The 6th International Forum on the Decommissioning of the Fukushima Daiichi NPS

Current Status and Future Plans for Radioactive Solid Waste Management

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Waste Management Challenges after The Accident

Immediately after the accident, a large amount of rubble were generated around Units 1 to 4 due to the tsunami and hydrogen explosions.

In order to install various facilities needed for decommissioning, it was necessary to dismantle existing buildings, remove trees and prepare the ground

Various types, and a large amount of solid waste, were generated, such as rubble (metal & concrete), contaminated trimmed trees and soil

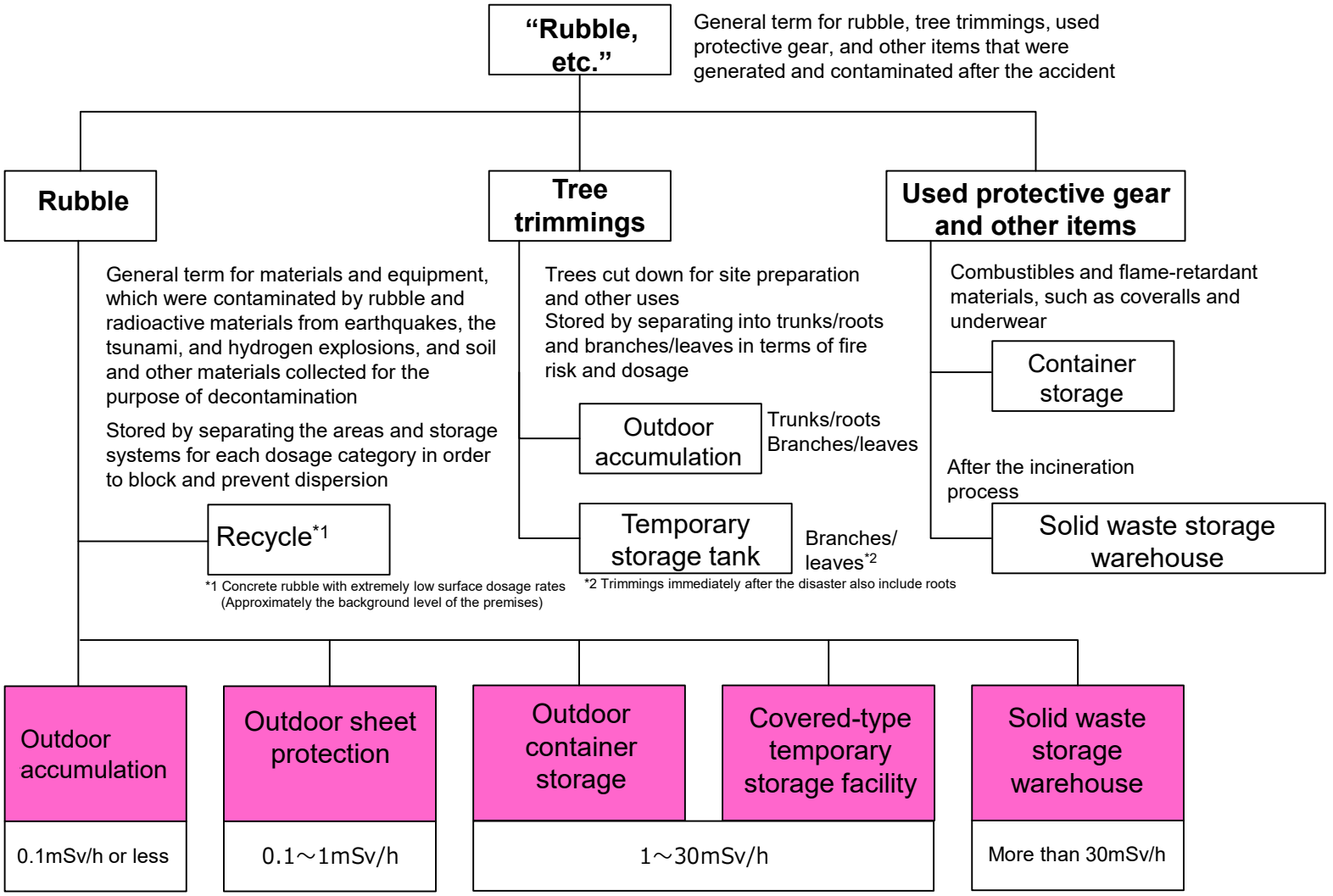
Not enough room to accommodate the waste in the existing storage buildings

With the aim of storing generated waste immediately and safely, temporary solid waste storage had to be conducted outdoors after classification & dispersion prevention measures had been taken

- We plan to reduce the waste volume to the least amount possible and store the remainder indoors within FY2028, except for metal and concrete.
- Related facilities (incinerators, volume reduction facilities & solid waste storage facilities) are under construction

Current status of solid waste storage

- Solid waste (rubble etc.) is separately stored indoors or outdoors temporarily, depending on the category and dose level



Examples of Storage Areas for rubble etc.

Outdoor sheet protection

Outdoor accumulation (tree trimmings)

Outdoor container storage

Container storage in solid waste storage warehouse

Current amount of waste and future outlook

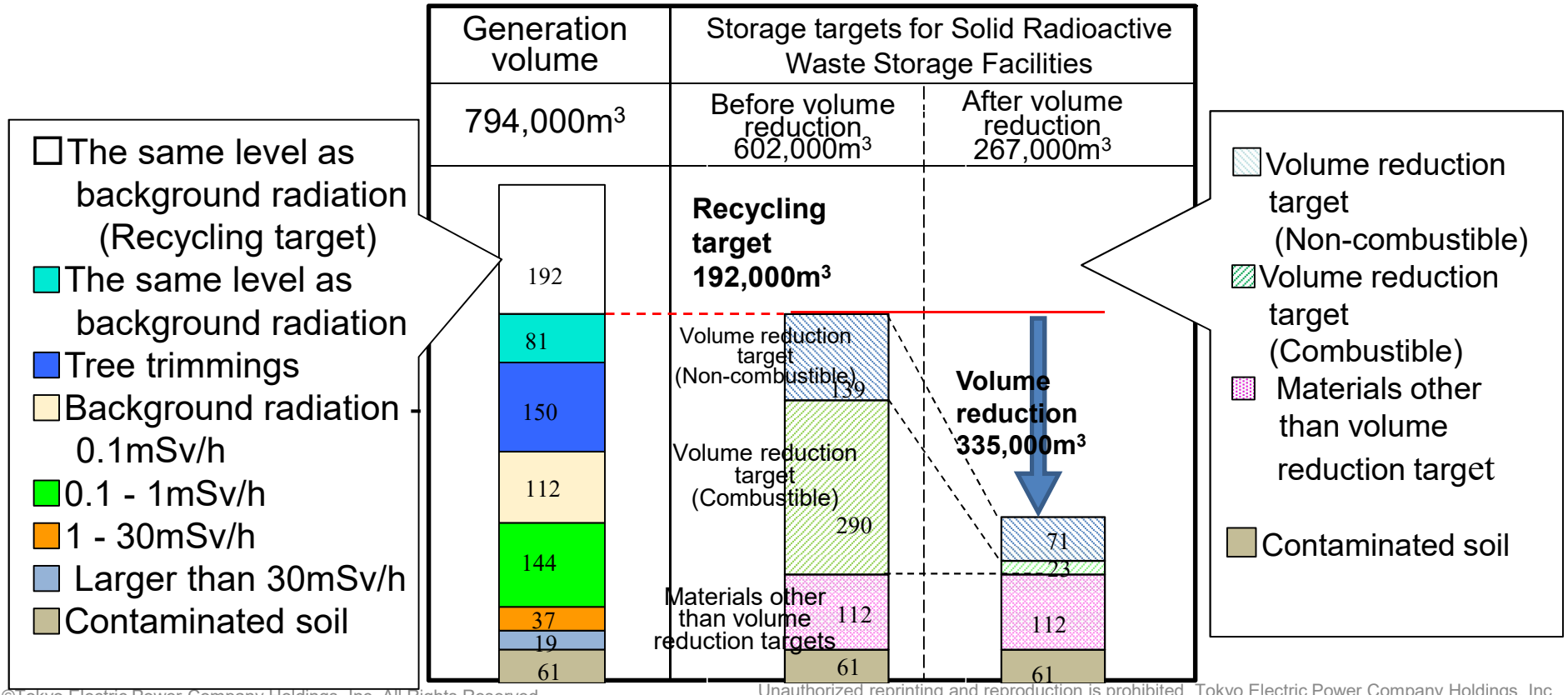
- As of May 2022, 326,000m^3 of rubble etc. and 133,000m^3 of trimmed trees are being temporarily stored.
- Most of this is stored outdoors.
- As the decommissioning work makes progress, the waste is expected to increase.
- The total amount is projected to reach 794,000m^3 by March 2033 according to the estimation in FY2021.

Category	As of end of May 2022	Projection for end of Mar. 2033
Rubble, etc.		
1mSv/h or less	290,000m^3	589,000m^3
more than 1mSv/h	36,000^3	55,000m^3
Trimmed trees	133,000m^3	150,000m^3
Total	459,000m^3	794,000m^3

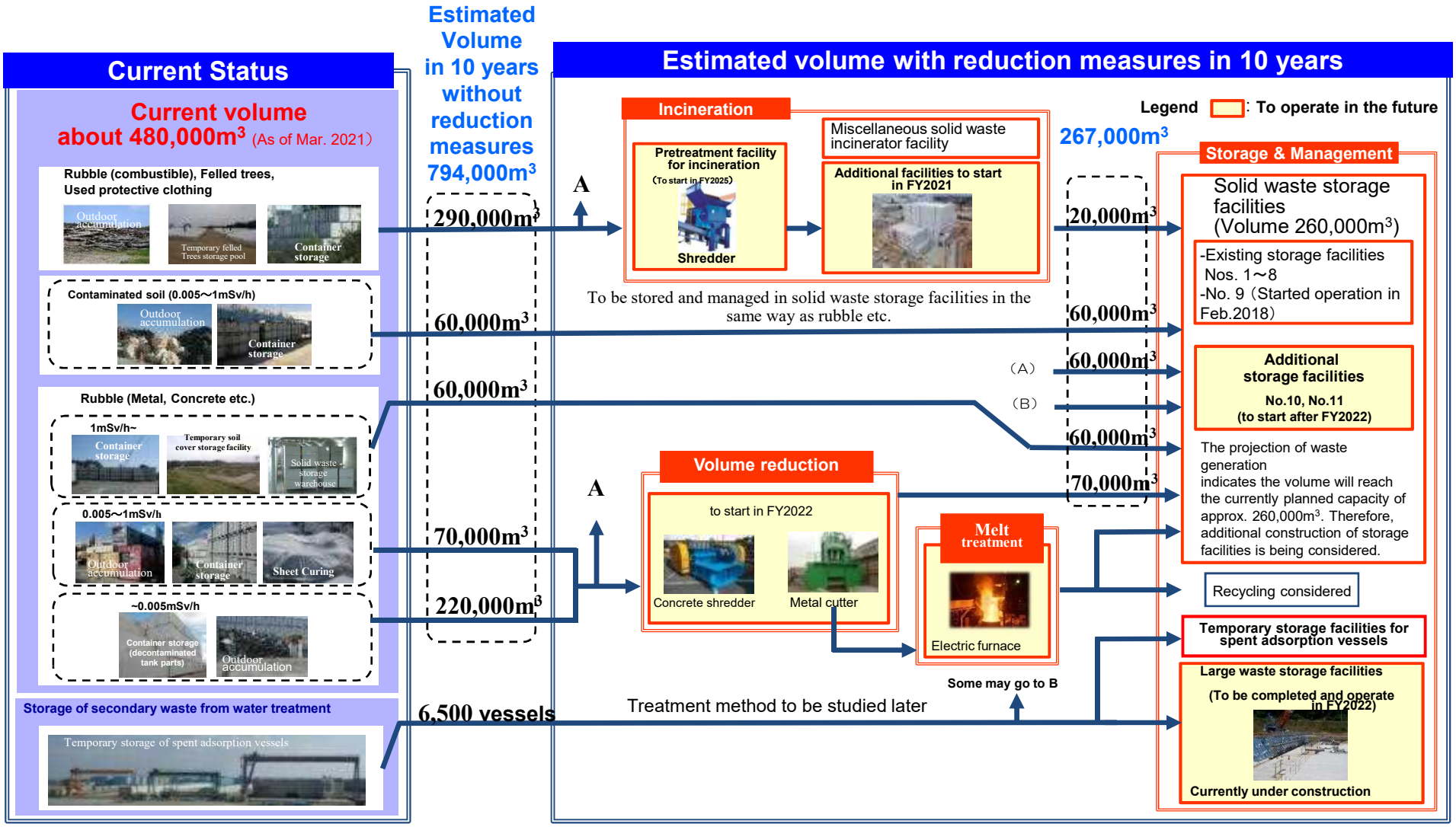
Forecast for recycling & volume reduction of “rubble etc.”

- By the end of March 2033, 794,000 m^3 of waste will be generated.
- Out of 794,000 m^3, 192,000m^3 is estimated to be metals etc. and these low dose materials can be reused or recycled.
- A part of the remaining 602,000m^3 can be reduced by incineration or cutting.
- After volume reduction, the remaining 267,000m^3 will be stored indoors, resulting in the elimination of outdoor temporary storage.

As of March 2033 [Unit for stacked bar chart: 1,000 m^3]



Efforts to eliminate the outdoor temporary storage



Storage status of “rubble, etc.” and “water treatment secondary waste”

- There are a number of outdoor temporary storage areas on the premises

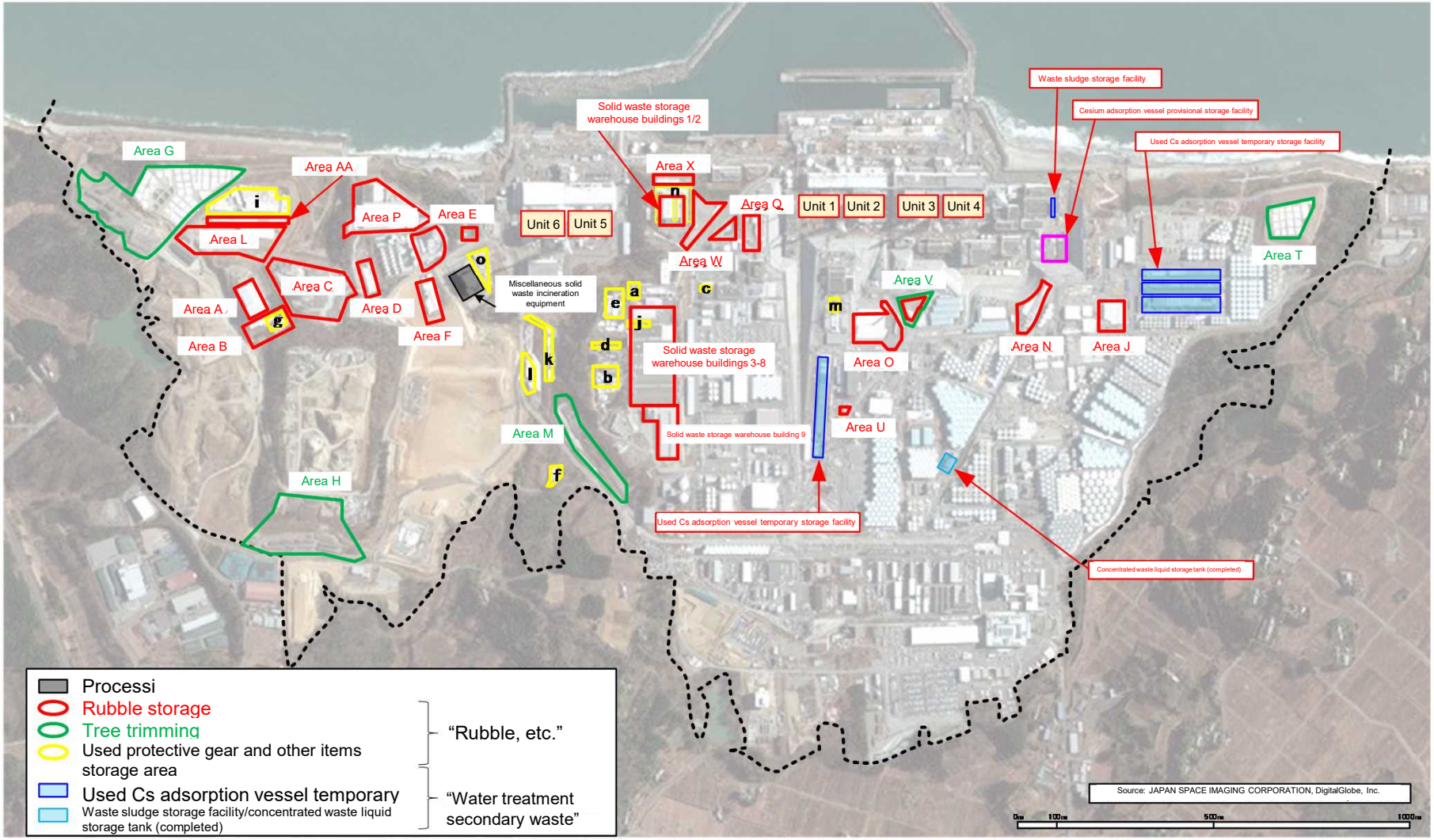
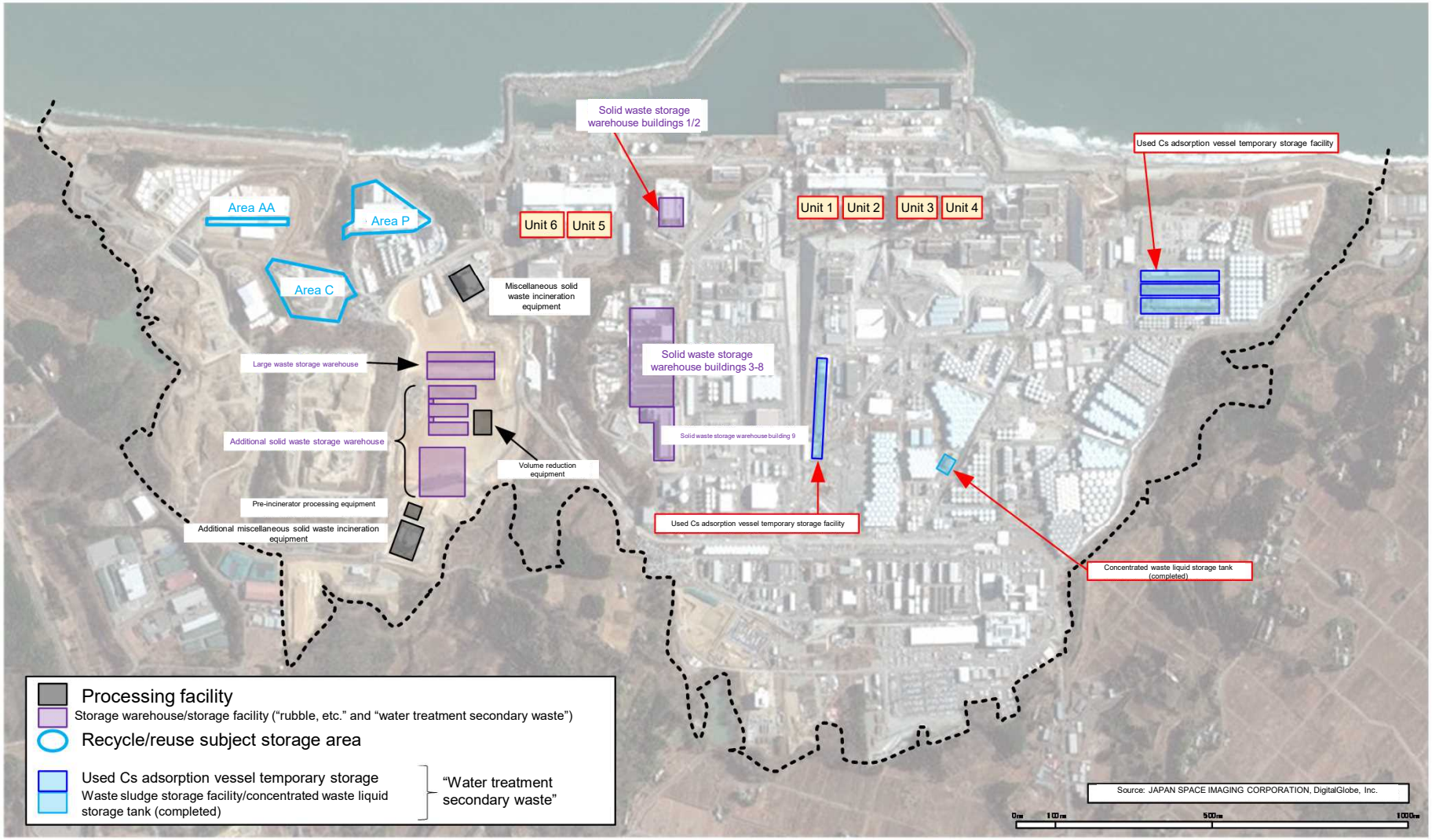


Illustration of future storage for “rubble, etc.” and “water treatment secondary waste”

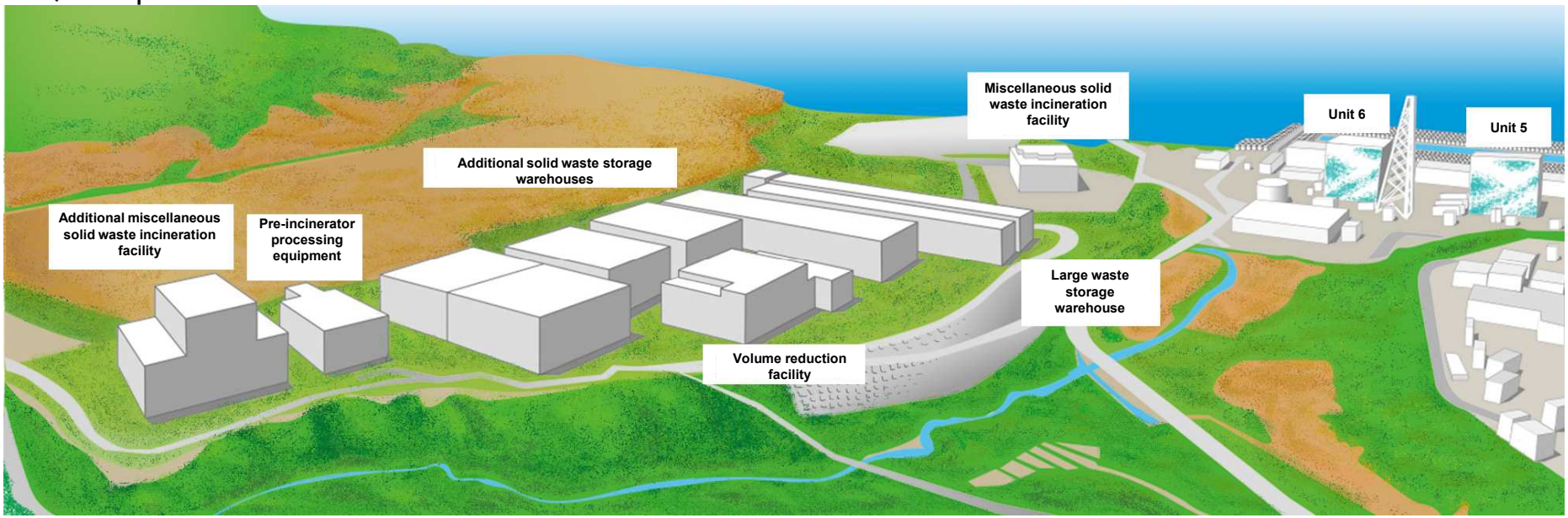
- Eliminate the outdoor temporary storage of “rubble, etc.” in FY2028*

*Excluding recycling/reuse subjects



Overview of solid waste management-related facilities

◇Blueprint



Additional miscellaneous solid waste incineration facility (completed in Mar. 2022)

Volume reduction facility (To be completed in 2023)

Large waste storage warehouse (To be completed in 2023)

Importance of understanding waste properties

- In terms of waste storage and management, we have measured surface dose rates for areas that can be easily accessed on-site and conducted preventive actions against dispersion based on the results.
- In the last fiscal year, a radioactive materials leakage event occurred due to the deterioration of containers. The risk of outdoor leakage will be eliminated by gradually shifting to indoor storage by FY2028.
  - ✓ Until the shift to indoor storage, containers storing waste with relatively high surface dose rates are cured with sheets for corrosion control, and periodic visual inspection is performed for containers that have been in storage for a prolonged period to reduce risk through these multiple measures.
- However, even after shifting to indoor storage, waste will still be generated along with the decommissioning work.
- When considering future processing and disposal methods, it is essential to understand the composition of nuclides. Moreover, it is desirable to sort waste with a far-sighted approach, to some extent, from the perspective of waste storage and management.
- Although nuclide analyses of solid waste from Fukushima Daiichi have been conducted by making maximum use of available analytical resources, they are insufficient for a wide variety and large volume of solid waste.
- As analytical facilities are to be constructed in the future, it is expected that many analyses will be performed, and based on the results, separation, storage, and management methods for waste will be developed with future processing/disposal in mind. By applying these in practice, we will improve waste management in a more forward-looking and appropriate manner.