The Inspection Results of Large Container Bags for Removed Soil in Temporary Storage Sites (TSS) after Heavy Rain by Typhoon Hagibis

The Ministry of the Environment, Japan (MOE) checked the large container bags, which contain removed soil from off-site decontamination works derived from the accident of TEPCO's Fukushima Daiichi Nuclear Power Station, to confirm whether those bags were carried away from Temporary Storage Sites (TSS) into rivers due to the heavy rain by Typhoon Hagibis. Findings as of 31st October are as follows:

・ Current Status of Removed Soil in TSS

Removed soil is stored in TSS until it is transported to Interim Storage Site. Total volume of the removed soil in TSS is as follows:

TSS managed by the MOE: 5.02 million m3 (as of the end of August 2019, 1 bag = 1 m3)

TSS and on-site storage managed by local municipalities: 5.35 million m3 (in Fukushima Prefecture as of the end of June 2019, outside Fukushima Prefecture as of the end of March 2019)

・ TSS managed by the MOE

All 236 TSS have been checked.

<u>Iitate Village</u>

The MOE found that 1 large container bag was carried away but the bag was retrieved on 15th October.

The MOE has conducted air dose rate monitoring as well as water quality monitoring, and confirmed that there has been no influence on the air dose rates and water quality.

- Air dose rates at TSS and around the areas (8 spots) where the container bag was retrieved: 0.25-0.45μSv/h
- Cs134 and Cs137 monitored at a river (2 spots): Not Detected (N.D.)

*Lower limit of detection: 1.6Bq/L (Cs134), 1.7Bq/L (Cs137)

*Note: "Lower limit of detection" depends on measuring equipment.

・ TSS managed by local municipalities

All 716 TSS in Fukushima Prefecture and all 44 TSS outside Fukushima

Prefecture have been checked.

Tamura City

A total of 30 bags were carried away. 21 bags were found at the downstream of a river nearby the site and were retrieved by 28th October. 8 of the 21 bags had no damage, 13 of them were assumed that the contents have been lost. The city and the MOE have conducted air dose rate monitoring as well as water quality monitoring, and confirmed that there has been no influence on air dose rates and water quality.

- Air dose rates at TSS and around the areas (10 spots) where container bags were retrieved: 0.11-0.16μSv/h
- Cs134 and Cs137 monitored at a river (5 spots): Not Detected (N.D.)
  *Lower limit of detection: 6Bq/L (Cs134), 7Bq/L (Cs137)

Nihonmatsu City

15 bags were carried away. 8 of the 15 bags were found and retrieved by 24th October. The 8 bags were found empty. The city and the MOE have conducted air dose rate monitoring as well as water quality monitoring, and confirmed that there has been no influence on air dose rates and water quality.

- Air dose rates at TSS and around the areas (6 spots) where container bags were retrieved: 0.08-0.14μSv/h
- Cs134 and Cs137 monitored at a river (10 spots): Not Detected (N.D.)
  *Lower limit of detection: 6Bq/L (Cs134), 7Bq/L (Cs137)

Kawauchi Village

44 bags were carried away. 20 bags of the 44 bags were found at the downstream of a river nearby the site and 19 of them were retrieved by 24th October. 16 of 19 bags had no damage and 3 bags were assumed that the contents have been lost. The village and the MOE have conducted air dose rate monitoring as well as water quality monitoring, and confirmed that there has been no influence on air dose rates and water quality.

- Air dose rates at TSS and around the areas (12 spots) where container bags were retrieved: 0.18-0.31μSv/h
- Cs134 and Cs137 monitored at a river (5 spots): Not Detected (N.D.)
  *Lower limit of detection: 6Bq/L (Cs134), 7Bq/L (Cs137)

Inspection Result of Large Container Bags in TSS

Name of Municipalities	Number of TSS	Estimated number of container bags swept away	Already found			Not found
			Already retrieved		Un- retrieved	
			Contents intact	Contents lost		
Iitate	1	1	1	—	—	—
Tamura	1	30	8	13	—	9
Nihonmatsu	1	15	—	8	—	7
Kawauchi	1	44	16	3	1	24
Total	4	90	25	24	1	40

・ On-site storage by local municipalities outside Fukushima Prefecture

Nasu Town (Tochigi Prefecture)

It was confirmed that 1 container bag at on-site storage* was carried away at Nasu Town. The bag was retrieved on 21st October at the downstream of a river nearby the site and found empty. The town has conducted air dose rate monitoring as well as water quality monitoring, and confirmed that there has been no influence on air dose rates and water quality.

- Air dose rates at TSS and around the areas (10 spots) where the container bag was retrieved: 0.06-0.14μSv/h
- Cs134 and Cs137 monitored at a river (3 spots): N.D.
  *Lower limit of detection: 3~4Bq/L (Cs134), 4~6Bq/L (Cs137)

*On-site storage: to store the removed soil from off-site decontamination work such as at schools, parks, and houses.

The MOE has requested prefectures concerned to check if there is any similar cases at other on-site storage locations, and no further cases have been reported so far.

Further Response

- As for the bags yet to be retrieved at Kawauchi Village, the village and the MOE will start collecting them soon after the water levels of rivers return to normal.
- As for the undiscovered bags in Tamura City, Nihonmatsu City and Kawauchi

Village, the MOE, in cooperation with related organizations such as Ministry of Land, Infrastructure, Transport and Tourism of Japan, has conducted the search of downstream of rivers in the surrounding areas. Those local municipalities and the MOE will continue to search for those bags.

- The MOE will continue to implement the air dose rate and water quality monitoring with relevant municipalities

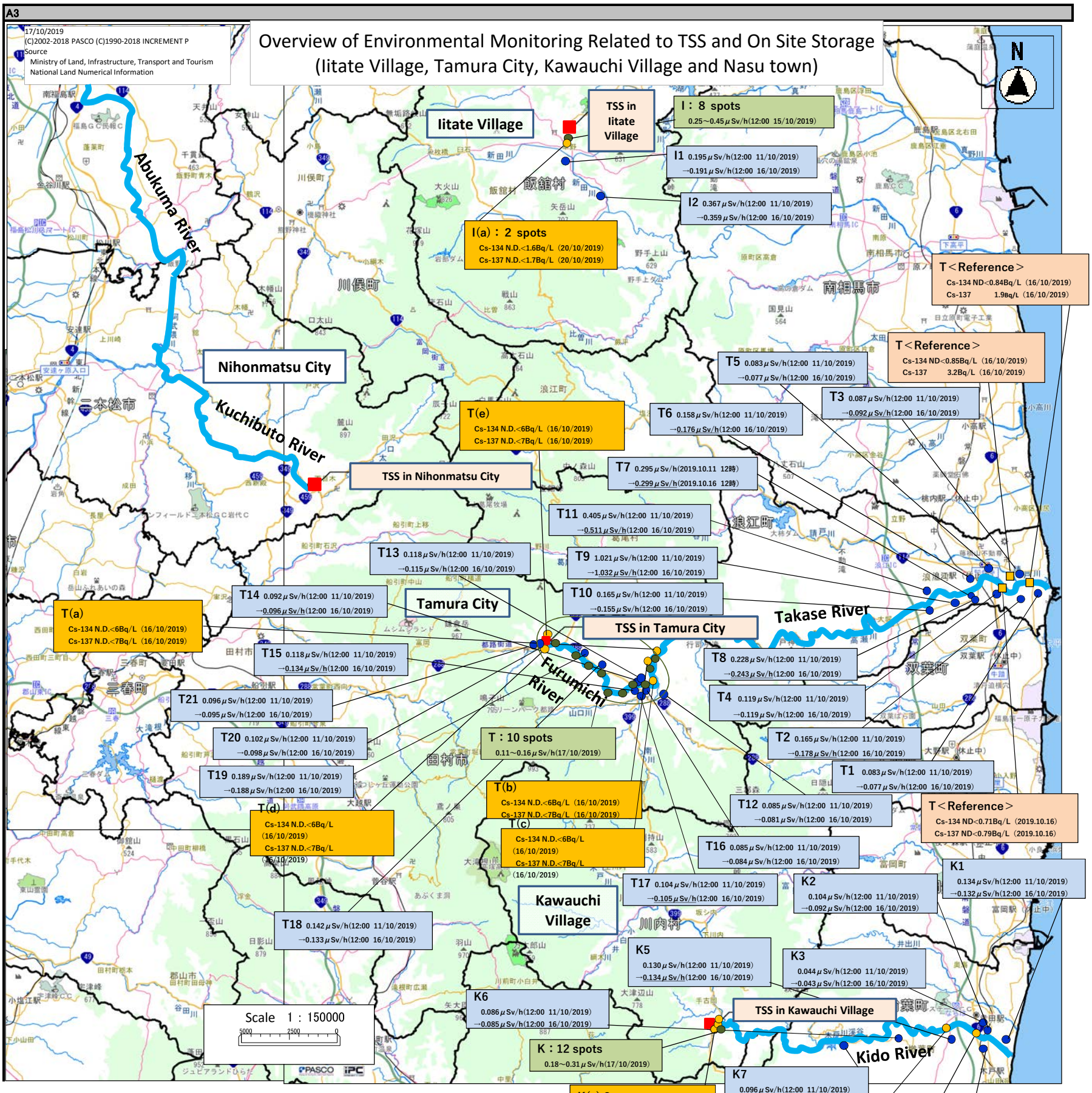
Recurrence Prevention Measures

- As for recurrence prevention measures, the MOE will construct fences around these TSS as emergency measures and transport large container bags as early as possible in cooperation with relevant municipalities.
- Container bags at TSS under preparation for transportation to Interim Storage Site will be fixed with ropes and waterproof sheets for the time being to prevent the bags from being carried away.
- To strengthen the management of TSS, the MOE will study and implement the measures as follows.

  to review the causes of the matter in details
  to check all the TSS after this review
  to technically support TSS for additional necessary measures
  to review a manual for maintenance and management of TSS

A3

Overview of Environmental Monitoring Related to TSS and On Site Storage (Iitate Village, Tamura City, Kawauchi Village and Nasu town)



Key	
●	Monitoring Post（※1）
●	Monitoring Point of air dose rate
●	Sampling point of river water（※2）

※1：Air dose rate constant monitoring equipment installed by NRA
※2：N.D.(Not detected)・・・Indicates that the radioactivity concentration (Bq / L) was less than the lower detection limit

Environmental monitoring results

Iitate Village（I）
Air dose rate
Unit：μSv/h

Monitoring date：15/10/2019	
Monitoring point	Monitoring result
1	0.32
2	0.30
3	0.37
4	0.38
5	0.34
6	0.25
7	0.45
8	0.40
Average	0.35

Tamura City（T）
Air dose rate
Unit：μSv/h

Monitoring date：16/10/2019	
Monitoring point	Monitoring result
1	0.16
2	0.16
3	0.16
4	0.11
5	0.11
6	0.13
7	0.13
8	0.15
9	0.15
10	0.11
Average	0.14

Nihonmatsu City（N）
Air dose rate
Unit：μSv/h

Monitoring date：18/10/2019	
Monitoring point	Monitoring result
1	0.10
2	0.14
3	0.08
4	0.10
5	0.11
6	0.11
Average	0.11

Kawauchi Village（K）
Air dose rate
Unit：μSv/h

Monitoring date：17/10/2019	
Monitoring point	Monitoring result
1	0.21
2	0.31
3	0.22
4	0.18
5	0.23
6	0.22
7	0.19
8	0.23
9	0.23
10	0.20
11	0.24
12	0.19
Average	0.22

Nasu town（Na）

Monitoring date：24/10/2019				
Monitoring point	Location	Distance from the storage site（m）	Air dose rate（μSv/h）	Water quality monitoring
1	Upstream	400～500	0.10	
2		100～200	0.09	
3	Storage Site	0	0.09	N.D.＜4 Bq/L（Cs-134） N.D.＜6 Bq/L（Cs-137）
4		200～300	0.14	
5		300～400	0.10	
6		500~600	0.08	
7		700～800	0.08	
8		1,000～1,100	0.07	
9	Retrieved point	1,300	0.09	N.D.＜3 Bq/L（Cs-134） N.D.＜4 Bq/L（Cs-137）
10		1,300～1,400	0.06	N.D.＜4 Bq/L（Cs-134） N.D.＜6 Bq/L（Cs-137）
11		1,400～1,500	0.08	
12	Downstream	1,400～1,500	0.07	
Average			0.09	

Overview of Environmental Monitoring Related to TSS (Nihonmatsu City)

N1
0.033μSv/h(12:00 11/10/2019)
→0.032μSv/h(12:00 16/10/2019)

N(a)
Cs-134 N.D.<6Bq/L（28/10/2019）
Cs-137 N.D.<7Bq/L（28/10/2019）

N2
0.048μSv/h(12:00 11/10/2019)
→0.047μSv/h(12:00 16/10/2019)

N(b)
Cs-134 N.D.<6Bq/L（28/10/2019）
Cs-137 N.D.<7Bq/L（28/10/2019）

N3
0.075μSv/h(12:00 11/10/2019)
→0.067μSv/h(12:00 16/10/2019)

N4
0.135μSv/h(12:00 11/10/2019)
→0.121μSv/h(12:00 16/10/2019)

N(c)
Cs-134 N.D.<6Bq/L（28/10/2019）
Cs-137 N.D.<7Bq/L（28/10/2019）

N5
0.187μSv/h(12:00 11/10/2019)
→0.178μSv/h(12:00 16/10/2019)

N6
0.110μSv/h(12:00 11/10/2019)
→0.122μSv/h(12:00 16/10/2019)

N7
0.184μSv/h(12:00 11/10/2019)
→0.174μSv/h(12:00 16/10/2019)

N(d)
Cs-134 N.D.<6Bq/L（28/10/2019）
Cs-137 N.D.<7Bq/L（28/10/2019）

N9
0.139μSv/h(12:00 11/10/2019)
→0.142μSv/h(12:00 16/10/2019)

N10
0.117μSv/h(12:00 11/10/2019)
→0.127μSv/h(12:00 16/10/2019)

N8
0.125μSv/h(12:00 11/10/2019)
→0.119μSv/h(12:00 16/10/2019)

N11
0.110μSv/h(12:00 11/10/2019)
→0.119μSv/h(12:00 16/10/2019)

N(e)： 6 spots
→Cs-134 N.D.<6Bq/L（17/10/2019）
→Cs-137 N.D.<7Bq/L（17/10/2019）

N12
0.189μSv/h(12:00 11/10/2019)
→0.199μSv/h(12:00 16/10/2019)

N15
0.088μSv/h(12:00 11/10/2019)
→0.090μSv/h(12:00 16/10/2019)

N13
0.114μSv/h(12:00 11/10/2019)
→0.115μSv/h(12:00 16/10/2019)

N14
0.146μSv/h(12:00 11/10/2019)
→0.144μSv/h(12:00 16/10/2019)

N： 6 spots
0.08～0.14μSv/h(18/10/2019)

TSS in Nihonmatsu City

Key	
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