

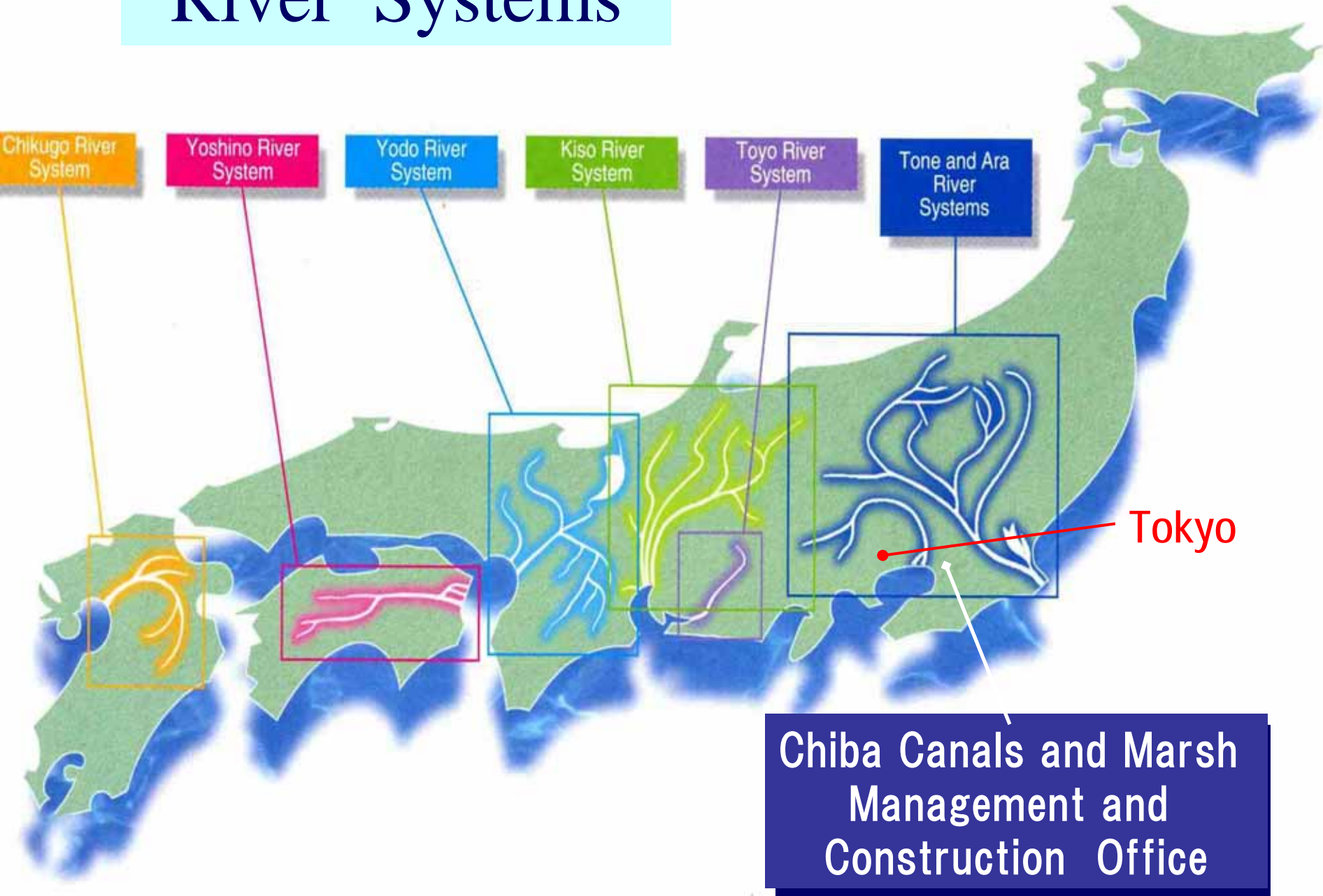
An aerial photograph showing a large-scale marsh development project. The central feature is a large, dark blue body of water, likely a canal or reservoir, surrounded by a network of smaller canals and ditches. The surrounding land is a mix of green fields, brownish soil, and some urban development. The text 'Inba marsh development project' is overlaid in a large, white, italicized font with a black outline.

Inba marsh development project

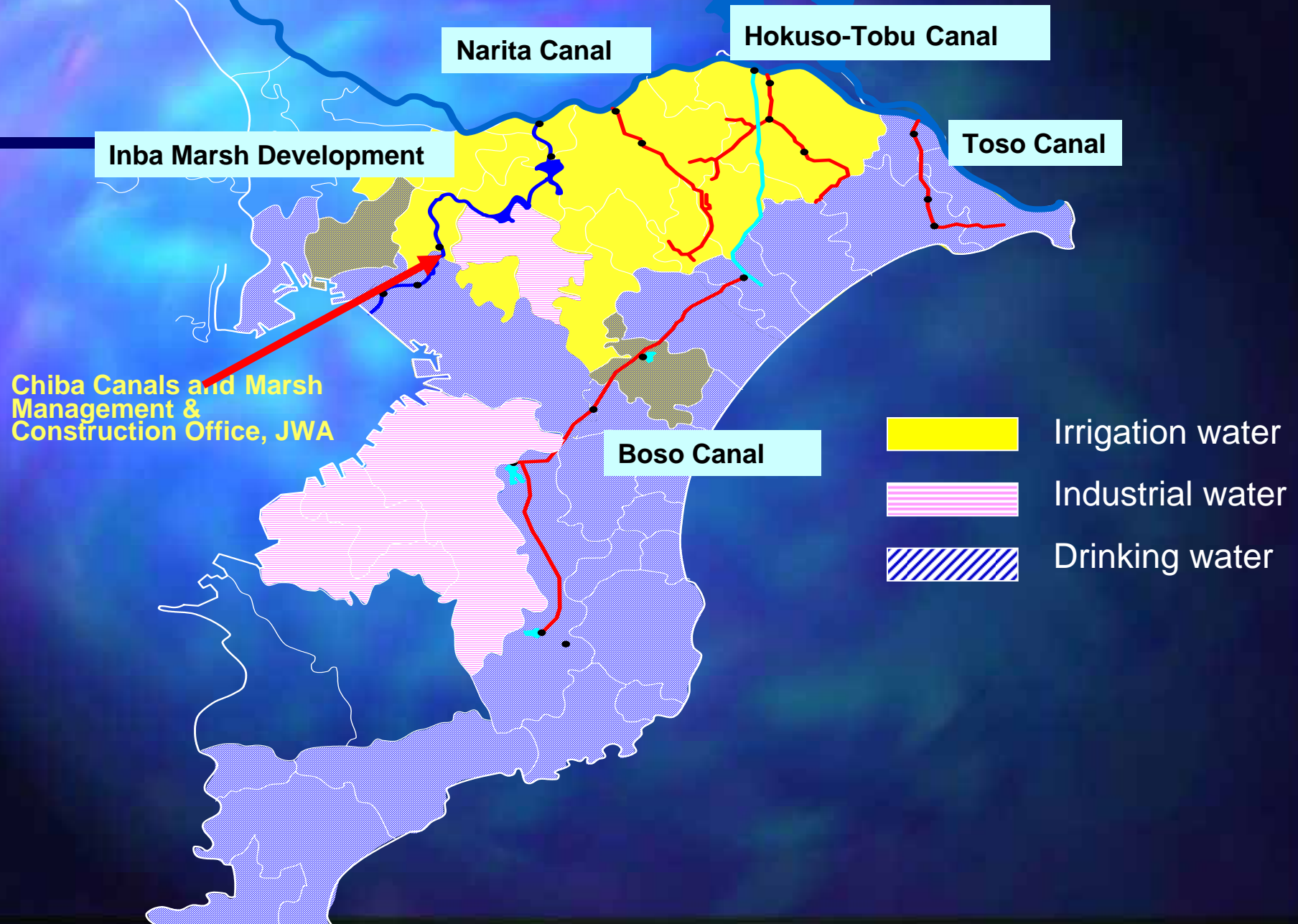
*Chiba Canals and Marsh Management and
Construction Department (JWA)*

Outline of Our Services

River Systems



5 Canal Systems under the Office



Narita Canal



Intake



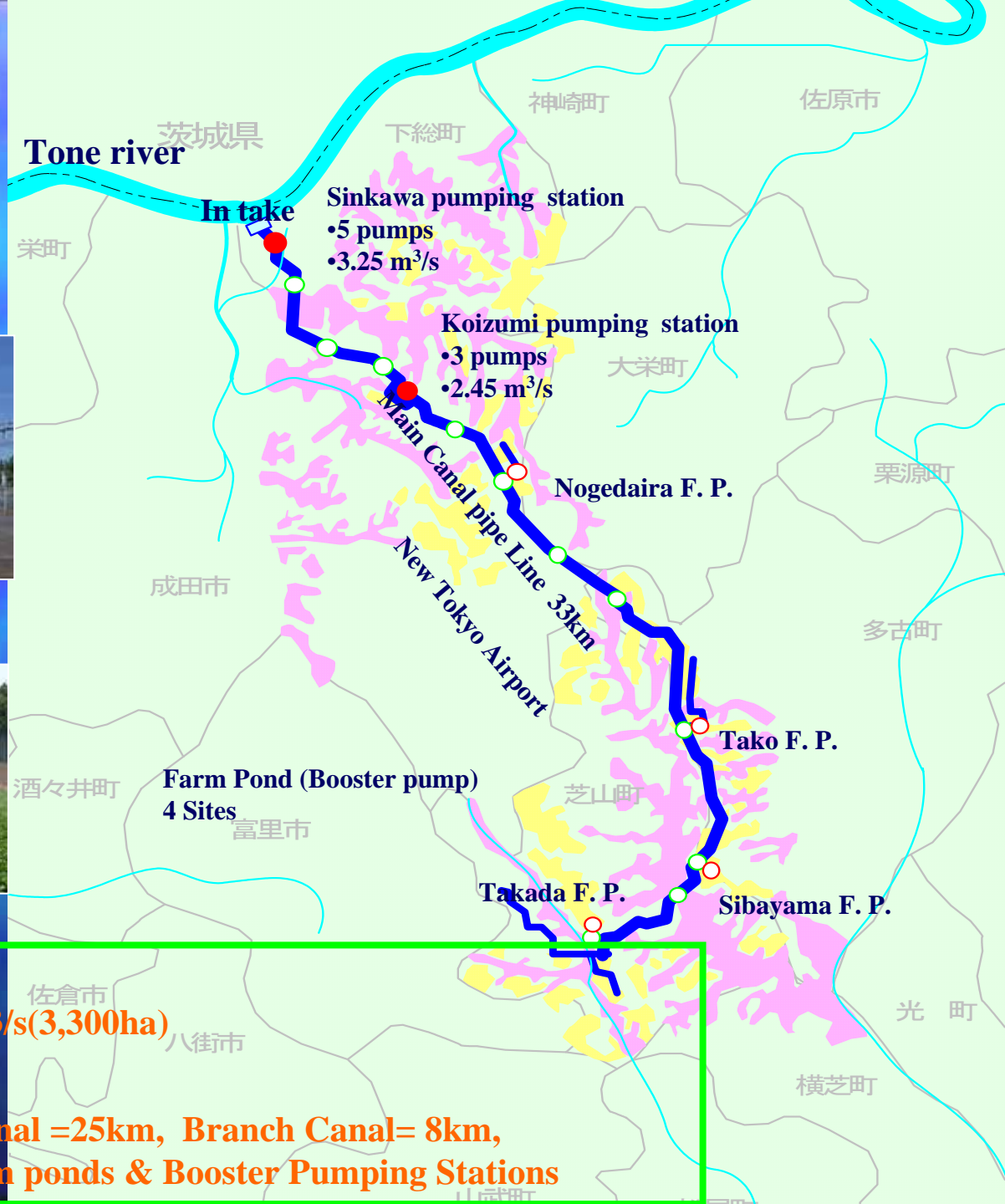
Sinkawa pumping station



Farm Pond



The irrigation conditions of the field



★Water conveyance

Irrigation water : 3.25m³/s(3,300ha)

★Project Description

Intake Facilities, Main Canal =25km, Branch Canal= 8km,
2Pumping Stations, 4 Farm ponds & Booster Pumping Stations

Hokuso-tobu Canal



Intake



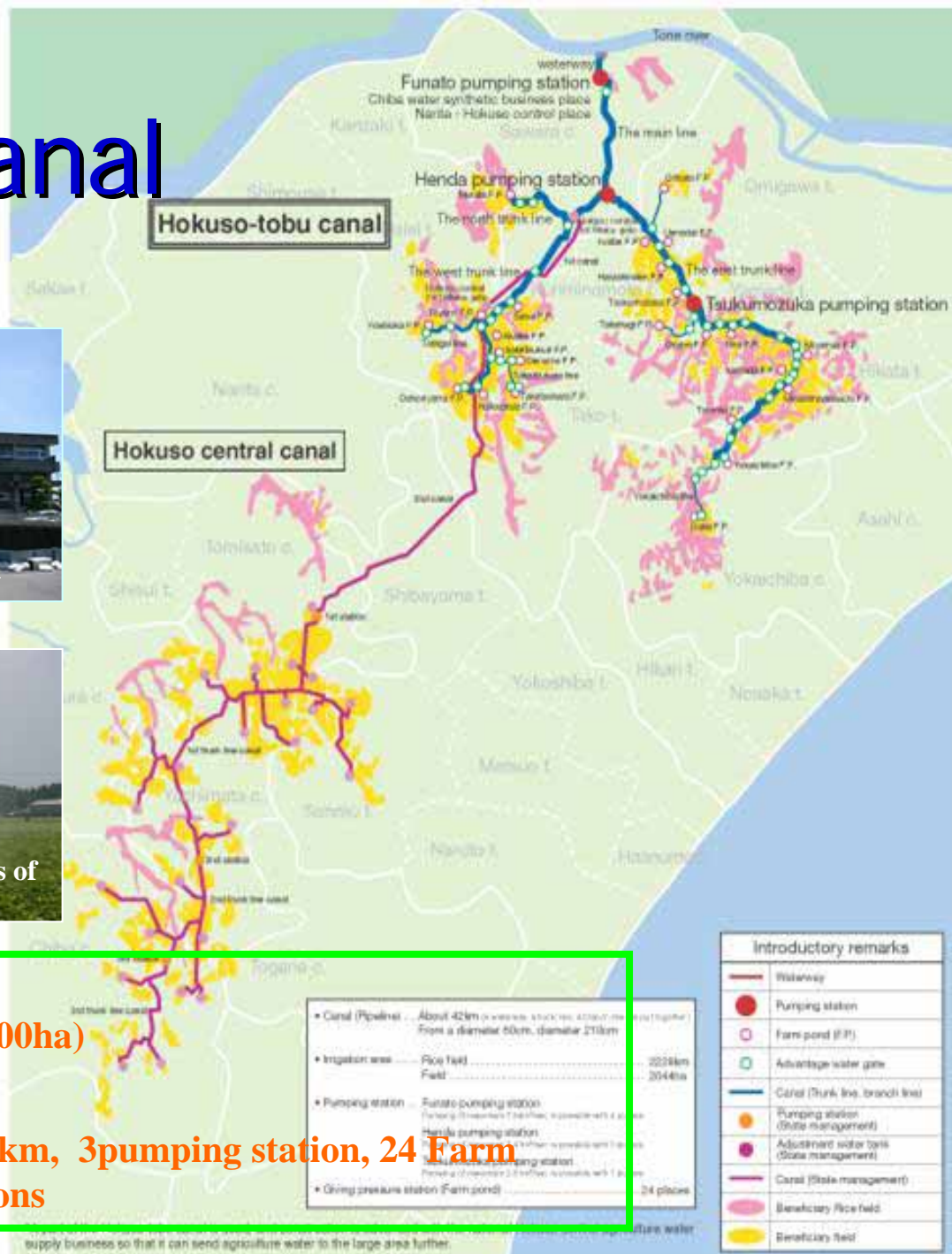
Funato pumping station



Kaeda pumping station



The irrigation conditions of the field



Hokuso-tobu canal

Hokuso central canal

• Canal (Pipeline)	• About 42km (waterway structure, about 40km (total length)) From a diameter 50cm, diameter 210cm
• Irrigator was	• Rice field 2028km Field 2044km
• Pumping station	• Funato pumping station Funato (Shimizu) The flow is possible with 4 pumps • Henda pumping station Henda (Shimizu) The flow is possible with 2 pumps • Tsumozuka pumping station Tsumozuka (Shimizu) The flow is possible with 1 pump
• Giving pressure station (Farm pond)	• 24 places

Introductory remarks	
	Waterway
	Pumping station
	Farm pond (F.P.)
	Advantage water gate
	Canal (Trunk line, branch line)
	Pumping station (State management)
	Adjustment water tower (State management)
	Canal (State management)
	Beneficiary Rice field
	Beneficiary field

★Water conveyance

Irrigation water : 7.54m³/s(8,400ha)

★Project Description

Intake facilities, Main canal =42km, 3pumping station, 24 Farm ponds & Booster Pumping Stations

supply business so that it can send agriculture water to the large area further.

Toso Canal

Ichinowakeme Pumping Station

7pumps
2.991 m³/s



Ichinowakeme Pumping Station



Tonosyo Pumping Station



Ioka Tank



The irrigation conditions of the field



★Water conveyance

Irrigation water : 2.235m³/s(2,800ha)

Domestic water : 1.324m³/s

★Project Description

Intake Facilities, Main Canal =22km, Branch Canal= 15km,

1Pumping Station, 18Farm ponds & Booster Pumping Stations

Boso Canal



Ryoso dai-ich Pumping Station



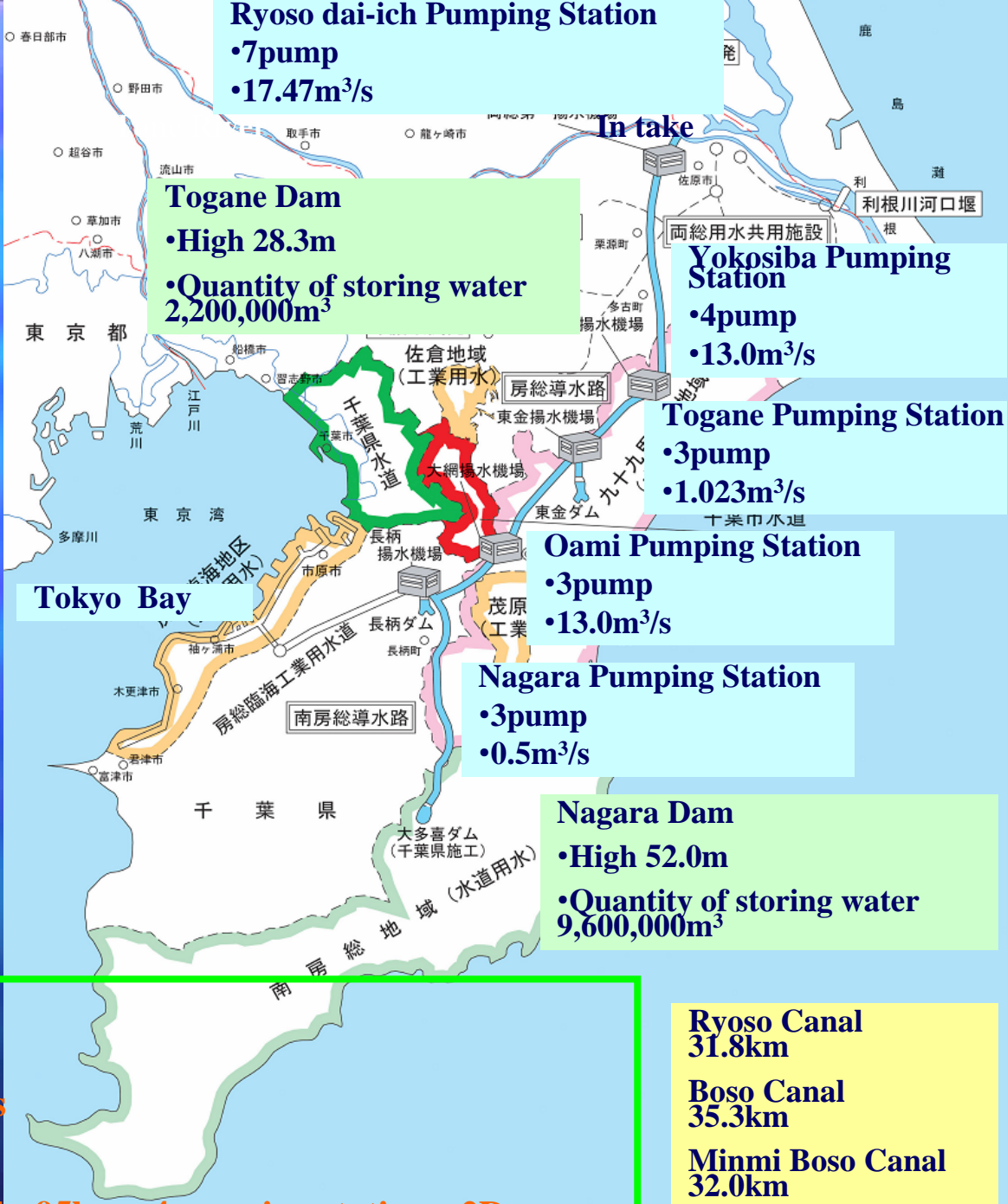
Yokosiba Pumping Station



Togane Dam



Nagara Dam



★ Water conveyance

Domestic water : 4.90m³/s

Industrial water : 3.50m³/s

★ Project Description

Intake facilities, Main canal =95km, 4pumping stations, 2Dams

Ryoso Canal
31.8km

Boso Canal
35.3km

Minmi Boso Canal
32.0km

千葉用水総合事業所組織図

所 長

副所長（事・技）

総務課

人事・厚生など総務業務と契約など経理業務を行います。

調査設計課

緊急改築事業の調査・設計を行います。

工務課

緊急改築事業の予算・計画・監督を行います。

調整課

関係機関との協議・調整を行います。

第一管理課

印旛沼ほか三用水及び房総導水路の維持管理・運用を行います。

第二管理課

主に印旛沼開発施設の電気通信設備の維持管理を行います。

電気通信課

機械課

主に印旛沼開発施設の機械設備の設計・監督を行います。

東総管理所

東総用水施設の維持管理・運用を行います。

成田北総管理所


成田用水及び北総東部用水施設の維持管理・運用を行います。

房総導水路管理所

房総導水路施設の維持管理・運用を行います。

Outline of Inba Marsh Development Project

Background of the Inba Marsh Development Project



- Frequent flood damage (Once in 3 years)
- Necessity for increasing food production after WWII
- Deficit of municipal water derived from economic development

History of Construction Project

- 1946 Construction project was started as reclamation project by the Ministry of Agriculture and Forest
(Purpose: Flood prevention of farmland, farmland development, and irrigation water, related only to irrigation)
- 1963 Project plan was changed to comprehensive water utilization project
(Municipal water use was added on the original purpose.)
Water Resources Development Public Corporation (WARDEC, Present JWA) took over the project excluding the part of reclamation project.
- 1969 Construction was completed (Cost for construction was about 18.1 billion JPY), and O&M started, by WARDEC

Transformation of the shape of the marsh due to the construction project

Before Construction
(1921)



After Construction
(1993)



◆Forming W-shaped marsh because
Tone river moved in the east

◆Flood damage, once in 3 years

Role of Inba Marsh Development Facility

○ Deliberation of (balk) Water

☆ Irrigation Water: 19.12m³/s (Maximum)

- For paddy field (6,300ha) around the marsh

☆ Industrial Water: 6.54m³/s (Maximum)

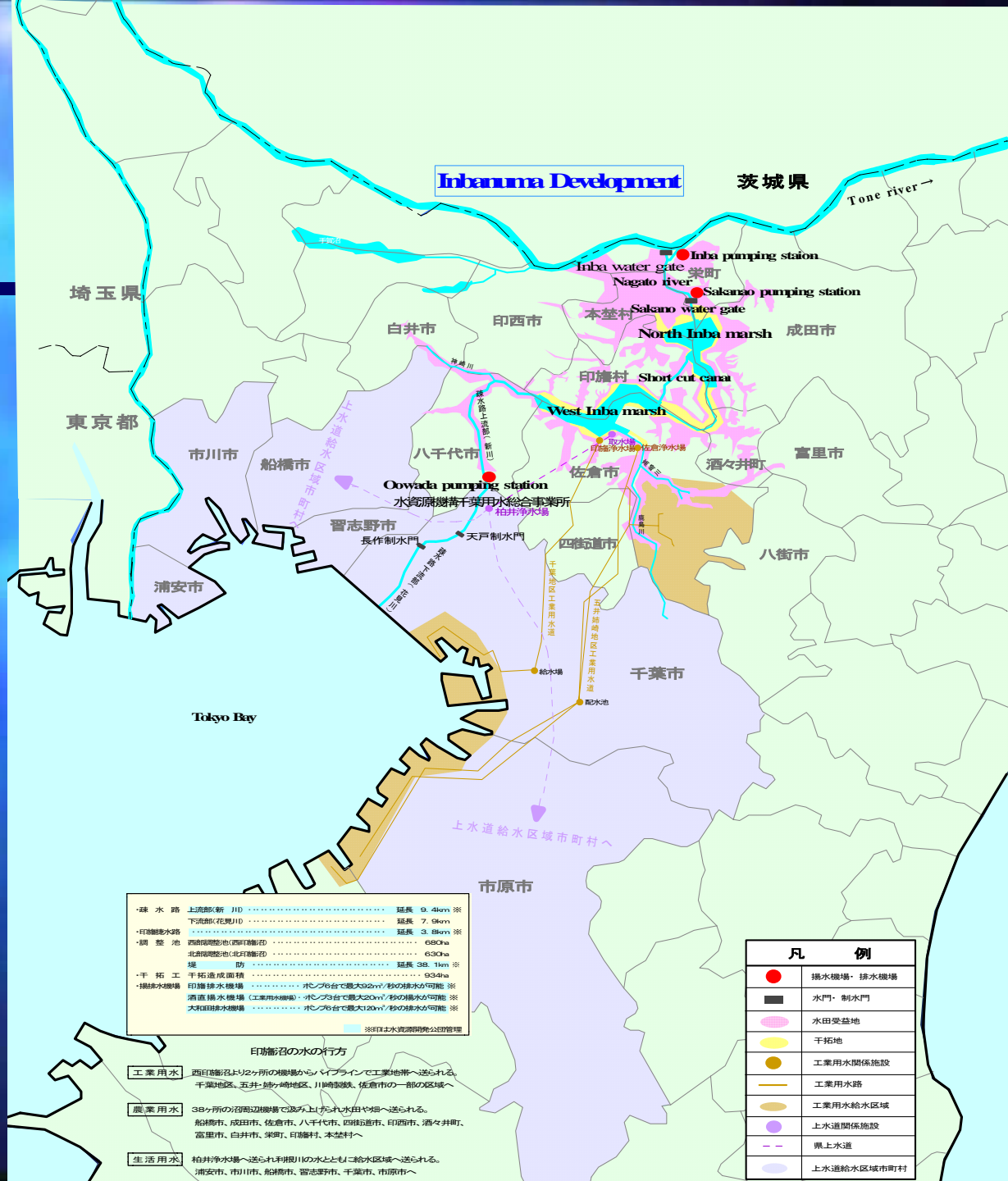
- For 55 factories along Tokyo Bay

☆ Drinking Water: 2.07m³/s (Maximum)

- For the areas around Chiba city (Population 2.8 million), about 16% of necessary amount

○ Prevention from Flood Damage

☆ Prevention from flood damage in farm and residential area around the marsh



Inbanuma Development

・疎水路	上流部(新 J1D)	延長 9.4km ※
	下流部(花見川)	延長 7.9km ※
・埋立地	西側埋立地(西側団地)	延長 3.0km ※
	北側埋立地(北側団地)	630ha
・堤防		延長 38.1km ※
・干拓工	干拓造成面積	934ha
・揚排水機場	印旛排水機場	ポンプ6台で最大32m ³ /秒の排水が可能 ※
	酒直排水機場 (五井排水機場)	ポンプ3台で最大20m ³ /秒の排水が可能 ※
	大和田排水機場	ポンプ6台で最大20m ³ /秒の排水が可能 ※

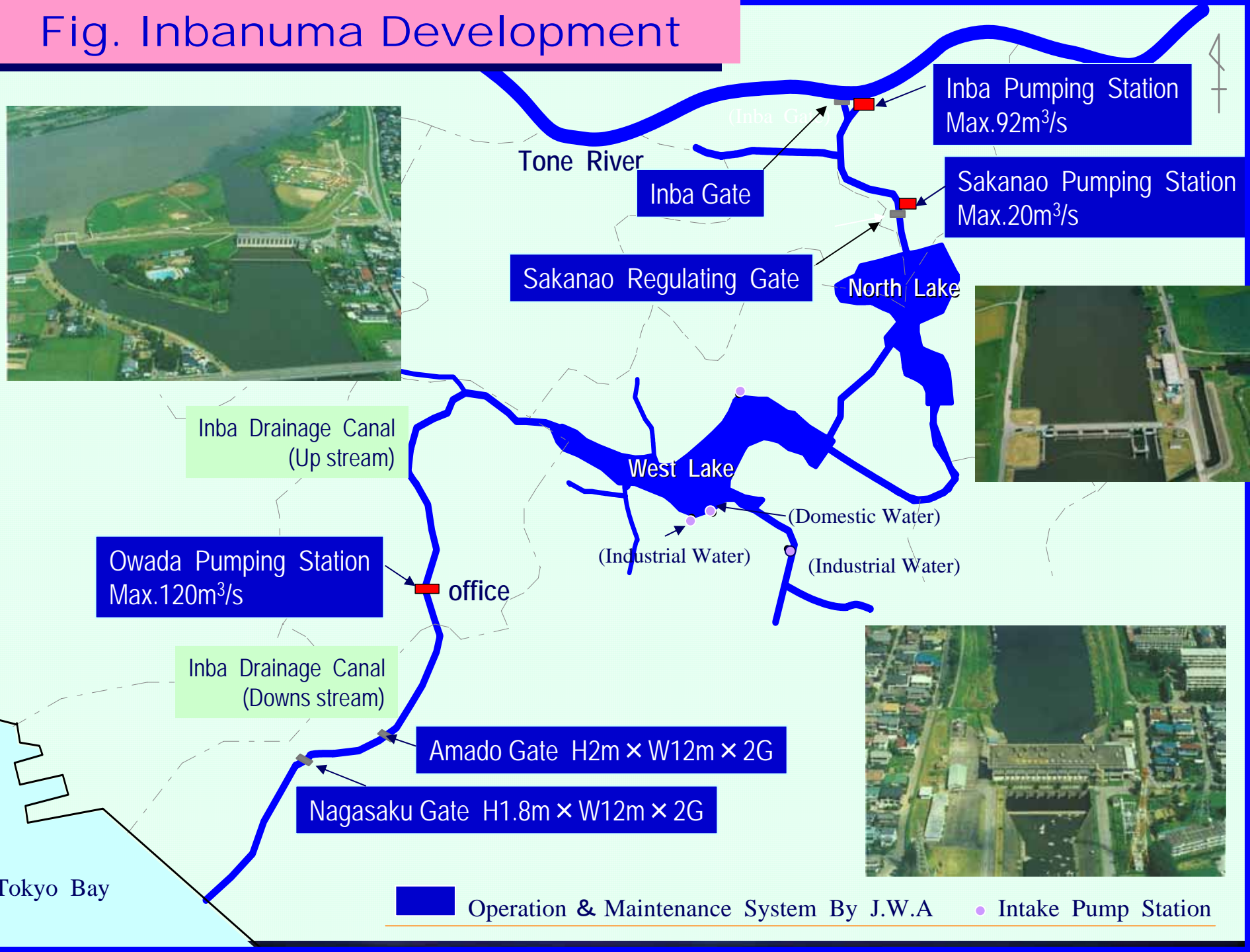
※印旛排水機場は水資源開発公社管理

- 印旛沼の水の行方**
- 工業用水** 西印旛沼より2ヶ所の揚場からパイプラインで工業地帯へ送られる。千葉地区、五井・船橋地区、川崎地区、佐倉市の一部の区域へ
 - 農業用水** 38ヶ所の沼荷田揚場から汲み上げられ水田や畑へ送られる。船橋市、成田市、佐倉市、八千代市、四街道市、印旛町、酒々井町、富里市、白井市、栄町、印旛村、本埜村へ
 - 生活用水** 柏井浄水場へ送られ利根川の水とともに給水区域へ送られる。浦安市、市川市、船橋市、習志野市、千葉市、市原市へ

凡 例

●	揚水機場・排水機場
■	水門・制水門
○	水田受益地
□	干拓地
●	工業用水関係施設
—	工業用水路
○	工業用水給水区域
—	上水道関係施設
- - -	県上水道
□	上水道給水区域市町村

Fig. Inbanuma Development



■ Operation & Maintenance System By J.W.A ● Intake Pump Station

Fig. Inba Drainage Canal

← Flow of Normal time
← Flow of Flood time

Inba Gate

H.W.L. 8.016m
Tone R.

Inba Marsh

Sakanao Regulating Gate

Nagato R.
H.W.L. 3.0m

N.W.L. 0.9~1.1m

Tokyo Bay

H.W.L. 4.25m

N.W.L. 2.3~2.5m

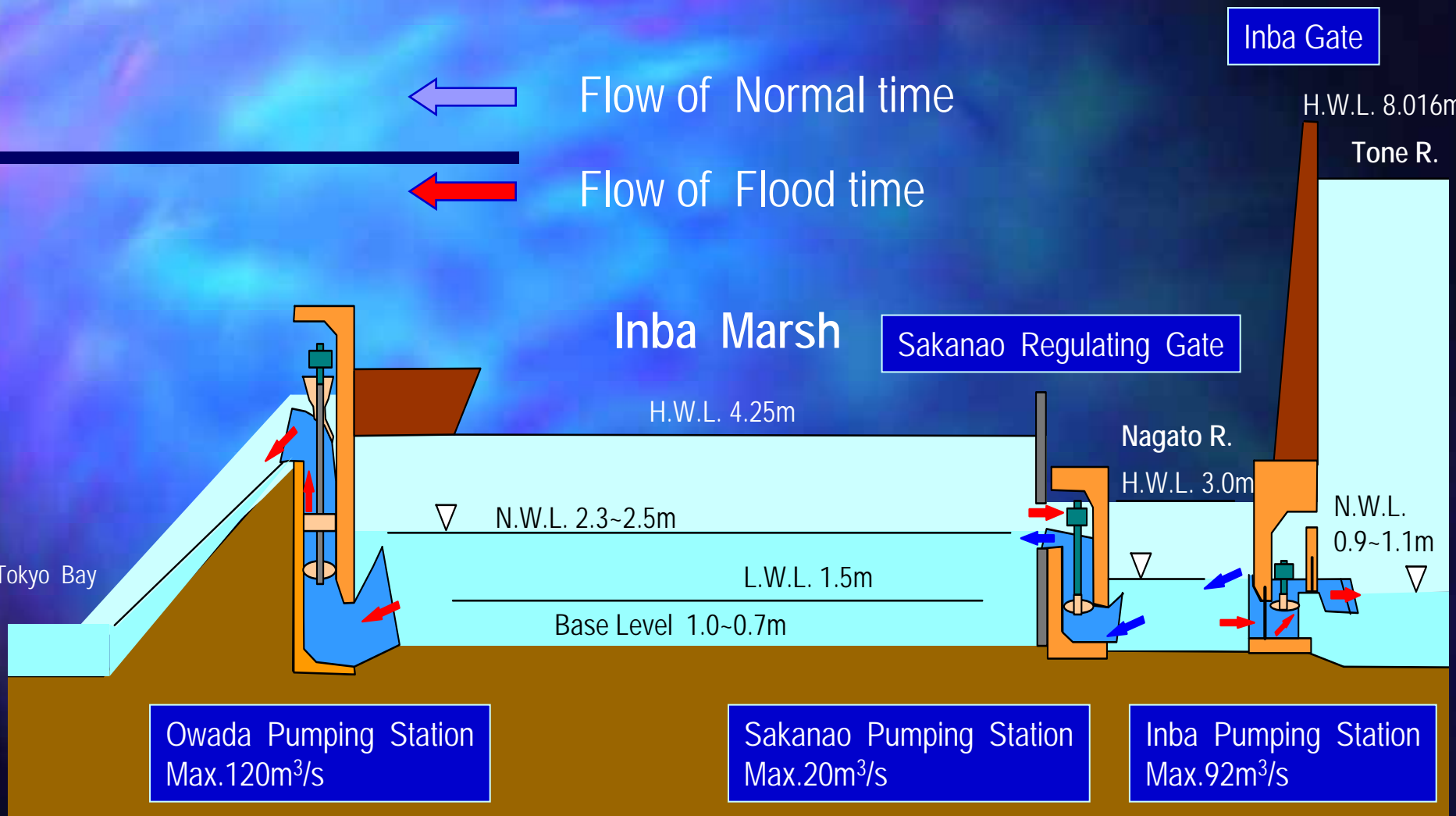
L.W.L. 1.5m

Base Level 1.0~0.7m

Owada Pumping Station
Max.120m³/s

Sakanao Pumping Station
Max.20m³/s

Inba Pumping Station
Max.92m³/s



Total Inflow
 $423 \times 10^6 \text{m}^3$

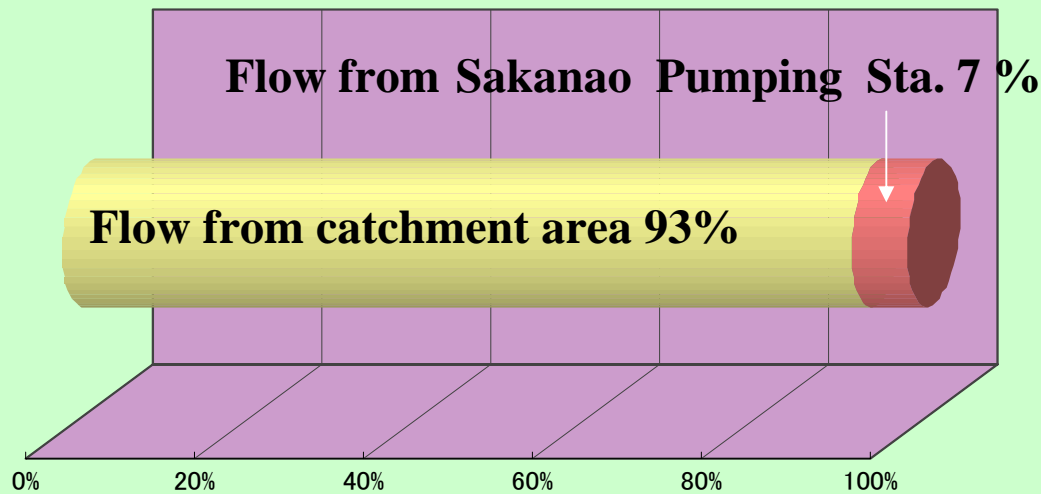
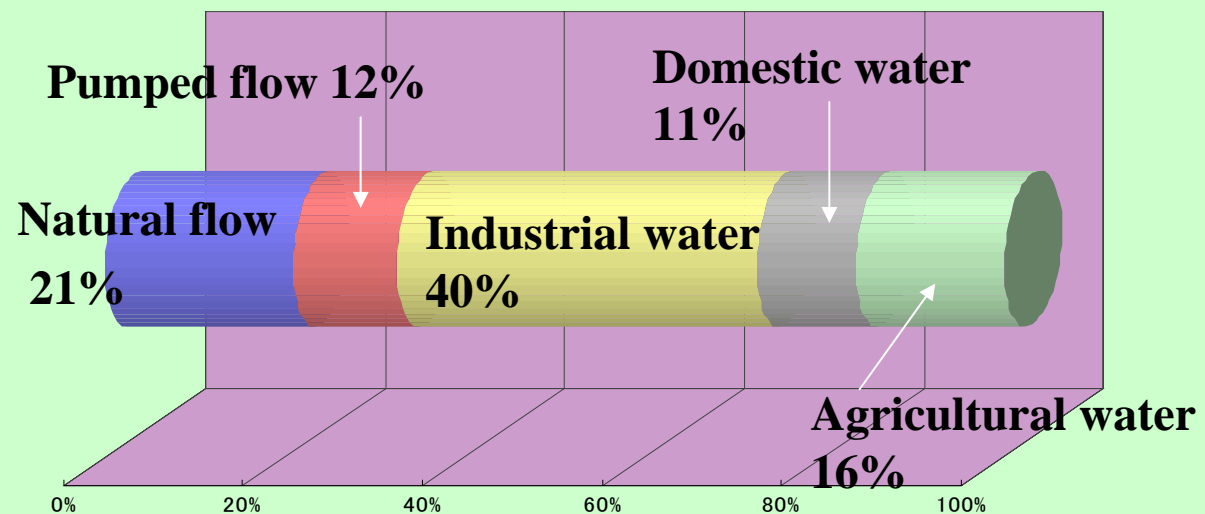


Fig. Annual In Coming and Out Going of Water in Inba Marsh

Total Outflow
 $423 \times 10^6 \text{m}^3$



System for Water Utilization Facility Management

- **Japan Water Agency** : Operate sluice gates and pump facilities to maintain the marsh water level and to secure the capacity for water utilization



- **Water Users (Irrigation, Drinking, Industrial)**
Each user places intake facilities around marsh by themselves, intakes water from them, and deliver water to end users.

Number of Intake facilities	Irrigation water : 38
	Industrial water : 2
	Drinking water : 1

Outline of Management Service

○ Annual Budget

About 500 million JPY

○ Service

- ☆ Operating drainage facility when happening floods
- ☆ Operating facilities to deliver water
- ☆ Collecting information including the amount of water intake or inflow, and meteorology
- ☆ Maintenance of facilities



Steering committee for Operation and Management

- We hold the steering committee for O&M composed of each water user every year. Also, we discuss important affairs related to O&M of the facility including project implementation process and management plans.



How to deal with the degraded facilities

Emergency Reconstruction of Inba Marsh Development Project

Inba Marsh

Tone River

Inba Gate

Inba PS

Owada PS

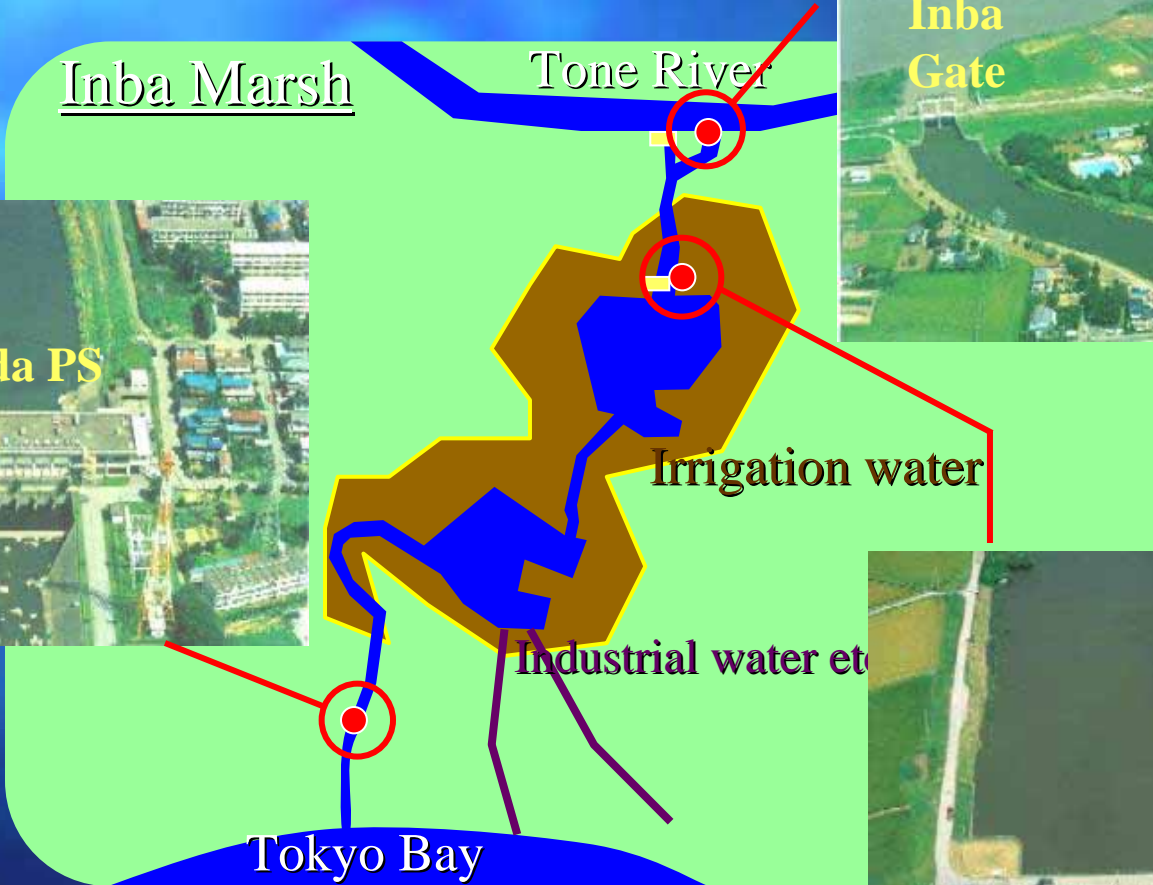
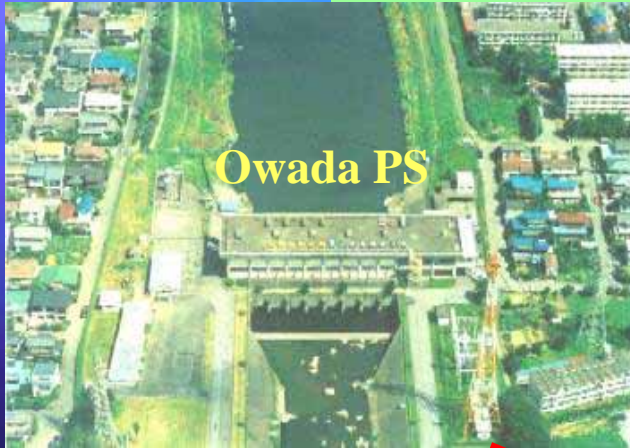
Irrigation water

Industrial water et

Tokyo Bay

Sakanao PS

Sakanao Gate



◆ Main Construction Work

Inba Pump Station: Renewal of drainage pumps, pump house, and operation facilities

Owada Pump Station: Renewal of drainage pumps, pump house, and operation facilities

Sakanao Pump Station: Renewal of drainage pumps, pump house, and operation facilities

◆ Project cost 26 billion JPY

◆ Project duration 2001~2008

Plans and status of pump facility renewal

Month & Year	03.Nov~04.Apr	04.Nov~05.Apr	05.Nov~06.Apr	06.Nov~07.Apr	2007~2008. Mar
	Completed	Completed	Completed		
Inba PS (Drainage)	1P 2P	3P 4P	5P 6P	As of Sep, 2006 Progress rate of renewal 64.2%	
Owada PS (Drainage)		6P 5P	4P 3P	2P 1P	As of Sep, 2006 Progress rate of renewal 49.4%
Function of renewed facility	30.7m ³ /s	60.7m ³ /s	60.7m ³ /s	60m ³ /s	
				Sakanao PS (Pumping up)	1P 2P 3P

Issues we are facing now

- Water quality of the Inba Marsh has been degraded due to urbanization of the basin area and other reasons (The value of COD is third worst of all Japanese lakes and marshes.)



- Therefore, in 2001, Chiba Prefecture promoted to organize the steering committee for water quality improvement of the Inba Marsh, composed of residents, local governments, enterprises concerned, water users, and other experts. Then, they have discussed and promoted efforts for improving water quality of the Inba Marsh.

Our Efforts

Mobilization operation for water purification



Signboard for enlightening



Clean-up Activity



水がささえる豊かな社会

Thank you for your attention