

Sampling, Measurement Frequency and Nuclide Analysis Plan (October 24, 2011)

- Gamma Ray Radiation Measure(1/4)

| Content                                       | Sampling Spot |   | Original     | Change           | Note                                |
|---|---------------|---|--------------|------------------|-------------------------------------|
| Soil  | 1F            | Playground (west-northwest approx. 500m )                                       | 1-time/week  | Same as original | Sampling frequency is 2-time/week*. |
|   |               | Forest of wild birds (west approx. 500m )                                       |              |                  |                                     |
|   |               | Adjacent to industrial waste disposal facility south-southwest approx. 500m )   |              |                  |                                     |
| Air   | 1F            | Around west gate  | 1-time/day   | Same as original |                                     |
|   | 2F            | MP-1  |              |                  |                                     |
|   | 1F            | Top of the slope at north side of Unit 1  | 1-time/week  | Same as original |                                     |
|   |               | Top of the slope at the west of Unit 1 and 2                                    |              |                  |                                     |
|   |               | Top of the slope at the west of Unit 3 and 4                                    |              |                  |                                     |
|   |               | Mountain side of Unit 1   | 1-time/month | Same as original |                                     |
|   |               | Mountain side of Unit 2   |              |                  |                                     |
|   |               | Mountain side of Unit 3   |              |                  |                                     |
|   |               | In front of the Environment Administration Office                               |              |                  |                                     |
|   |               | In front of Water Treatment Building  | 1-time/week  | Same as original |                                     |
|   |               | In front of Switchyard of Unit 5 and 6  |              |                  |                                     |
|   |               | MP-1  |              |                  |                                     |
|   | MP-3          |   |              |                  |                                     |
| MP-8  |               |   |              |                  |                                     |
| Underground Water                             | 1F            | Subdrain around Unit 1 turbine building   | 3-time/week  | Same as original |                                     |
|   |               | Subdrain around Unit 2 turbine building   |              |                  |                                     |
|   |               | Subdrain around Unit 3 turbine building   |              |                  |                                     |
|   |               | Subdrain around Unit 4 turbine building   |              |                  |                                     |
|   |               | Subdrain around Unit 5 turbine building   |              |                  |                                     |
|   |               | Subdrain around Unit 6 turbine building   |              |                  |                                     |
|   |               | Deep well   |              |                  |                                     |
|   | 1F            | Subdrain northeast of Process Main Building                                     | 1-time/day   | Same as original |                                     |
|   |               | Subdrain southeast of Process Main Building                                     | 1-time/week  |                  |                                     |
|   |               | Subdrain south of Miscellaneous Solid Waste Volume Reduction Treatment Building |              |                  |                                     |
|   |               | Southwest Subdrain of On-site Bunker Building                                   | 1-time/day   |                  |                                     |
|   |               | Subdrain west of Incineration Workshop Building                                 |              |                  |                                     |
|   |               | Subdrain north of Miscellaneous Solid Waste Volume Reduction Treatment Building |              |                  |                                     |
| Southeast Subdrain of On-site Bunker Building |               |   |              |                  |                                     |

\* Sampling is done twice a week. Out of which, one sample is measured. If it is recognized that the radioactivity concentration is changed, the remaining sample will be measured.

- Gamma Ray Radiation Measure(2/4)

| Content                | Sampling Spot |   | Original   | Change           | Note |
|------------------------|---------------|---|------------|------------------|------|
| Seawater (inside port) | 1F            | Front of Shallow Draft Quay                     | 1-time/day | Same as original |      |
|                        |               | Inside north water intake canal of Unit 1-4     |            |                  |      |
|                        |               | Screen of Unit 1 (outside the silt fence)       |            |                  |      |
|                        |               | Screen of Unit 1 (inside the silt fence)        |            |                  |      |
|                        |               | Screen of Unit 2 (outside the silt fence)       |            |                  |      |
|                        |               | Screen of Unit 2 (inside the silt fence)        |            |                  |      |
|                        |               | Screen of Unit 3 (outside the silt fence)       |            |                  |      |
|                        |               | Screen of Unit 3 (inside the silt fence)        |            |                  |      |
|                        |               | Screen of Unit 4 (outside the silt fence)       |            |                  |      |
|                        |               | Screen of Unit 4 (inside the silt fence)        |            |                  |      |
|                        |               | Inside the south of Unit 1-4 Water Intake Canal |            |                  |      |

|                             |                                   |  |  |                         |  |  |
|-----------------------------|-----------------------------------|--|--|-------------------------|--|--|
| Seawater<br>(outside port)  | Coast                             | North of Discharge Channel of 5-6u of 1F | 1-time/day   | Same as original        |  |  |
|                             |                                   |  |  |                         |  |  |
|                             |                                   | Around South Discharge Channel of 1F     |  |                         |  |  |
|                             |                                   | Around North Discharge Channel of 2F     |  |                         |  |  |
|                             |                                   |  | Around Iwasawa Shore of 2F   |                         |  |  |
|                             | Within 20km<br>of periphery       | 3 km offshore of Haramachi district      | 1-time/2-day<br>(Sampling 2 points<br>- upper and lower<br>layers) | Same as original        |  |  |
|                             |                                   | 3 km offshore of Odaka district          |  |                         |  |  |
|                             |                                   | 3 km offshore of Iwasawa coast           |  |                         |  |  |
|                             |                                   | 8 km offshore of Odaka district          |  |                         |  |  |
|                             |                                   | 8 km offshore of Iwasawa coast           |  |                         |  |  |
|                             |                                   | 15 km offshore of Ukedo-gawa             |  |                         |  |  |
|                             |                                   | 15 km offshore of Fukushima Daiichi      |  |                         |  |  |
|                             | 15 km offshore of Fukushima Daini |  |  |                         |  |  |
|                             | Within 30km<br>of periphery       | 15 km offshore of MinamiSouma City       | 1-time/week<br>(Sampling 2 points<br>- upper and lower<br>layers)  | <u>Same as original</u> |  |  |
|                             |                                   | 15 km offshore of Iwasawa Shore          |  |                         |  |  |
|                             |                                   | 15 km offshore of Hirono-machi           |  |                         |  |  |
|                             | Outside 30km<br>of periphery      | 3 km offshore of North Iwaki             |  |                         |  |  |
|                             |                                   | 3 km offshore of Natsui-gawa             |  |                         |  |  |
|                             |                                   | 3 km offshore of Onahama Port            |  |                         |  |  |
| 3 km offshore of Ena        |                                   |  |  |                         |  |  |
| 3 km offshore of Numanouchi |                                   |  |  |                         |  |  |
| 3 km offshore of Toyoma     |                                   |  |  |                         |  |  |

- Gamma Ray Radiation Measure(3/4)

| Content                    | Sampling Spot                        |  | Original  | Change                  | Note |
|----------------------------|--------------------------------------|--|---|-------------------------|------|
| Seawater<br>(outside port) | Outside 30km<br>of periphery         | 3 km offshore of Souma City              | 1-time/week<br>(Sampling 2 points<br>- upper and lower<br>layers)           | Same as original        |      |
|                            |                                      | 5 km offshore of Souma City              |   |                         |      |
|                            |                                      | 5 km offshore of Kashima                 |   |                         |      |
|                            |                                      | 5 km offshore of Numanouchi              |   |                         |      |
| Seawater<br>(outside port) | Offshore of<br>Ibaraki<br>prefecture | 3 km offshore of Takadokobama shore      | 1-time/week<br>(Sampling 2 points<br>- upper and lower<br>layers)           | <u>Same as original</u> |      |
|                            |                                      | 3 km offshore of Kujihama shore          |   |                         |      |
|                            |                                      | 3 km offshore of Oarai shore             |   |                         |      |
|                            |                                      | 3 km offshore of Hirai shore             |   |                         |      |
|                            | 3 km offshore of Hasaki shore        |  |   |                         |      |
|                            | Offshore of<br>Miyagi<br>prefecture  | Ishinomaki Bay                           | 1-time/2-week<br>(Sampling 3 points<br>- upper, middle and<br>lower layers) | Same as original        |      |
|                            |                                      | Offshore of Kinkasan east                |   |                         |      |
|                            |                                      | Offshore of Kinkasan south               |   |                         |      |
|                            |                                      | Offshore of Shichigahama                 |   |                         |      |
|                            |                                      | Sendai Bay center                        |   |                         |      |
| Offshore of Abukuma River  |                                      |  |   |                         |      |
| Marine soil                | Within 20km<br>of periphery          | 3 km offshore of Odaka district          | 1-time/month  | Same as original        |      |
|                            |                                      | 3 km offshore of Iwasawa coast           |   |                         |      |
|                            | Coast                                | North of Discharge Channel of 5-6u of 1F | 1-time/month  | Same as original        |      |
|                            |                                      | Around South Discharge Channel of 1F     |   |                         |      |
|                            |                                      | Around North Discharge Channel of 2F     |   |                         |      |
|                            |                                      | Around Iwasawa Shore of 2F               |   |                         |      |
|                            | Within 20km<br>of periphery          | 3 km offshore of Haramachi district      |   |                         |      |
|                            |                                      | 8 km offshore of Odaka district          |   |                         |      |
|                            |                                      | 8 km offshore of Iwasawa coast           |   |                         |      |
|                            |                                      | 15 km offshore of Ukedo-gawa             |   |                         |      |
|                            |                                      | 15 km offshore of Fukushima Daiichi      |   |                         |      |
|                            |                                      | 15 km offshore of Fukushima Daini        |   |                         |      |

- Gamma Ray Radiation Measure(4/4)

| Content         | Sampling Spot                          |  | Original     | Change           | Note |                                |                  |                |
|-----------------|--|--|--------------|------------------|------|--------------------------------|------------------|----------------|
| Marine soil     | Within 30km of periphery               | 15 km offshore of MinamiSouma City                             | 1-time/month | Same as original |      |                                |                  |                |
|                 |  | 15 km offshore of Iwasawa Shore                                |              |                  |      |                                |                  |                |
|                 |  | 15 km offshore of Hirono-machi                                 |              |                  |      |                                |                  |                |
|                 | Outside 30km of periphery              | North Iwaki offshore 3km                                       |              |                  |      |                                |                  |                |
|                 |  | Natsui-gawa offshore 3km                                       |              |                  |      |                                |                  |                |
|                 |  | Onahama Port offshore 3km                                      |              |                  |      |                                |                  |                |
|                 |  | Ena offshore 3km   |              |                  |      |                                |                  |                |
|                 |  | Numanouchi offshore 3km  |              |                  |      |                                |                  |                |
|                 |  | Toyoma offshore 3km  |              |                  |      |                                |                  |                |
|                 |  | 3 km offshore of Souma City                                    |              |                  |      |                                |                  |                |
|                 |  | 5 km offshore of Souma City                                    |              |                  |      |                                |                  |                |
|                 |  | 5 km offshore of Kashima                                       |              |                  |      |                                |                  |                |
|                 |  | 5 km offshore of Numanouchi                                    |              |                  |      |                                |                  |                |
| <u>Dropping</u> | 1F                                     | Environment Administration Office of Fukushima Daiichi         | 1-time/month | Same as original |      |                                |                  |                |
|                 |  | Roof of Environment Administration Office of Fukushima Daiichi |              |                  |      |                                |                  |                |
|                 | Around 5km                             | Around 5km North   |              |                  |      |                                |                  |                |
|                 |  | Around 5km Northwest   |              |                  |      |                                |                  |                |
|                 |  | Around 5km West  |              |                  |      |                                |                  |                |
|                 |  | Around 5km Southwest   |              |                  |      |                                |                  |                |
|                 |  | Around 5km Southwest (roof)                                    |              |                  |      |                                |                  |                |
|                 |  | Around 5km South   |              |                  |      |                                |                  |                |
|                 | Around 10km                            | Around 10km North  |              |                  |      |                                |                  |                |
|                 |  | Around 10km Northwest  |              |                  |      |                                |                  |                |
|                 |  | Around 10km West   |              |                  |      |                                |                  |                |
|                 |  | Around 10km Southwest  |              |                  |      |                                |                  |                |
|                 |  | Around 10km Southwest (roof)                                   |              |                  |      |                                |                  |                |
|                 |  | Around 10km South (roof)                                       |              |                  |      |                                |                  |                |
|                 |  | 2F   |              |                  |      | Administration Office Building |                  |                |
|                 | Roof of Administration Office Building |  |              |                  |      |                                |                  |                |
|                 |  |  |              |                  |      |                                | Cancelled        | Hard to access |
|                 |  |  |              |                  |      |                                | Same as original |                |

- Plutonium et cetera

| Content                   | Sampling Spot  |   | Original   | Change  | Note  |
|---------------------------|--|---|--|---|---|
| Soil                      | 1F   | Playground (west-northwest approx. 500m )                                     | 1-time/week<br>(only UP)   | Same as original  | Sampling frequency is 2-time/week*.   |
|                           |  | Forest of wild birds (west approx. 500m)                                      |  |   |   |
|                           |  | Adjacent to industrial waste disposal facility south-southwest approx. 500m ) |  |   |   |
| Air                       | 1F   | West Gate of Fukushima Daiichi  | 1-time/week  | Same as original  |   |
| Underground Water         | 1F   | Subdrain around Unit 2 turbine building                                       | 1-time/month   | Same as original  | Take a sample in turn at 1-time/month from the sampling points mentioned in the left column |
|                           |  | Subdrain around Unit 5 turbine building                                       | 1-time/month<br>(Refer to Note)  | Same as original  |   |
|                           |  | Subdrain around Unit 1, 3, 4, 6 turbine buildings, and Deep well              |  |   |   |
| Seawater (inside port)    | 1F   | Inside north water intake canal of Unit 1-4                                   | 1-time/month   | Same as original  |   |
| Seawater (outside port)   | Coast  | North of Discharge Channel of 5-6u of 1F                                      | 1-time/month   | 1-time/month<br>(If Pu 238 is detected, U, Am, Cm analysis is conducted)                  | Adjustment with how to lead sea area monitoring in future                                   |
|                           |  | Around South Discharge Channel of 1F  |  |   |   |
|                           | Within 20km of periphery                               | 15 km offshore of Fukushima Daiichi   | 1-time/month<br>(Upper layer)  | 1-time/month<br>(Upper layer)<br>(If Pu 238 is detected, U, Am, Cm analysis is conducted) | Adjustment with how to lead sea area monitoring in future                                   |
|                           |  | 15 km offshore of Fukushima Daini   |  |   |   |
| Marine soil               | Within 20km of periphery                               | 3km offshore of Odaka district  | 1-time/2-month<br>(If Pu is detected, U, Am, Cm analysis is conducted) | 1-time/2-month<br>(If Pu 238 is detected, U, Am, Cm analysis is conducted)                | Adjustment with how to lead sea area monitoring in future                                   |
|                           |  | 3km offshore of Iwasawa coast   |  |   |   |
|                           |  | 15 km offshore of Fukushima Daiichi   |  |   |   |
|                           | Coast  | North of Discharge Channel of 5-6u of 1F                                      | 1-time/2-month<br>(If Pu is detected, U, Am, Cm analysis is conducted) | 1-time/2-month<br>(If Pu 238 is detected, U, Am, Cm analysis is conducted)                | Adjustment with how to lead sea area monitoring in future                                   |
|                           |  | Around South Discharge Channel of 1F  |  |   |   |
|                           | Within 20km of periphery or Within 30km of periphery   | Each one point of North and South of high Cs-137 level                        |  |   |   |
|                           |  | Each one point of North and South of high Cs-137 level                        |  |   |   |
| Outside 30km of periphery | Each one point of North and South of high Cs-137 level |   |  |   |   |

\* Sampling is done twice a week. Out of which, one sample is measured. If it is recognized that the radioactivity concentration is changed, the remaining sample will be measured.

- Strontium

| Content  | Sampling Spot  |   | Original                        | Change                          | Note  |
|--|--|---|---------------------------------|---------------------------------|---|
| Soil   | 1F   | Playground (west-northwest approx. 500m )                                     | 1-time/month                    | Same as original                |   |
|  |  | Forest of wild birds (west approx. 500m)                                      |                                 |                                 |   |
|  |  | Adjacent to industrial waste disposal facility south-southwest approx. 500m ) |                                 |                                 |   |
| Air  | 1F   | Around west gate  | 1-time/month                    | Same as original                |   |
| Underground Water                                      | 1F   | Subdrain around Unit 2 turbine building                                       | 1-time/month                    | Same as original                |   |
|  |  | Subdrain around Unit 5 turbine building                                       |                                 |                                 |   |
|  |  | Subdrain around Unit 1, 3, 4, 6 turbine buildings, and Deep well              | 1-time/month<br>(Refer to Note) | Same as original                | Take a sample in turn at 1-time/month from the sampling points mentioned in the left column |
| Seawater (inside port)                                 | 1E   | Inside north water intake canal of Unit 1-4                                   | 1-time/month                    | Same as original                |   |
| Seawater (outside port)                                | Coast  | North of Discharge Channel of 5-6u of 1F                                      | 1-time/month                    | Same as original                |   |
|  |  | Around South Discharge Channel of 1F  |                                 |                                 |   |
|  | Within 20km of periphery                               | 15 km offshore of Fukushima Daiichi   | 1-time/month<br>(Upper layer)   | Same as original                |   |
|  |  | 15 km offshore of Fukushima Daini   |                                 |                                 |   |
|  | Outside 30km of periphery                              | Middle of Sendai Bay  | -                               | 1-time/2-month<br>(Upper layer) | Expansion of Survey   |
|  |  | 5 km offshore of Souma city   |                                 |                                 |   |
|  |  | 3 km offshore of Ena  |                                 |                                 |   |
|  |  | 3 km offshore of Oarai shore  |                                 |                                 |   |
| Marine soil  | Within 20km of periphery                               | 3 km offshore of Odaka district   | 1-time/2-month                  | <u>Same as original</u>         |   |
|  |  | 3 km offshore of Iwasawa coast  |                                 |                                 |   |
|  |  | 15 km offshore of Fukushima Daiichi   |                                 |                                 |   |
|  | Coast  | North of Discharge Channel of 5-6u of 1F                                      |                                 |                                 |   |
|  |  | Around South Discharge Channel of 1F  |                                 |                                 |   |
|  | Within 20km of periphery or Within 30km of periphery   |   | 1-time/2-month                  | <u>Same as original</u>         |   |
| Each one point of North and South of high Cs-137 level |  |   |                                 |                                 |   |
| Outside 30km of periphery                              | Each one point of North and South of high Cs-137 level |   |                                 |                                 |   |

- Tritium, all alpha and beta radiation

| Content                 | Sampling Spot            |  | Original                        | Change           | Note |
|-------------------------|--------------------------|--|---------------------------------|------------------|------|
| Underground Water       | 1F                       | Subdrain around Unit 2 turbine building                          | 1-time/month                    | Same as original |      |
|                         |                          | Subdrain around Unit 5 turbine building                          |                                 |                  |      |
|                         |                          | Subdrain around Unit 1, 3, 4, 6 turbine buildings, and Deep well | 1-time/month<br>(Refer to Note) | Same as original |      |
| Seawater (inside port)  | 1F                       | Inside north water intake canal of Unit 1-4                      | 1-time/month                    | Same as original |      |
| Seawater (outside port) | Coast                    | North of Discharge Channel of 5-6u of 1F                         | 1-time/month                    | Same as original |      |
|                         |                          | Around South Discharge Channel of 1F                             |                                 |                  |      |
|                         | Within 20km of periphery | 15 km offshore of Fukushima Daiichi                              |                                 |                  |      |
|                         |                          | 15 km offshore of Fukushima Daini                                |                                 |                  |      |