

RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM

1. **PURPOSE**

- 1.1. This procedure outlines the essential elements of the Radiological Groundwater Protection Program (RGPP). The use of vendors and contractors to implement this program is acceptable.
- 1.2. The purpose of the program is to provide timely detection and effective response to radiological releases to groundwater and other non-permitted releases, both on and off Exelon premises.
- 1.3. Groundwater Protection is a significant issue specific to the environmental and chemistry functional areas, with overlap to operations, maintenance and engineering. The program is driven in part by non-traditional regulatory requirements, both EPA and state requirements, and Exelon's voluntary commitments established by Nuclear Energy Institute (NEI) and legal (court-mandated) requirements.
- 1.4. This is a complete re-write of the procedure.

2. **DEFINITIONS**

- 2.1. **Controlled RGPP Sample Point Data** – A list of radionuclide analytical requirements, laboratory reporting requirements, and internal and external reporting thresholds controlled in accordance with station-specific procedure.
- 2.2. **Leak Detection Sample Point** – Subsurface sample point within owner controlled area operated and managed by station to provide early leak detection as the primary function. The distinguishing characteristic is that these are leak detection systems rather than environmental monitoring points that happen to be operated like wells, rather than electronic or level sensors as may be used inside power block. These systems are frequently checked by station personnel and water is screened by station laboratories. They are located immediately adjacent to systems and structures of interest, and are intended to provide prompt warning at a low threshold, rather than aquifer monitoring. These could also be French drain structures, “cofferdam-like” structures, intra-barrier sample points, storm drains, or other points before a final environmental barrier.
- 2.3. **REMP Well Sample Point** – Ground or surface water monitoring locations sampled in accordance with the ODCM.
- 2.4. **RGPP Monitoring Points (Monitoring Wells/Surface Sample locations/ Drinking water wells** – Monitoring points (historical or new) installed to monitor groundwater aquifers (both on and off of Exelon controlled property) and incorporated in mandatory (statutory or judicial, but **not** including ODCM requirements) or voluntary (NEI, Exelon) commitments to monitor and report results.

- 2.5. **RGPP Task Manager** – The individual or team leader with responsibility to implement the Chemistry/Environmental RGPP requirements at any station.
- 2.6. **Sentinel Well** –Wells installed close to higher risk systems or components where leak detection capability is limited or where leak detection sample points cannot be established.
3. **RESPONSIBILITIES**
- 3.1. Chemistry/Environmental (Station) is responsible to identify the limit/requirement/standard that is not met and to initiate event reportability.
- 3.2. Radiation Protection is responsible for the radiological support of (new) well installation(s), collection and radiological monitoring of free-flowing solids and surficial sampling of soils as requested by Chemistry/Environmental in support of the RGPP and in accordance with the RP well installation support procedure.
- 3.3. Radiation Protection is responsible for surveys for unconditional release any groundwater sampling equipment used in protected area and at other sample locations they designate.
- 3.4. Radiation Protection is responsible for release of groundwater samples from protected area and for determining when samples not released to sample collection contractor will be shipped directly to laboratory.
- 3.5. Environmental (corporate) is responsible for specification of enhanced sampling frequency following events, specification of location and design of new monitoring locations, and evaluation of need to take additional actions when Chemistry/Environmental or Radiation Protection identify potential radiological impacts.
- 3.6. Communications/Regulatory Assurance (RA)/Public Affairs is responsible for support in notification of state and local officials. RA has the responsibility for support in making the call and for ensuring notifications/reports are made in a timely manner.
- 3.7. Operations makes all notifications required by this program.
- 3.8. Regulatory Affairs will notify Chemistry/Environmental of new reporting requirements.

4. **MAIN BODY**

NOTE: Depending on the structure or system, positive detects may be reportable by requirement or commitment, therefore, sample analytical data from these locations shall be reviewed by the station RGPP Task Manager.

- 4.1. **ESTABLISH** water sampling points for groundwater protection including:
 - Sentinel sampling points to detect leakage from plant systems
 - Plant leak detection systems including systems that monitor the final barrier between station buildings and the environment (i.e., spent fuel pool tell-tale drain)
 - Onsite and Offsite groundwater sampling wells and surface water locations.
 - Routine environmental sampling locations (REMP) to monitor plant activities that may impact the drinking water pathway.
- 4.2. **ESTABLISH** the following for each sample point in accordance with CY-AA-170-415:
 - Lower Limit of Detection (LLD).
 - Radionuclide Analyses to be performed.
 - Sampling and Analysis Frequencies.
 - Investigation levels.
 - Internal and External Reporting Levels.
- 4.3. **MAINTAIN** all groundwater monitoring sample points in functional condition.
- 4.4. **SAMPLE and ANALYZE** water from each sample point using either onsite or offsite laboratories to demonstrate radiological protection of groundwater is maintained.
- 4.5. **EVALUATE** analytical data to identify potentially contaminated systems.
- 4.6. **NOTIFY and REPORT** when monitoring data significantly increases as determined by trending and tracking.
- 4.7. **ESTABLISH** new monitoring locations as required by significant events or detection of station impacts on groundwater resources.
- 4.8. **EVALUATE** spills of station liquids that may threaten groundwater for Reportability and for 10 CFR 50.75 (g) and 72.30 (d) documentation.
- 4.9. **NOTIFY** Operations promptly when new spills are identified.
- 4.10. **DETERMINE** the need to take remedial measures when data analysis, consultant (hydrogeologic) input, or other reviews indicate a continued threat to groundwater resources is emerging (Corporate Environmental).
- 4.11. **COORDINATE** with Corporate Environmental to develop an enhanced sampling program for evaluating potential threats to groundwater by considering:
 - Data trends
 - Source factors (concentration and quantity of released material)
 - Existing sample locations

- 4.12. **INCLUDE** in the Annual Radiological Environmental Operating Report (AREOR) a section detailing the RGPP monitoring results.
- 4.13. RGPP Change Process
 - 4.13.1. **ENSURE** changes to RGPP sample point parameters do **not** adversely impact the goals of the RGPP.
 - 4.13.2. **CONTROL** changes to RGPP sample points in accordance with CY-AA-170-415.
 - 4.13.3. **UPDATE** the site specific CY-XX-170-4160 with the approved changes.
- 4.14. Annual Reports
 - 4.14.1. **PREPARE** documentation of monitoring results for inclusion in the station's Annual Radiological Environmental Operating Report (AREOR).
- 5. **DOCUMENTATION** - None
- 6. **REFERENCES**
 - 6.1. Station Commitments – None
 - 6.2. User References
 - 6.2.1. LS-AA-120, Issue Identification And Screening Process.
 - 6.2.2. RM-AA-101-1004, Standard Records Retention Schedule (SRRS).
 - 6.3. Regulatory Requirements
 - 6.3.1. 10 CFR 50.75(g), Reporting and Recordkeeping for Decommissioning Planning.
 - 6.3.2. 10 CFR 72.30(d), Financial Assurance and Recordkeeping for Decommissioning.
- 7. **ATTACHMENTS** - None