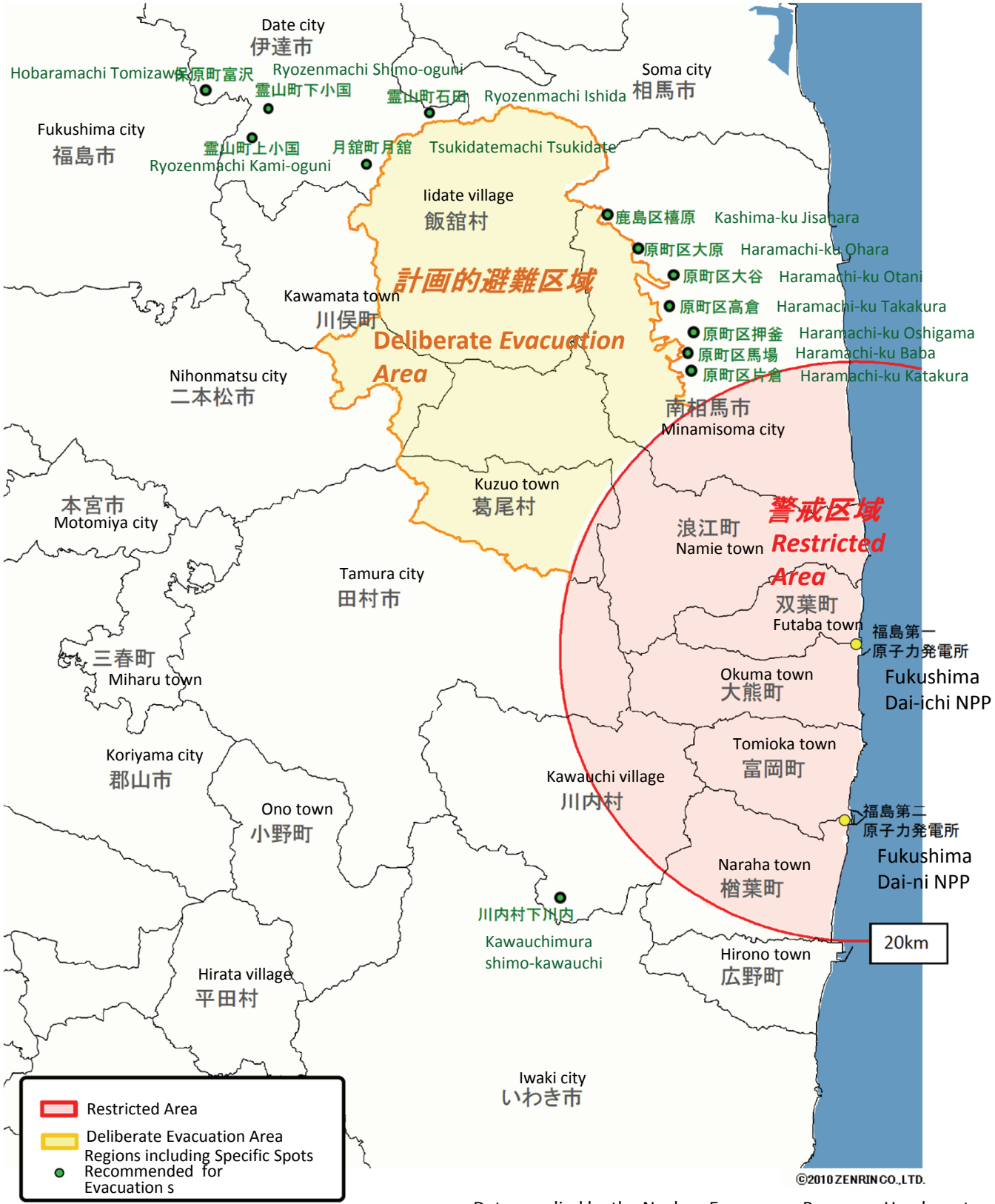
Geographical overview of the restricted area, deliberate evacuation areas, areas prepared for emergency evacuation and regions including specific spots from where evacuation is recommended (before the cancellation of areas prepared for emergency evacuation)

Attachment V-1

Data supplied by the Nuclear Emergency Response Headquarters

Geographical overview of the restricted area, deliberate evacuation areas, areas prepared for emergency evacuation and regions including specific spots from where evacuation is recommended (after the cancellation of areas prepared for emergency evacuation)

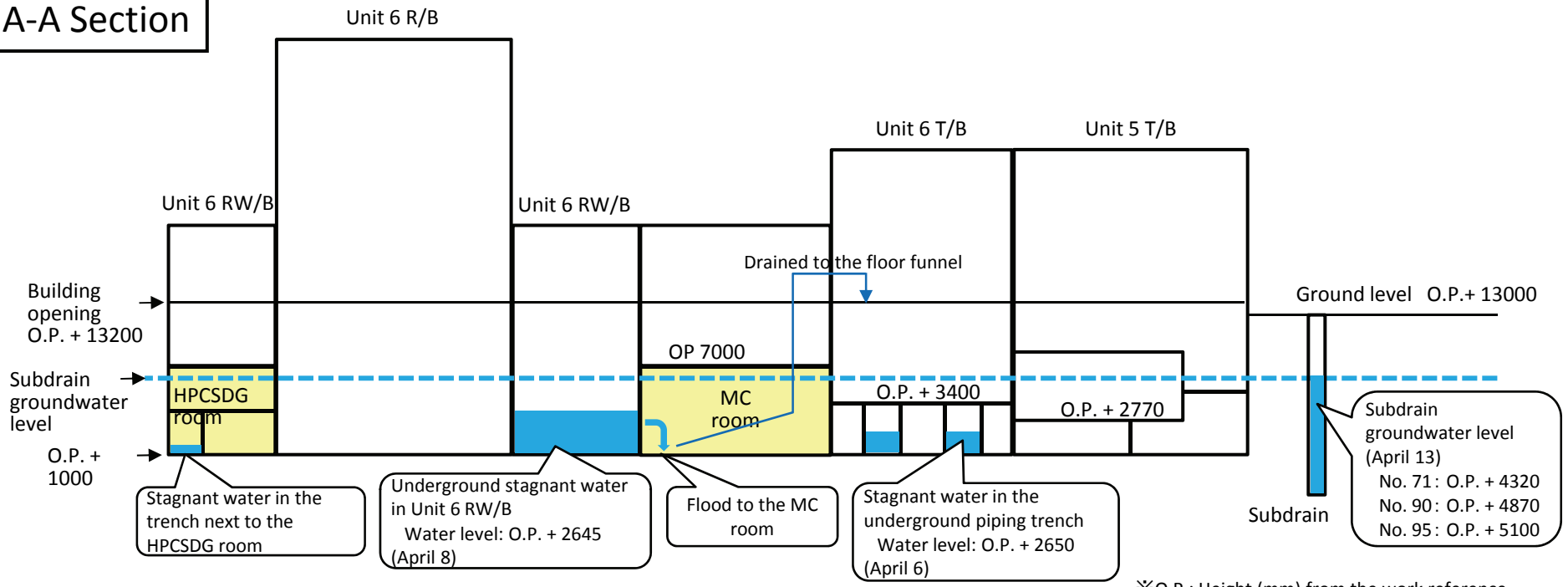
Attachment V-2



Data supplied by the Nuclear Emergency Response Headquarters

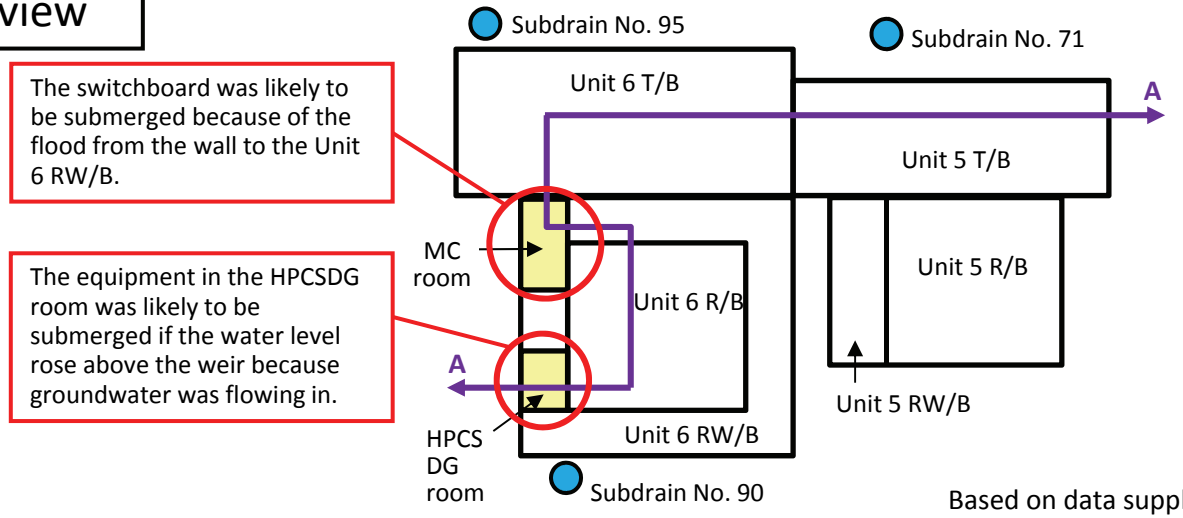
Overview of the penetration of groundwater into the basement of Unit 6 buildings

A-A Section



※O.P.: Height (mm) from the work reference level of Onahama Peil

Plan view

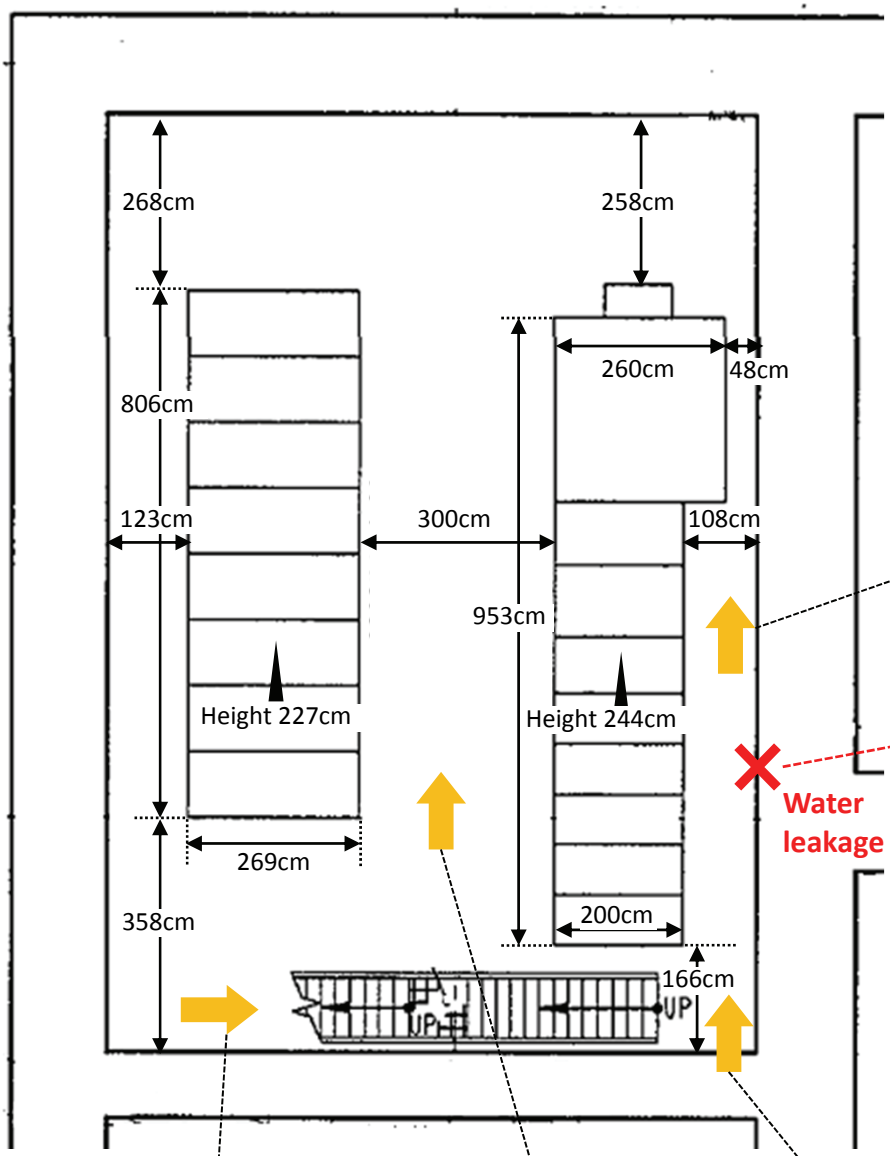


Based on data supplied by TEPCO.

Attachment V-3

Photographs showing the penetration of water into the MC room (as of March 26)

Attachment V-4

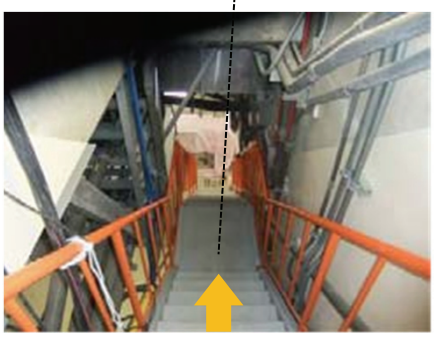


(Photo by TEPCO on Aug 22)

(Photo by TEPCO on Mar 26)

Close up

(Photo by TEPCO on Mar 26)



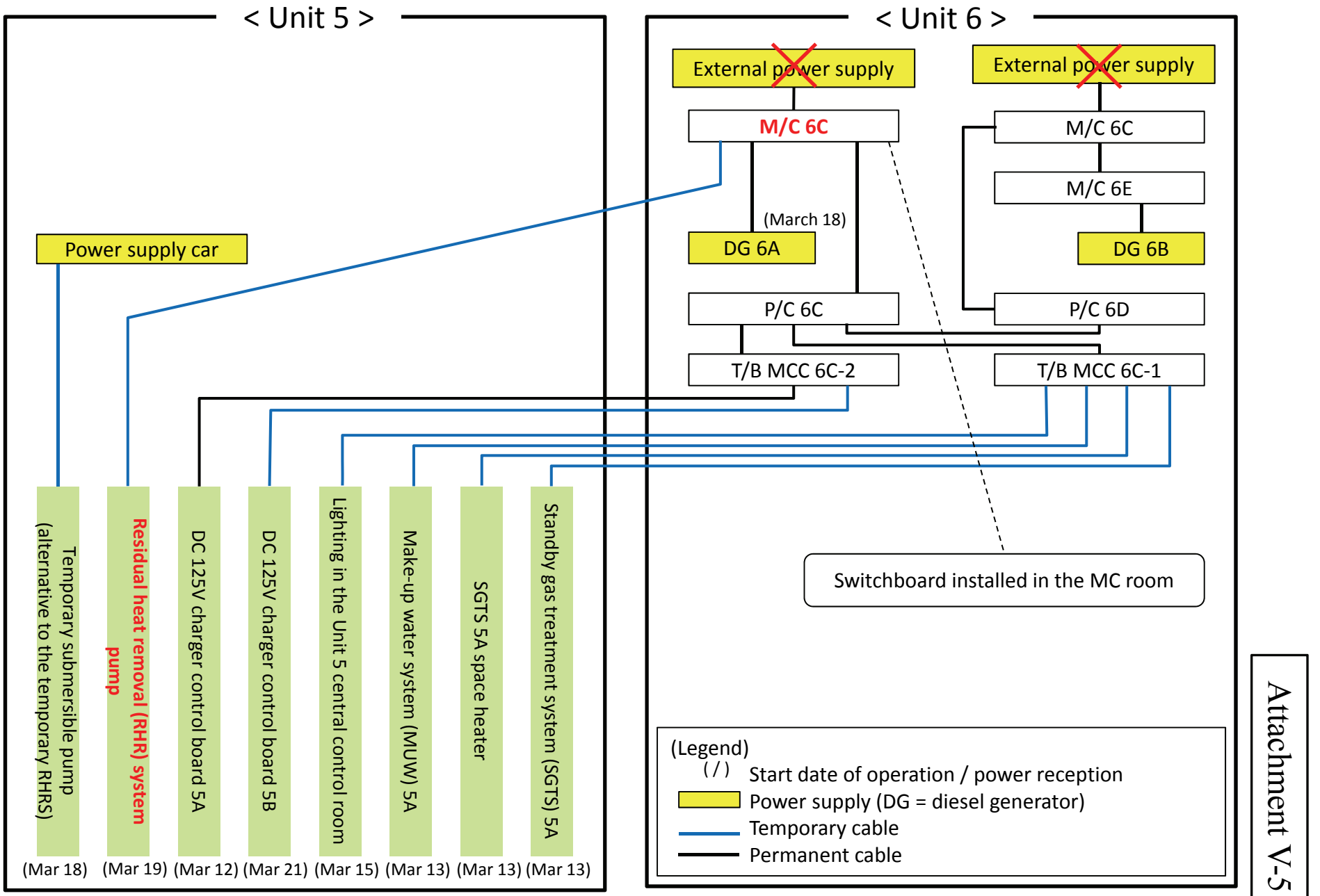
(Photo by TEPCO on Aug 22)

(Photo by TEPCO on Aug 22)

(Photo by TEPCO on Aug 22)

Prepared by TEPCO.

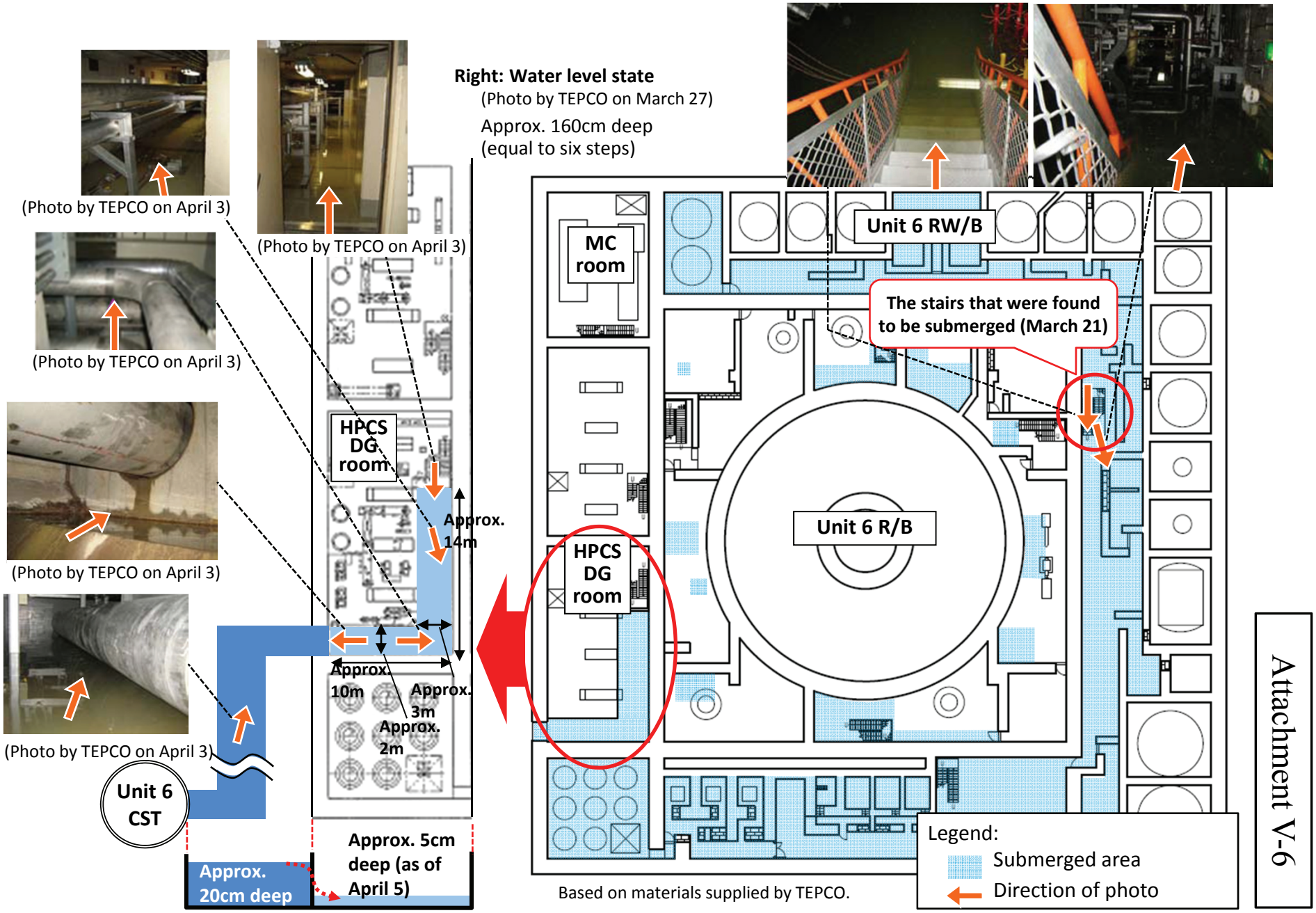
Overview of efforts to supply power from Unit 6 to Unit 5 (as of March 21)



Based on data supplied by TEPCO.

Attachment V-5

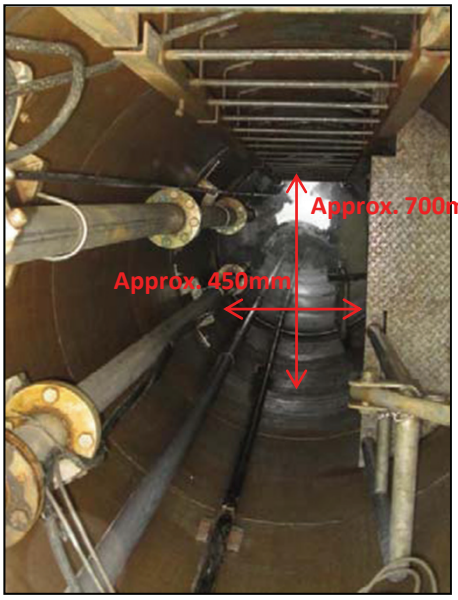
Overview of water that remained in the second basement area of the Unit 6 R/B and RW/B



Attachment V-6

Configuration and layout of the subdrain system

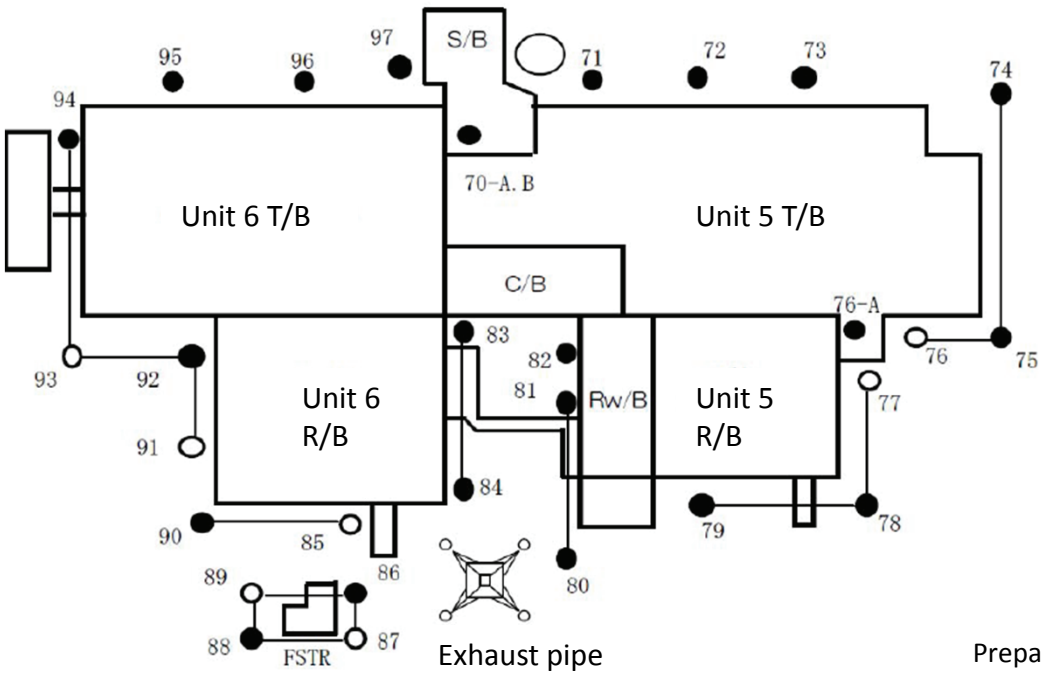
Attachment V-7



Available opening: approx. 450mm × approx. 700mm

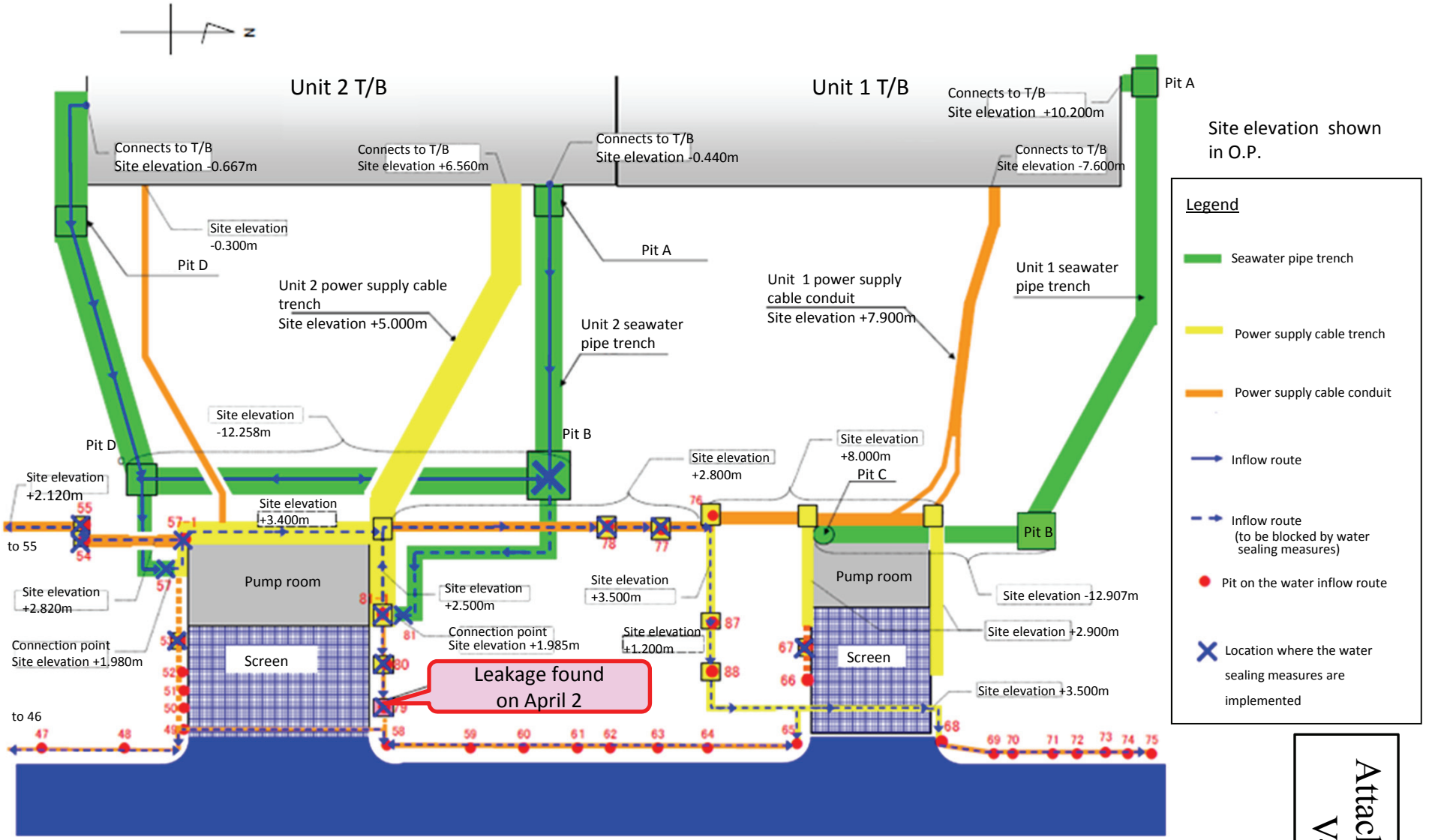
(All five photos were taken by TEPCO on May 2 in subdrain No. 56 located in the southeast of the Unit 4 T/B)

Layout of the subdrain in Units 5 & 6



Prepared by TEPCO.

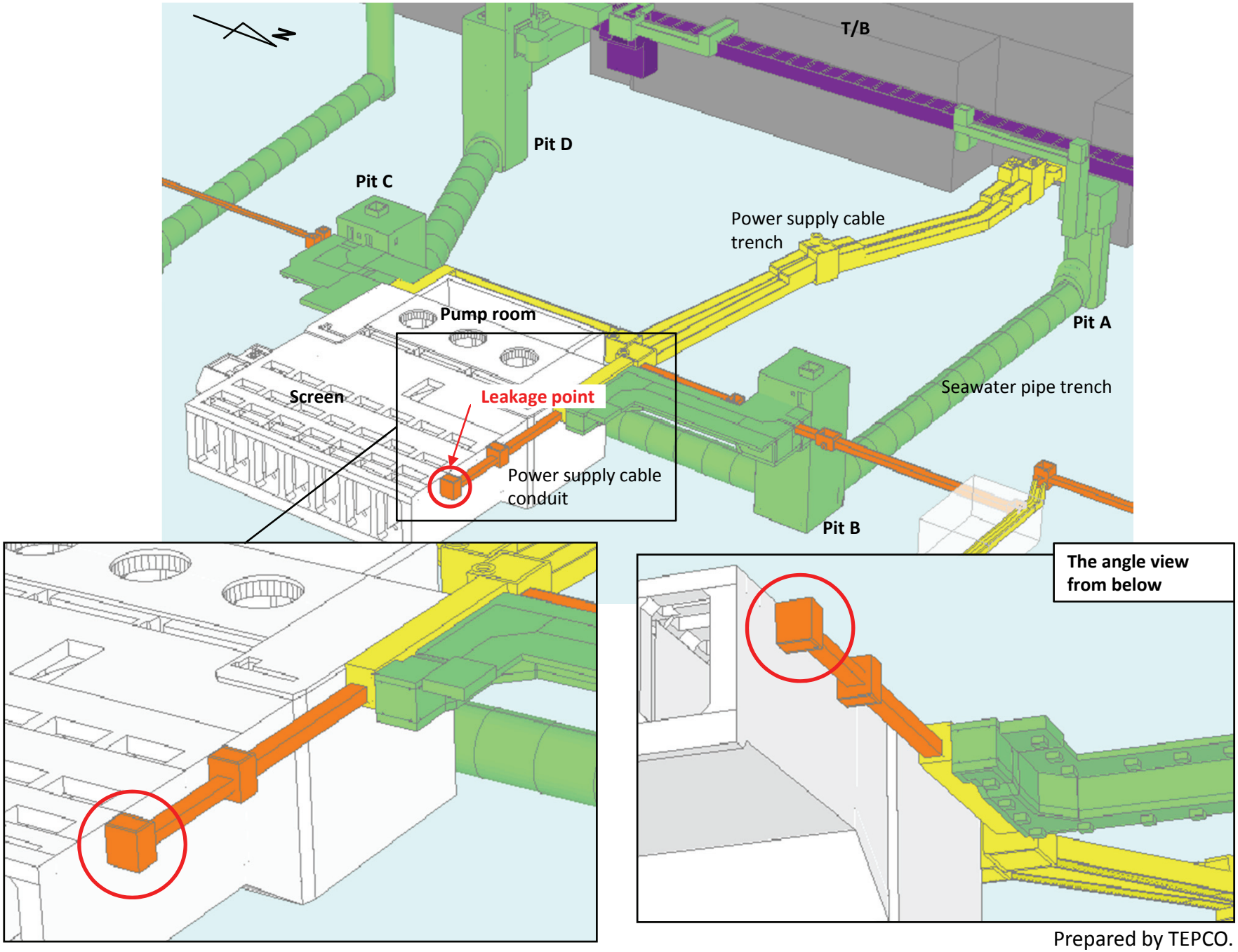
Highly contaminated water outflow routes near the Unit 2 water intake (plane view)



Attachment V-8

Prepared by TEPCO.

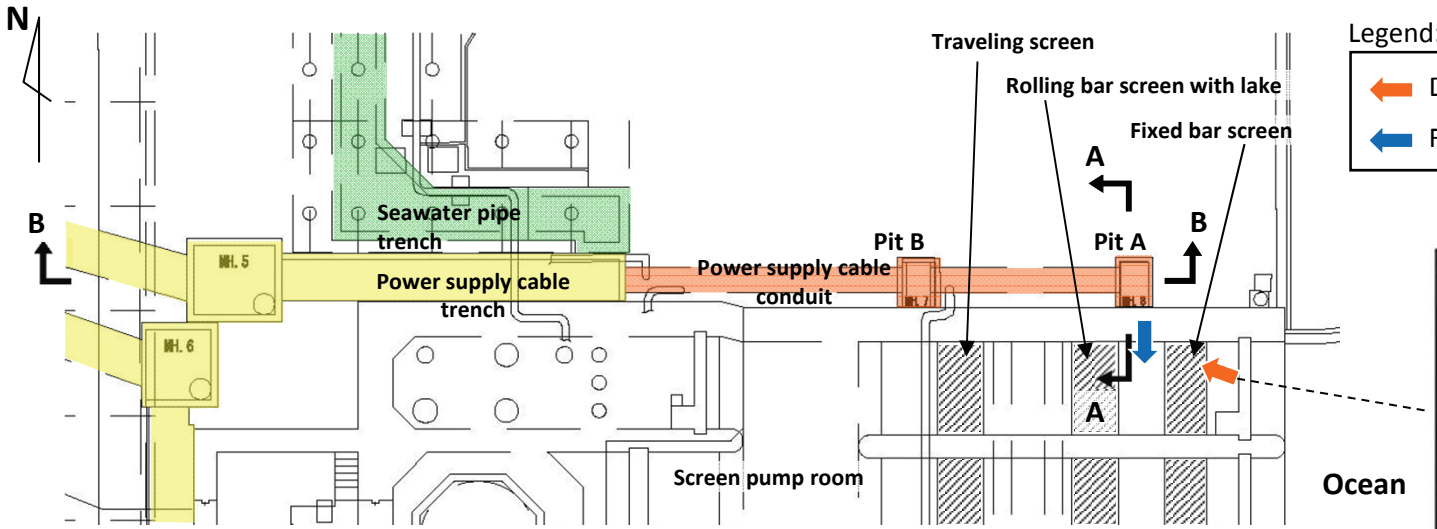
Highly contaminated water outflow routes near the Unit 2 water intake (sketch)



Prepared by TEPCO.

Attachment V-9

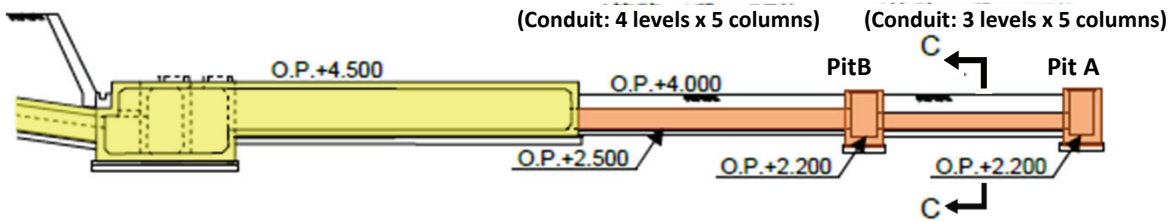
Response to the outflow of highly contaminated water near the Unit 2 water intake (status at the time of detection)



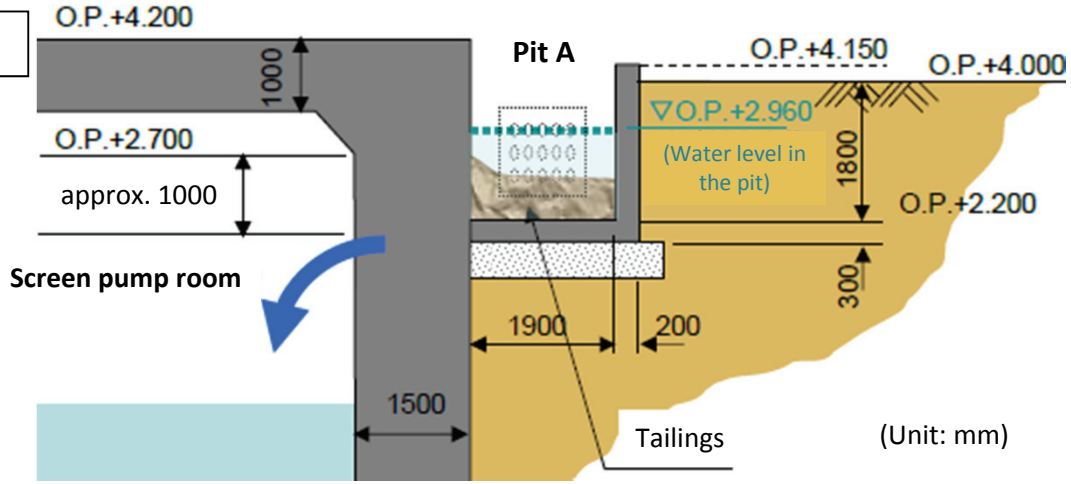
Legend:
- Direction of photo
- Flow to the ocean

Photo of outflow (taken by TEPCO at approximately 12:40 on April 2)

B-B Section

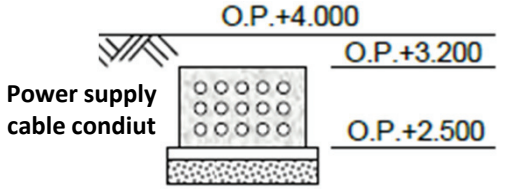


A-A Section



(Unit: mm)

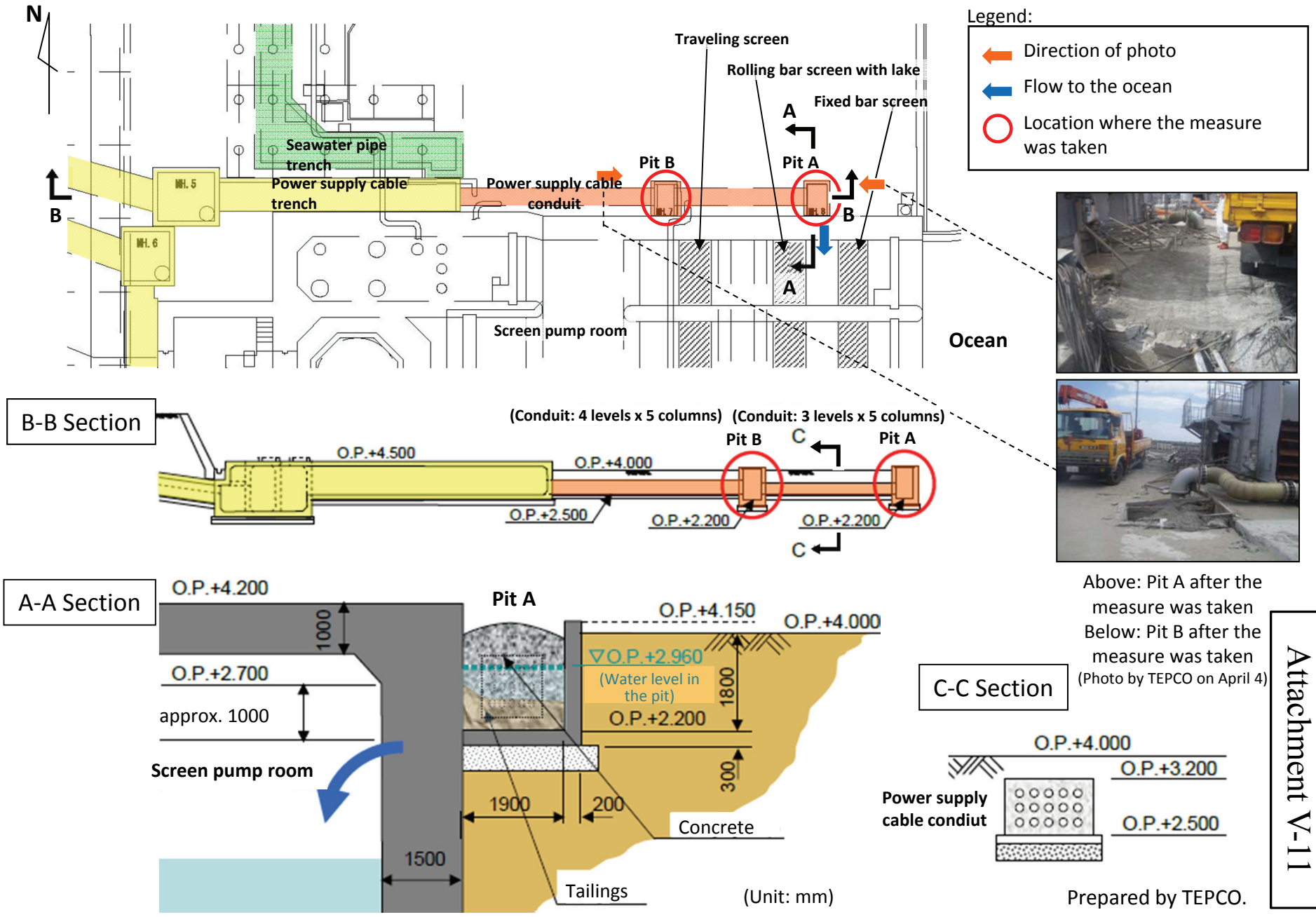
C-C Section



Prepared by TEPCO.

Attachment V-10

Response to the outflow of highly contaminated water near the Unit 2 water intake (status after the injection of concrete)

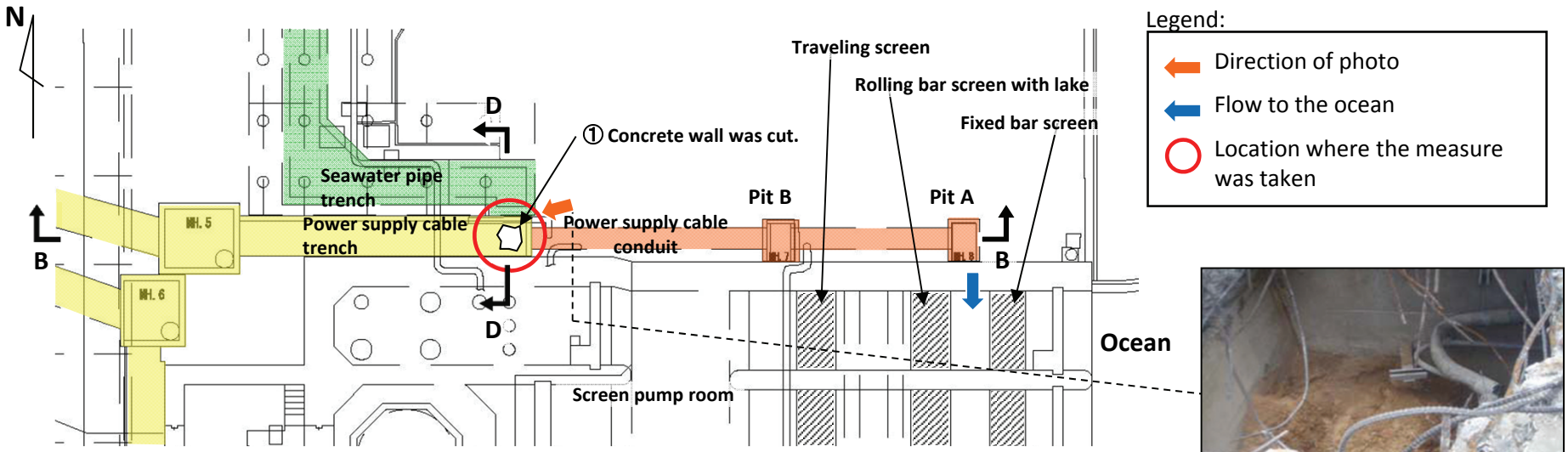


Above: Pit A after the measure was taken
Below: Pit B after the measure was taken
(Photo by TEPCO on April 4)

Prepared by TEPCO.

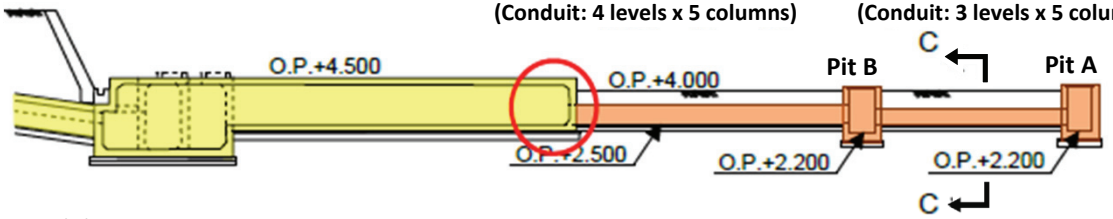
Attachment V-11

Response to the outflow of highly contaminated water near the Unit 2 water intake (status after the injection of polymer, etc.)



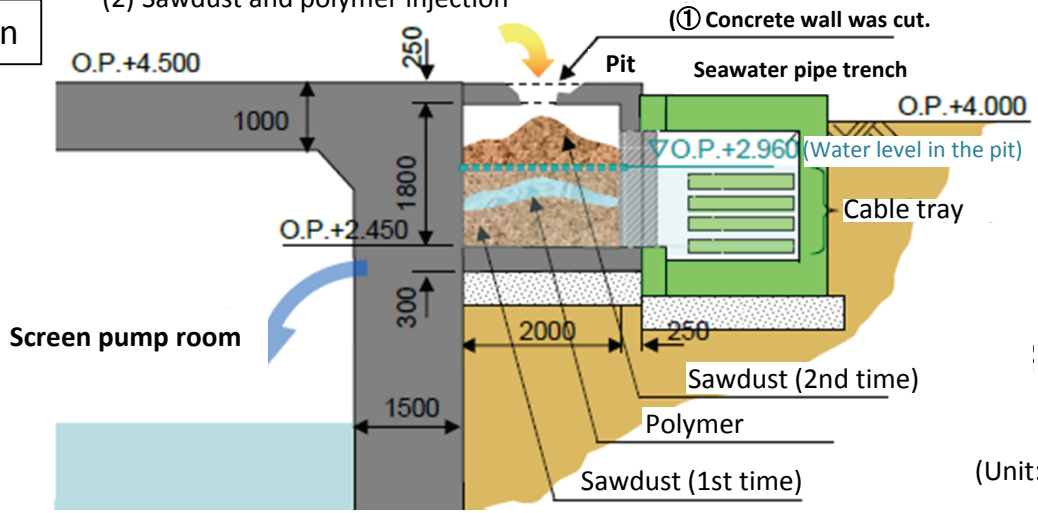
Polymer injection
(Photo by TEPCO at 13:47 on April 3)

B-B Section

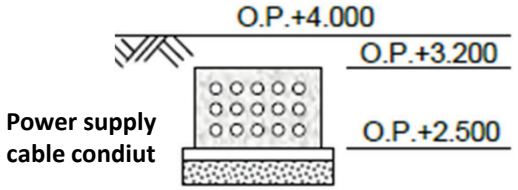


(2) Sawdust and polymer injection

D-D Section



C-C Section

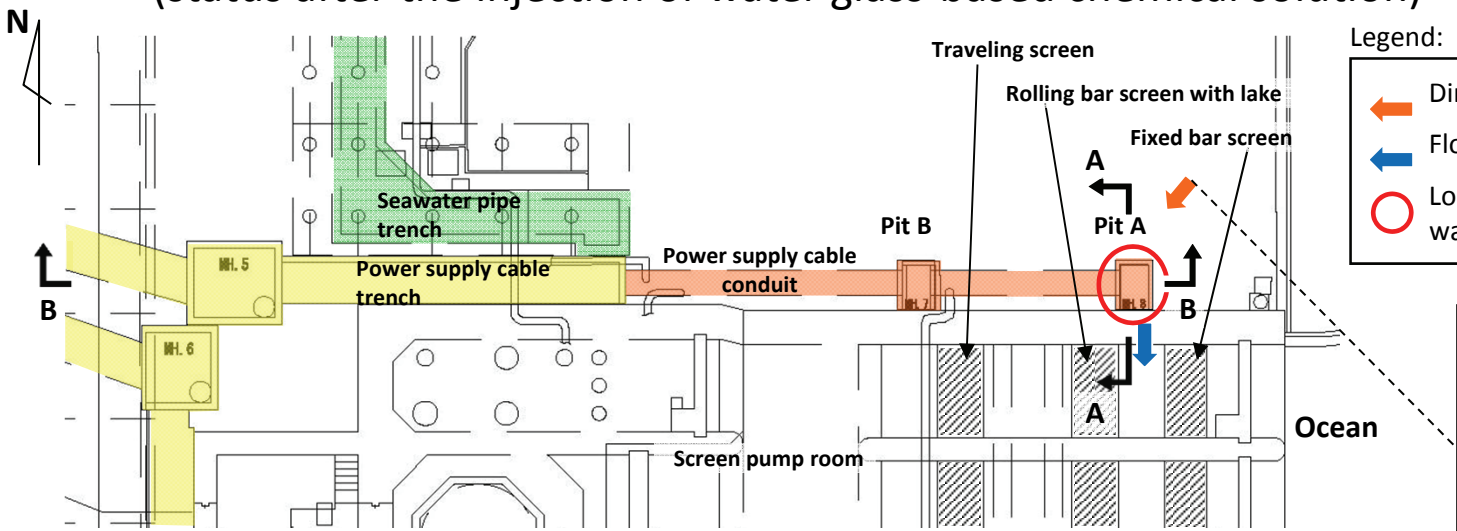


(Unit: mm)

Prepared by TEPCO.

Attachment V-12

Response to the outflow of highly contaminated water near the Unit 2 water intake (status after the injection of water glass-based chemical solution) - (1)

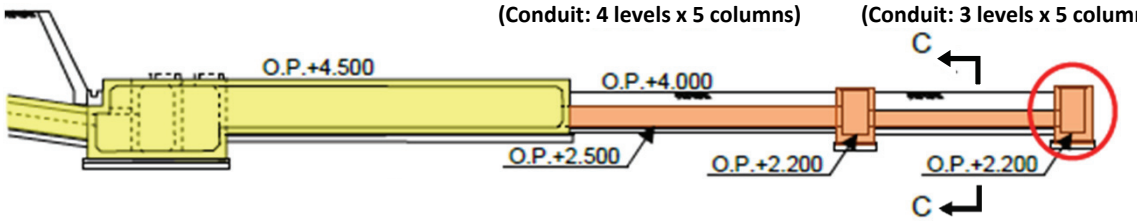


Legend:

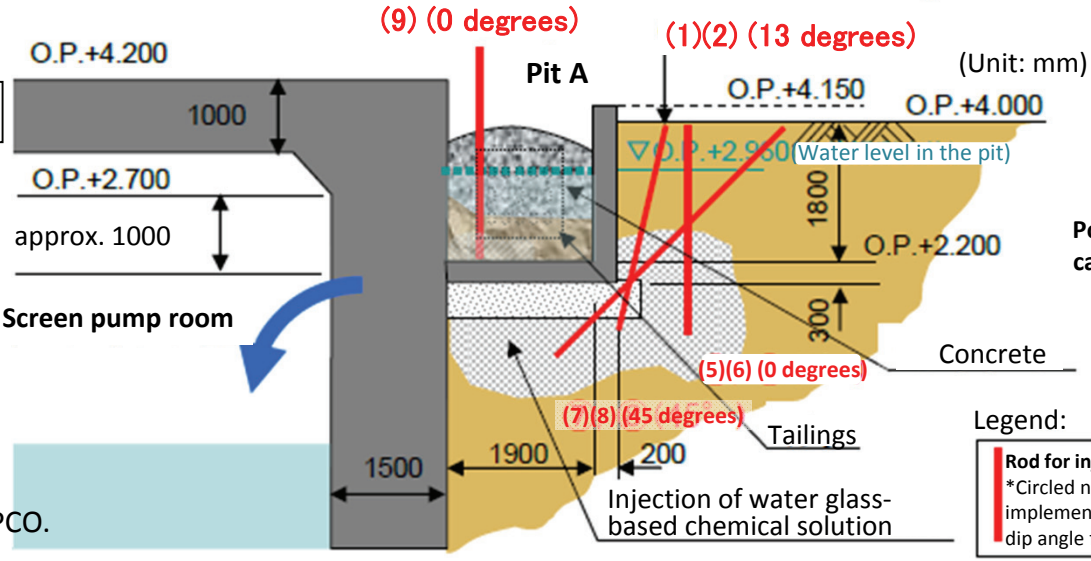
- Direction of photo
- Flow to the ocean
- Location where the measure was taken

Injecting the solution
(Photo by TEPCO on April 5)

B-B Section

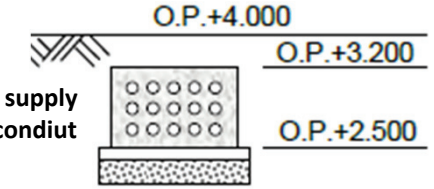


A-A Section



(Unit: mm)

C-C Section



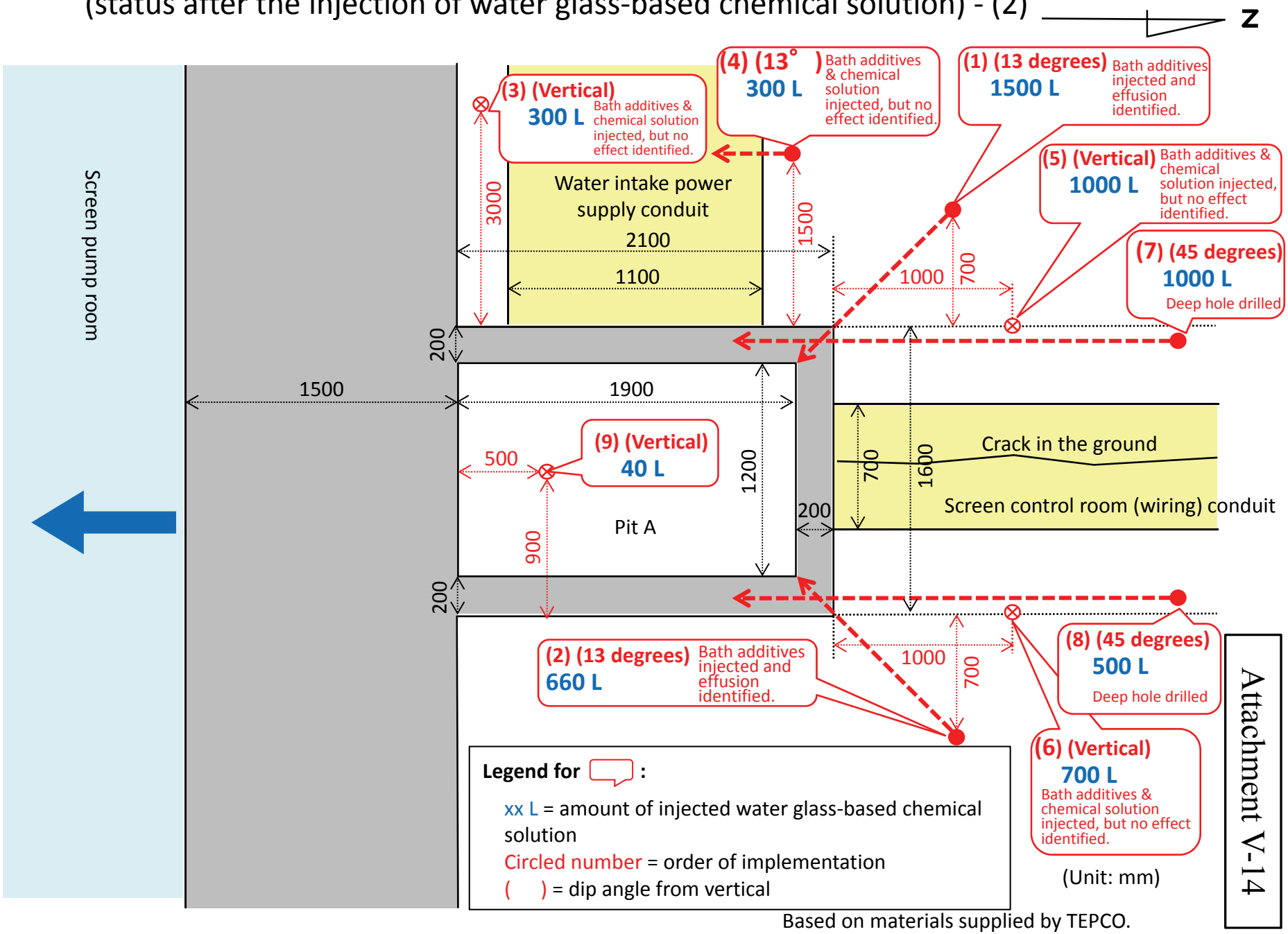
Legend:

Rod for injecting water glass-based chemical solution.
*Circled numbers indicate the order of implementation. Numbers in parentheses indicate the dip angle from vertical.

Prepared by TEPCO.

Attachment V-13

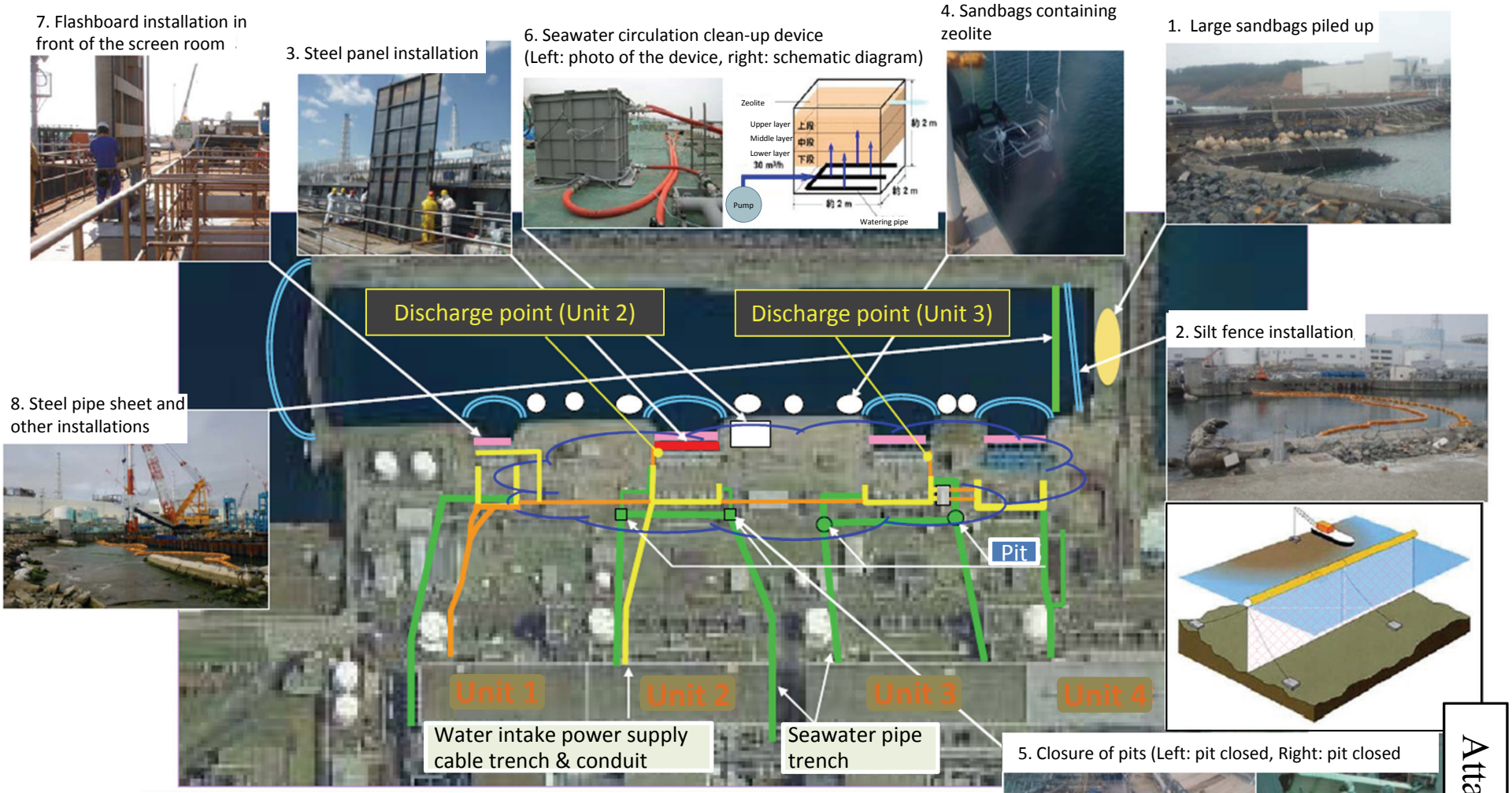
Response to the outflow of highly contaminated water near the Unit 2 water intake (status after the injection of water glass-based chemical solution) - (2)



Based on materials supplied by TEPCO.

Attachment V-14

Enhanced measures for preventing the spread of radioactive water (bird's eye view of the sites where measures were implemented)

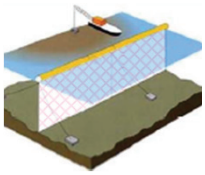
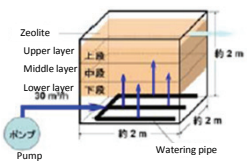


1. Large sandbags (April 5 - 8)
2. Silt fence (April 11 - 14)
3. Steel panel installation (April 12 - 15)
4. Sandbags containing zeolite (April 15, 17, 19)
5. Closure of pits and other routes (pits with seawater pipe trench: April 5 - 30, pits with power supply cable trench: April 2 - June 25)
6. Seawater circulation clean-up device (installed: mid – late May, operational: from June 13)
7. Flashboard installation in front of the screen room (June 12 - 29)
8. Steel pipe sheet pile installation (July 12 – late September) [Sea sweeping started on July 12, steel pipe sheet pile installation: started Aug 17 and completed on Sep 6]

Prepared by TEPCO.

Attachment V-15

Enhanced measures for preventing the spread of radioactive water (list) Attachment V-16

No.	Measure	Period	Overview	Condition
1	Installation of large sandbags	April 5 - 8	Sixty-two large sandbags piled up on the damaged area of the breakwaters (outlying facilities).	
2	Installation of silt fences	April 11 - 14	Silt fences spread out in six locations: the water intake curtain wall, in front of the screen pump rooms, and the damaged area of the penetration resistant structures.	 
3	Installation of steel panels	April 12 - 15	Seven steel panels installed in front of the screen pump room of Unit 2.	
4	Submersion of sandbags containing zeolite	April 15 and 17, May 19 (additional submersion)	Sandbags containing zeolite submerged in front of the seawall between the screen pump rooms of each Unit.	
5	Closure of pits and other routes	- Closure of pits with seawater pipe trench: April 5 - May 30 - Closure of pits with power supply cable trench and other routes: April 2 - June 25 (including countermeasures against leakage of contaminated water in Unit 2)	Water blocking measures implemented in the following pits and locations where there was a risk of leakage of radioactive solution: - Closure of pits with seawater pipe trench - Closure of power supply cable trench	 
6	Installation of seawater circulation clean-up device	Installation: mid – late May Operation: June 13	Seawater circulation clean-up device that uses zeolite as an absorbent installed on the seawall between the screen pump rooms of Units 2 and 3. Seawater clean-up is currently being conducted.	 
7	Installation of flashboards in front of the screen rooms	June 12 - 29	Steel flashboards installed on the sea side of the screen pump rooms.	
8	Insertion of steel pipe sheet piles around outlying facilities	July 12 - September 28	Steel pipe sheet piles and the other members inserted inside large sandbags piled up on the damaged area of the breakwaters (outlying facilities).	

Prepared by TEPCO.

Attachment V-17

Level of contaminated water in the Unit 3 T/B (in the pit)

Unit: mm

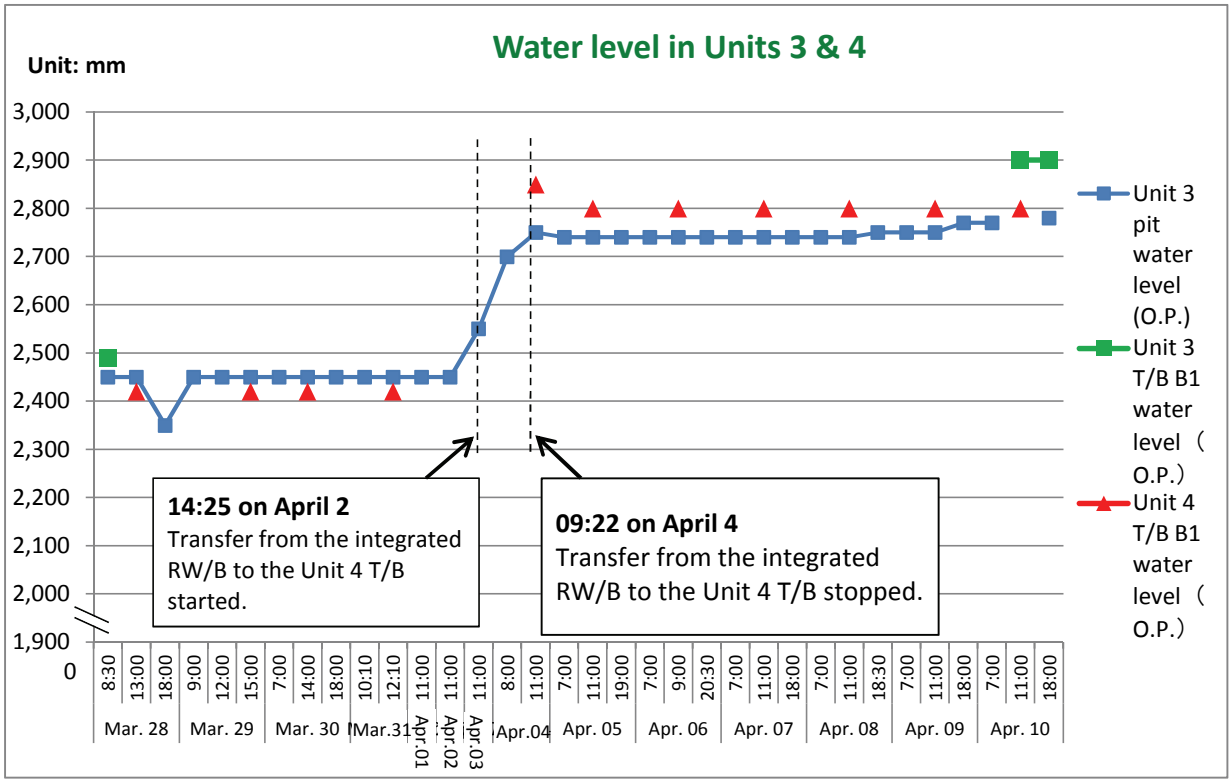
Date	Mar. 28			Mar. 29			Mar. 30			Mar. 31	
Time	8:30	13:00	18:00	9:00	12:00	15:00	7:00	14:00	18:00	10:10	12:10
Unit 3 pit water level (O.P.)	2,450	2,450	2,350	2,450	2,450	2,450	2,450	2,450	2,450	2,450	2,450
Unit 3 T/B B1 water level（O.P.）	2,490										
Unit 4 T/B B1 water level（O.P.）		2,420				2,420		2,420			2,420

Unit: mm

Date	Apr. 01	Apr. 02	Apr. 03	Apr. 04		Apr. 05			Apr. 06		
Time	11:00	11:00	11:00	8:00	11:00	7:00	11:00	19:00	7:00	9:00	20:30
Unit 3 pit water level (O.P.)	2,450	2,450	2,550	2,700	2,750	2,740	2,740	2,740	2,740	2,740	2,740
Unit 3 T/B B1 water level（O.P.）											
Unit 4 T/B B1 water level（O.P.）					2,850		2,800			2,800	

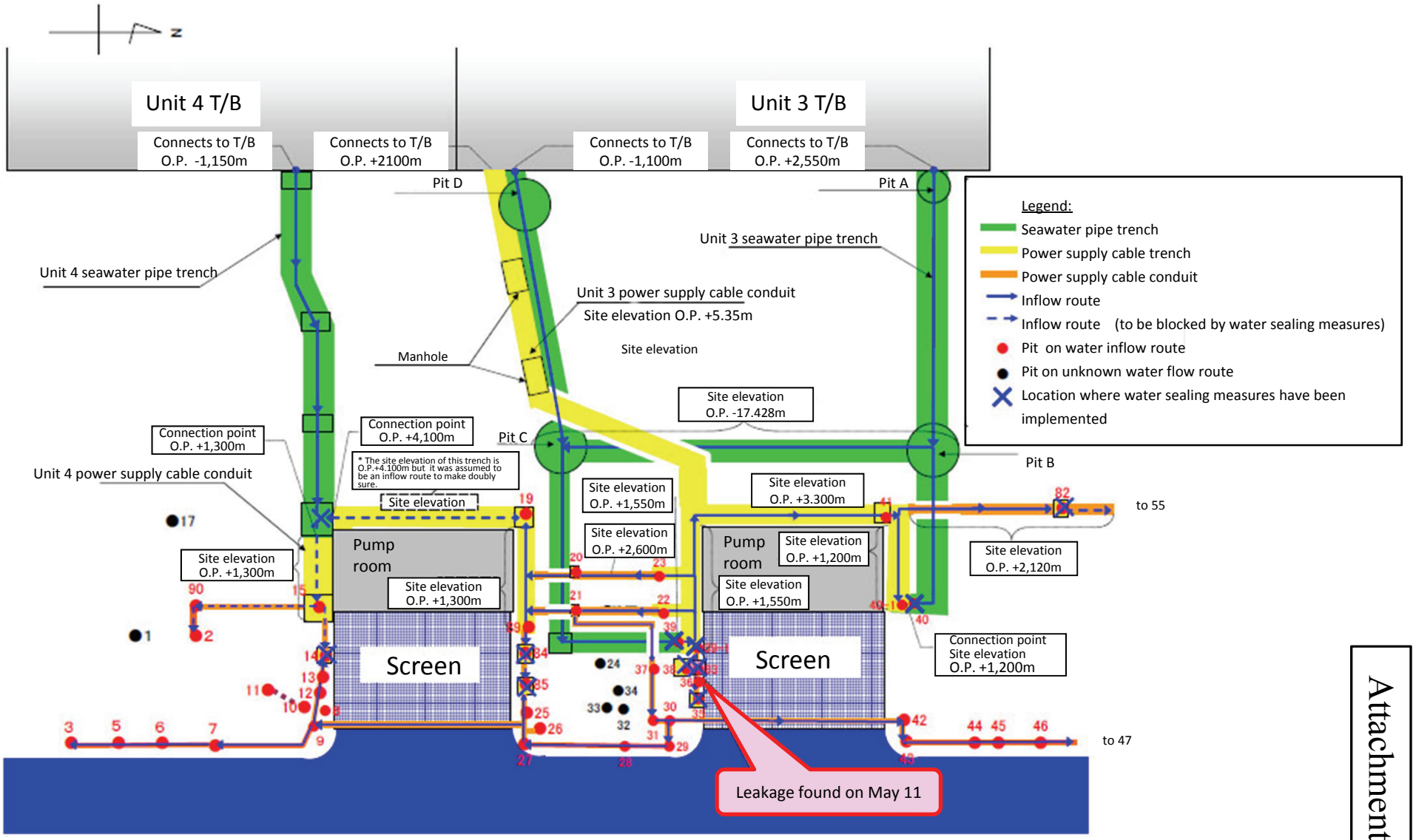
Unit: mm

Date	Apr. 07			Apr. 08			Apr. 09			Apr. 10		
Time	7:00	11:00	18:00	7:00	11:00	18:30	7:00	11:00	18:00	7:00	11:00	18:00
Unit 3 pit water level (O.P.)	2,740	2,740	2,740	2,740	2,740	2,750	2,750	2,750	2,770	2,770		2,780
Unit 3 T/B B1 water level（O.P.）											2,900	2,900
Unit 4 T/B B1 water level（O.P.）		2,800			2,800			2,800			2,800	



Based on data supplied by TEPCO.

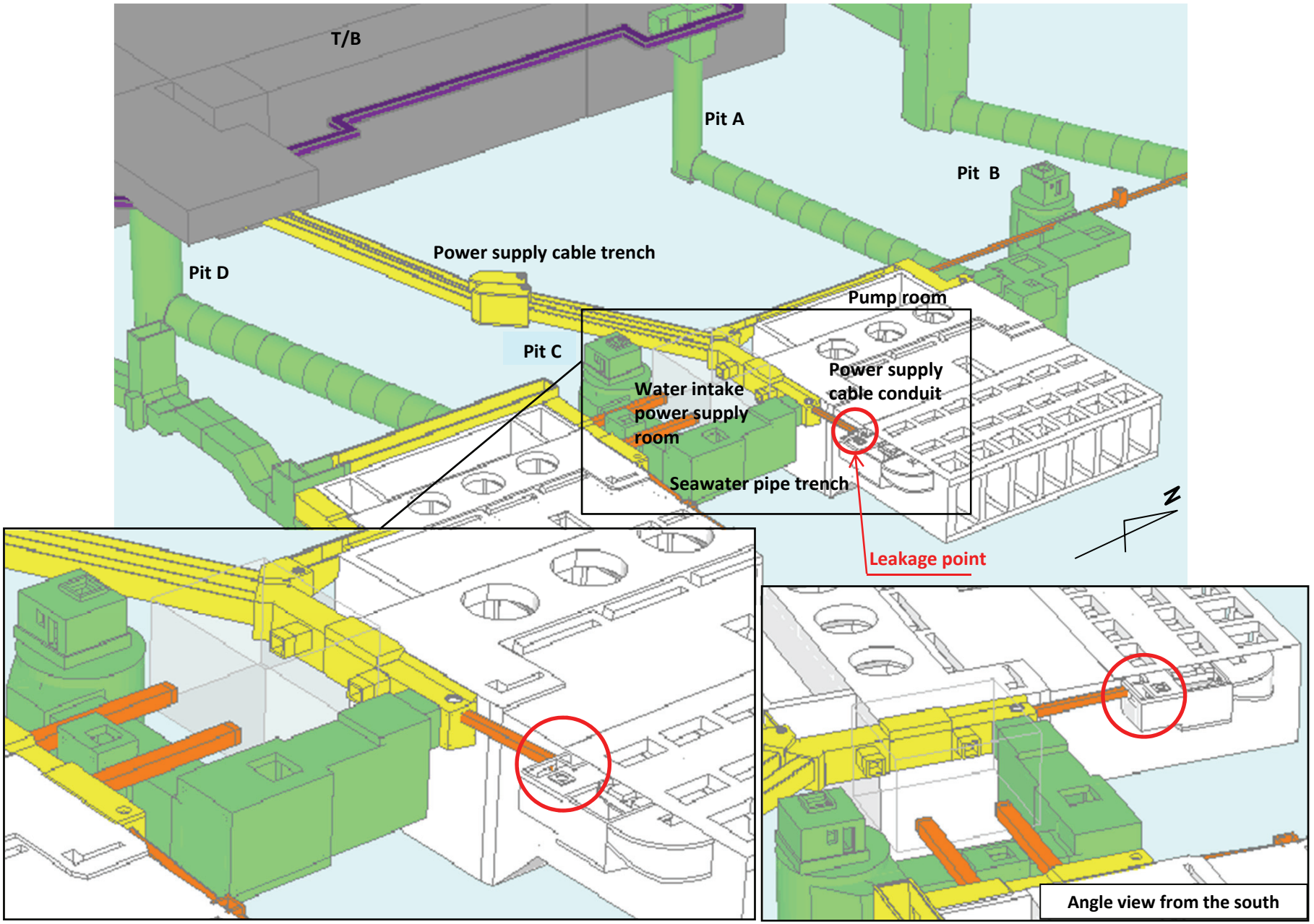
Highly contaminated water outflow routes near the Unit 3 water intake (birds eye view)



Prepared by TEPCO.

Attachment V-18

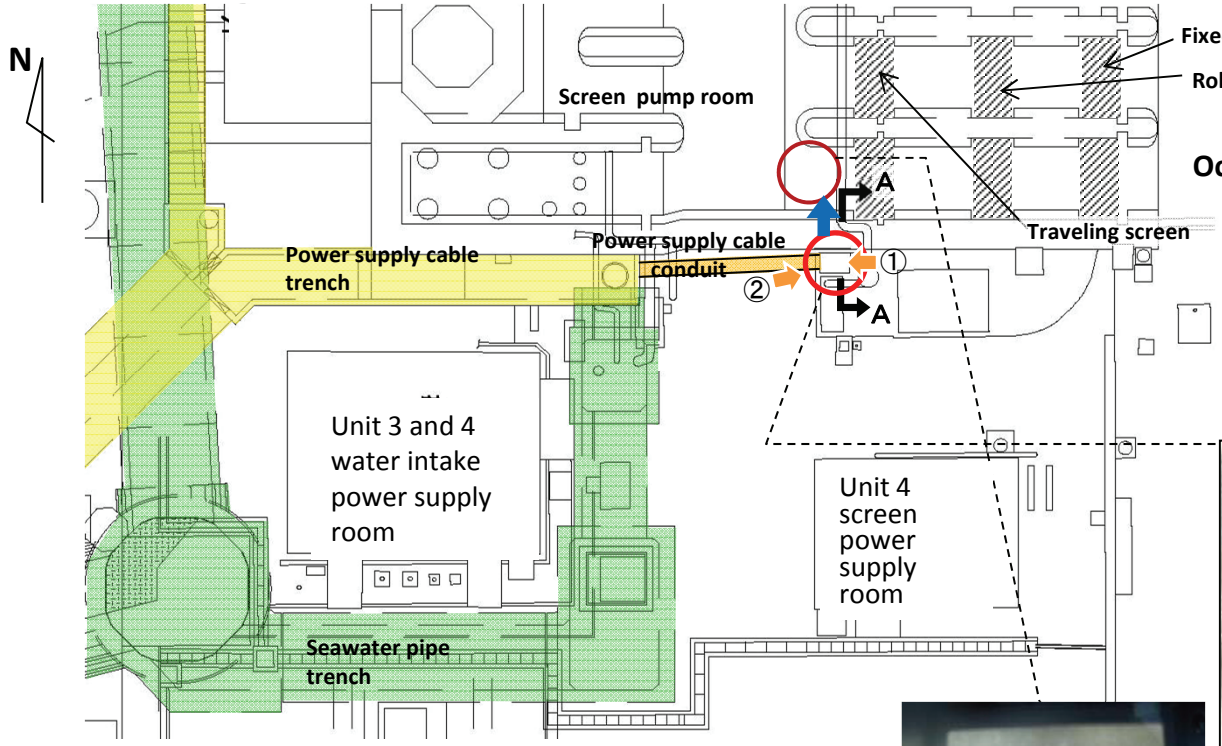
Highly contaminated water outflow routes near the Unit 3 water intake (sketch)



Prepared by TEPCO.

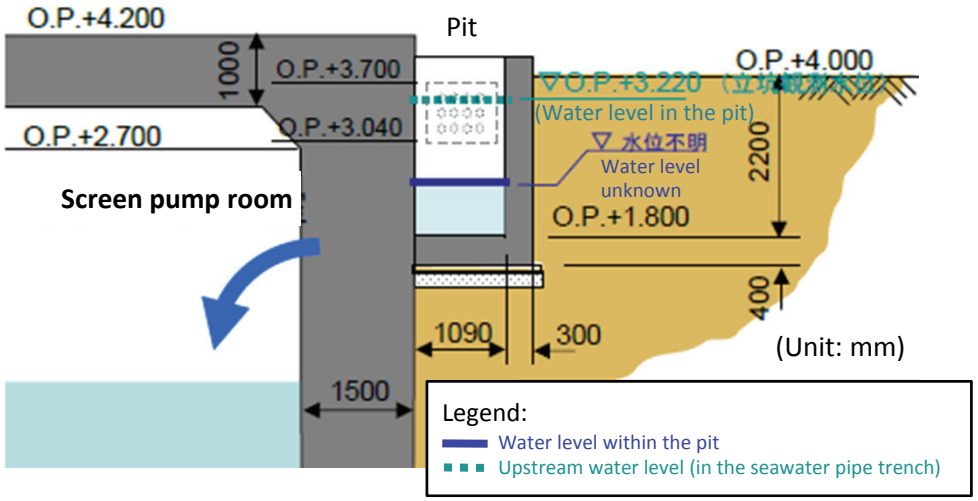
Attachment V-19

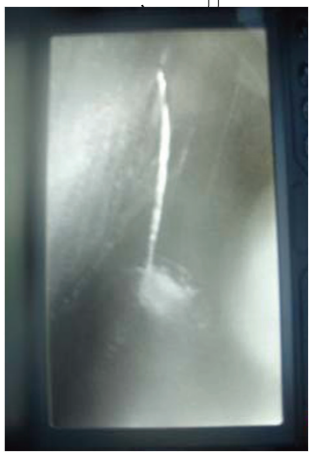
Response to the outflow of highly contaminated water near the Unit 3 water intake



Legend:
- Direction of photo
- Flow to the ocean
- Location where the measure was implemented

A-A cross section





Water leakage from the power supply cable pit to the screen area (photo by TEPCO at 18:30 on May 11)

Above: water flow to the power supply cable pit (photo by TEPCO at 10:30 on May 11)
Below: after concrete injected into the pit where leakage found (photos by TEPCO at 17:30 on May 12)

Prepared by TEPCO.

Attachment V-20

The International Nuclear and Radiological Event Scale

("INES") at nuclear facilities and installations

	INES LEVEL	Criteria on people and the environment		Criteria on radiological barriers and control		Criteria on Defense-in-Depth	
ACCIDENT	LEVEL 7 (MAJOR ACCIDENT)	- Major release of radioactive material with widespread health and environmental effects requiring implementation of planned and extended countermeasures.. (An atmospheric release of radioactive material equivalent to more than tens of thousands of terabecquerels of iodine-131).	Chernobyl NPP, USSR (now in Ukraine 1986				
	LEVEL 6 (SERIOUS ACCIDENT)	- Significant release of radioactive material likely to require implementation of planned countermeasures. (An atmospheric release of radioactive material equivalent to the order of thousands to tens of thousands of terabecquerels of iodine-131).					
	LEVEL 5 (ACCIDENT WITH WIDER CONSEQUENCES)	- A limited release of radioactive material likely to require implementation of some planned countermeasures. - Several deaths from radiation. (An atmospheric release of radioactive material equivalent to the order of hundreds to thousands of terabecquerels of iodine-131).	Windscale Pile, UK (1957)	- Severe damage to reactor core (meltdown of more than several percent of fuel, or a release of radioactive material from the fuel bundles equivalent to more than several percent of the reactor core inventory) - Release of large quantities of radioactive material within an installation with a high probability of significant public exposure. This could arise from a major critical accident or fire.	Three Mile Island, NPP, USA (1979)		
	LEVEL 4 (ACCIDENT WITH LOCAL CONSEQUENCES)	- Minor release of radioactive material unlikely to result in implementation of planned countermeasures other than local food controls. - At least one death from radiation. ((An atmospheric release of radioactive material equivalent to the order of tens to hundreds of terabecquerels of iodine-131).	JCO critical accident (1999)	- Meltdown of or damage to fuel resulting in a release of radioactive material of more than 0.1% of the fuel bundles. - Release of large quantities of radioactive material within an installation with a high probability of significant public exposure.	Saint-Laurent NPP, France, (1980)		

INCIDENT	LEVEL 3 (SERIOUS INCIDENT)	- Exposure in excess of ten times the statutory annual limit for workers. - Non-lethal determininistic health effect (e.g. burns) from radiation.		- Exposure rates of more than 1 Sv/h in an operating area. - Severe contamination in an area not expected by design, with a low probability of significant public exposure.		- Near accident at a nuclear power plant with no safety provisions remaining. - Lost or stolen highly radioactive sealed source. - Misdelivered highly radioactive sealed source without adequate procedures in place to handle it.	Fire incident in Vandellos NPP, Spain (1989)
	LEVEL 2 (INCIDENT)	- Exposure of a member of the public to more than 10 mSv. - Exposure of a worker to more than the statutory annual limit.		- Radiation levels in an operating area of more than 50 mSv/h. - Significant contamination within the facility into an area not expected by design.		- Significant failures in safety provisions but with no actual consequences. - Found highly radioactive sealed orphan source, device or transport package found with safety provisions intact. - Inadequate packaging of a highly radioactive sealed source.	Accident involving broken steam generator heat transfer tube at Mihama No.2 plant, Japan (1991)
	LEVEL 1 (ANOMALY)					- Overexposure of a member of the public to more than the statutory annual limits. - Minor problems with safety components with significant defense-in-depth remaining. - Low activity lost or stolen radioactive source, device or transport package.	"Monju" sodium leakage incident, Japan (1995), etc.
No Safety Significance (Below Scale / Level 0)							

Based on the "International Nuclear Event Scale" prepared by the Nuclear and Industrial Safety Agency