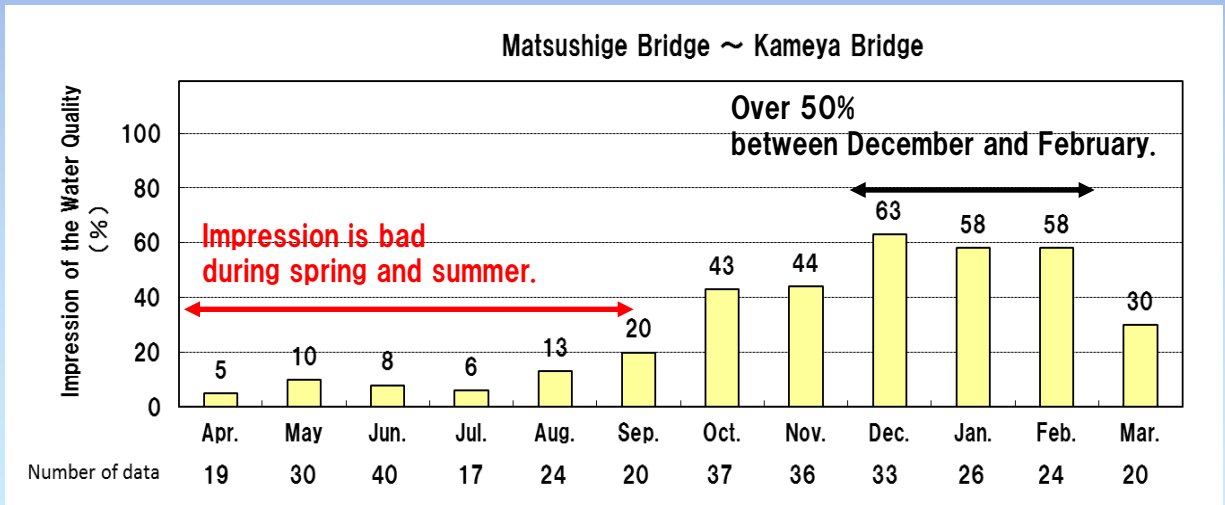
＊"clean", "a little clean" and "ordinary" are categorized as the acceptable range for citizens.
and we categorized the evaluation of less than 50% as bad, and categorized the evaluation of less than 20% as especially bad.

Impression of the Water Quality(annual change) Between Asahi Bridge and Kameya Bridge

From April 2007 to March 2013
No rain on the day and the previous day

The percentage of "clean" "a little clean" and "ordinary"





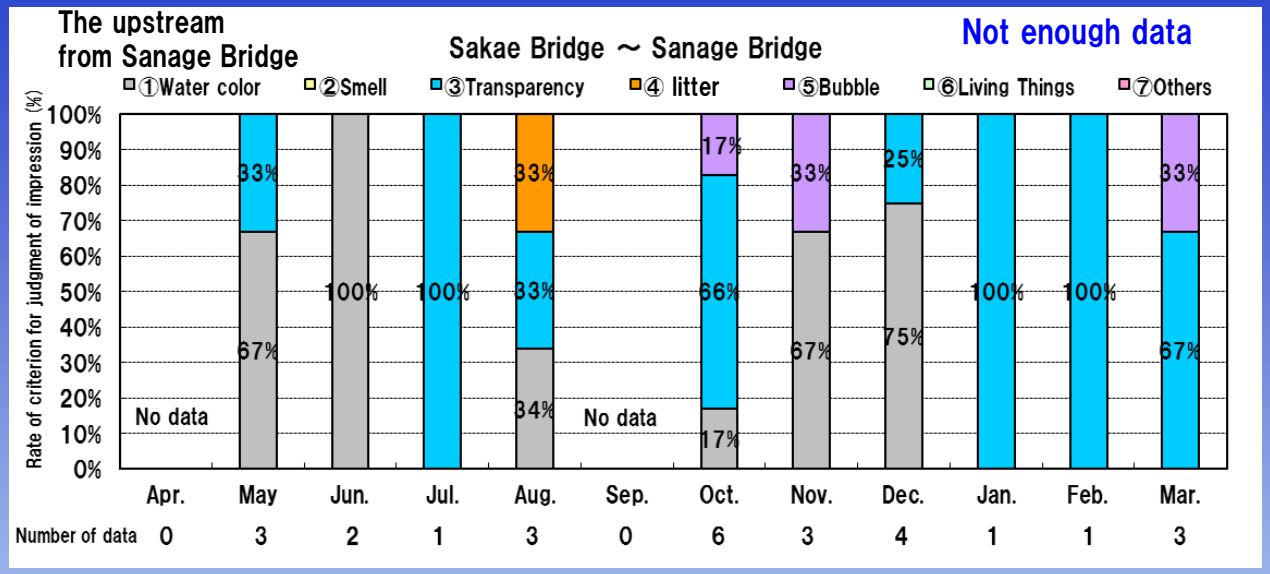
■ How did the impression of the Water Quality change throughout the year?

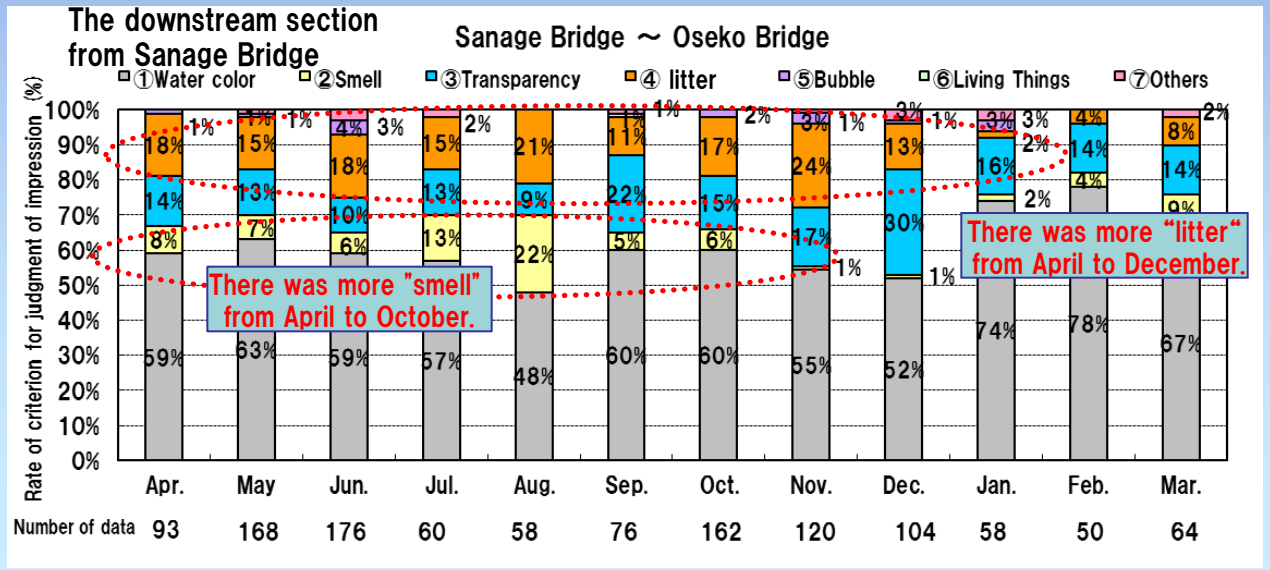
The percentage of people who answered between "clean" and "ordinary" between Asahi Bridge and Matsushige Bridge was under 50%.
Impression of the Water Pollution was bad through the year. It was bad especially during early spring and early autumn. (the percentage of "clean" "a little clean" and "ordinary" was under 20%)
The percentage of people who answered between "clean" and "ordinary" between Matsushige Bridge and Kameya Bridge was over 50% between December and February.
Impression of the Water Quality was bad especially during early spring and summer.

＊"clean", "a little clean" and "ordinary" are categorized as the acceptable range for citizens.
and we categorized the evaluation of less than 50% as bad, and categorized the evaluation of less than 20% as especially bad.

Evaluation of impression of the Water Quality(annual change)

From April 2007 to March 2013
No rain on the day and the previous day



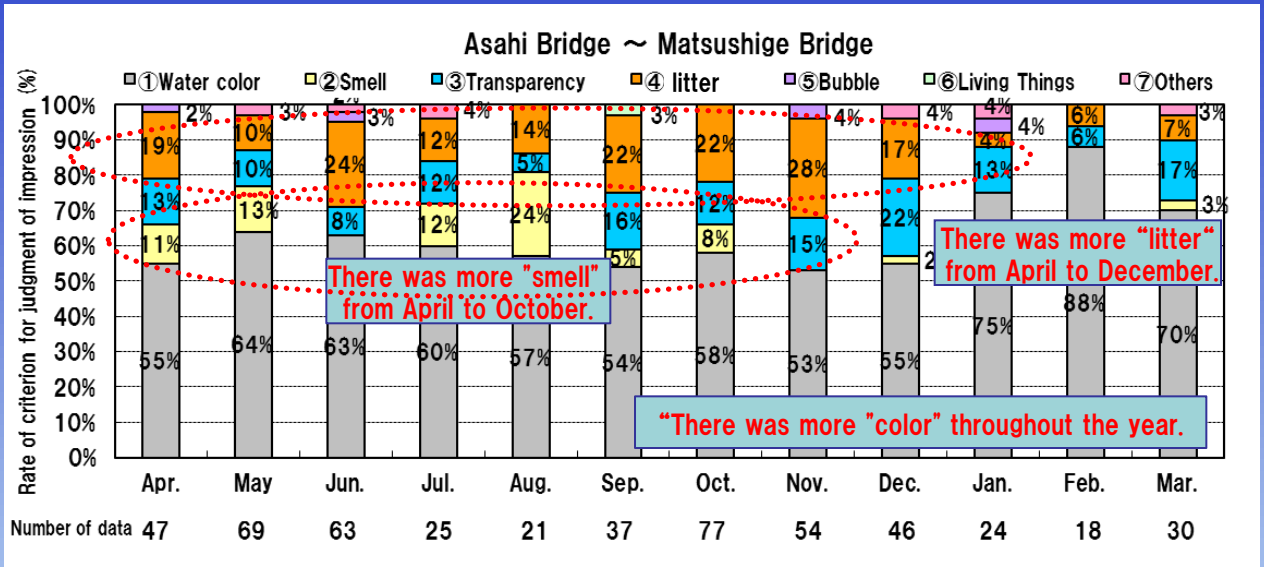


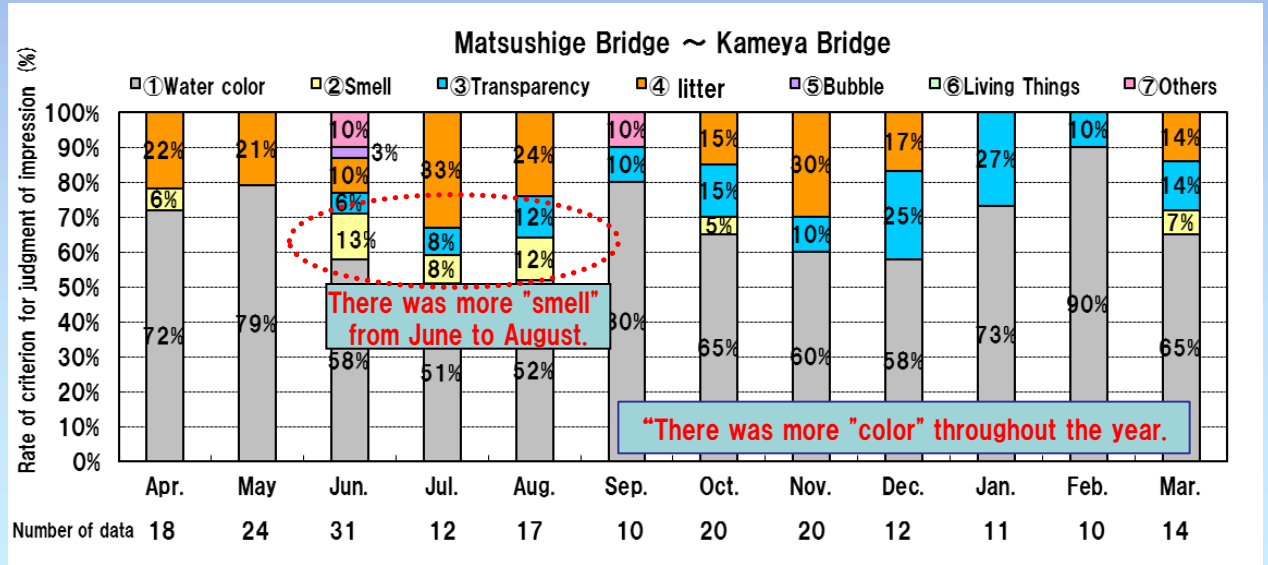
■ How did the impression of the Water Quality change throughout the year?

There were the most evaluations of "color" through the year in the downstream from Sanage Bridge, it was between 50% and 60% from April to December, it was between 70% and 80% from January to March.
The evaluation of litter increased from April to December.
The evaluation of smell exceeded 5% from March to October, and it increases to 10%-20% from July to August.
It is thought that weather condition , tide level fluctuation and sludge at the river bottom are related to it.

Evaluation of impression of the Water Quality(annual change) Between Asahi Bridge and Kameya Bridge

From April 2007 to March 2013
No rain on the day and the previous day





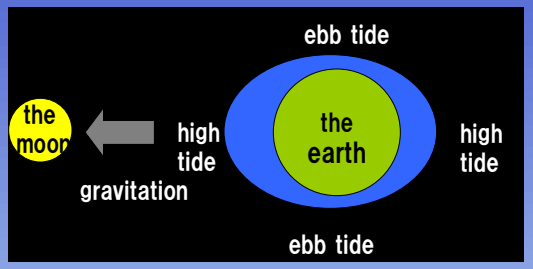
■ How did the impression of the Water Quality change throughout the year?

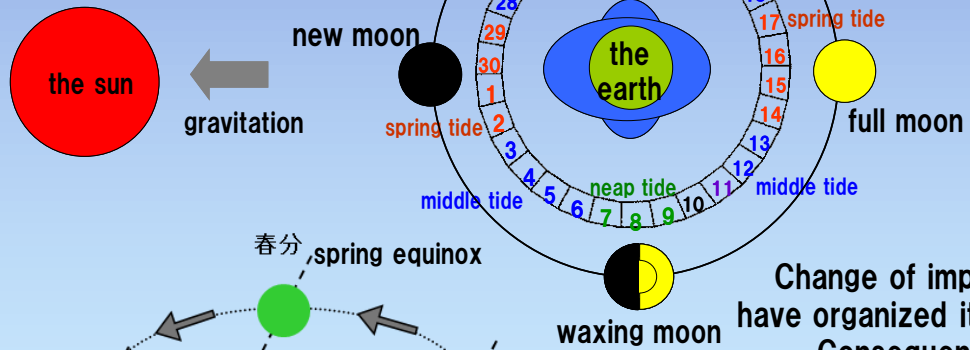
There were the most evaluations of "color" through the year between Asahi Bridge and Matsushige Bridge, it was between 50% and 60% from April to December, it was between 70% and 80% from January to March.
The evaluation of "litter" decreased slightly from April to December.
The evaluation of "smell" increased over 10% from April to May and from July to August.
It is thought that weather condition , tide level fluctuation and sludge at the river bottom are related to it.

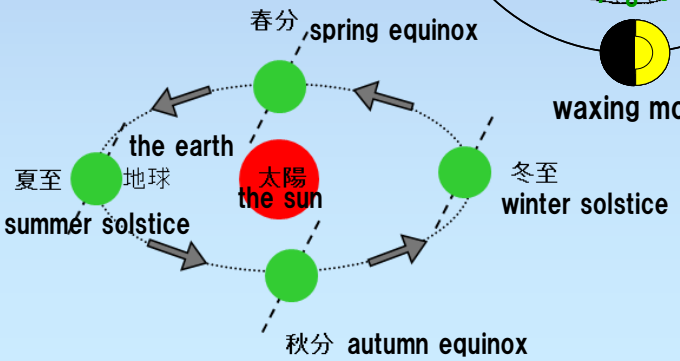
10.Change of Horikawa by tidal cycle

Comparison of spring tide with neap tide

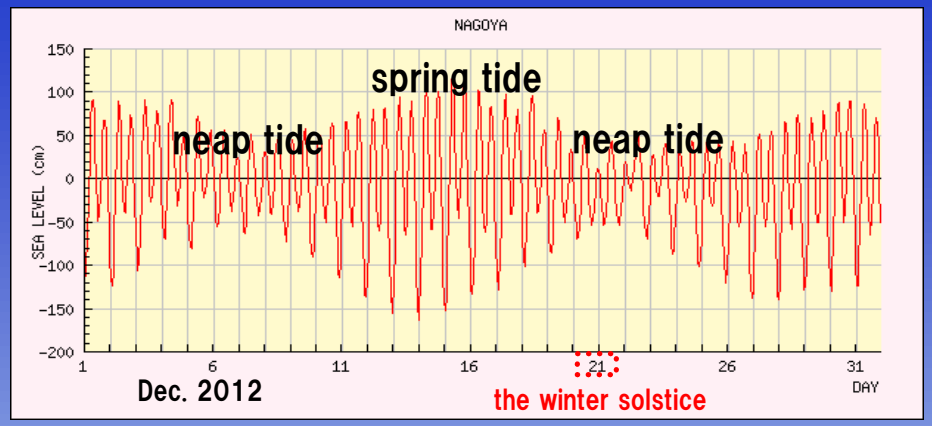
Section from Sanage Bridge to the mouth is influenced by the tide



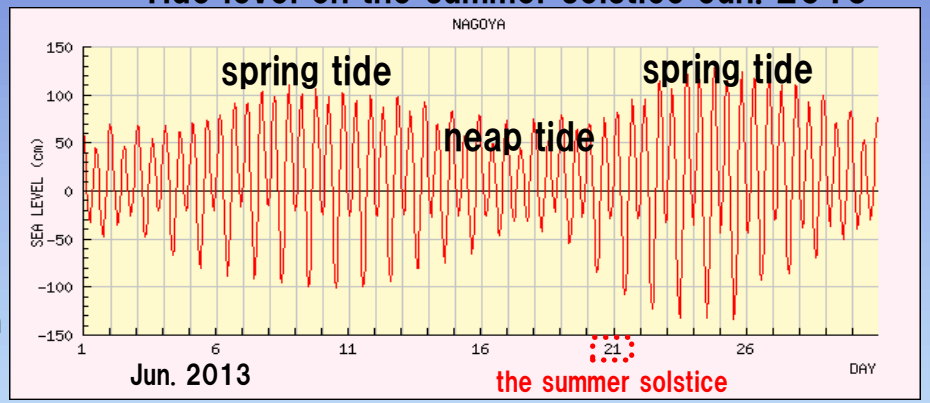




Tide level on the winter solstice Dec. 2012



Tide level on the summer solstice Jun. 2013



Source：statistical information of meteorology by the Meteorological Agency

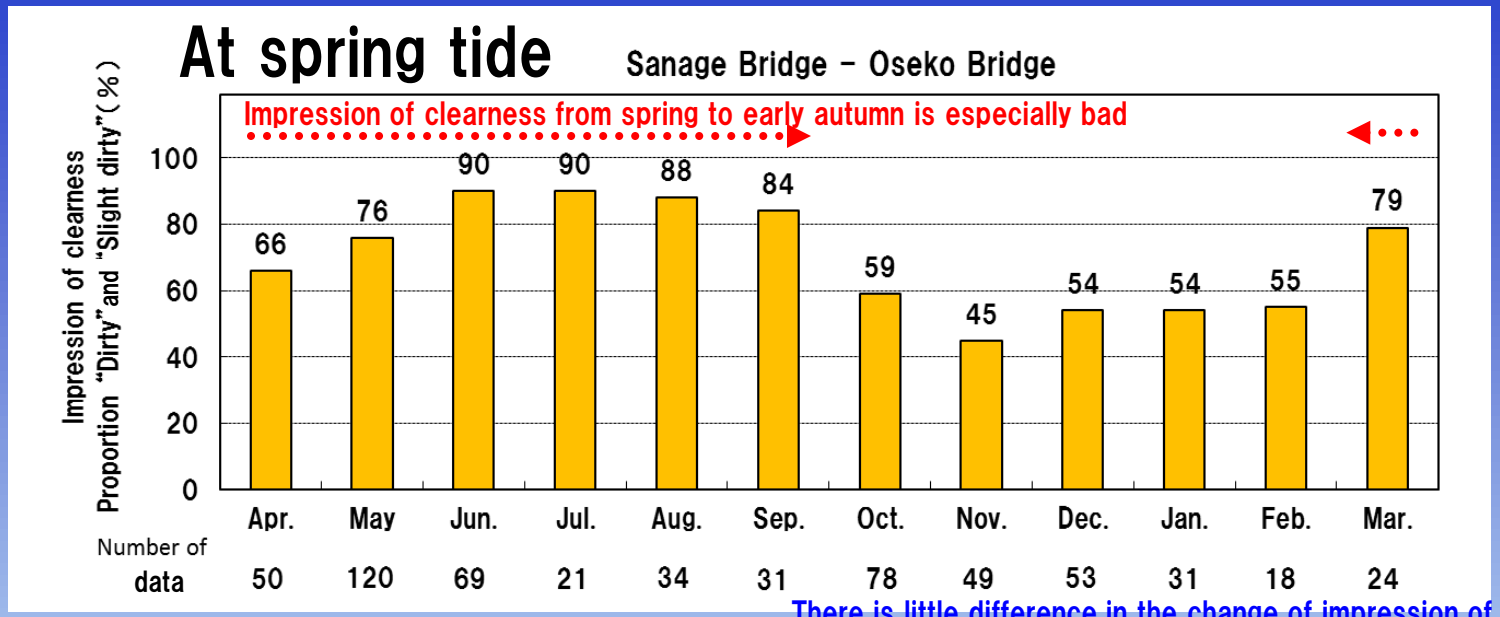
Change of impression of clearness relates to water quality of Horikawa. We have organized it by comparing of spring tide with neap tide.

Consequently, it turned out that impression of clearness was especially estimated by color, smell and garbage from Asahi Bridge to Kameya Bridge at spring tide in spring or early summer (1st,3rd,5th,7th,9th,11th stage). Particularly, it turned out that smell of sludge was greater at downstream from Asahi Bridge. From the result, it is supposed that impression of clearness in this area is infulenced by sludge heaping on the riverbed.

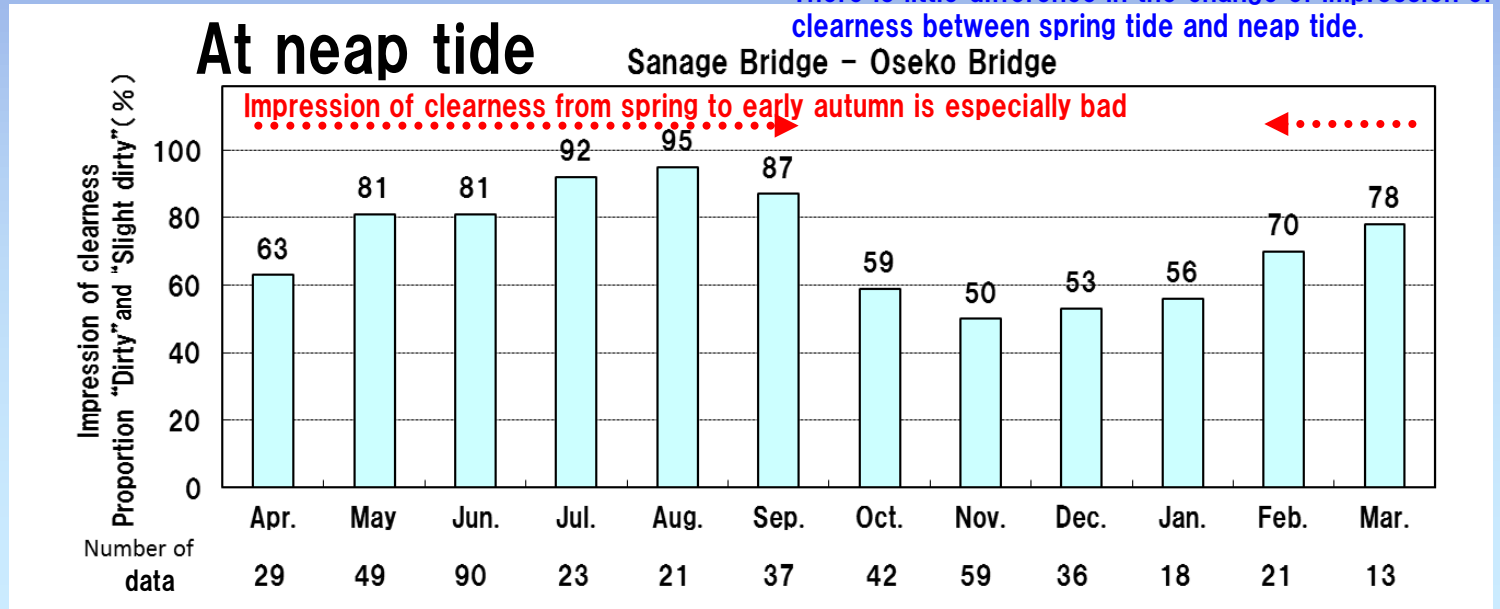
Impression of clearness Spring tide/Neap tide by month

Percentage of "Dirty" and "Slight dirty"

Apr. 2007(Start of 1st Stage) – Mar. 2013
No rain on the day and the previous day



There is little difference in the change of impression of clearness between spring tide and neap tide.



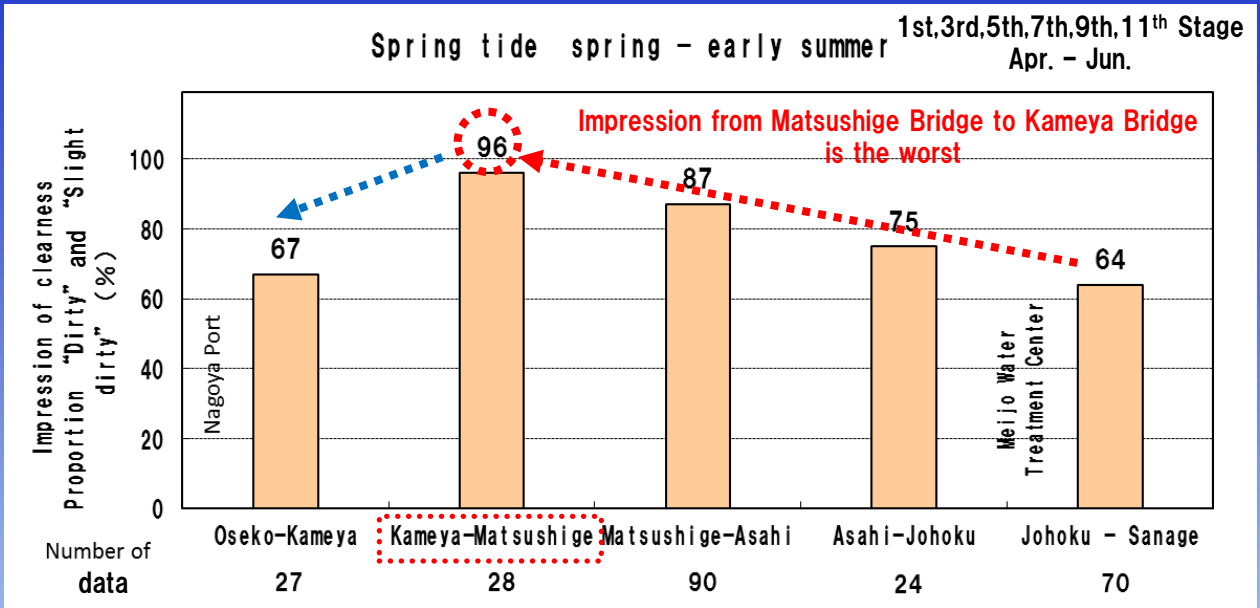
we extracted and organized data at spring tide and neap tide, from the data of between April 2007 and March 2013.

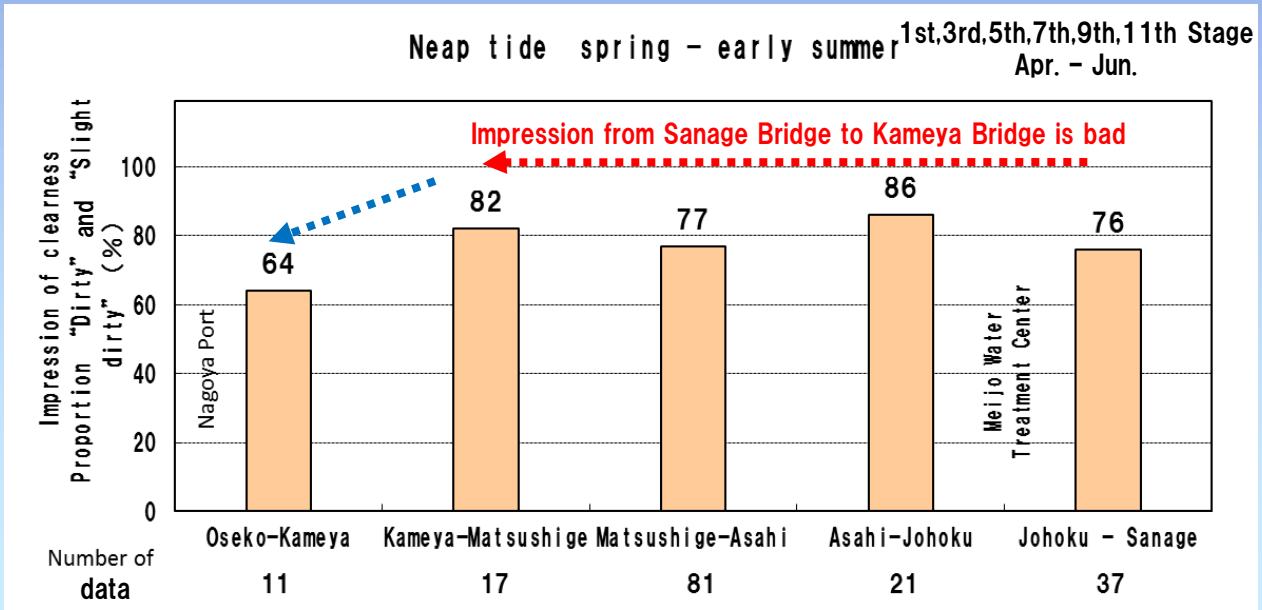
How is impression of clearness at spring tide and neap tide?

It is especially bad from spring to early autumn at both spring tide and neap tide. There is little difference between change of impression of clearness at spring tide and neap tide.

Impression of clearness from spring to early summer Spring tide/Neap tide

Percentage of “Dirty” and “Slight dirty”





1st,3rd,5th Stage: With TRWKR
7th,9th,11th Stage: Without TRWKR
No rain on the day and the previous day

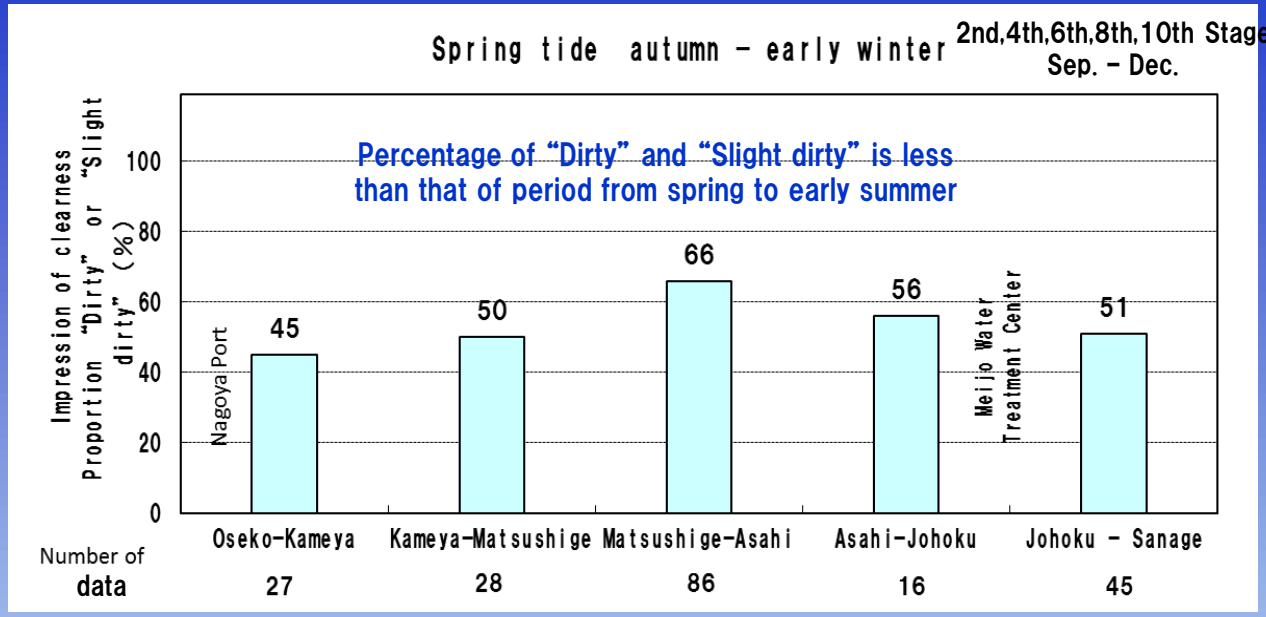
How is impression of clearness at spring tide and neap tide from spring to early summer?

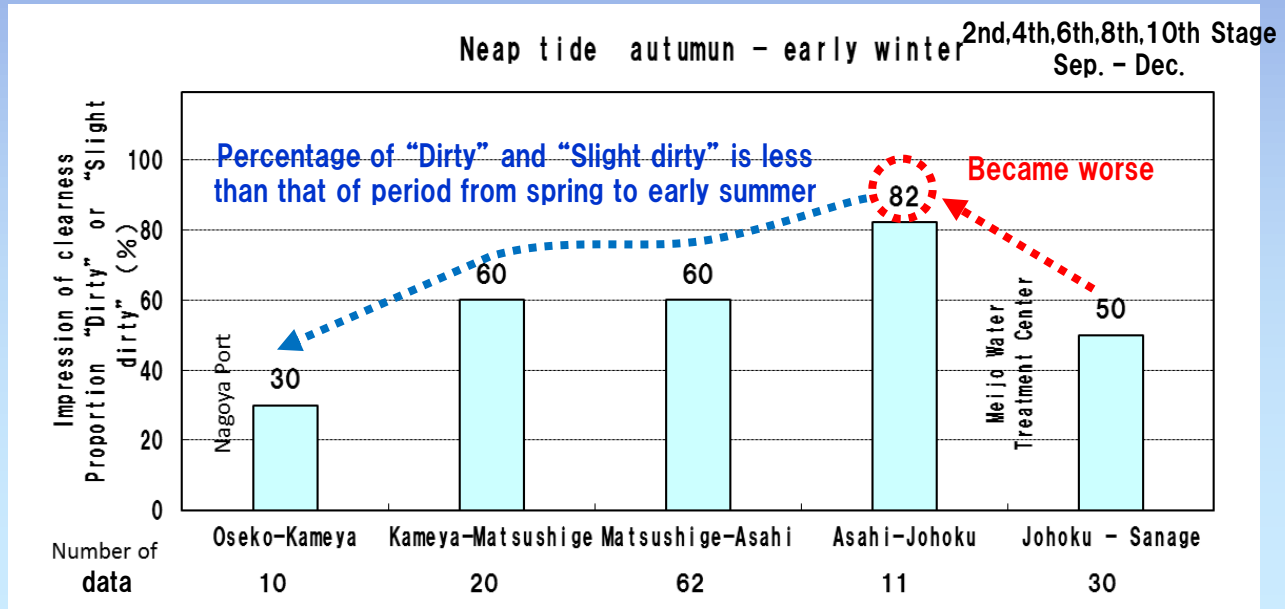
Impression of clearness at spring tide becomes worse from upstream of Sanage Bridge to downstream of Kameya Bridge. Especially, impression from Matsushige Bridge to Kameya Bridge is the worst, percentage of “Dirty” and “Slight dirty” is up to 96%.

Impression of clearness at neap tide from Sanage Bridge to Kameya Bridge is bad, percentage of “Dirty” and “Slight dirty” is around 80%.

Impression of clearness from autumn to early winter Spring tide/Neap tide

Percentage of “Dirty” and “Slight dirty”





2nd,4th,6th Stage: With TRWKR
8th,10th,12th Stage: Without TRWKR
No rain on the day and the previous day

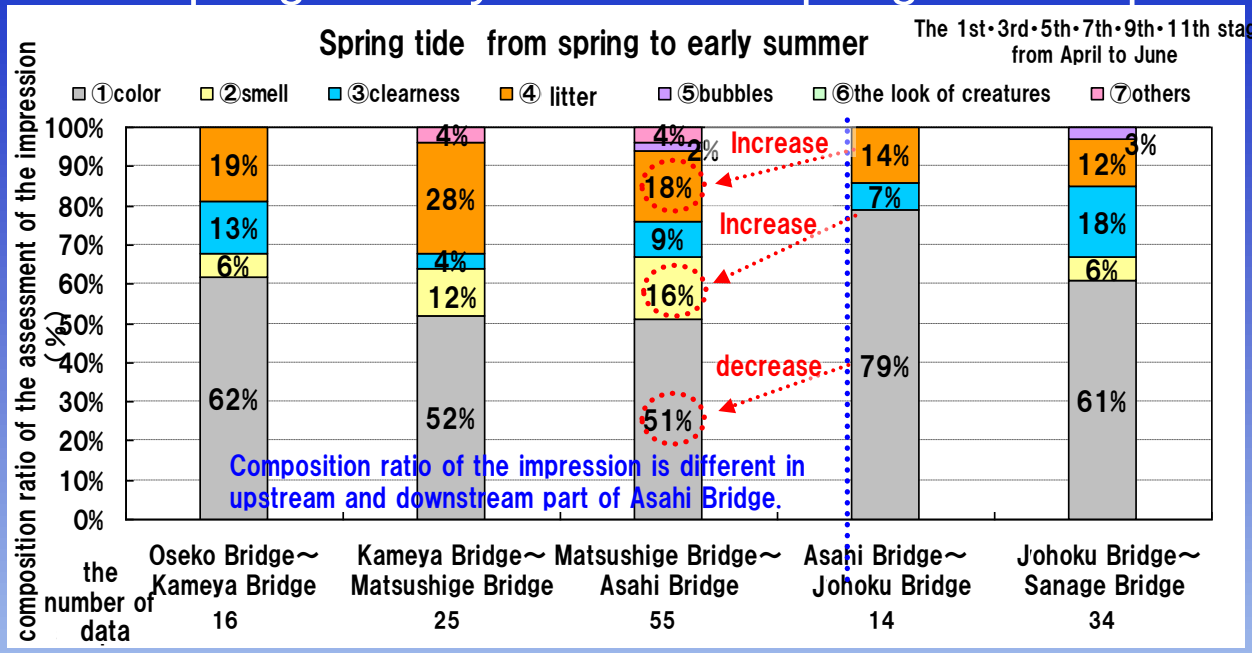
How is impression of clearness at spring tide and neap tide from autumn to early winter?

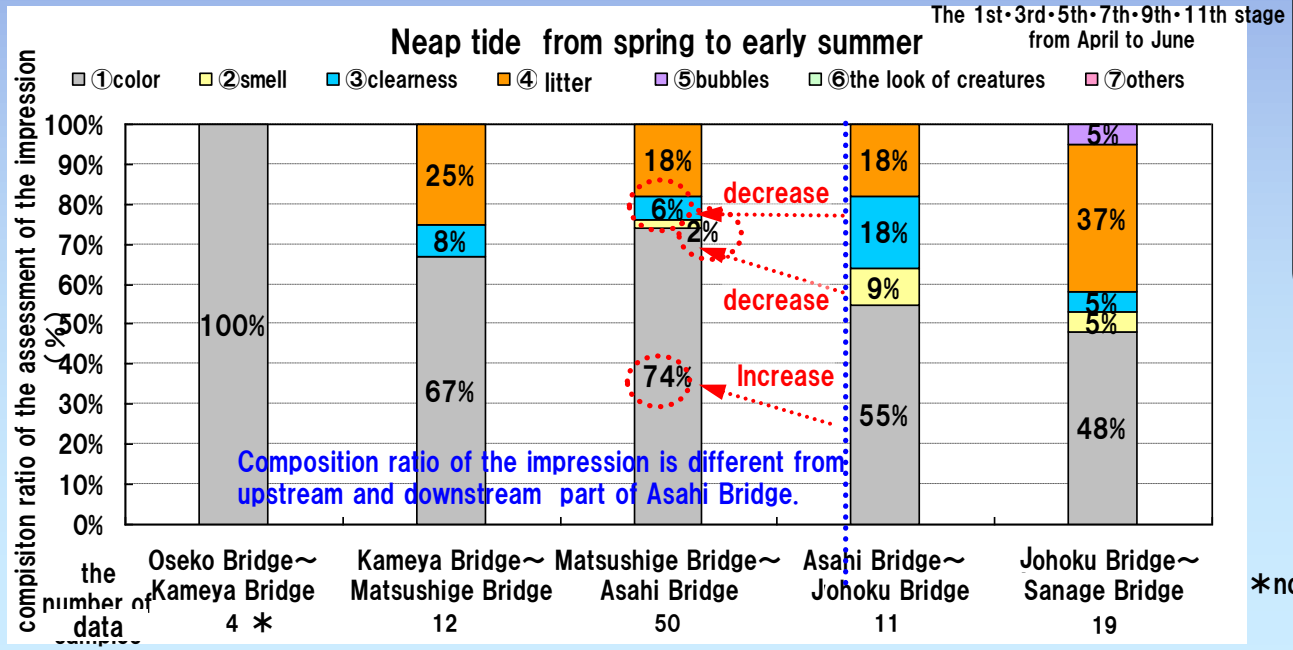
About impression of clearness at spring tide, percentage of “Dirty” and “Slight dirty” is around 40%-60% as little as that from spring to early summer.
Impression from Matsushige Bridge to Kameya Bridge is 66% the worst.

About impression of clearness at neap tide, that from Johoku Bridge to Asahi Bridge is bad, percentage of “Dirty” and “Slight dirty” is around 80%. Percentage of “Dirty” and “Slight dirty” is around 30%-60% in the other area. It is less than that from spring to early summer.

Evaluation of the impression of water quality from spring to early summer in spring and neap tide

The 1st,3rd,5th stage : With TRWKR
the 7th,9th,11th stage: No TRWKR
No rain on the day and the previous day





■ How is the impression of the water quality from spring to early summer in spring and neap tide?

→Composition ratio of the impression is different from the upstream and downstream part of Asahi Bridge in both spring and neap tide.

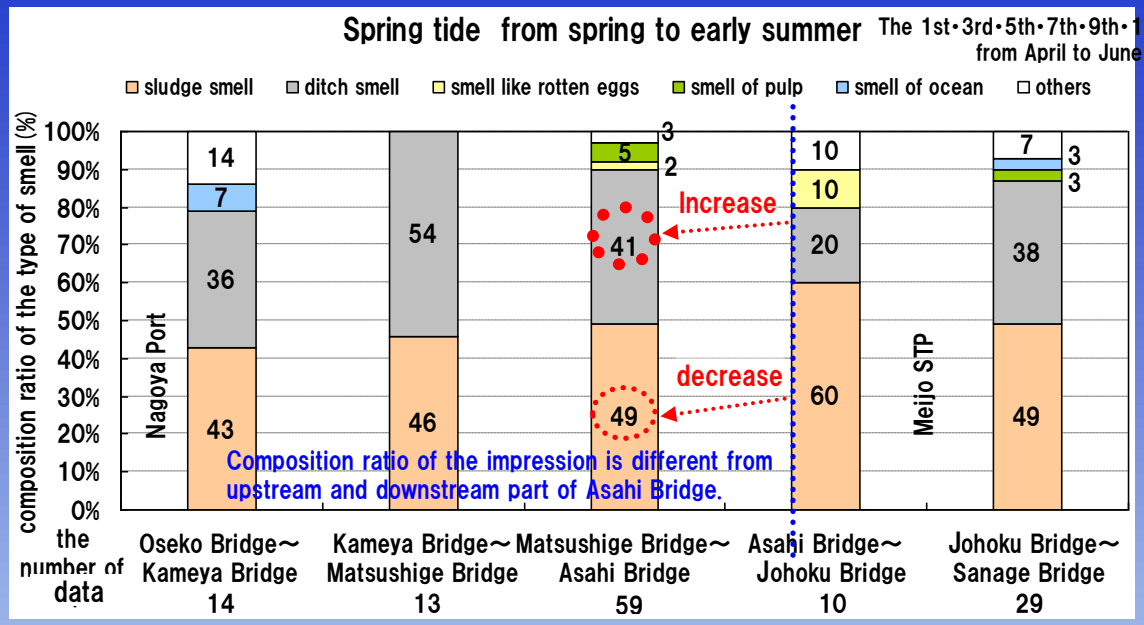
The evaluation of the impression of water quality in spring tide shows, between Asahi Bridge and Kameya Bridge, the rate of "color" is smaller and rates of "smell" and "litter" are larger than the upstream.

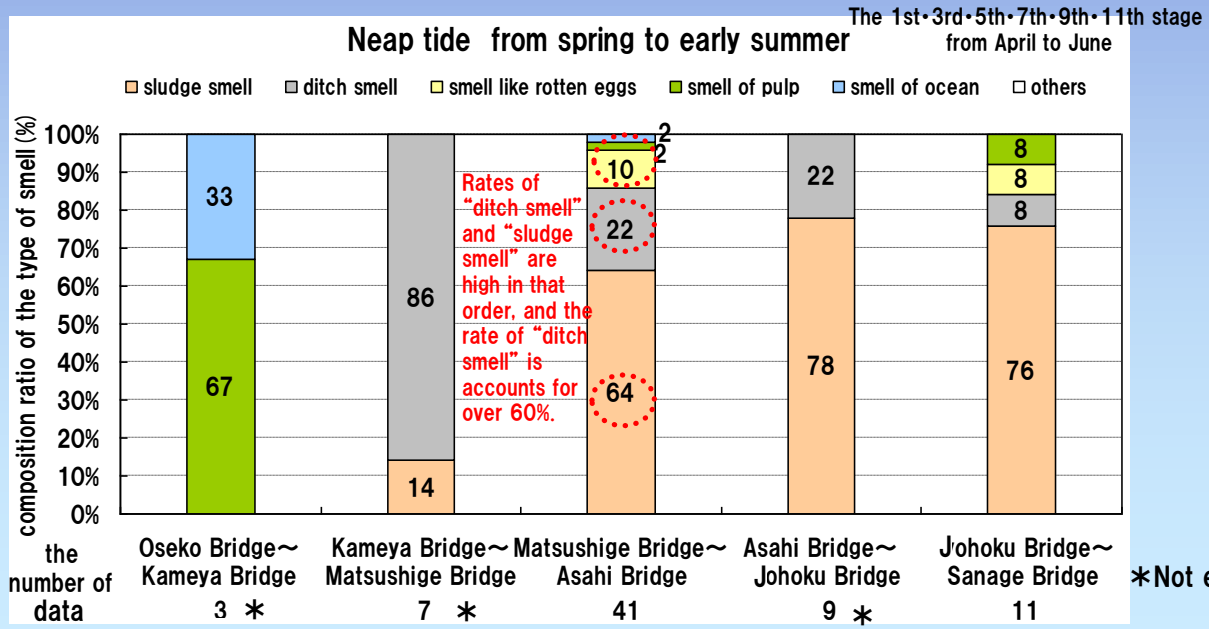
The evaluation of the impression of water quality shows, between Asahi Bridge and Kameya Bridge, the rate of "color" is bigger and rates of "smell" and "clearness" are smaller than that of the upstream.

＊not enough data.

Smell from spring to early summer in spring and neap tide

The 1st・3rd・5th stage : With TRWKR
the 7th・9th・11th stage: No TRWKR
No rain on the day and the previous day





＊Not enough data.

■ Which type of smell is it from spring to early summer in spring and neap tide?

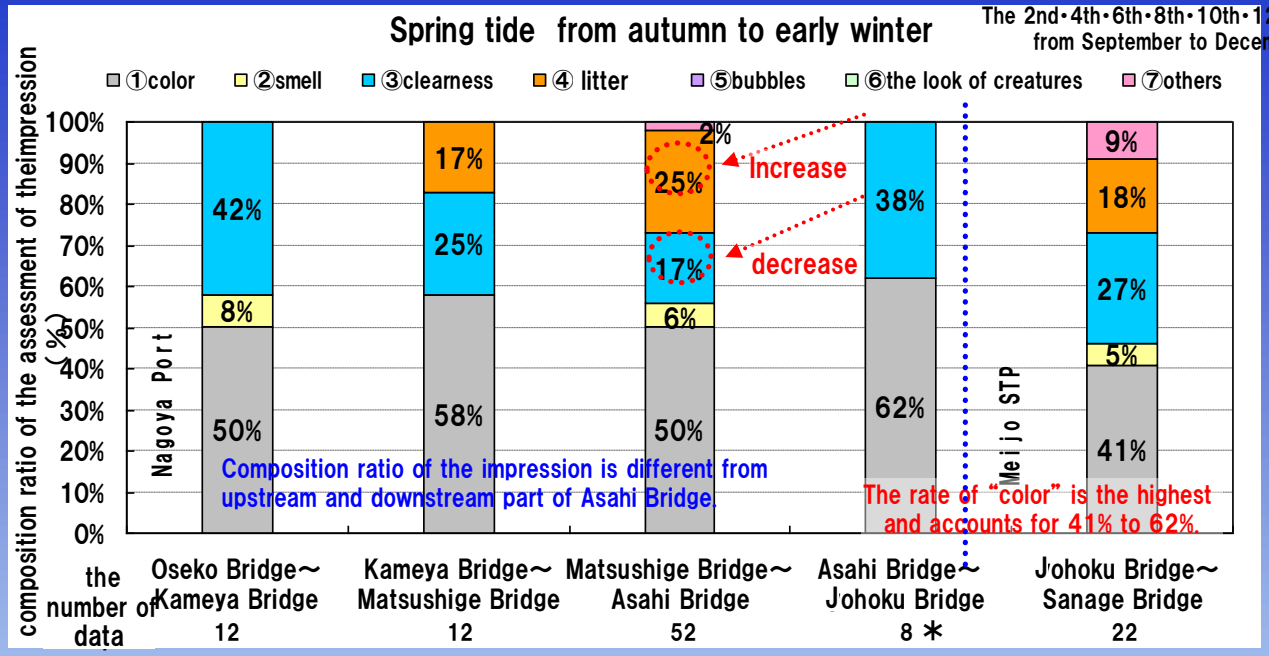
→Between Asahi Bridge and Kameya Bridge, the rate of "sludge smell" is larger and the rate of "ditch smell" is smaller than the upstream.
It is considered the evaluation of water quality is influenced by "sludge smell".
Composition ratio of the impression is different in the upstream and downstream part of Asahi Bridge.

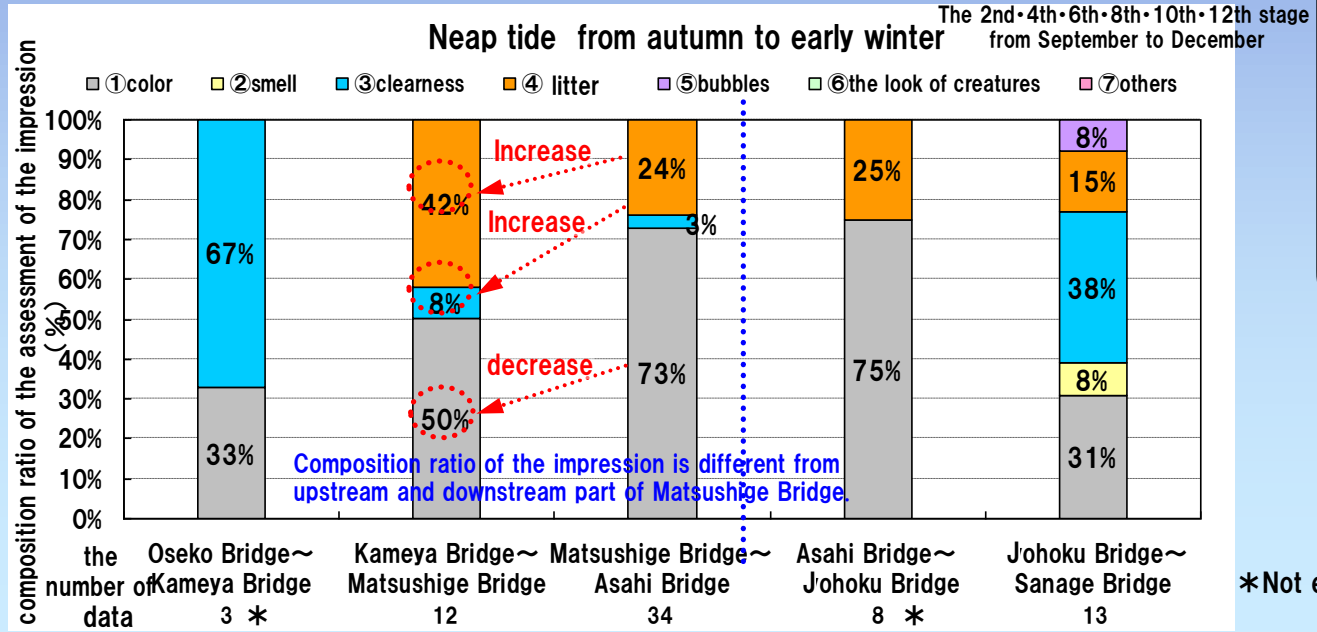
Between Asahi Bridge and Matsushige Bridge in the neap tide, rates of "ditch smell" and "sludge smell" are high in that order, and the rate of "ditch smell" is accounts for over 60%.

In spring tide, rates of "ditch smell" and "smell like rotten eggs" are smaller and the rate of "sludge smell" is larger than that in neap tide.

Evaluation of the impression of water quality from autumn to early winter in spring and neap tide

The 2nd・4th・6th stage : With TRWKR
The 8th・10th・12th stage: No TRWKR
No rain on the day and the previous day





■ How is the impression of the water quality from autumn to early winter in spring and neap tide?

→ According to the evaluation of the impression of water quality in spring tide, the rate of "color" is the highest in the entire interval and accounts for 41% to 62%.

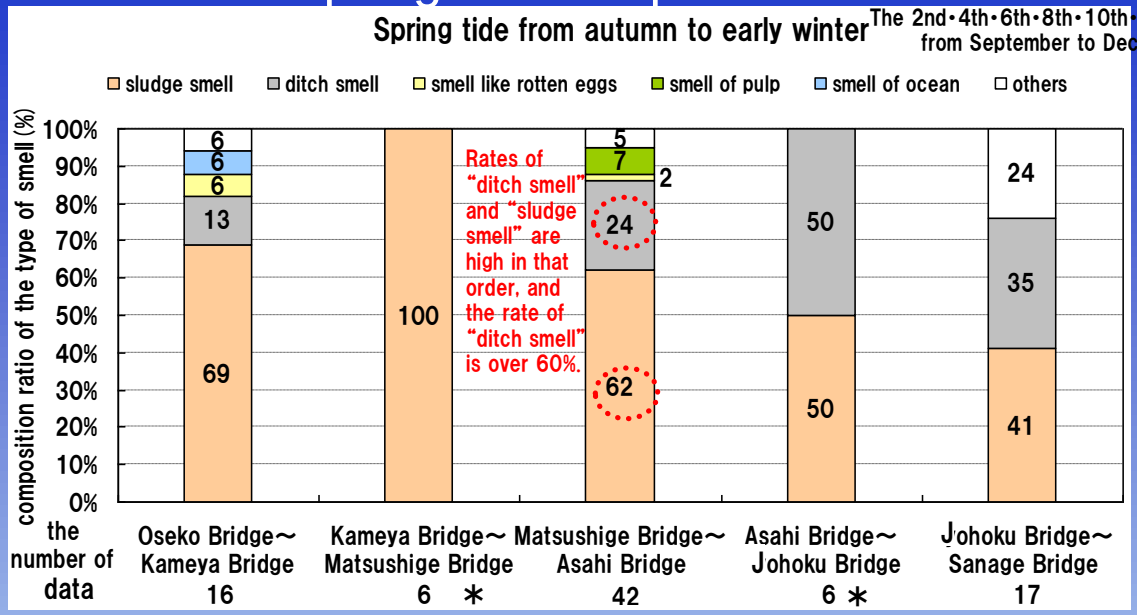
Between Asahi Bridge and Kameya Bridge, the rate of "clearness" is smaller and the rate of "litter" (17% to 25%) is larger than upstream. Composition ratio of the impression is different from upstream and downstream of Asahi Bridge.

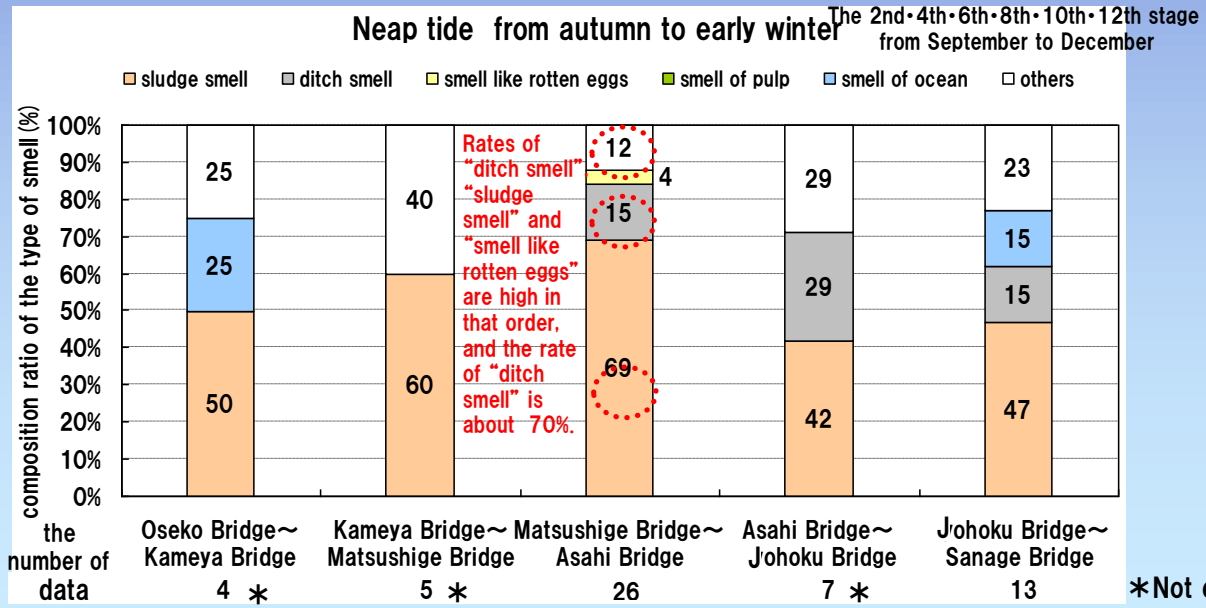
According to the evaluation of the impression of water quality in neap tide, between Matsushige Bridge and Kameya Bridge, the rate of "color" is smaller and rates of "litter" and "clearness" are larger than upstream. Especially the rate of "litter" is high (42%). Composition ratio of the impression is different in upstream and downstream of Matsushige Bridge.

＊Not enough data

Smell from autumn to early winter in spring and neap tide

The 2nd・4th・6th stage : With TRWKR
The 8th・10th・12th stage: No TRWKR
No rain on the day and the previous day





＊Not enough data

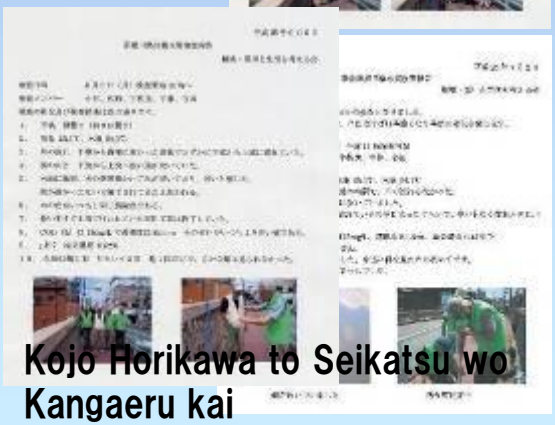
■ Which type of smell is it from autumn to early winter in spring and neap tide?

→Between Asahi Bridge and Matsushige Bridge in spring tide, rates of "ditch smell" and "sludge smell" are high in that order, and the rate of "ditch smell" is over 60%.

Between Asahi Bridge and Matsushige Bridge in neap tide, rates of "ditch smell", "sludge smell" and "smell like rotten eggs" are high in that order, and the rate of "ditch smell" is about 70%.

In spring tide, rates of "ditch smell" and "smell like rotten eggs" are smaller and the rate of "sludge smell" is larger than that in neap tide.

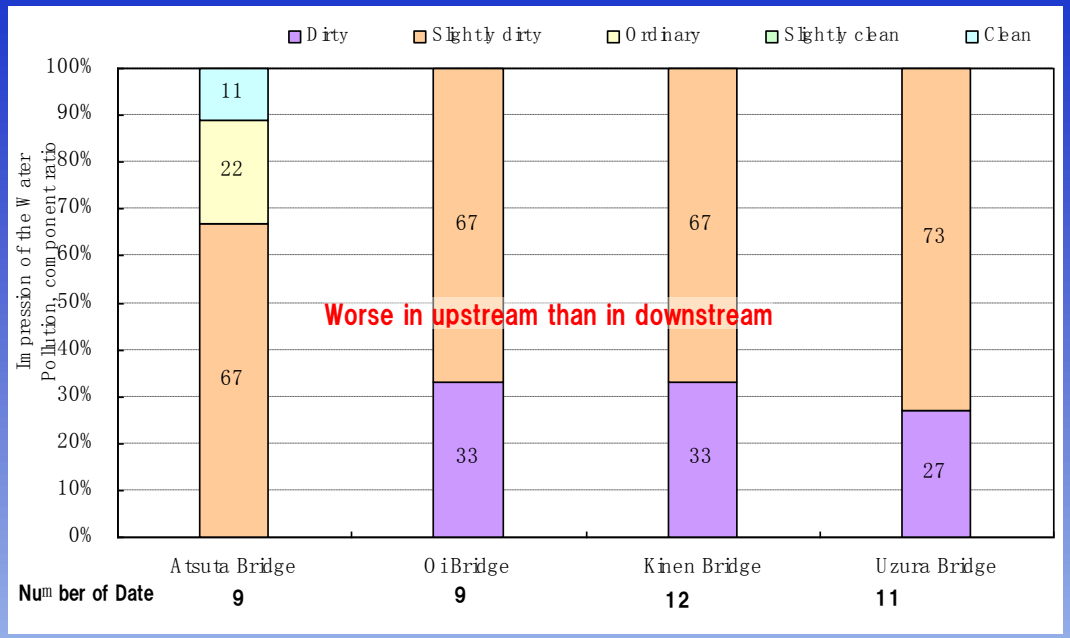
11. Survey activities spread into Shin-Horikawa by the Horikawa Sen-nin Chosatai (HSC)



Kojo Horikawa to Seikatsu wo Kangaeru kai

Team NTT Smile Nagoya

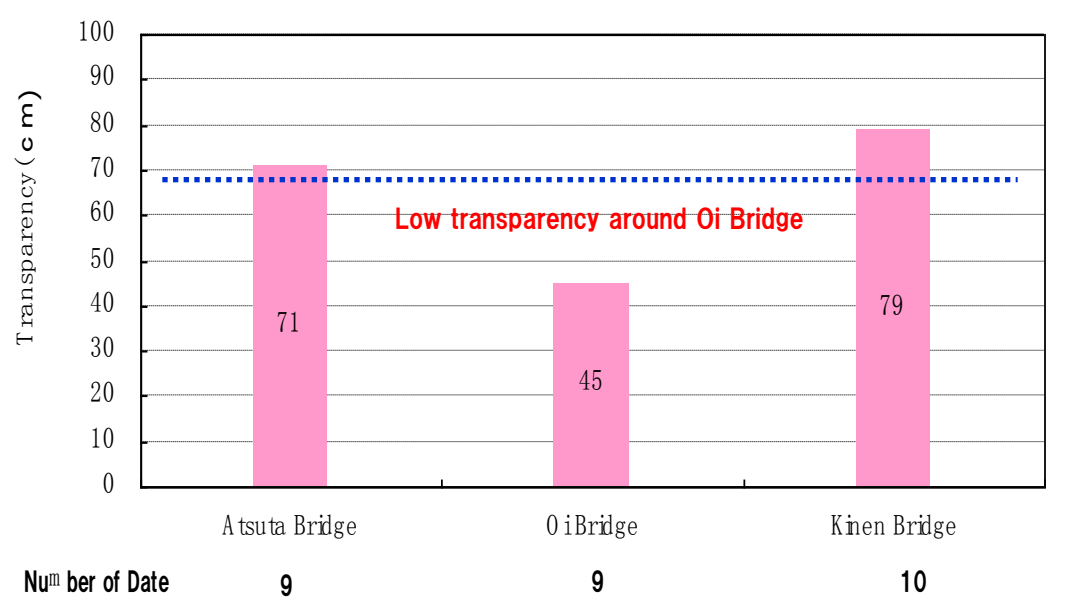
Impression of the Water Pollution in Shin-Horikawa



■ How about the impression of the Water Pollution？

→"dirty"-"slight dirty" around Uzura, ,Kinen and Oi Bridge in upstream of Shin-Horikawa, and "slight dirty" - "slight clean" around Atsuta Bridge in downstream.
The impression of the water pollution is worse in upstream than in downstream.

Transparency in Shin-Horikawa

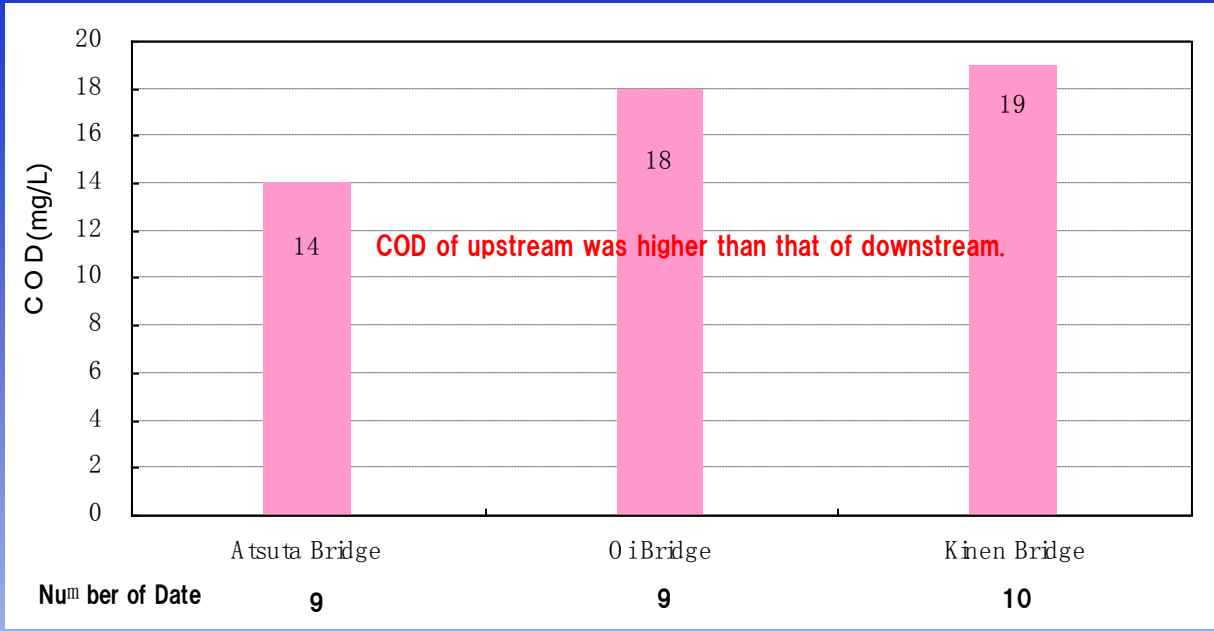


■How about transparency？

→Over 70cm (acceptable range for citizens) around Kinen Bridge in upstream of Shin-Horikawa and Atsuta Bridge in downstream of Shin-Horikawa.
However, only 46cm around Oi Bridge.

＊We defined "Clean "-"Ordinary" as acceptable range for citizens, transparency over 70cm in number.

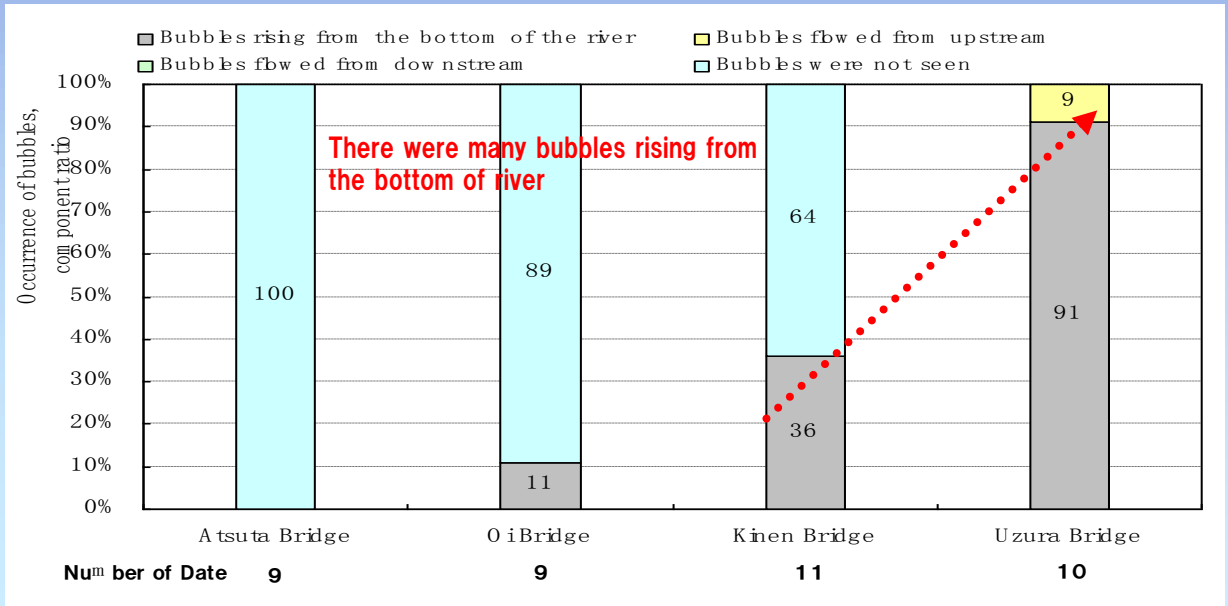
COD in Shin-Horikawa



■ How much was COD?

→Under 20mg/L around Kinen and Oi Bridge.
This rate is a little high and under 14mg/L around Atsuta Bridge.
It seemed that COD was higher in upstream than in downstream.

Occurrence of bubbles in Shin-Horikawa



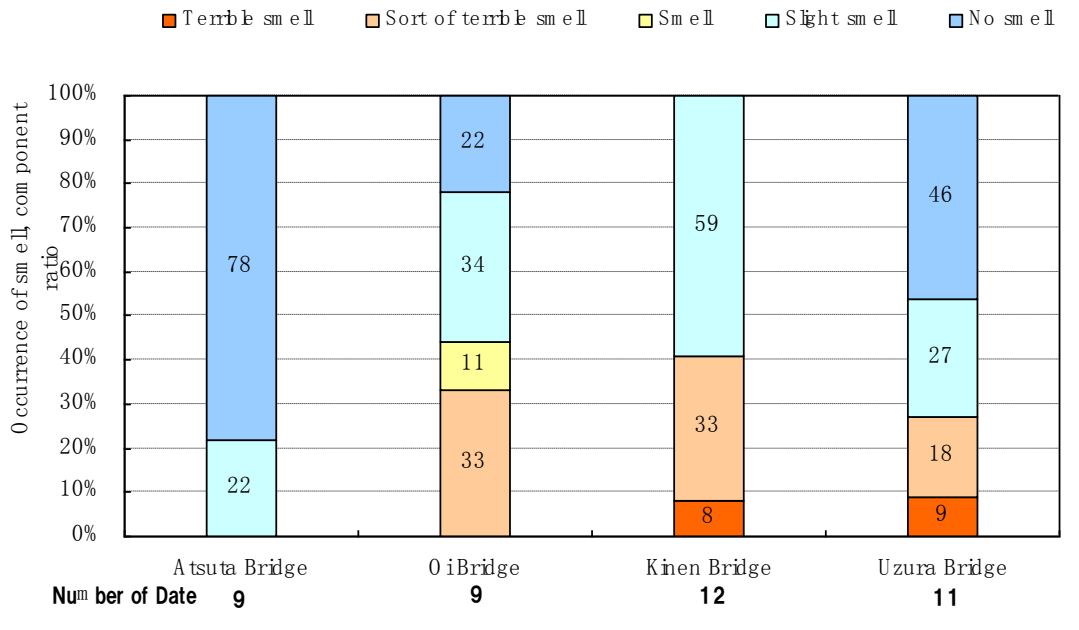
■ How do bubbles occur?

→It seemed that bubbles occur around Uzura, Kinen and Oi Bridge on Shin-Horikawa

Around Uzura Bridge of upstream the 91% of bubbles were rising from the bottom of river.
There were not bubbles around Atsuta Bridge of downstream.

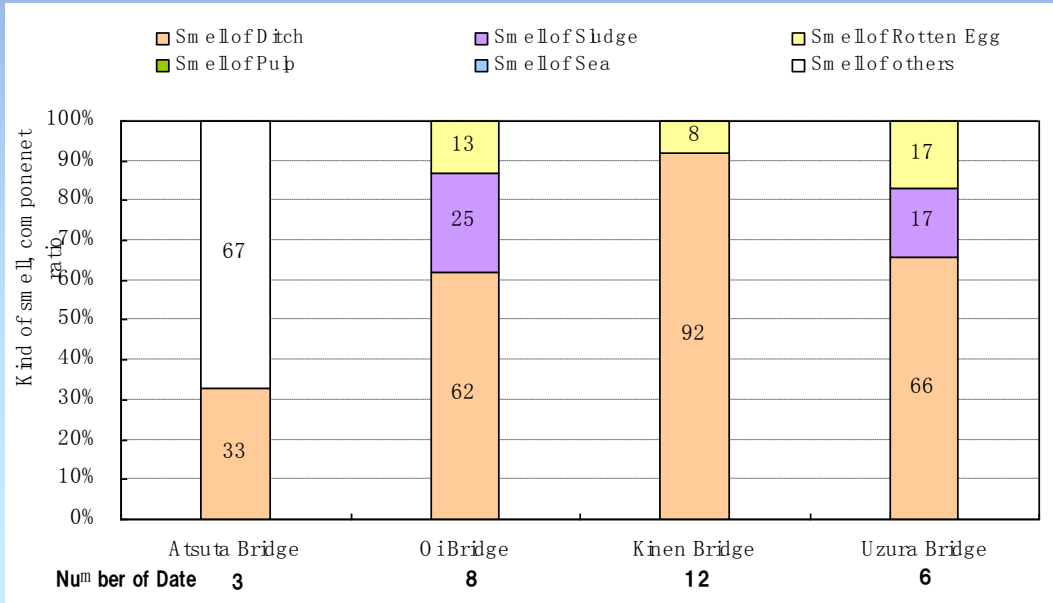
Occurrence of smell in Shin-Horikawa

There were a lot of "Terrible smell" or "smell" around Uzura, Kinen and Oi Bridge, upstream of Shin-Horikawa.



Kind of smell in Shin-Horikawa

There were many kinds of smell, "Ditch"-"Sludge" and "Rotten Egg" around Uzura, Kinen and Oi bridge upstream on Shin-Horikawa.



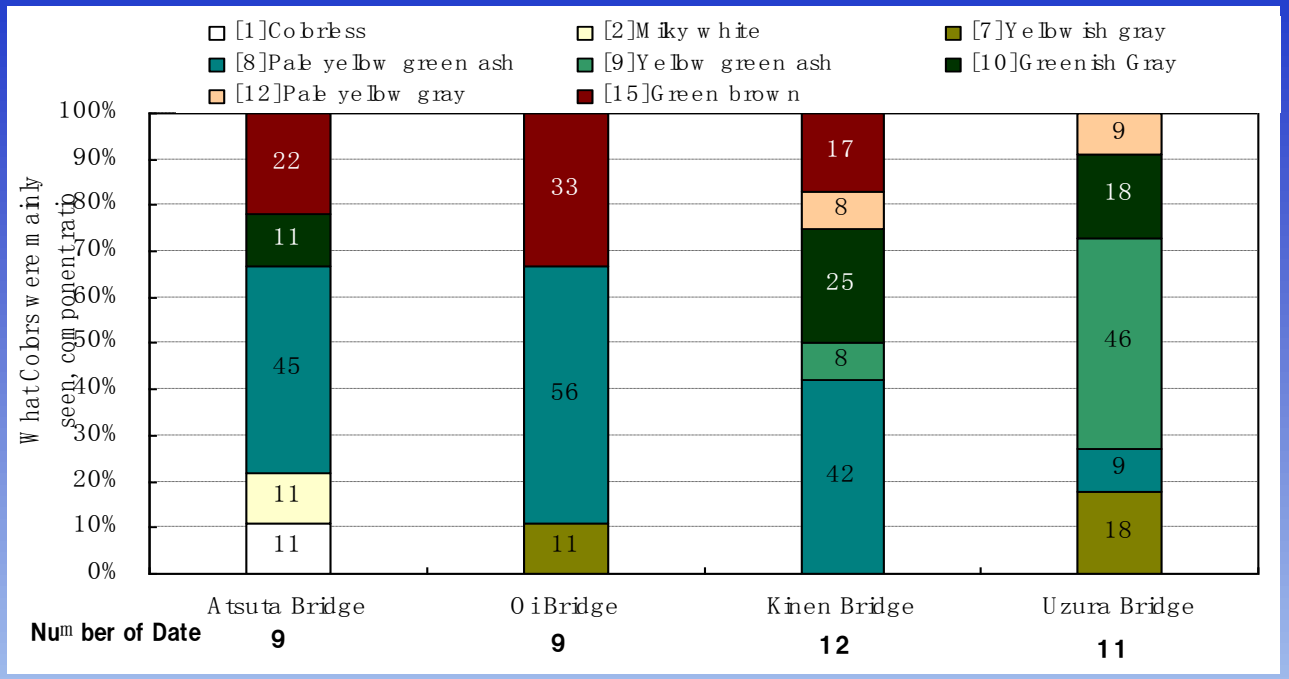
■ How does smell occur?

→The persentage of "Terrible smell" - "Bad smell" is between 27% and 44% at Uzura, Kinen and Oi Bridge (upstream).

The kinds of smell were "Ditch", "Sludge" and "Rotten Egg".

There were "Slight smell" and "No smell" around Atsuta Bridge (downstream).

Component ratio of colors in Shin-Horikawa



■ What colors sere seen frequently?

→Greenish gray, Yellow green ash and Pale yellow green ash appeared frequently around Uzura, Kinen and Oi Bridge in upstream of Shin-Horikawa. And Milky white also appeared around Uzura and Kinen Bridge. It is assumed to be caused by sulfide.
And Green brown also appeared Kinen, Oi and Atsuta Bridge.
It is assumed to be caused by the phytoplankton such as the red tide.

The Point of Kinen Bridge

May 28th 2013
Gray green

June 25th 2013
Pale yellow green ash

July 30th 2013
Pale yellow green ash

August 28th 2013
Milky white

Photo&report：Team NTT Smile Nagoya

Review; Current Condition & Pollution Mechanism of Horikawa

Based on 3,083 surveys for 6.5 years by HSC

Bad impression of the water pollution between Johoku Bridge and Matsushige Bridge.

Especially between Asahi Bridge and Matsushige Bridge
- Many bubbles from the bottom
- Terrible smell

How do we evaluate Impression of the Water Pollution (13th stage)

Color of water	60%
Clearness	18%
Litter	14%
Smell	7%

Bad impression of the water pollution

Many babbles from the bottom

Terrible smell

Many floating litter

Many floating litter

Minatoshinbashi Bridge

Nagoya port

Oseko Bridge

Kameya Bridge

Matsushige Bridge

Asahi Bridge

Johoku Bridge

Sanage Bridge

Shonai River

Motoiru-himon

▼high tide

▼low tide

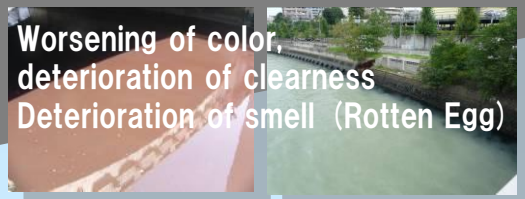
Water level, stream direction, flow rate changes by tide level.

Difference of tide level reaches 2m & over.

Rising sludge

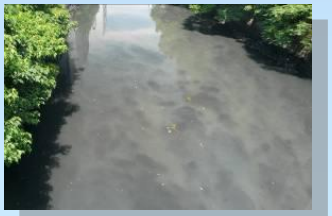
Sedimentation of sludge

Detrioration of color, clearness,and smell

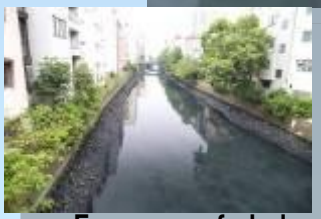


Red tide

Blue tide



Rising of sludge



Exposure of sludge when tide is low at spring tide.

■ Season of bad impression of the water pollution

①High temperature
②Large difference of tide level between high and low, and low tide level on daytime (around midsummer)

➡ Early summer to early autumn (July to September)

■ Why is impression especially between Asahi and Matsushige Bridge worse?

①Rising and exposure of sludge
②Run upstream of red tide & blue tide generated downstream by flood tide.
It is assumed that the span between Asahi and Matsushige Bridge is compositely influenced by the reason above.

Downstream

Growth of plankton ⬇ Red tide
- Brown suspended solids

Lack of Oxygen at the bottom ⬇ Blue tide
- Getting clouded
- Bubbles from bottom
- Smell of Rotten Egg

⬇ Deterioration of color, clearness and smell (Rotten Egg)

Matsushige – Asahi Bridge

Sedimentation of scum ⬇ ⬅ Lack of Oxygen at the bottom

Sediment is changed into sludge.

⬇ Exposure of sludge on low tide

⬇ Rising of sludge by flood tide & falling tide

⬇ Deterioration of color, clearness and smell (sludge & ditch smell)

➡ Run upstream of red tide & blue tide by flood tide

12. Living things

The 6th Survey of Living Things in Horikawa, July 6th 2013 (Sat.)
Hosted by conference of biodiversity in Horikawa

第６回堀川生物調査の結果

日　時　平成２５年７月６日９時３０分から１１時３０分

場　所　新堀橋下

参加者　御用水跡公園愛護会　山田会長始め３名
　　ロマン黒川　小林さん始め８名
　　堀川ライオンズクラブ　奥村さん始め４名
　　その他　区役所、多様性センターなど　６名

≪結果の概要≫

前日から、三階橋ポンプ所で庄内川導水を停止して水量の下がった新堀橋下に地引き網を仕掛け、上流からの追い込みを行いながら、大型タモ網などで体長 70cm 級のコイ５匹を採集した。（最大 76cm、その他 73cm、70cm）

≪その他≫

当日９時頃には新堀橋の水位は 10cm ほどであったが、９時半頃に突然、濁り水が大量に上流から流れ始め水位が上昇。１時間後には綺麗な水になったが、なお流入水があり、新堀橋で水位が 20cm 以上になった。原因は不明。

≪今年の堀川の様子≫

今年春からの堀川は、最近２ヶ月ほどの観察会でオイカワ等の小魚やテナガエビが大量に見られ、３年ほど前の状態に戻っているようにも見受けられる。

本日も、沢山のオイカワが地引き網にかかっており、魚影も濃くなってきている。

なお、下図の上部・下部に見られる水草は、外来生物の「オオカナダモ」である。

"Carp, current situation of urban river"
June 17th 2013
Reported by
Goyousui-gaien aigokai
Chosatai

Run upstream of brackish water and wide ranging fish

■Young mulet (about 3cm)
at the Nishikibashi Bridge
(first day of confirmation)
May 9th 2007
March 22nd 2008
May 3rd 2009
May 25th 2010
April 26th 2011
April 27th 2012
April 29th 2013

■Young dikkop
at the Nishikibashi Bridge
(first day of confirmation)
April 22nd 2008
April 22nd 2009
April 25th 2010
April 13th 2011
April 18th 2012
April 16th 2013

■Eel
At the Nayabashi Bridge, June 21st 2013
Shooting by the river planning survey groop

Horikawa got in lack of Oxygen by spring tide and heavy rain on June 21st 2013. Around the Nayabashi Bridge.

Reported by secretariat

堀川で魚が大量死
熱田、港区

二十一日午前十時四十分ごろ、港区千年三の堀川の紀左ヱ門橋付近で大量の魚が死んでいるのを近くの会社の男性従業員が発見した。

港保健所などが調べたところ、熱田区千年一の大瀬子橋付近から堀川河口までの四・五キロ区間で、体長二〇～三〇センチのコノシロ七百～八百匹と同五～一〇センチのハゼ百～二百匹が死んでいた。死因は特定できなかった。

水面付近の酸素量が一リットルあたり一・二二ミリグラムと国の環境基準の二ミリグラムを下回っており、市環境局の担当者は「酸欠の可能性もある」と話している。

By the "Chunichi Newspaper"
June 2nd 2013 (Sat)

At Nishikibashi Bridge
At AM on June 22nd 2013

Heavy rain & spring tide, July 21st 2013

Horikawa got in lack of Oxygen. At Nayabashi Bridge Reported by secretariat

Around quay of Nayabashi Bridge, June 21st 2013, Reported by secretariat

Horikawa River clarification experiment with water spinach. 2013/6/21-2013/8/30

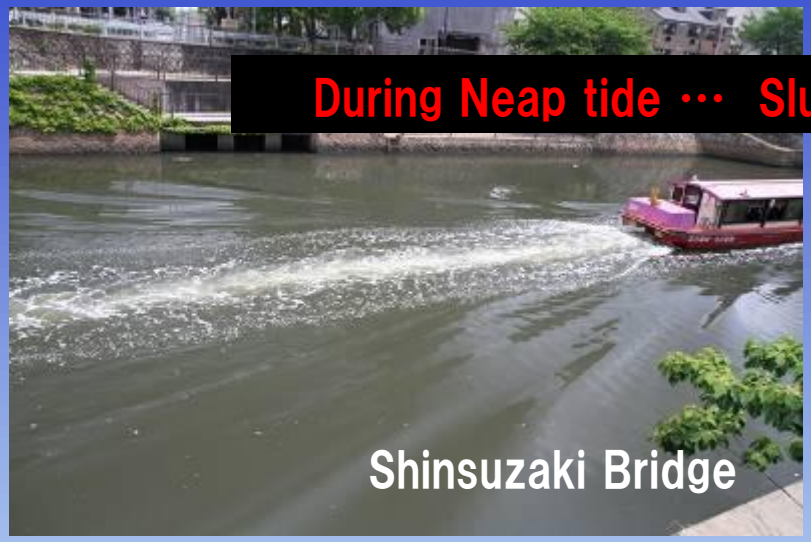
Ena Agricultural High School & Horikawa Lions Club had joint experiment this year again.

Living things swarming over floating water spinach

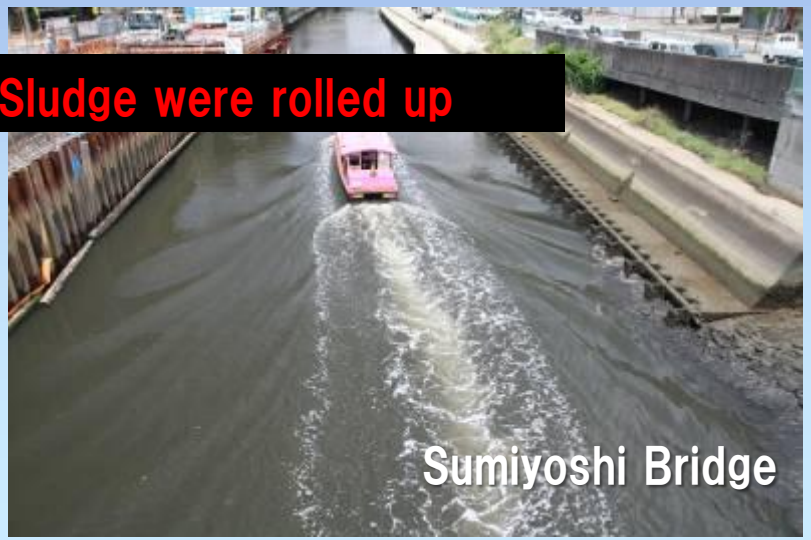
Conclusion of the 3rd Horikawa River general investigation.

On May 18th (neap tide), Color of the water didn't change when the water bus passed.
On May 25th (Spring tide), Color of the water changed into gray and Bubbles were rolled up near Shinsuzaki bridge. It is thought to be the causes of sludge rolled up from the water bed.

■ 2013/5/18 Neap tide



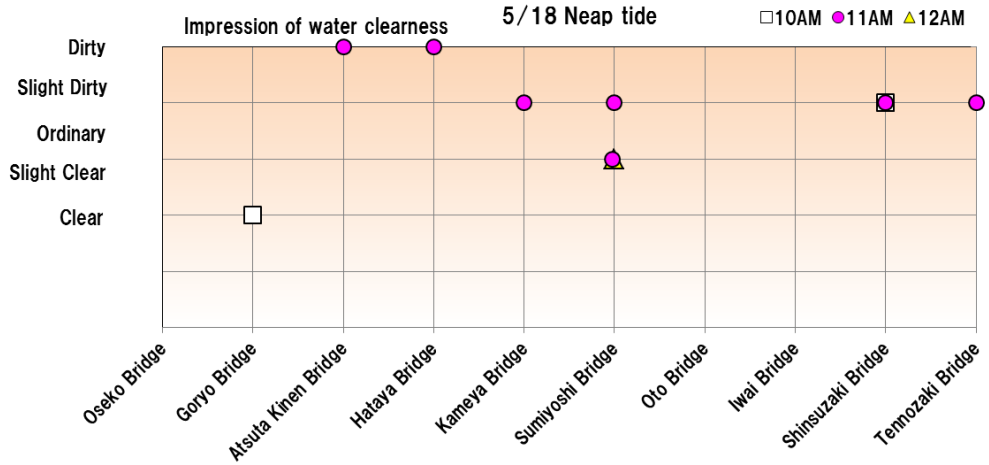
■ 2013/5/25 Spring tide

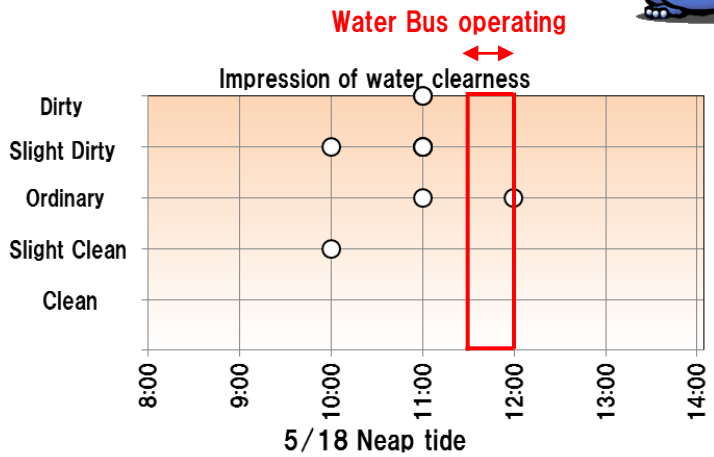


Conclusion of the 3rd Horikawa River general investigation 2013/5/18, 5/25
Impression of water clearness

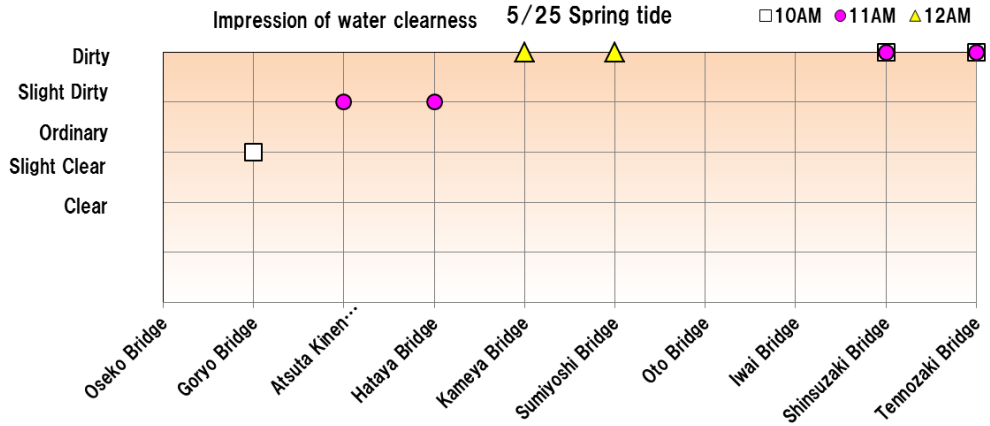
There are no remarkable changes.

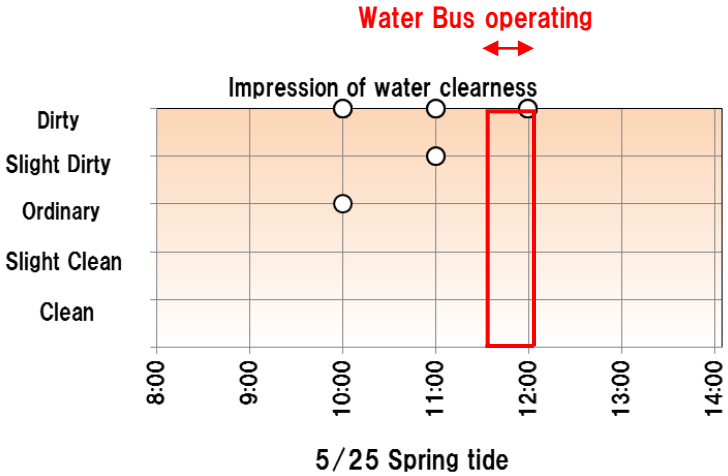
■ 2013/5/18 Neap tide





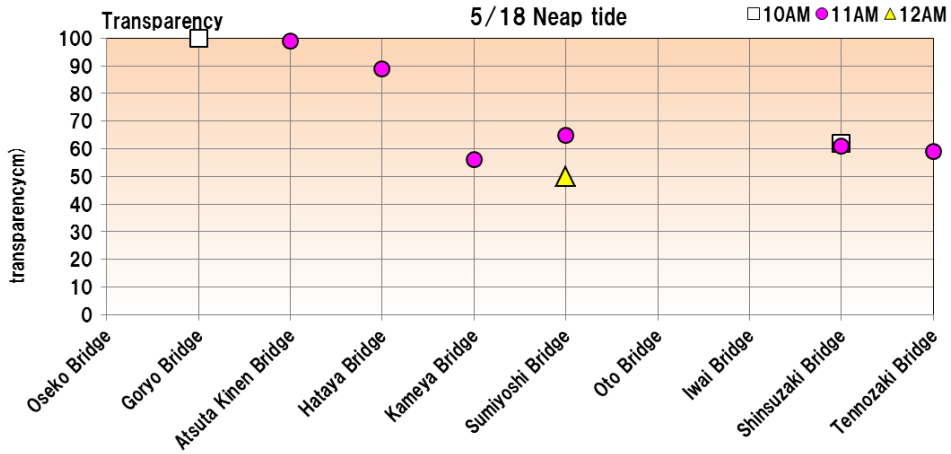
■ 2013/5/25 Spring tide

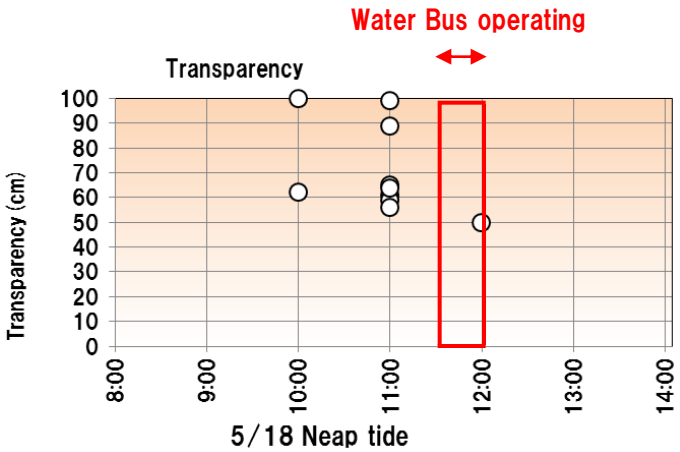




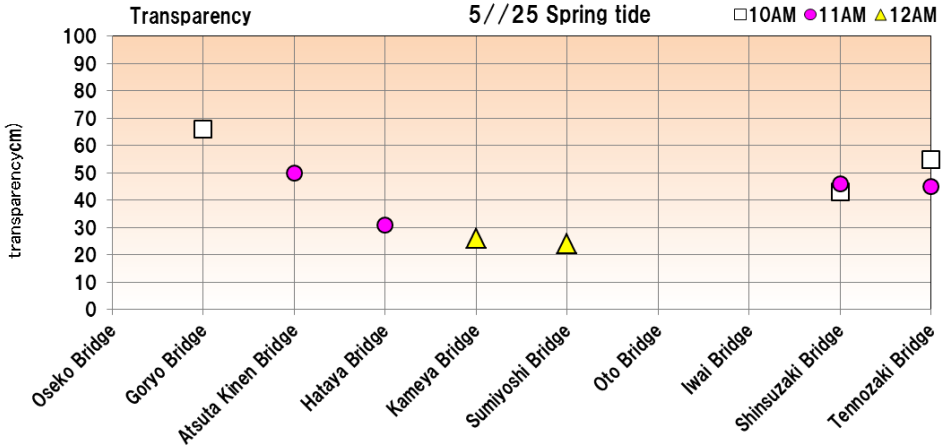
Conclusion of the 3rd Horikawa River general investigation 2013/5/18, 5/25 Transparency

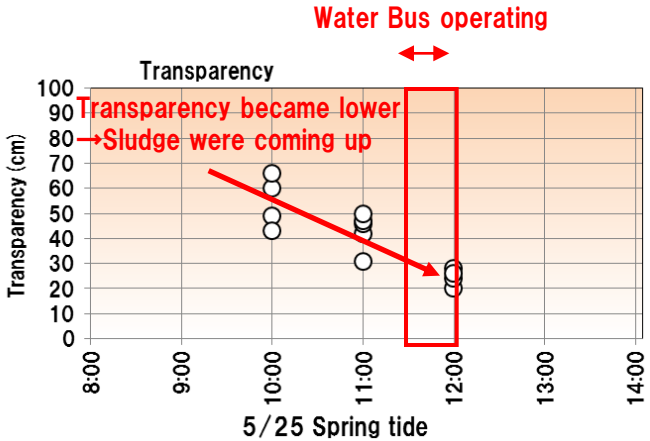
■ 2013/5/18 Neap tide





■ 2013/5/25 Spring tide

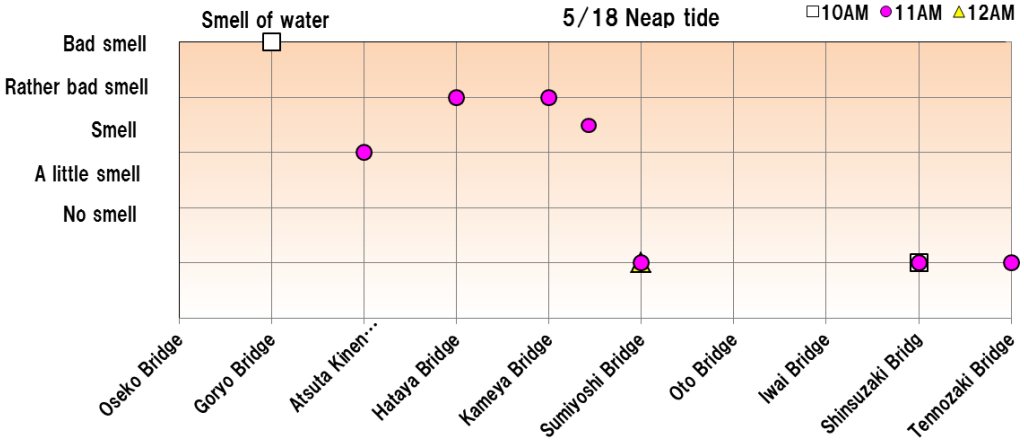


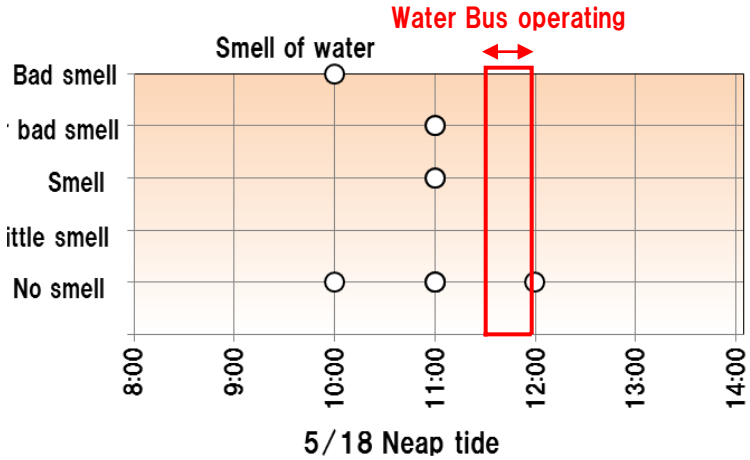


Transparency became lower as time passed during Spring tide. This is because Sludge were coming up. There were no remarkable changes during Neap tide.

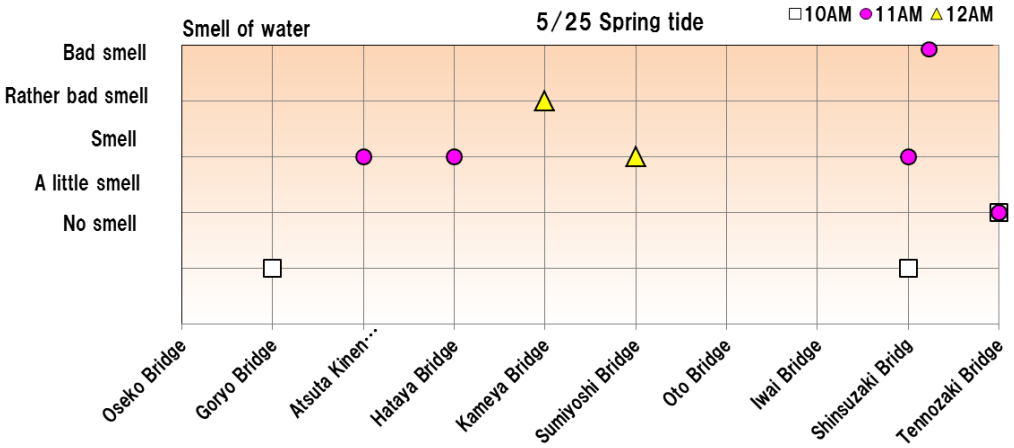
Conclusion of the 3rd Horikawa River general investigation 2013/5/18, 5/25 Smell of water

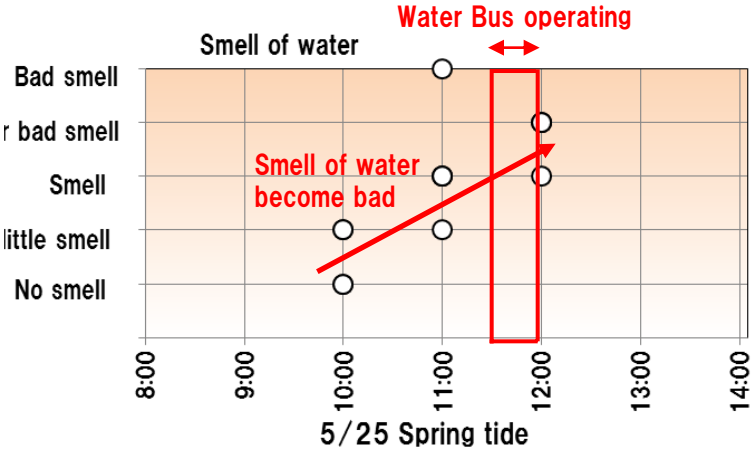
■ 2013/5/18 Neap tide





■ 2013/5/25 Spring tide





Smell of water became bad as time passed during Spring tide.

14.Progress of Citizen's Awareness　Activities of studies

堀川1000人調査隊2010
第12回調査隊会議
平成25年2月23日（土）
報告：事務局

第5回 堀川生物多様性対策会議
平成25年2月4日（月）
主催：堀川生物多様性対策会議
報告：事務局

第1回 中川運河再生プラットフォーム開催
平成25年2月26日（火）
報告：事務局

伊勢湾流域圏再生フォーラム開催
平成25年3月2日（土）
報告：事務局

堀川まちづくりのこれから
平成25年5月30日（木）
報告：御用水跡街園愛護会調査隊

堀川まちづくりの会（仮称）第3回準備会
平成25年3月26日
報告：事務局

堀川浄化 船運航が有効かも
前年より悪臭やや強く白濁

中日新聞
平成25年2月24日（日）　朝刊より

Activities of studies

辻小学校2年生　校外学習
平成25年6月5日（水）

飯田小学校3年生　黒川観察会
平成25年6月7日（金）

主催・協力・報告
黒川ドリーム会、御用水跡街園愛護会調査隊
河川計画課調査隊、事務局

名北小学校3年生　黒川学習会
平成25年6月10日（月）

大杉小学校2年生　黒川観察会
平成25年6月13日（木）

名北小学校3年生　黒川観察会
平成25年6月17日（月）

中日新聞
平成25年6月12日（水）　朝刊より

水上の清掃活動を紹介

東築地小の児童招く

笹島小学校5年生　黒川観察会
平成25年6月24日（水）

八熊小学校3年生　黒川体験学習
平成25年6月28日（金）

支援センター「なないろ」の皆さん　生き物調査と清掃活動
平成25年7月11日（木）

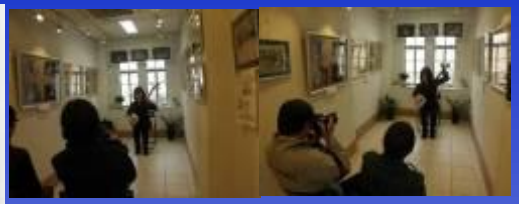
水質調査
御用水跡街園愛護会調査隊
平成25年2月9日（土）

堀川生き物調査
平成25年7月6日（土）

Activities of “Free Survey Groups” & “Cheering Groups”

清掃活動
平成25年2月16日(土)
御用水跡街園愛護会調査隊

「相川上流部の四季と野鳥」



堀川ギャラリー写真展　三味線の生演奏
平成25年3月7日(木)
報告:御用水跡街園愛護会調査隊

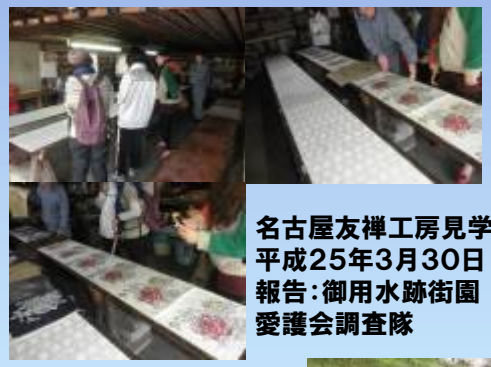
堀川定期船
実現へ前進
地元会社検討「来春にも」
川底掘削、ハードル下がる

朝日新聞　平成25年4月19日(金)　夕刊より

堀川の野草料理教室
生活支援センター「なないろ」にて開催
平成25年3月18日(月)
報告:御用水跡街園愛護会調査隊

木曽の高校生手作り
間伐材製の玩具
市科学館に寄贈
積み木など9作品

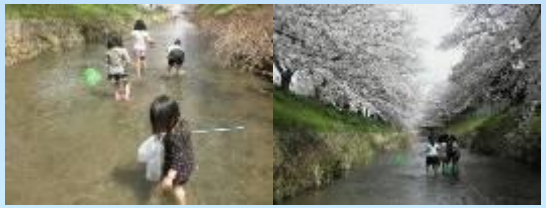
中日新聞
平成25年2月28日(木)　朝刊より



名古屋友禅工房見学
平成25年3月30日(土)
報告:御用水跡街園
愛護会調査隊

清掃活動・駅ちかウォーキング写真展示
平成25年3月24日(日)
御用水跡街園愛護会調査隊

定点調査・清掃活動　中日本建設コンサルタント㈱かわせみ調査隊



魚捕り　平成25年4月1日(月)
報告:御用水跡街園愛護会調査隊

第72回目の水質調査活動を実施
地球倶楽部調査隊
平成25年4月17日(水)
報告:事務局

Activities of “Free Survey Groups” & “Cheering Groups”

春の堀川一斉大そうじ
平成25年4月20日(土)
主催:クリーン堀川　報告:事務局

中日新聞　平成25年5月8日(水)朝刊より

納屋橋100年　歴史紐解きマップ
マップ作成:「納屋橋100年・歴史紐解きワークショップ」参加者の皆さん、名古屋市緑政土木局河川計画課

中日新聞
平成25年
5月17日(金)
夕刊より

なごや北ホームニュース
平成25年5月11日(土)より

鯱城・堀川と生活を考える会
平成24年度の活動報告書

Activities of “Free Survey Groups” & “Cheering Groups”

北清水親水広場付近の清掃活動
黒川ドリーム会平成25年6月1日（土）
報告：御用水跡街園愛護会調査隊山田隊長

無病息災 この1年も

ちょうちん川面ゆらり 熱田・堀川まつり

一年の無病息災や堀川の浄化を願う「堀川まつり」が二日まで、熱田区の宮の渡し公園で開かれた。一日夜には、三百六十五個のちょうちんを掲げた「まきわら船」が、夕闇の堀川で幻想的な姿を浮かび上がらせた。

ちょうちんの数は一年の三百六十五日にちなみ、台船の上で直径六尺のドーム状に掲げられている。ドーム上部にはさおが立てられ、一年の十二カ月に合わせて十二個のちょうちんが付いている。

午後七時すぎに点灯し、公園周辺をゆっくりと周遊。船上では和太鼓の演奏もあり、勇壮な音が川面に響きわたった。

まきわら船は戦前から名古屋の夏の風物詩として親しまれていたが、資金難などで一九七五（昭和五十）年に中止。昔を懐かしむ市民らの手で九〇年に復活した。（佐藤航）

勇壮な太鼓の演奏とともに堀川を引き回されるまきわら船＝熱田区の宮の渡し公園で

中日新聞　平成25年6月2日（月）　朝刊より

「御用水跡街園を花で飾ろう」運動
生活支援センター「なないろ」
平成25年6月11日（火）
報告：御用水跡街園愛護会調査隊

木が結ぶ 木曽川の縁

小牧の業者 下流部に流域材PR

市民団体の「流域図」に着目

<6月22、23日>

22・23日に展示会

朝日新聞　平成25年6月14日（金）

黒川ドリーム会

地域情報誌「北区プリモ」
黒川ドリーム会 特集
平成25年7月27日（土）

夕顔や材木表現のアクセサリーがはんなり

堀川テーマの雑貨展

元デザイナーの女性4人

中日新聞
平成25年7月4日（木）
朝刊より

堀川ギャラリーかわら版

堀川ギャラリーはこんなところです！

5月28日(火)～6月16日(日)

「堀川写真コンテスト」

堀川写真コンテスト
平成25年5月28日（火）～6月16日（日）
開催：名古屋堀川ライオンズクラブ

Activities of “Free Survey Groups” & “Cheering Groups”

活動報告
「上流は下流を思い、下流は上流に感謝する」
水源の里を守ろう 木曽川流域みん・みんの会

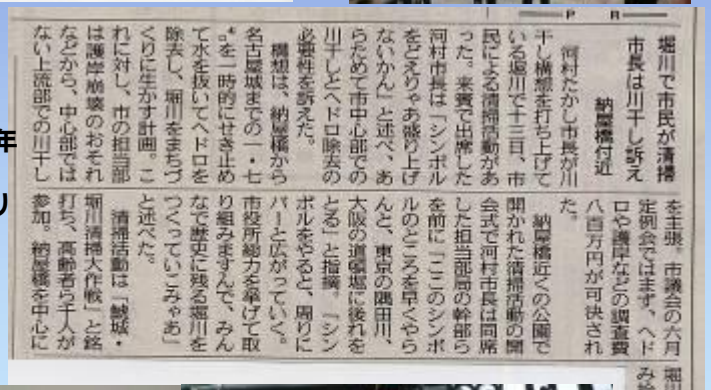
活動レポート：環境ボランティアサークル「亀の子隊」

ヘドロ臭が激減し、ハゼが戻る！！レポート
自由研究隊　イワシ調査隊

名古屋都市センター ニュースレター　2013. 7
堀川・納屋橋のレポート　掲載

クリーン堀川
会報誌（第16号
2013. 3発行）

中日新聞
平成25年
7月14日（日）
朝刊より



堀川で市民が清掃
市長は川干し訴え
納屋橋付近

河村たかし市長が川干し構想を打ち上げている堀川で十三日、市民による清掃活動があった。来賓で出席した河村市長は「シンボルをどえりゃあ盛り上げないかん」と述べ、あらためて市中心部での川干しとヘドロ除去の必要性を訴えた。

構想は、納屋橋から名古屋城までの一・七キロを一時的にせき止めて水を抜いてヘドロを除去し、堀川をまちづくりに生かす計画。これに対し、市の担当部は護岸崩壊のおそれなどから、中心部ではない上流部での川干しを主張。市議会の六月定例会ではまず、ヘドロや護岸などの調査費八百万円が可決された。

納屋橋近くの公園で開かれた清掃活動の開会式で河村市長は同席した担当部局の幹部らを前に「ここのシンボルのところを早くやらんと、東京の隅田川、大阪の道頓堀に後れをとる」と指摘。「シンボルをやると、周りにパーと広がっていく。市役所総力を挙げて取り組みますんで、みんなで歴史に残る堀川をつくっていこうじゃあ」と述べた。

清掃活動は「鯱城・堀川清掃大作戦」と銘打ち、高齢者ら千人が参加。納屋橋を中心に堀川沿いの十六キロでごみ拾いなどをした。

伊勢湾流域圏
再生ネットワーク事務局さん
活動レポート

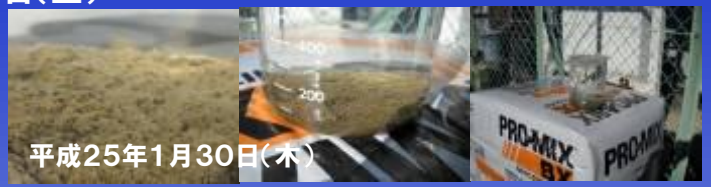
レトロ納屋橋100年実行委員会の皆さん
納屋橋の欄干を磨き周辺の清掃活動
平成25年7月13日（土）

鯱城・堀川と生活を考える会・名古屋市高年大学鯱城学園・OBの皆さん
900人を超える規模で、堀川全域の一斉清掃を実施
平成25年7月13日（土）

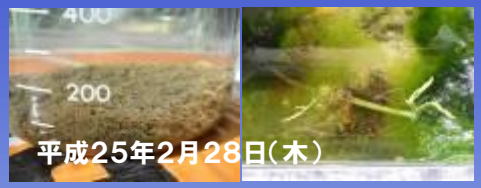
Activities of “Free Survey Groups” & “Cheering Groups”

東日本大震災津波被災農地での
空芯菜栽培による塩分吸収実験報告

岐阜県恵那農業高校　堀川のヘドロ分析実験を継続中
平成24年12月8日(土)～



平成25年1月30日(木)



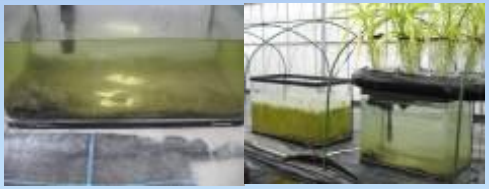
平成25年2月28日(木)

平成25年3月28日(木)

平成25年4月18日(木)

●水槽での汚泥実験を開始　平成25年6月26日(水)

汚泥実験 平成25年7月30日(火)



汚泥実験 4日目　平成25年6月30日(日)

平成25年2月24日(日)
中日新聞より

Events

堀川友禅流し
平成25年4月6日(土)
主催:北区役所・
北区まちづくり推進協議会
報告:御用水跡街園愛護会調査隊・事務局

名古屋堀川ライオンズクラブ
設立10周年記念事業
「堀川狂言会」
平成25年4月6日(土)

地元児童熱演に拍手
堀川舞台 新作狂言を披露
能楽堂

中日新聞
平成25年4月9日(火) 朝刊より

堀川フラワーフェスティバル2013
平成25年5月10日(金)
報告:御用水跡街園愛護会調査隊・事務局

朝日新聞 平成25年5月11日(土) 朝刊より

中日新聞
平成25年5月11日(土) 朝刊より

平成25年5月12日(日)

平成25年5月18日(土)

Events

春の環境デーなごや2013　堀川体験乗船
「身近な自然体験会～船から発見！　私たちの堀川」開催　2013年6月1日(土)
主催：名古屋市環境局
運営協力：名古屋堀川ライオンズクラブ

なごや水フェスタ　平成25年6月2日(日)
開催：名古屋市上下水道局
参加：名古屋市高年大学27期環境学科調査隊
　　名古屋グランパス応援隊
　　名古屋堀川ライオンズクラブ
報告：事務局

中日新聞　平成25年6月3日(月)　朝刊より

日本経済新聞　平成25年2月18日(月)　朝刊より

なやばし沖縄夜イチ
平成25年7月29日(土)
報告：御用水跡街園愛護会調査隊