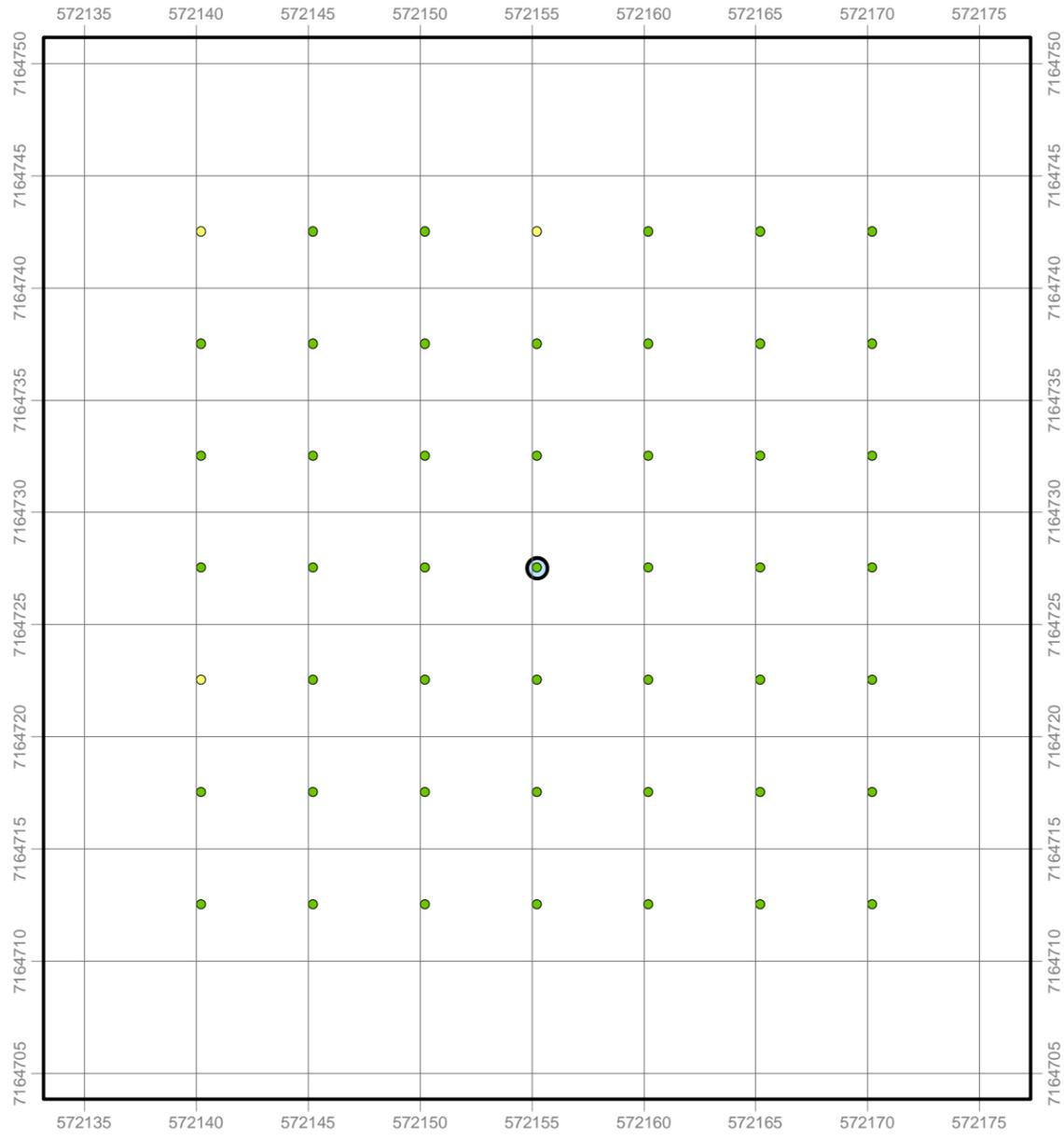
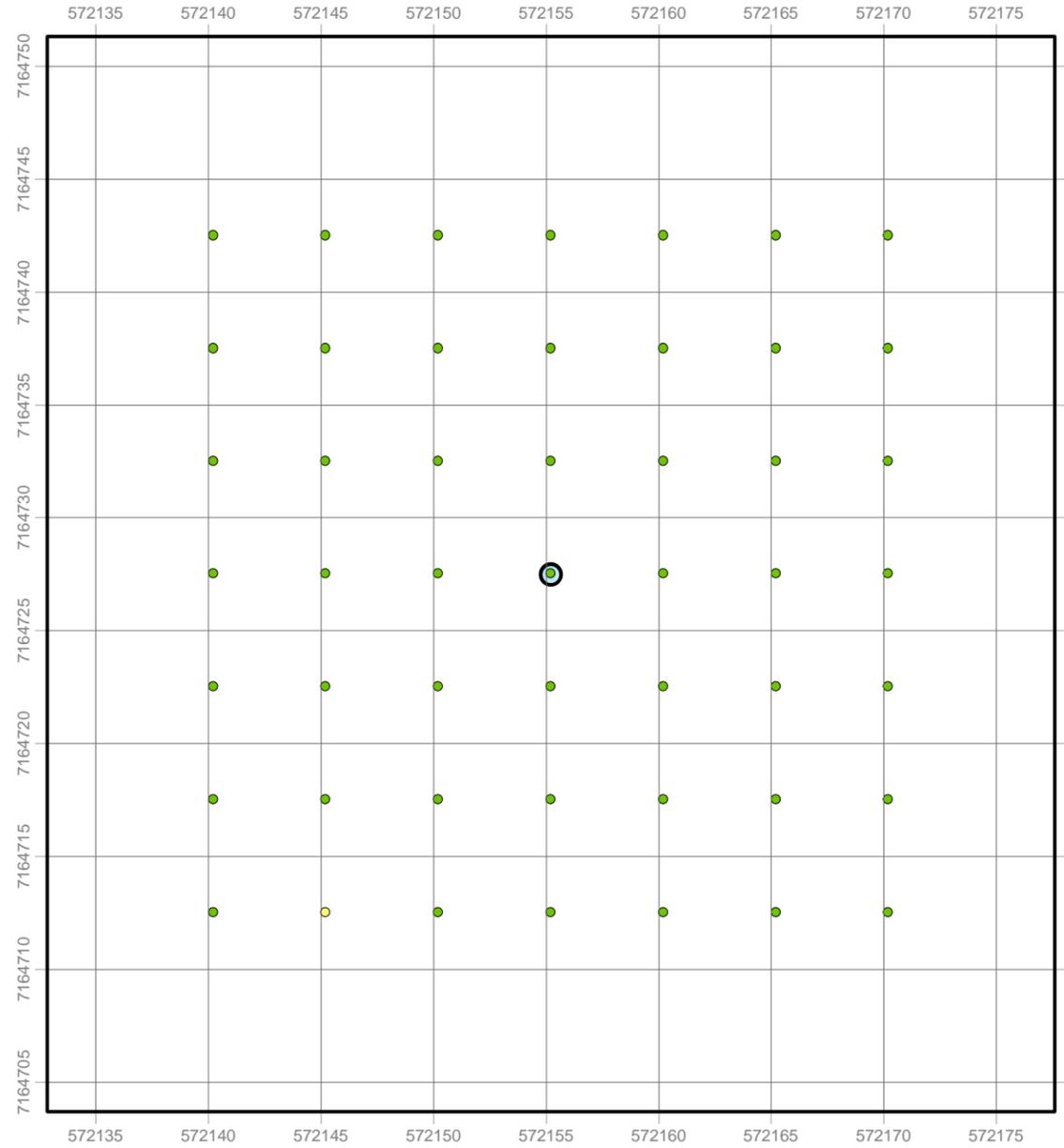


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 -  1.0 - 2.5 µSv
 -  > 2.5 µSv



ST-04
Pre Gamma Survey
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 Min-Max: 0.0 - 0.36 µSv



ST-04
Post Gamma Survey
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 Min-Max: 0.01 - 0.32 µSv

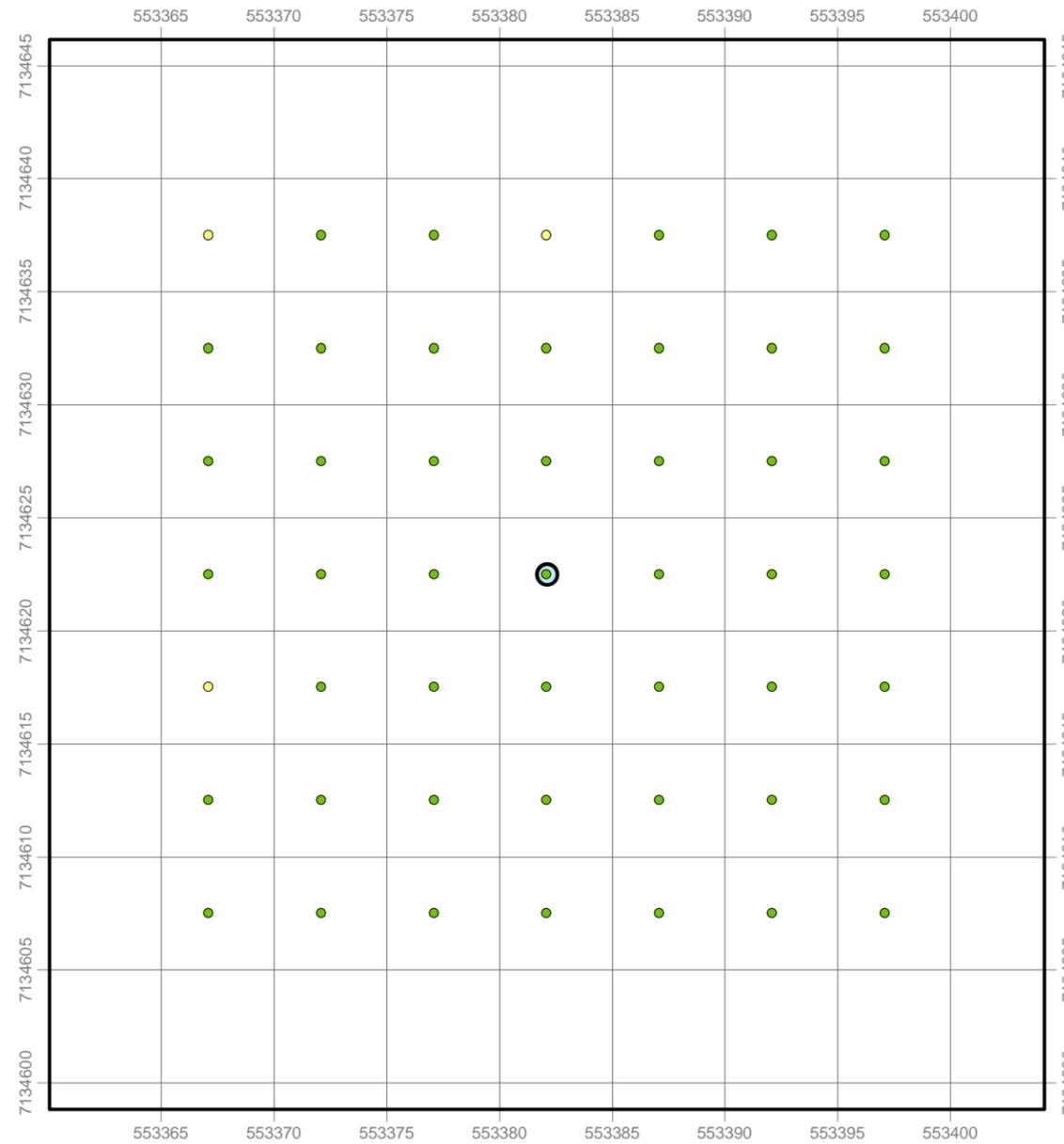
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 Topographic Database, AREVA Resources Canada
 Inc.

PRE AND POST GAMMA SURVEY
DRILL HOLE ST-04
 Figure 3.7-23
 2015 KIGGAVIK Annual Report



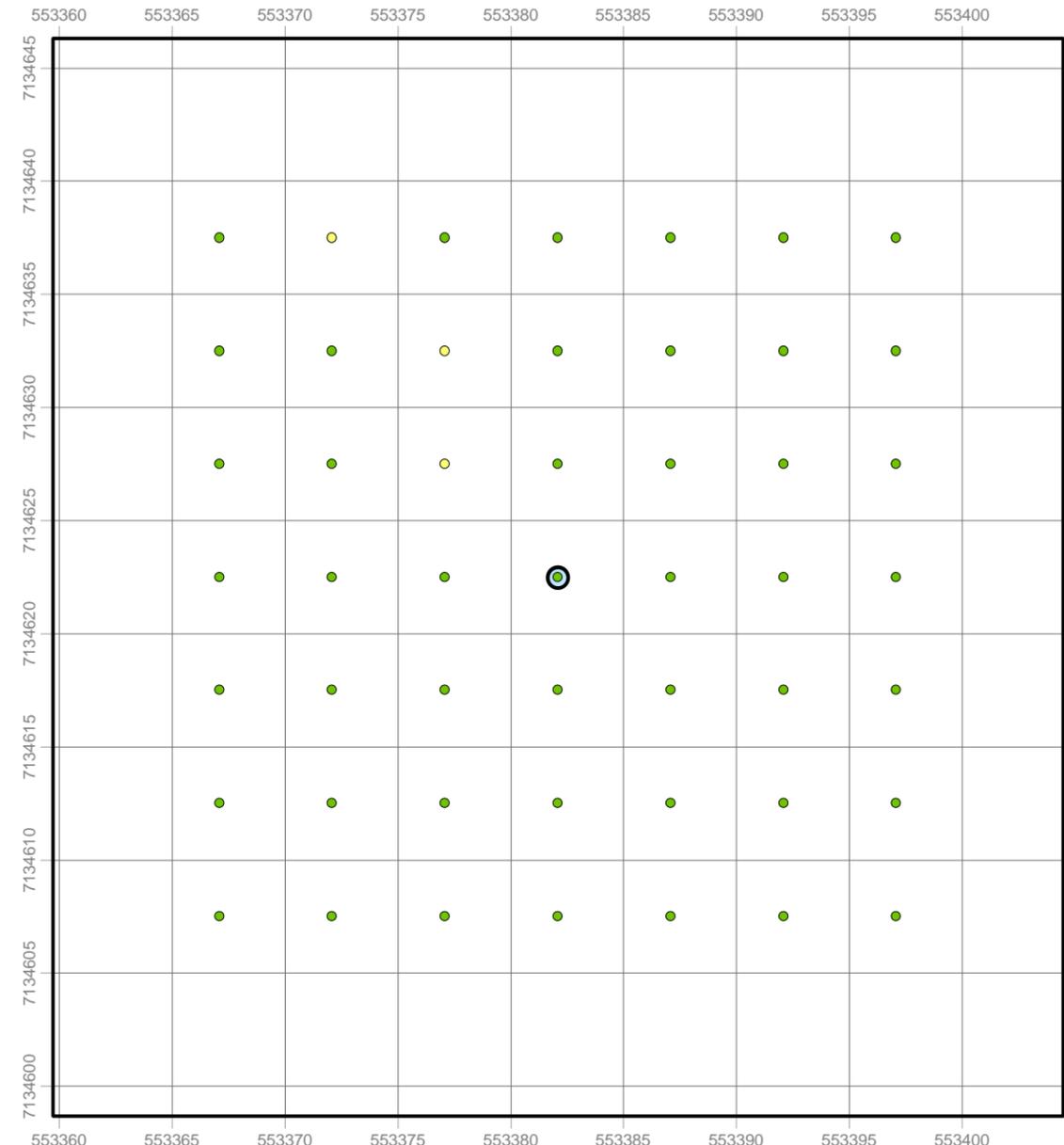
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-  0.3 - 0.6 µSv
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-  1.0 - 2.5 µSv
-  > 2.5 µSv



**AND-15-01
Pre Gamma Survey**

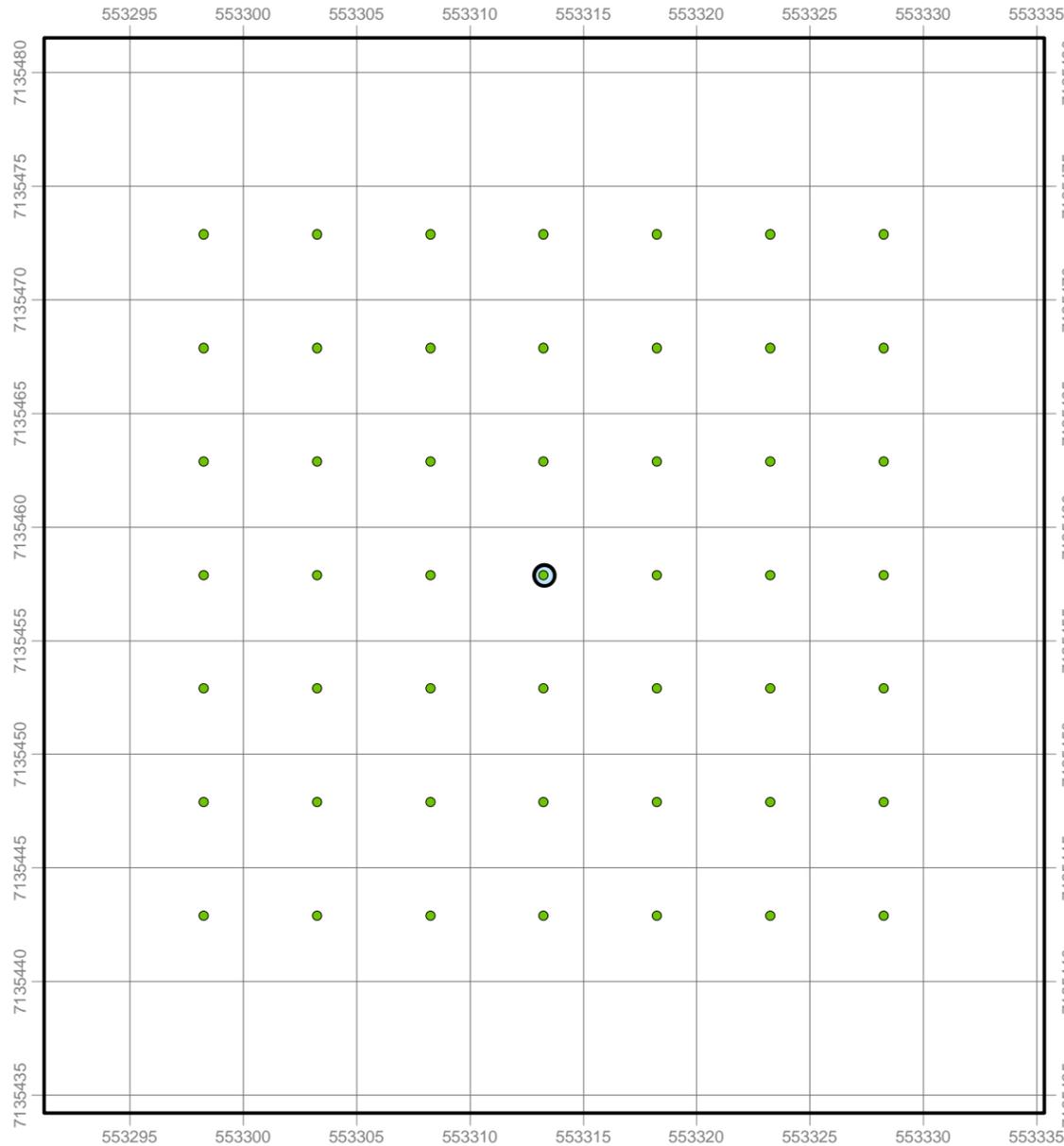
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**AND-15-01
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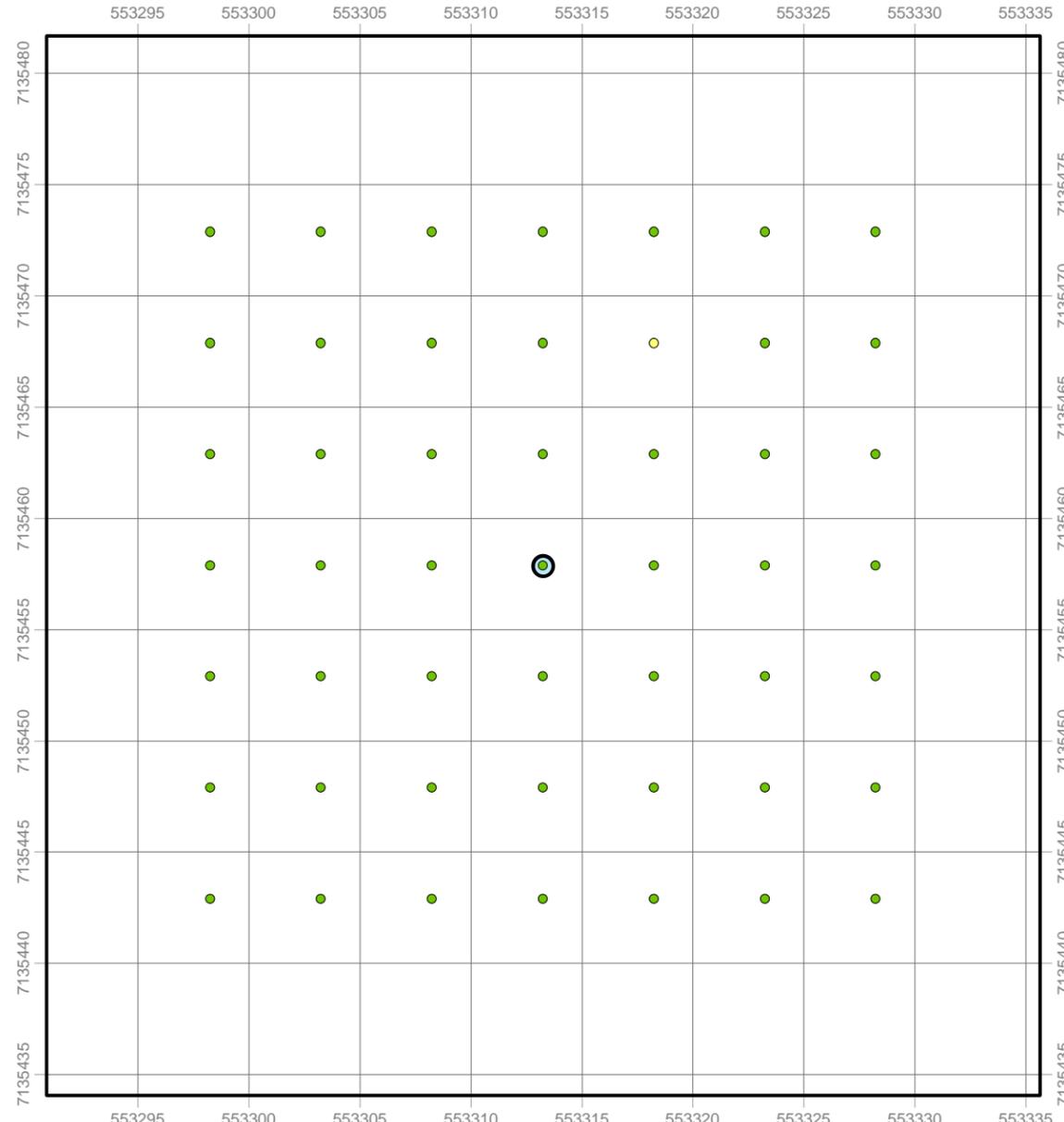
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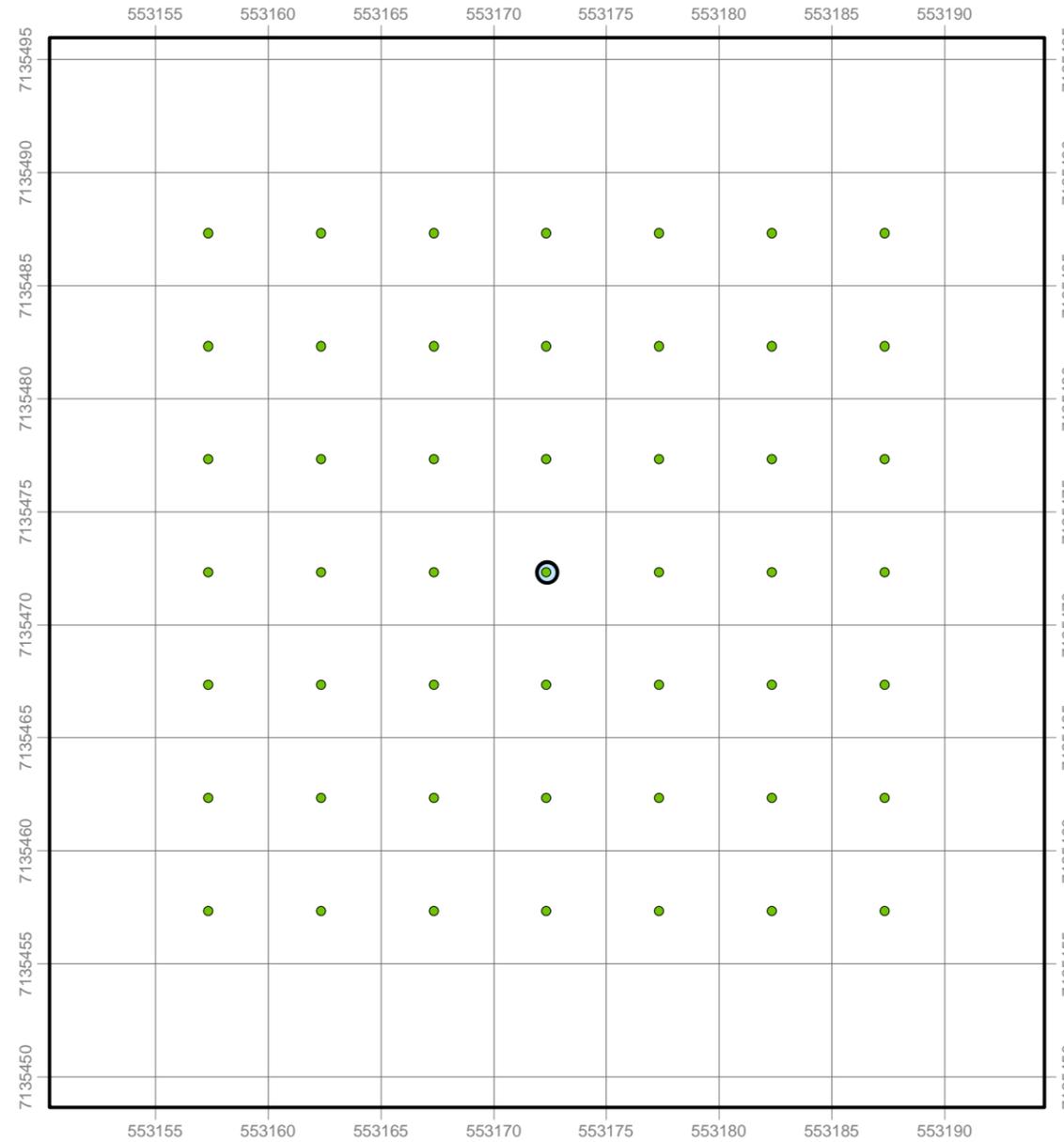
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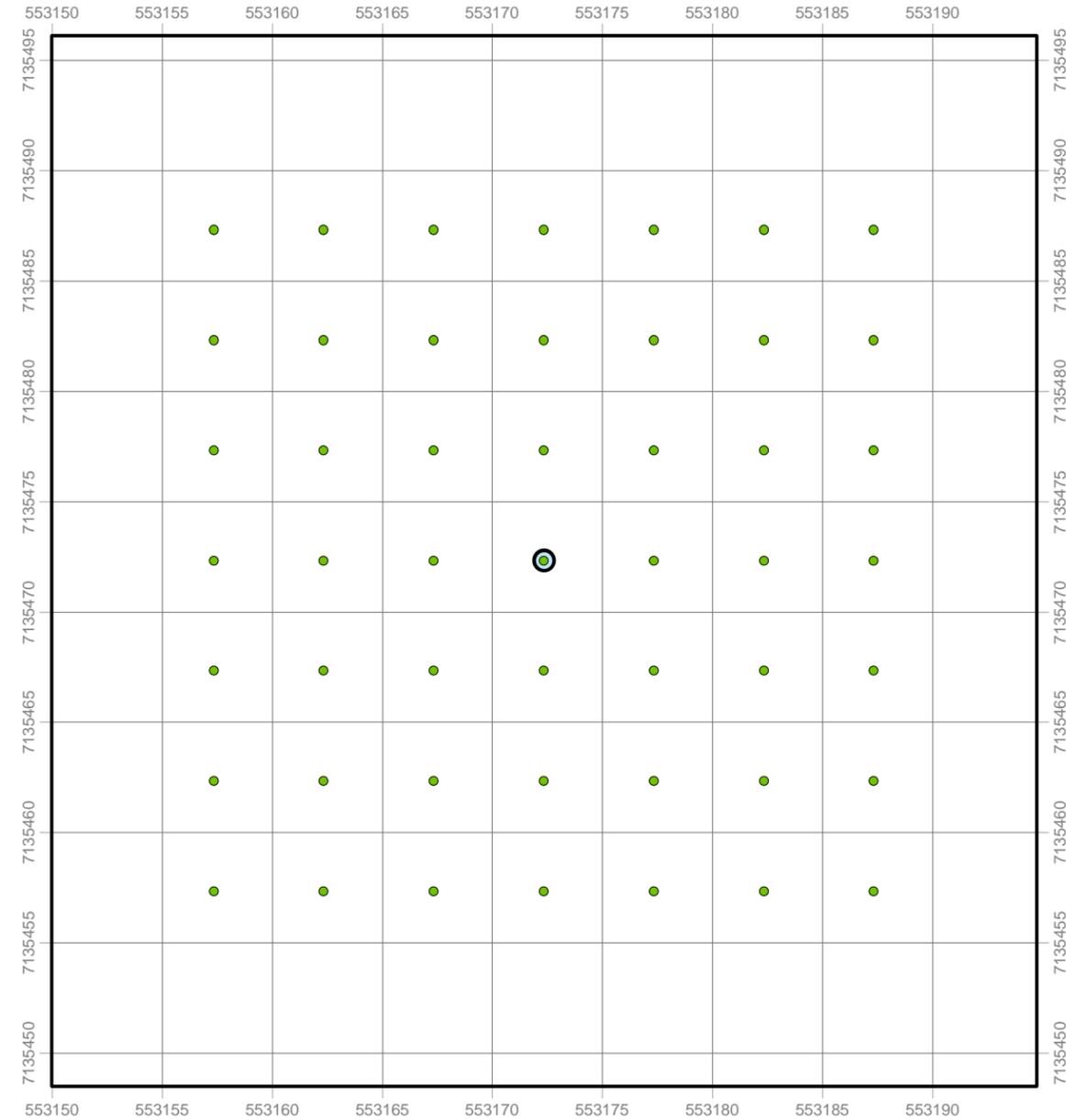
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-  > 2.5 µSv



**AND-15-03
Pre Gamma Survey**

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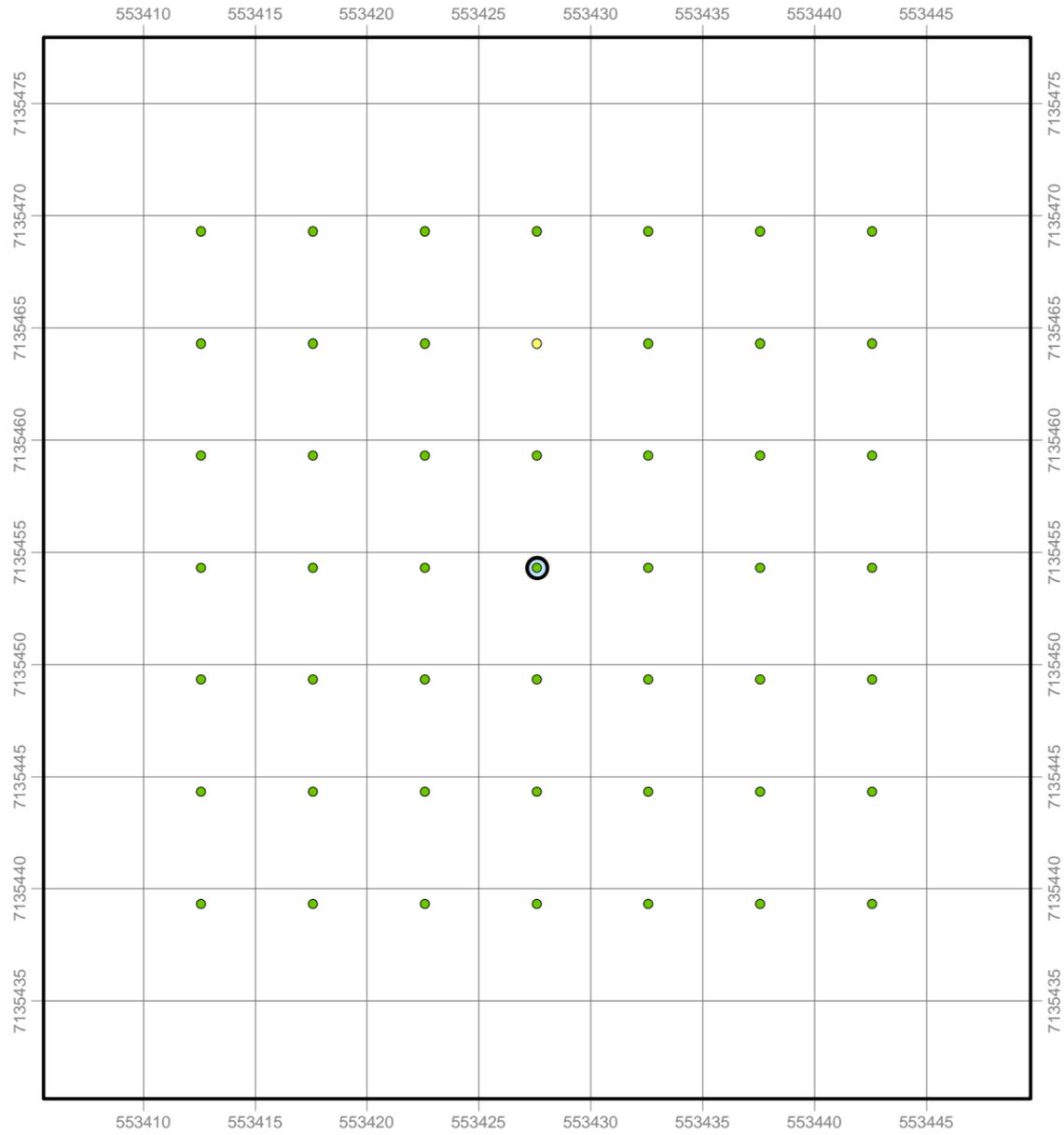


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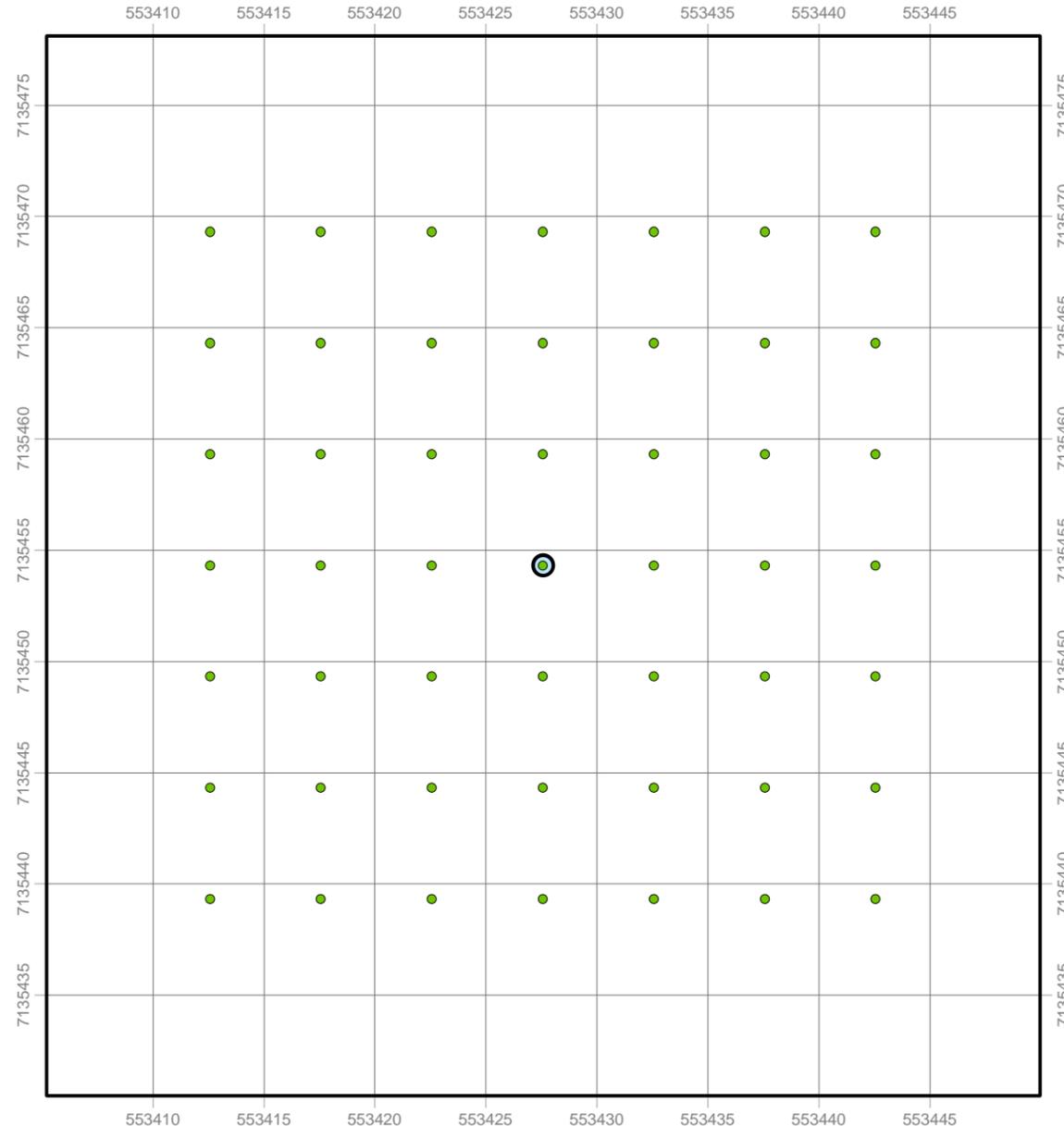


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 -  > 2.5 µSv



**AND-15-04
Pre Gamma Survey**

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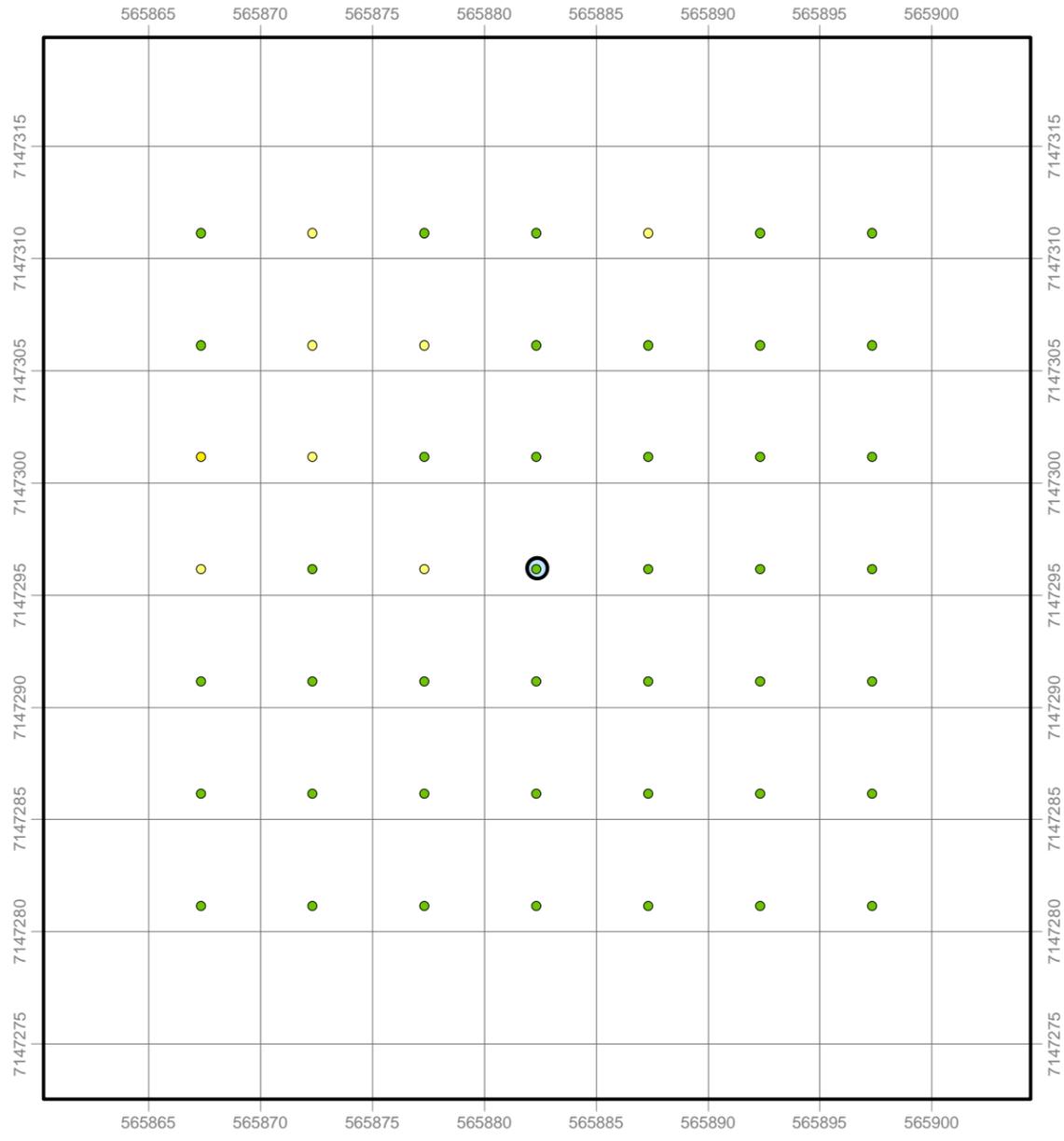


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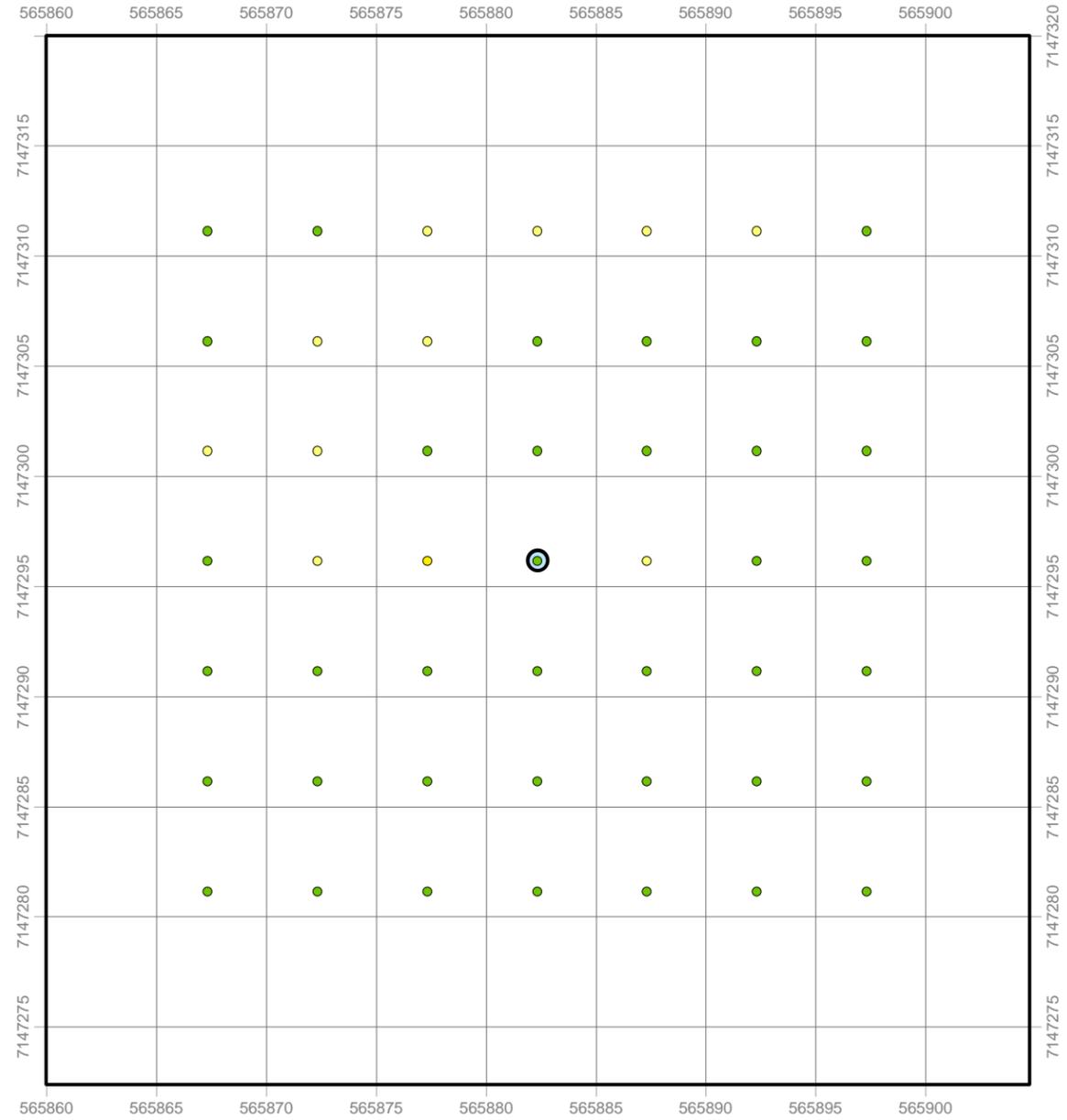
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- Legend**
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 -  > 2.5 µSv



CZ-15-01
Pre Gamma Survey
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 Min-Max: 0.01 - 0.65 µSv



CZ-15-01
Post Gamma Survey
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 Min-Max: 0.0 - 0.7 µSv



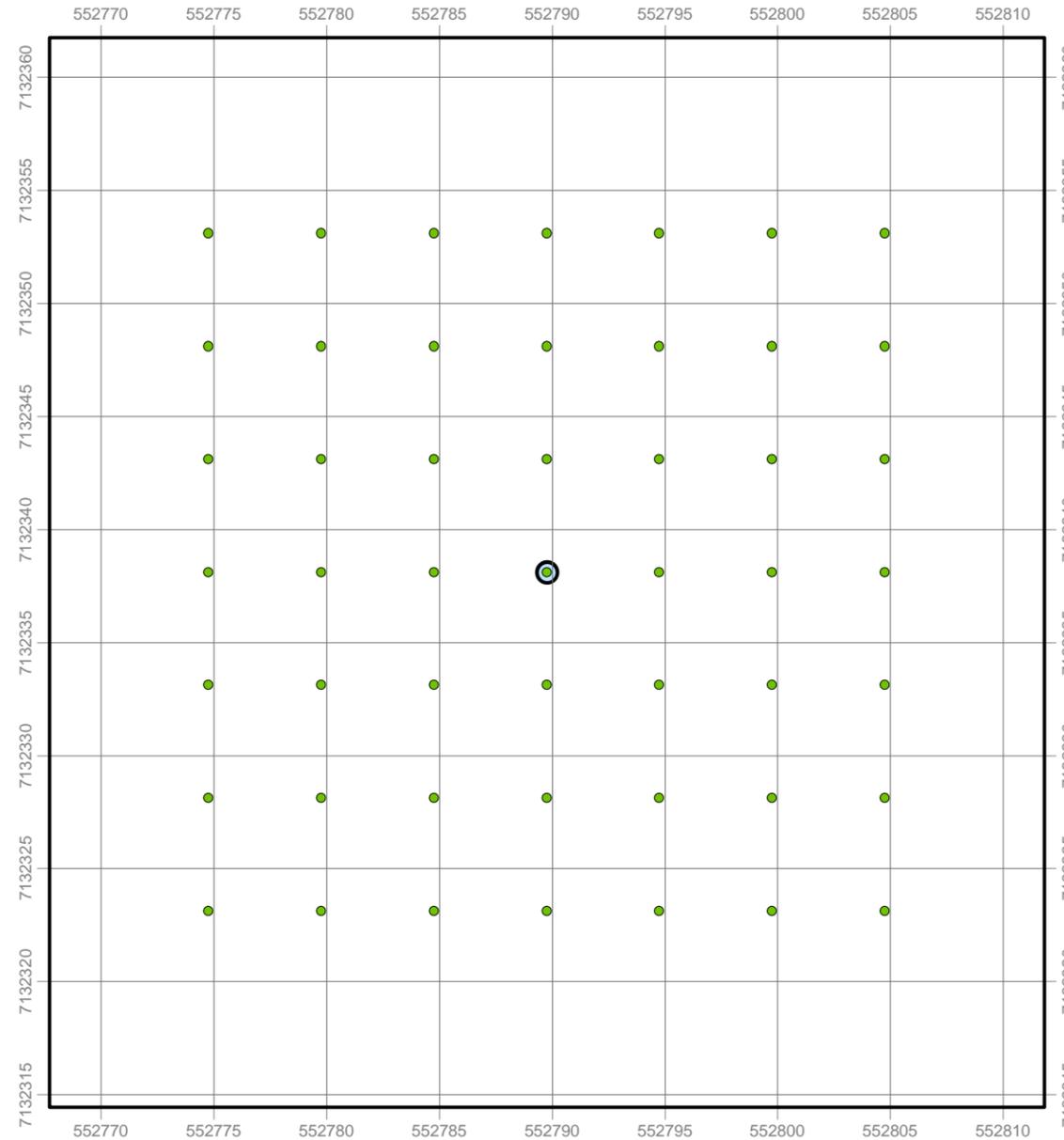
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 Data Sources: Natural Resources Canada, Geobase®, Nation
 Topographic Database, AREVA Resources Canada
 Inc.

PRE AND POST GAMMA SURVEY
DRILL HOLE CZ-15-01
 Figure 3.7-28
 2015 KIGGAVIK Annual Report



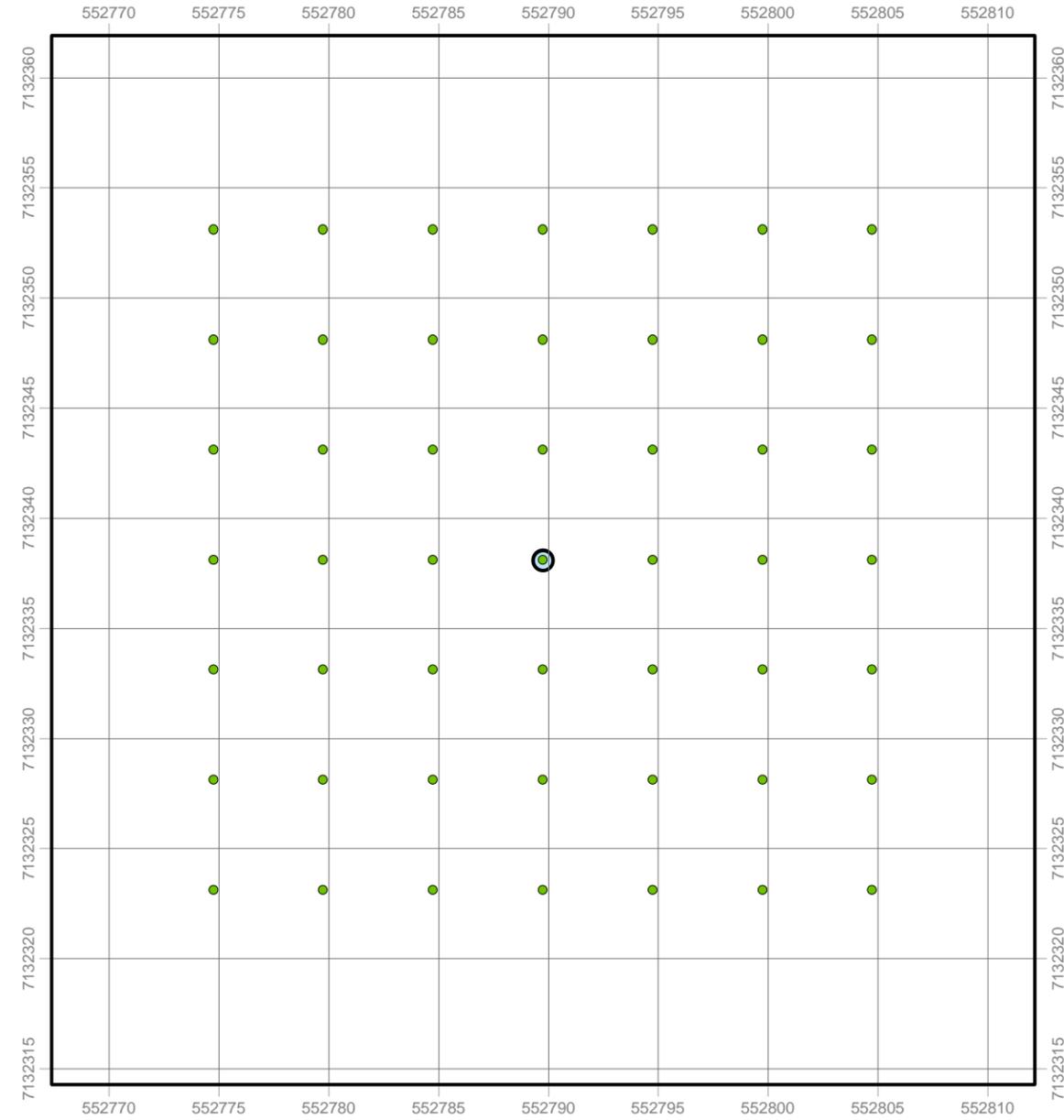
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-  Drill Hole
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-  0.3 - 0.6 µSv
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-  1.0 - 2.5 µSv
-  > 2.5 µSv



**JE-03
Pre Gamma Survey**

Point Count: 49
Min-Max: 0.0 - 0.23 µSv

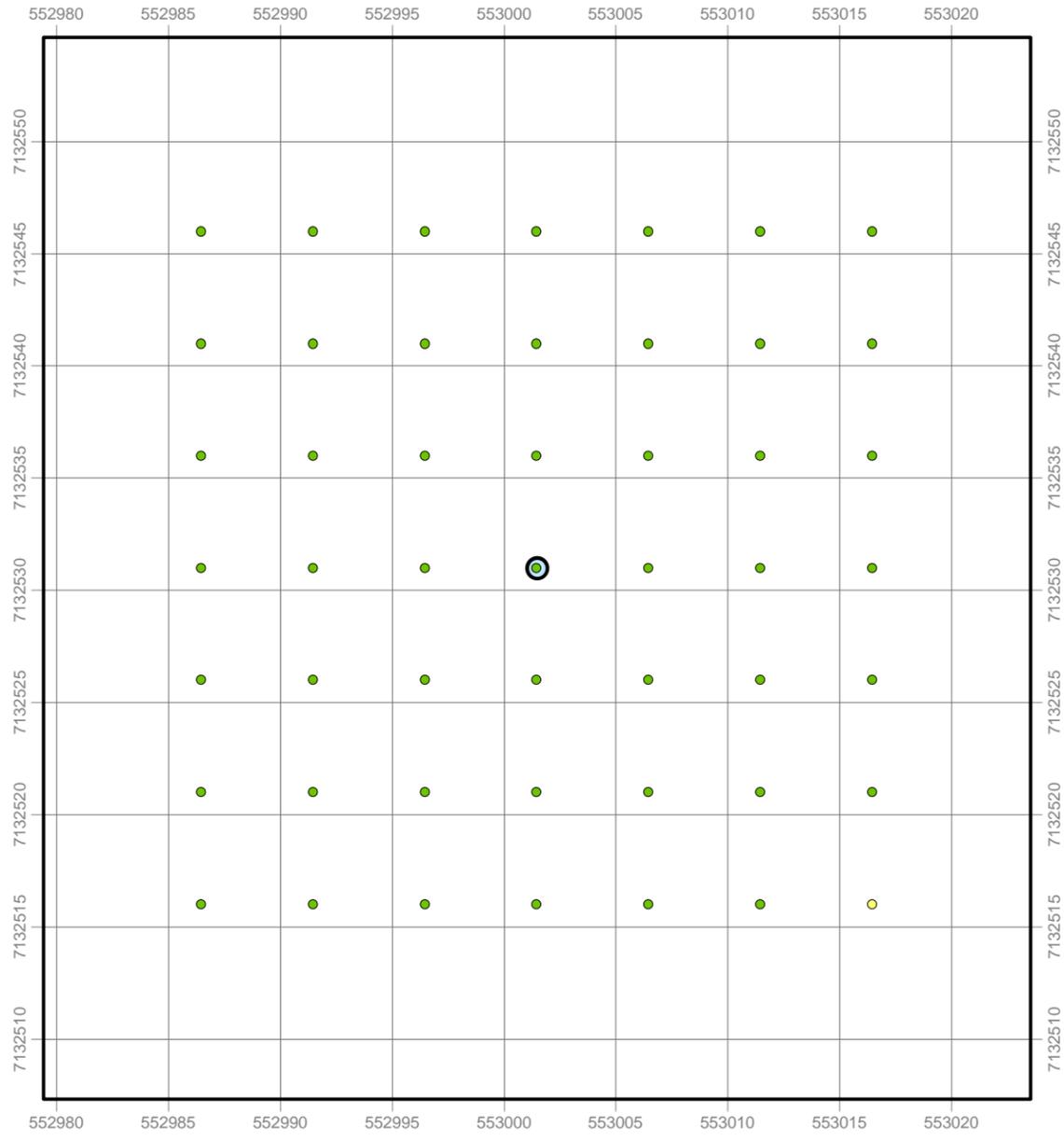


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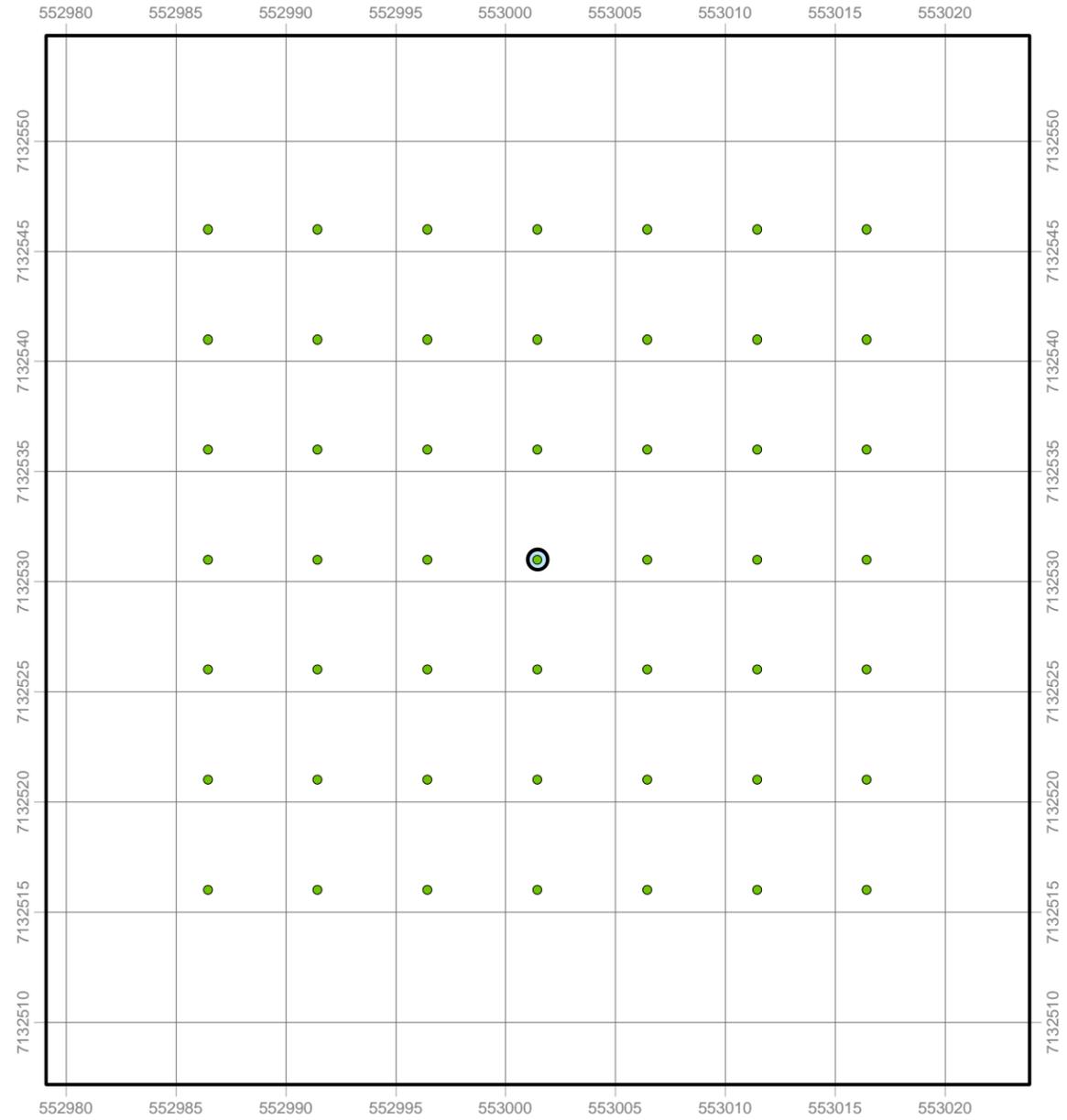


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-  Drill Hole
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 -  1.0 - 2.5 µSv
 -  > 2.5 µSv



**JE-04
Pre Gamma Survey**

Point Count: 49
Min-Max: 0.0 - 0.35 µSv



**JE-04
Post Gamma Survey**

Point Count: 49
Min-Max: 0.0 - 0.3 µSv

Projection: NAD 1983 UTM Zone 14N
 Compiled: T. Lohman Drawn: T. Lohman
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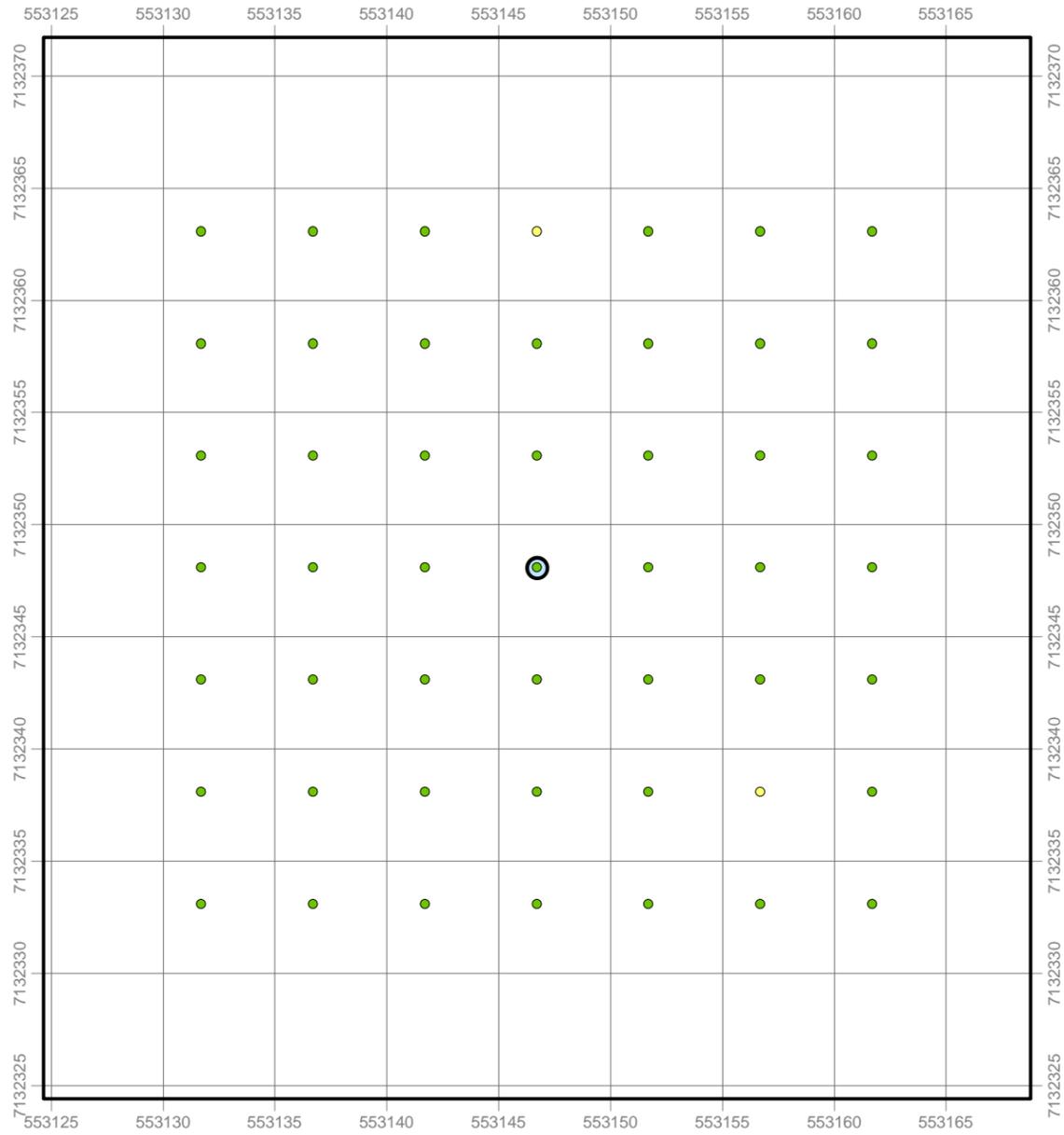
**PRE AND POST GAMMA SURVEY
DRILL HOLE JE-04**

Figure 3.7-30
 2015 KIGGAVIK Annual Report



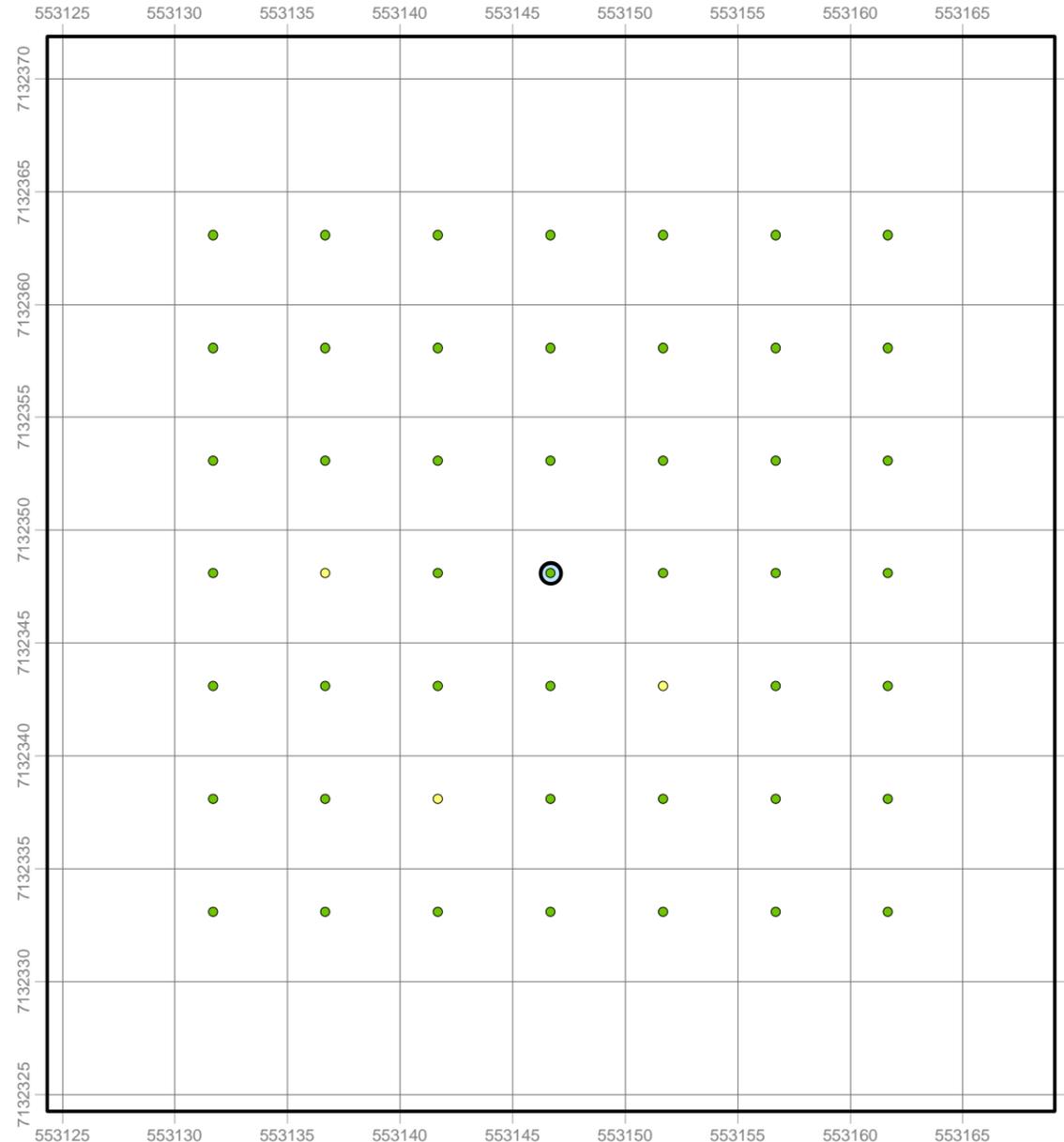
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-  Drill Hole
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-  > 2.5 µSv



**JE-05
Pre Gamma Survey**

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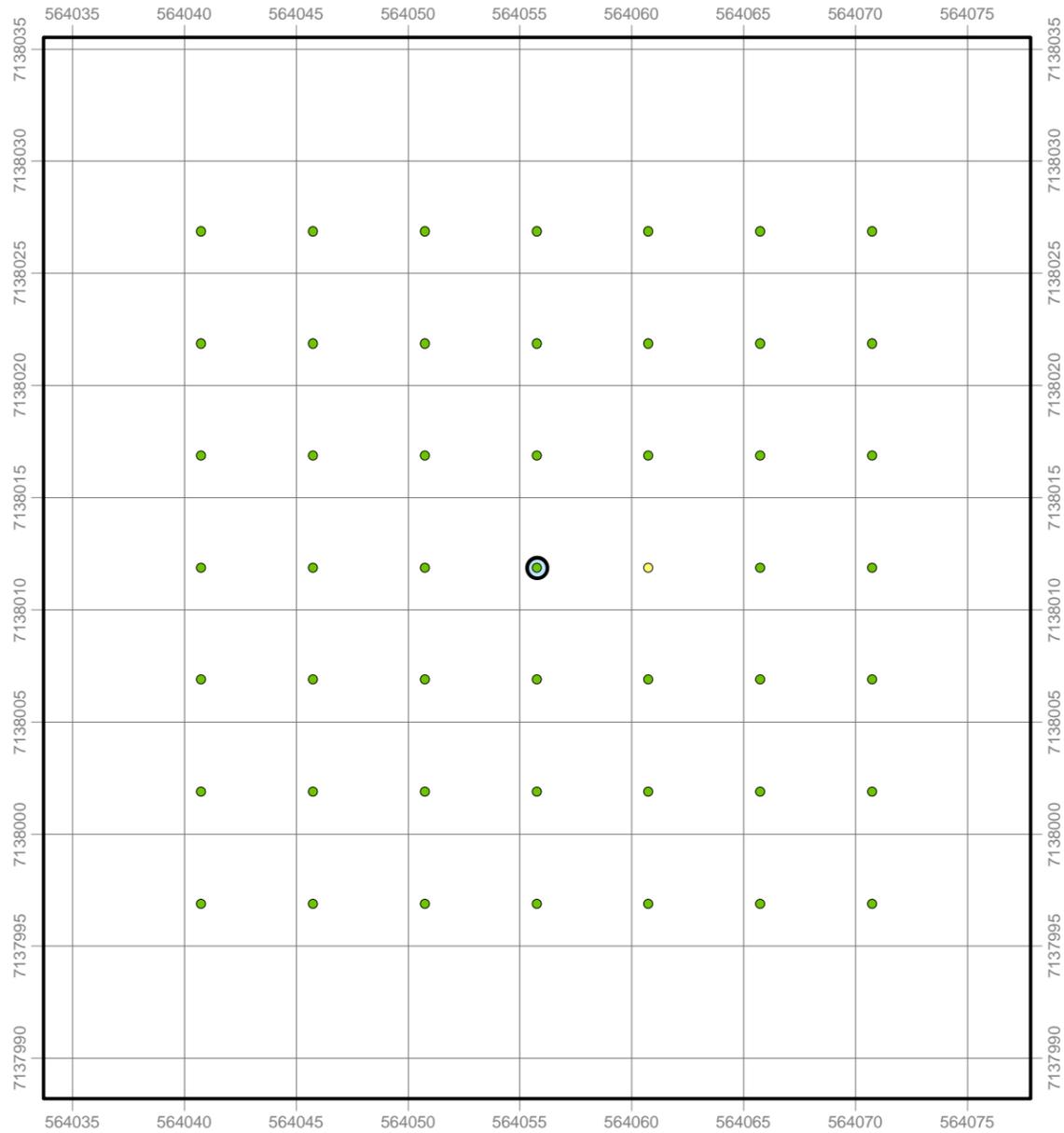


**JE-05
Post Gamma Survey**

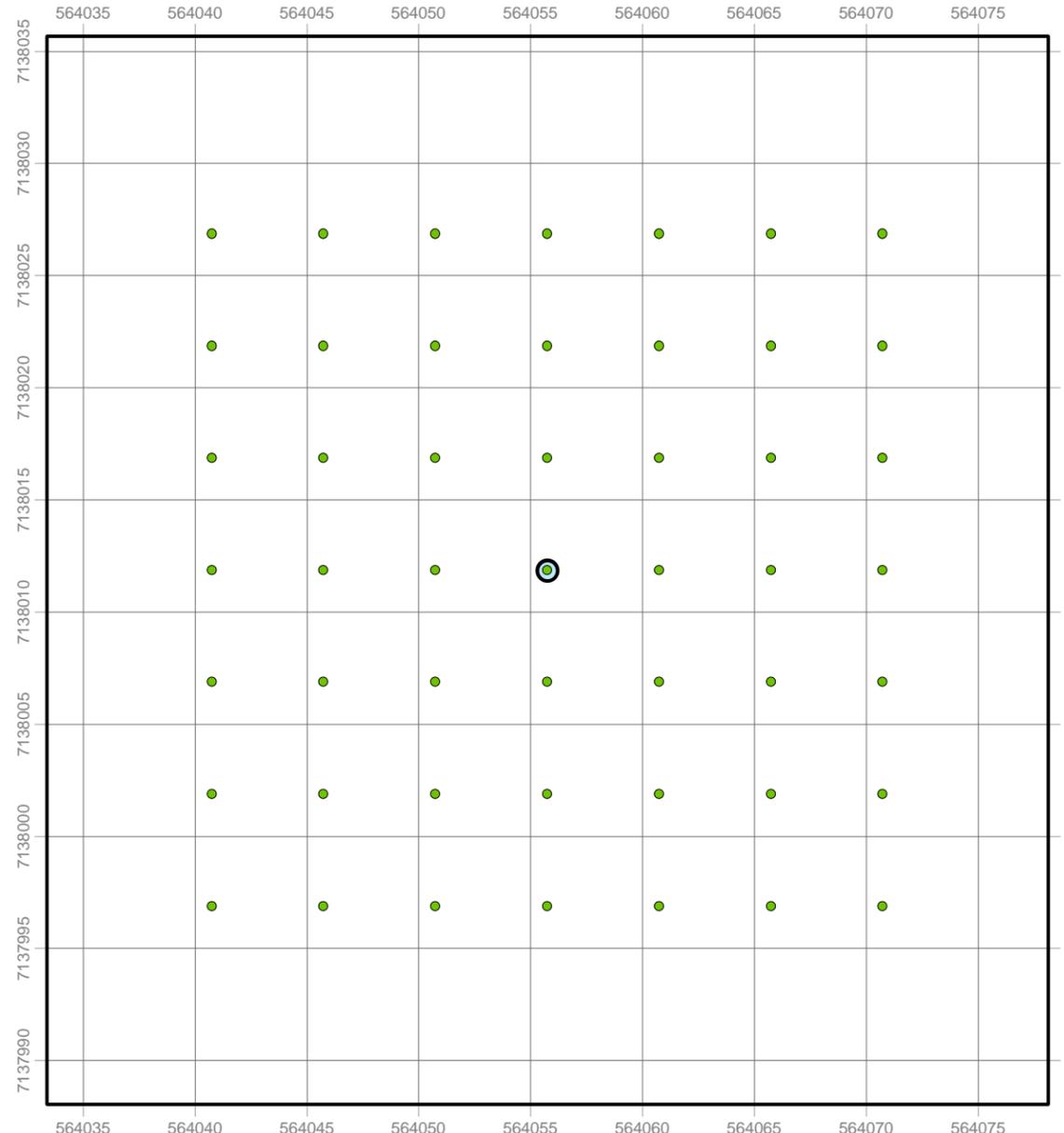
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- Legend**
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 -  1.0 - 2.5 µSv
 -  > 2.5 µSv



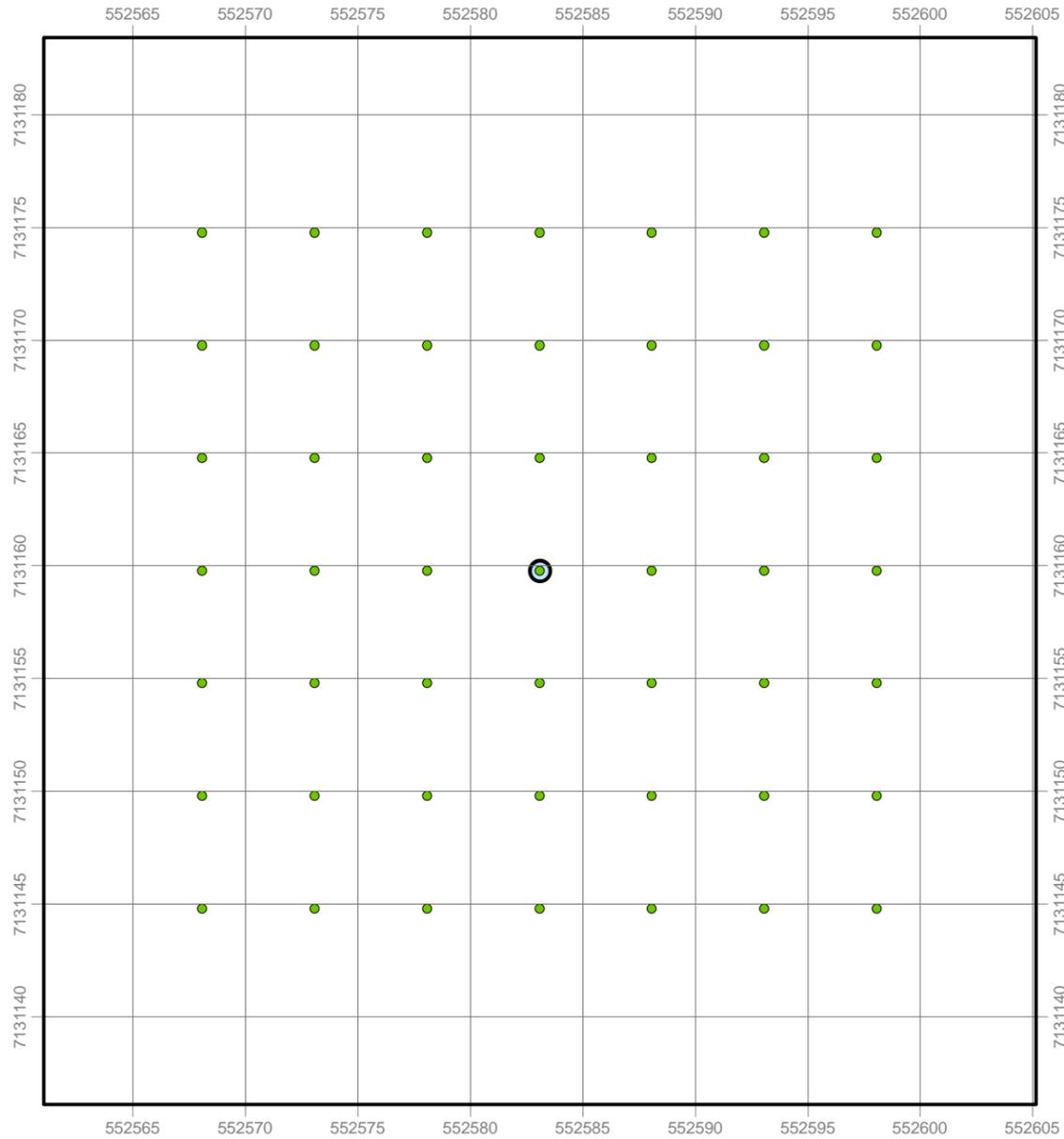
CARB-009
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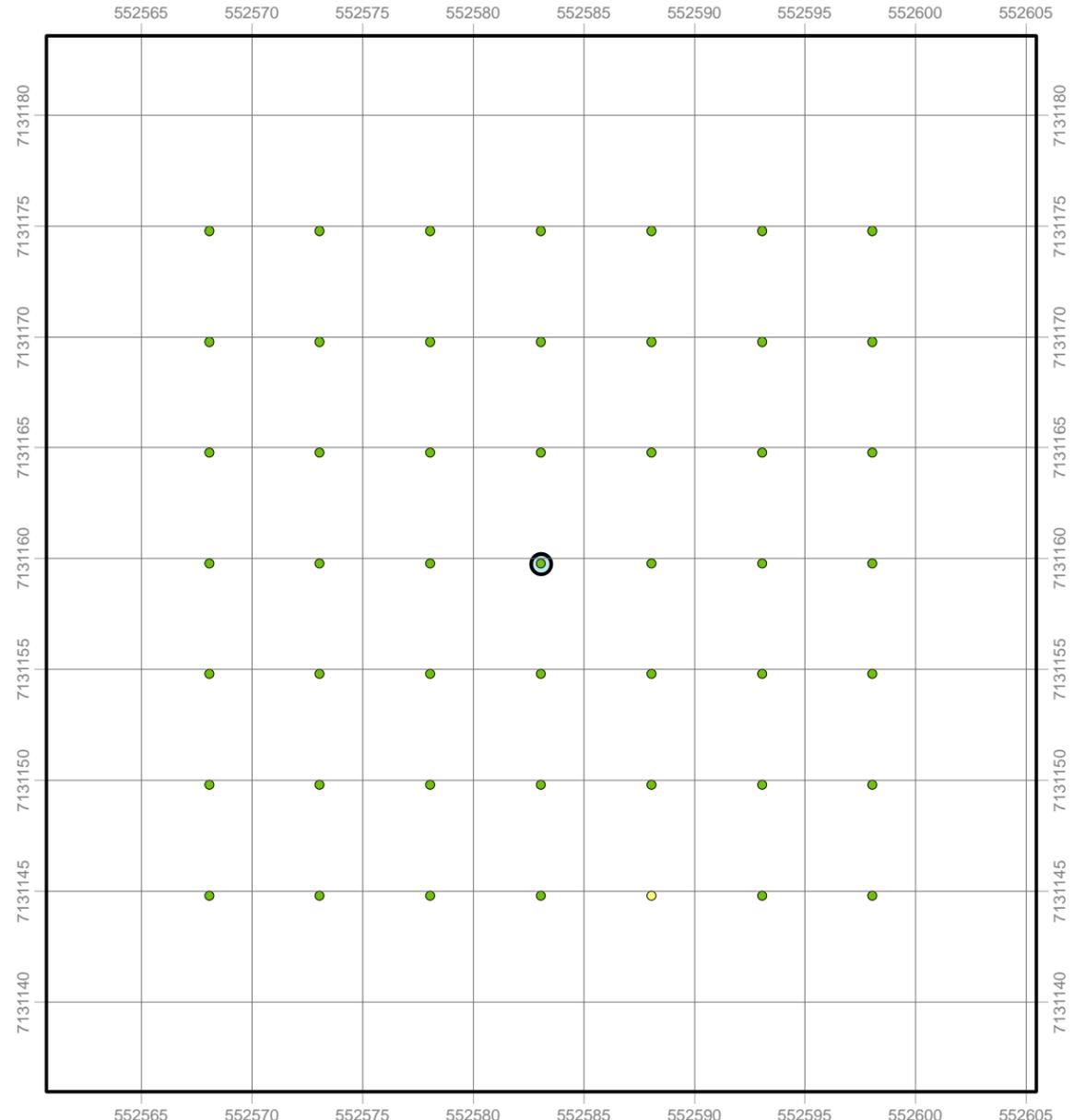
CARB-009
Post Gamma Survey
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- Legend**
-  Drill Hole
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 -  0.3 - 0.6 µSv
 -  0.6 - 1.0 µSv
 -  1.0 - 2.5 µSv
 -  > 2.5 µSv



HOT90-01
Pre Gamma Survey
 Point Count: 49
 Min-Max: 0.04 - 0.3 µSv



HOT90-01
Post Gamma Survey
 Point Count: 49
 Min-Max: 0.02 - 0.33 µSv



Appendix C Management Plans

Abandonment and Restoration Plan
Noise Abatement Plan
Radiation Protection Plan
Spill Contingency Plan
Uranium Exploration Plan
Waste Management Plan
Wildlife Mitigation and Monitoring Plan



AREVA Resources Canada Inc. Abandonment and Restoration Plan

Exploration Department

Kiggavik Project

Version 5 Revision 1

PIGA Unrestricted

January 2016

Controlled Distribution List

Recipient	Copy No.
Aboriginal Affairs and Northern Development Canada	1
Government of Nunavut – Department of Environment	1
Kivalliq Inuit Association	1
Nunavut Impact Review Board	1
Nunavut Water Board	1
Workers' Safety and Compensation Commission	1

Approval for Use

Editor:		
Exploration Safety Health Environment and Quality Supervisor	Brad Pohler	
Title	Name	Signature

Approver:		
Vice President, Exploration	Patrick Ledru	
Title	Name	Signature

History of Revisions

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	October 2007	Updated to reflect changes in field activities/capabilities and areas of continual improvement
2	1	May 2008	Updated to reflect comments and conditions received by the Nunavut Water Board associated with the issuance of water licence no. 2BE-KIG0812
3	0	January 2009	Updated to reflect changes in field activities/capabilities and areas of continual improvement
4	0	January 2010	Updated to reflect changes in infrastructure
4	1	May 2011	Updated personnel titles and grammatical changes
4	2	May 2012	Updated to reflect personnel changes
4	3	May 2013	Updated to reflect personnel title changes, update land ownership details, and input coordinates
4	4	May 2014	Updated infrastructure list and surface land administration
5	0	January 2015	Inclusion of greater detail for reclamation practices, waste disposal, and long-term drill core management. Reformatted to new template
5	1	January 2016	Updated to include Temporary Care and Maintenance plans

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Acronyms and Abbreviations

Term	Definition
AANDC	Aboriginal Affairs and Northern Development Canada
AREVA	AREVA Resources Canada Inc.
A&R Plan	Abandonment and Restoration Plan
CLARC	Community, Land and Resources Committee
HTO	Hunters and Trappers Organization
KIA	Kivalliq Inuit Association
NWB	Nunavut Water Board
SHEQ	Safety Health Environment and Quality

1 Preamble

The AREVA Resources Canada Inc. (AREVA) Abandonment and Restoration Plan (A&R Plan) is in effect from the time licences and permits are issued to the expiry date. The A&R Plan applies to the Kiggavik Project located approximately 80 km west of Baker Lake, Nunavut.

1.1 Purpose and Scope

Abandonment and restoration considerations are on-going during the life of the project. Progressive reclamation provides an opportunity to reduce the extent of disturbed land over the life of the project.

The objectives of the A&R Plan are to:

- Protect public health and safety by using safe and responsible reclamation practices;
- Reduce or eliminate environmental effects, such as ground disturbance;
- Following cessation of project activities, re-establish conditions which permit the land to return to a similar pre-exploration land use; and
- Reduce the need for long term monitoring and maintenance by establishing physical and chemical stability of disturbed areas.

The A&R Plan complies with the conditions of permits, licences, regulations and industry standards. The following principles have been established to guide the development of the overall A&R Plan:

- Plan and implement in accordance with regulations;
- Apply cost effective and appropriate abandonment and reclamation practices to reduce environmental risks and allow for traditional use of the land;
- Implement progressive abandonment and reclamation as an integral part of the project; and
- Incorporate new abandonment/reclamation methods and procedures, when applicable.

1.2 Revisions to Plan

The Abandonment and Restoration Plan is reviewed annually and updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this Plan.

1.3 Responsibilities

The District Geologist, Nunavut is responsible to ensure that this plan is implemented, and the implementation may be completed by:

- Project Geologist
- Safety Health Environment and Quality (SHEQ) Supervisor or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 Introduction

This A&R Plan applies to the Kiggavik Project which includes advanced exploration activities and occasional environmental work to support the environmental assessment process. AREVA is the operator of the Kiggavik Project with the head office located at the following address:

AREVA Resources Canada Inc.
P.O. Box 9204
817 – 45th Street West
Saskatoon, Saskatchewan S7K 3X5

2.1 Location

The Kiggavik Project includes 37 mineral leases covering 45,639 acres located in the Kivalliq Region of Nunavut. The surface rights for 31 mineral leases on Inuit Owned Land (IOL) are administered by the Kivalliq Inuit Association (KIA) while the remaining six mineral leases are on Crown land. The Crown land covers 3,794 acres of the Jane prospect of the south-west portion of the Project with surface rights administered by Aboriginal Affairs and Northern Development Canada (AANDC).

The St. Tropez area, wholly owned and operated by AREVA, is composed of 18 mineral claims covering 41,223 acres which will soon be converted to mineral leases. The surface rights are administered by the KIA.

There is a temporary exploration camp at the Kiggavik site which can accommodate approximately 60 people. The Kiggavik camp is located at the following coordinates:

- UTM 14W 564530 E 7146879 N
 - Latitude: 64° 26' 29" N
 - Longitude: 97° 39' 34" W

2.2 Schedule

The Kiggavik Camp is seasonally occupied during active exploration programs. The project site is secured and prepared for each seasonal shutdown following completion of exploration field program activities. Temporary care and maintenance will occur in preparation for extended camp closure (i.e. multi-year) when future programs are expected. Final restoration would commence once the exploration/feasibility programs have ceased. Should the Project advance

to mining construction and operation there would be a transition of decommissioning obligations and assurances as appropriate.

No buildings, equipment or waste will remain beyond the expiration date of permits or licences (i.e., KIA Land Use Licence; AANDC Land Use Permit; NWB Water Licence), unless approvals have been obtained permitting these items to remain. The removal of equipment, buildings, and waste at the expiry of approvals is not intended to apply to unforeseen delays in permitting renewals. Should a permitting renewal delay occur, AREVA will be in communication with the authorizing organization to discuss any concerns.

2.3 Infrastructure

The temporary camp was initially capable of accommodating approximately 32 persons in 2007, but was later expanded in 2008 and again in 2009 to accommodate approximately 60 people. Should it be required, further camp expansion and increased personnel would be discussed in permit applications prior to the field season. The camp currently consists of the following:

- One storage shed/back-up generator/shop
- One generator building (housing current generator)
- Helicopter storage/shop
- Three helicopter pads
- One washroom/dry building constructed with separate male/female facilities
- One kitchen with storage
- One wooden office
- 15 wooden sleeping units (one is a first aid shack)
- Wooden boardwalk throughout camp
- Five prospector tents (core logging tents)
- Three weather havens (2 for sleeping units, 1 for office)
- One mechanical services room
- Grey water collection area
- Industrial incinerator
- Core storage
- Radioactive materials storage compound
- Eight bulk fuel storage tanks (50,000 L capacity per tank)

There is a fuel esker containing two sheds and eight bulk fuel tanks. Three bulk tanks are for Jet-B fuel and five are for diesel fuel. Occasionally fuel drums within secondary containment may be stored at the esker.

Currently there is one shed and core storage located near Andrew Lake, and there is core storage at the Kiggavik site and Pointer Lake.

Future additions may include the following:

- New sleeping units
- Additional office space
- Additional core storage racks
- Small core logging sheds/tents

3 Seasonal Shutdown

3.1 Buildings, Contents and Equipment

Following the completion of each field program, equipment is either removed from site, or stored within buildings or sea containers to ensure they can withstand the winter season. Canvas tents are secured and braced internally so they can withstand snow and wind loads. All wooden buildings are secured with plywood over the windows and doors to prevent inadvertent opening. Pumps and hoses from the water system are drained and dismantled.

3.2 Fuel Cache and Chemical Storage

An inventory is conducted prior to leaving at the end of the field season to track the items that are removed or remain at site. A thorough inspection of all fuel caches is completed, and chemicals are removed from site for storage and or disposal. If any chemical products (CaCl₂) remain on site they are stored in secure buildings or sea containers.

3.3 Waste

The Waste Management Plan and Radiation Protection Plan detail waste handling and are in effect from the time the exploration licence is issued to the time it expires.

Combustible waste includes non-hazardous material and is burned in a Single Chamber Cyclonator Incinerator (Series CY1000) which remains on site for use each year. Incinerator ash is collected in drums and stored until shipped off-site to an approved handling facility.

The grey water from the kitchen and washroom facilities is diverted to the grey water collection sump area that is regularly inspected. The grey water sump consists of a barrel that was punctured with drainage holes and buried to allow drainage. A filtration berm surrounding the sump area allows the grey water to slowly dissipate and effectively removes solid particles.

3.4 Drill Equipment and Drill Sites

The drill is dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drill components may winter at site, be removed via the winter road or may be flown out by the drilling contractor. Any remaining waste is taken to camp to be burned or if required, flown off-site to an approved disposal location.

Where possible, residual radioactive materials accumulated during drilling are disposed of down the drill hole; however, where this is not practicable, radioactive drill cuttings are collected and stored in the existing radioactive storage compound for future handling. Where collected cuttings are non-mineralized, they are used to re-establish the physical stability of drill sites by levelling depressions that may have formed from permafrost thaw. Drill holes that encounter uranium mineralization with a uranium content greater than 1.0% over a length of more than 1 m with a meter percent concentration greater than 5% are sealed by cementing over the entire mineralization zone; this should be at least 10 m above and below each mineralization zone. Drill holes are sealed by cementing/grouting the upper 30 m of bedrock or the entire depth of the hole, whichever is less or otherwise approved of by the Nunavut Water Board (NWB) in writing.

Drill sites are inspected for fuel stained soil and undergo a radiation survey for radioactive contamination. Should contamination be encountered, the material will be collected and stored for disposal at a licensed facility. To achieve radioactive clearance for each drill site, the gamma dose at 1 m above ground must remain less than 1 micro-Sievert per hour ($\mu\text{Sv/h}$) above background radiation levels. Gamma radiation levels at 1 m from the surface of the core storage area should be reduced to 1 $\mu\text{Sv/h}$ above background and in no instances exceed 2.5 $\mu\text{Sv/h}$. Should the levels be exceeded, the AANDC Land Use Inspector will be contacted for review and approval of handling procedures. If necessary, residual radioactive material may be transported to the McClean Lake Operation for storage and/or disposal.

It is AREVA's intention to facilitate progressive reclamation in any project area no longer required for operations primarily through minimizing surface disturbance. Additional reclamation work prior to the expiry of the land use licence may include grading or scarifying the disturbed surface to promote the growth of vegetation. Further detail is provided in Section 5.3.

3.5 Contamination Clean up

Any soil around camp that has become contaminated and was previously unnoticed is treated as per the Spill Contingency Plan. Before and after photos are taken to document the contamination and the clean-up. Clean-up will be conducted in accordance with Government of Nunavut's Department of Environment - Environmental Guideline for Site Remediation.

3.6 Inspection and Documentation

A full inventory and complete inspection of all areas are conducted prior to seasonal closure. Photos are taken to document the conditions prior to leaving the site for the winter. These photos are included in the annual report submitted to the NWB, AANDC and KIA and included in any required spill reporting.

4 Temporary Care and Maintenance

In circumstances where multi-year camp closure is anticipated and future activity is expected, a temporary care and maintenance phase is completed to properly prepare the site for extended closure. The camp site, fuel caches, and drill sites will be prepared similarly to seasonal shutdown with additional work completed as necessary to secure the campsite and storage locations.

4.1 Buildings, Contents and Equipment

Equipment is either removed from site, or stored within buildings or sea containers to ensure they can withstand a temporary camp closure. Canvas tents will be disassembled and stored in wooden buildings on site, or removed off site for the duration of care and maintenance period. All wooden buildings are secured with plywood over the windows and doors to prevent inadvertent opening. Pumps and hoses from the water system are drained and dismantled. Pumps are removed from site for servicing or put into storage along with the hoses.

4.2 Fuel Cache and Chemical Storage

An inventory and full inspection of the fuel cache area is conducted prior to care and maintenance to track the items that are removed or remain at site. Fuel will remain on site in double walled Envirotanks for support of future programs.

A thorough inspection of chemical storage areas is completed and chemicals (CaCl_2) are removed from site for storage and/or disposal, or placed into appropriate long term storage on site during the temporary care and maintenance phase.

4.3 Waste

All waste remaining on site is disposed of according to the Waste Management Plan prior to the period of temporary care and maintenance. The Single Chamber Cyclonator Incinerator (Series CY1000) will remain on site for use in future camp operations.

No additional waste will be generated during this phase.

4.4 Drill Equipment and Drill Sites

The drill is dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drill components may remain at site, be removed via the winter road or may be flown out. Contractor waste and unnecessary chemicals (CaCl₂) are removed from site in preparation for temporary closure. Drill equipment will not be utilized during the temporary care and maintenance phase.

4.5 Contamination Clean up

Any soil around camp that has become contaminated and was previously unnoticed is treated as per the Spill Contingency Plan prior to temporary care and maintenance. Before and after photos are taken to document the contamination and the clean-up. Clean-up will be conducted in accordance with Government of Nunavut's Department of Environment - Environmental Guideline for Site Remediation.

4.6 Inspection and Documentation

A full inventory and complete inspection of all camp and storage areas are conducted prior to temporary care and maintenance. An inspection of the Kiggavik campsite and fuel cache locations will occur in preparation for temporary closure. Photos are included in the annual report submitted to the NWB, AANDC and KIA that would also serve as a care and maintenance report in the first year of extended care and maintenance. Authorizing agencies and AREVA may mutually agree on a reduced reporting schedule over a period of care and maintenance to reflect the reduction in activity.

5 Final Abandonment and Restoration

Final abandonment and restoration will be completed according to agreements made with the Kivalliq Inuit Association (KIA), as well as conditions outlined in the KIA Land Use License, AANDC Land Use Permit, and NWB Water License when AREVA determines and communicates no further intention to hold the property and in the absence of a transfer to new ownership. The camp site, fuel caches, and drill sites will be reclaimed to a similar pre-exploration state with all wastes removed from site and any contamination treated as per the Spill Contingency Plan. Following completion of restoration, photos will be taken and submitted in a Final Abandonment and Restoration report.

5.1 Buildings, Contents and Equipment

As per the Waste Management Plan, non-treated wood products will be incinerated while the treated wood will be shipped off-site for proper disposal. Buildings in good structural condition may be offered to the community of Baker Lake or the Baker Lake Hunters and Trappers Organization (HTO). Those buildings that are not donated will be dismantled and removed or incinerated. All wooden helicopter pads will be burned or taken off site to an approved disposal facility. The soil around the helicopter pads and buildings will be inspected for contamination, and where the ground has not been altered, scarification will not be necessary. All equipment, including pumps, generators, etc. will be dismantled and removed from site. All wastes that are not incinerated will be removed from site and taken to an approved disposal facility. Shipping containers from site will be transported by winter road to Baker Lake before shipment to a licensed facility during the open water shipping season. A final inspection of the camp site area will be conducted to ensure that there is no waste left behind.

Where sumps were used, they will be properly back-filled at the end of the project and inspected to ensure that there is no leaching, run-off, or radiological and hydrocarbon contamination. Any contaminated material found will be treated as per the Spill Contingency Plan. Sumps will be back-filled and levelled as required and final photos will be taken.

5.2 Fuel Caches and Chemical Storage

The fuel drums, slip tanks, and 50,000 L EnviroTanks will be removed during final abandonment, and all areas used for caching fuel will be thoroughly inspected. Any contamination at fuel cache sites will be cleaned up as well as any debris removed. All chemicals will be removed from site. Areas where chemicals have been stored will be inspected to ensure that there has been no contamination. Should there be any soil contamination the soils will be tested for petroleum hydrocarbons (fraction F1 through F4) as per Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (2001) and benzene, ethylbenzene,

toluene and xylene as per Canadian Soil quality Guidelines for the Protection of Environmental and Human Health (2004). Any contaminated soil will be handled as prescribed by the Spill Contingency Plan. Final photos will be taken of all fuel caches for inclusion in the final report.

5.2.1 Fuel Cache Landing Esker

The esker located at the fuel cache has been used as a landing strip and will be inspected for surface disruption. If necessary, the landing strip will be restored to pre-use conditions to ensure site stability. As there was no vegetation present, the area will be similar to pre-use condition following the leveling of the esker.

5.3 Drill Equipment and Drill Site Abandonment

The drill will be dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drill may be flown out by the drilling contractor or taken out overland during the winter.

During the course of drilling operations, all drill sites are inspected for radioactive or hydrocarbon contamination with any contaminated material being treated as per the Spill Contingency Plan. The remaining wastes will be incinerated if possible or transported to an approved disposal location.

To re-establish physical stability where drill sites show evidence of permafrost thaw, clean non-mineralized cuttings are used to level depressions. Where inadequate fill material is available, excess material from clean discharge areas or gravel may be used to fill depressions. AREVA personnel conduct regular inspections, and prior to final abandonment, AREVA will ensure that all drill sites are/have been restored and sumps have been covered and levelled. AREVA will implement progressive reclamation practices and incorporate new abandonment and/or reclamation methods and procedures, where applicable. To ensure site stability, AREVA is currently investigating reclamation techniques to return lands to a state similar to pre-exploration use.

Challenges surrounding physical reclamation of disturbed surfaces include lack of local knowledge or available information. To minimize the affected footprint and therefore the amount of required physical reclamation there is a focused effort on proper planning of infrastructure placement and drill sites. It was noted by some members of the Baker Lake Community, Land and Resources Committee (CLARC) that natural re-vegetation is the preferred reclamation method.

5.4 Drill Core Management

AREVA proposes to retain all drill core on site as the core represents a signature for the land and significant scientific value for the future title holder. This practice is consistent with the

Saskatchewan Mineral Tenure Registry Regulations and the *Territorial Land Use Regulations* which permit the retention of drill core at a drill site or centralized core storage facility. The core represents decades of investment and holds the value of the land for development.

5.5 Inspection and Documentation

A complete inspection will be conducted of all areas prior to permanent closure and a final report prepared for all agencies. Photos will be taken to document the conditions prior to leaving the site and to document any contamination and resulting clean up. These photos will make up part of the final report to be submitted to the Water Resource Inspector; the annual report submitted to the NWB, AANDC and KIA and will be included in any required spill reporting. All agencies will be contacted and notified once the final cleanup has been completed. Agency contact information can be found in the Exploration Government Contact List of Appendix A (accessible for AREVA personnel at: Q:\Exploration\IMS\006_Contacts).

Appendix A Exploration Government Contacts

NUNAVUT/ NWT: LIST OF CONTACTS

Organization	Address	Contact	Position	Phone/Fax	Email	Website
Nunavut Tunngavik Incorporated (NTI)	Land and Resource Department Attention: Administrative Geologist Box 76	Keith Morrison	Administrative Geologist			www.tunngavik.com
		Wayne Johnson	Senior Advisor, Minerals/Oil/Gas			
Aboriginal Affairs and Northern Development Canada (AANDC)	Mining Recorder's Office/Land Administration Box 1500 4914 50TH ST, 5th Floor Yellowknife NT X1A 2R3			Phone (867) 669-2691 / 2692 (Mining Recorder) (867) 669-2671/73 (Surface Section: For maps showing surface rights) Fax: (867) 669-2714		www.aadnc-aandc.gc.ca
	Mining Recorder's Office Building 918 Box 100 Iqaluit, NU X0A 0H0			Phone (867) 975-4275 Fax (867) 979-6445		
	Land Administration Box 100 Iqaluit, NU X0A 0H0	Tracey McCaie	Manager, Land Administration	Phone (867) 975-4280 Fax (867) 979-6445	Tracey.McCaie@aadnc-aadnc.gc.ca	
		Christine Wilson	Water Resources Officer	Phone 867-975-4296 Fax 867-979-6445	Christine.Wilson@aadnc-aadnc.gc.ca	
		Nicholas Kavanagh	Land Administrator Specialist	Phone (867)975-4283 Fax (867)975-4286	Nicholas.Kavanagh@aadnc.gc.ca	
		Rory MacDonald	Water Resources Technician	Phone (867) 975-4568	Rory.MacDonald@aadnc-aadnc.gc.ca	
Henry Kablalik	Resource Management Officer III	Phone 867-645-2831	Henry.Kablalik@aadnc-aadnc.gc.ca			
Kivalliq Inuit Association (KIA)	Land Administration Box 340 Rankin Inlet, NU X0C 0G0	Luis Manzo	Director of Lands	Phone (867) 645-5731 Toll Free 1-800-220-6581 Luis emergency cell (204) 793- 2944 Fax (867) 645-2348	lmanzo@kivalliqinuit.ca	www.kivalliqinuit.ca
		Jeff Hart	Water & Marine Environment Specialist	Phone (867) 793-4468 Cell (902) 448-2821	landsbaker@kivalliqinuit.ca	
		Veronica Tattuinee	Lands Administrator	Phone (867) 645-5734	vtattuinee@kivalliqinuit.ca	
Nunavut Water Board (NWB)	BOX 119 Gjoa Haven, NU, X0B 1J0	Phyllis Beaulieu	Manager of Licensing	Phone (867) 360-6338	licensing@nwb-oen.ca	www.nunavutwaterboard.org
		Sean Joseph	Technical Advisor	Fax (867) 360-6369	sjoseph@nwb-oen.ca	
Nunavut Impact Review Board (NIRB)	P.O. Box 1360 (29 Mitik) Cambridge Bay NU, X0E 0C0	Sophia Granchinho	Senior Technical Advisor	Phone (867) 793-4633	sgranchinho@nirb.ca	www.nirb.ca
		Tara Arko	Technical Advisor, A/Manag	867-983-4600	Tara.Arko@nirb.ca	
		Natasha Lear		Phone: 867-983-4600 Fax (867) 983-2594	info@nirb.ca	ftp.nirb.ca
Nunavut Planning Commission (NPC)	Keewatin Region Box 419 Arviat, NU X0C 0E0			Phone (867) 857-2242 Fax (867) 857-2243		www.npc.nunavut.ca
Environment Canada (EC)	NWT Division Environmental Protection Branch Yellowknife NT			Phone (867) 920-6060 Fax (867) 873-8185		http://www.ec.gc.ca
Workers' Safety & Compensation Commission (WSCC)	Qamutiq Building, 2nd Floor Box 669 611 Queen Elizabeth Way Iqaluit NU X0A 0H0	Martin van Rooy	Mine Inspector / Engineer	(867) 979-8527	Martin.vanRooy@wscc.nu.ca	www.wscc.nt.ca
				Toll Free (866) 979-8501 24/7 1-800-661-0792 Fax (867) 979-8501		

NUNAVUT/ NWT: LIST OF CONTACTS

Organization	Address	Contact	Position	Phone/Fax	Email	Website
Government of Nunavut (GN)	Department of Environment - Wildlife Management Division Kivalliq Region Box 9 Baker Lake, NU X0C 0A0	Rob Harmer	Conservation Officer III	Phone (867) 793-2940/ 793-2944 Cell Phone (867) 222-0067 Fax (867) 793-2514	RHarmer@GOV.NU.CA	www.gov.nu.ca
	Department of Environment Wildlife Management Division Government of Nunavut P.O. Box 9 Baker Lake, NU X0C 0A0	Russell Toolooktook	Conservation Officer II	Phone 867-793-2944	rtoolooktook@gov.nu.ca	
	Department of Environment PO Box 1000 Station 1310 Iqaluit, NU X0A 0H0	Conor Mallory	Project Manager, Impact Assessment	867-975-7749	cmallory1@gov.nu.ca	
	Department of Environment	Kristi Lowe	Environmental Compliance Manager	Phone (867) 975-7748 Cell (867) 222-0304	KLowe@GOV.NU.CA	
	Department of Community and Government Services The Registrar Business Licensing Consumer Affairs Box 440 Baker Lake, NU X0C 0A0			Phone (867) 793-3303 Toll Free Phone: 1-866-223-8139 Fax (867) 793-3321		
NWT and NU Chamber of Mines	Box 2818 Suite 103, 5102 50 Ave Yellowknife NT X1A 2R1			Phone (867) 873-5281 Fax (780) 669-5681		www.miningnorth.com
	Nunavut Office Box 1019 Unit 116, Tukturnuk Tower (8-Story) Astro Hill Complex Iqaluit, NU X0A 0H0			Phone (867) 979-5291 Fax (780) 669-5681	info@miningnorth.com	
NAPEGG: Association of Professional Engineers, Geologists & Geophysicists of the N.W.T.	#201, 4817 - 49TH ST. Yellowknife NT X1A 3S7			Phone (867) 920-4055 Fax (867) 873-4058		www.napegg.nt.ca
Mackenzie Valley Land and Water Board	7th Floor - 4910 50th Avenue Box 2130 Yellowknife NT X1A 2P6			Phones (867) 669-0506 Fax (867) 873-6610		www.mvlwb.com
Mackenzie Valley Environmental Impact Review Board	200 Floor, Scotia Centre 5102 50th Ave. Box 938 Yellowknife NT X1A 2N7			Phone (867) 766-7050 Fax (867) 920-4761		www.mveirb.nt.ca
Government of Northwest Territories	Department of Municipal and Community Affairs The Registrar Business Licensing Directorate/Corporate Affairs 600, 5201 50th Ave Box 1320 Yellowknife NT X1A 3S9			Phone (867) 920-8059 Fax (867) 873-0152		www.maca.gov.nt.ca



AREVA Resources Canada Inc.
Noise Abatement Plan

Exploration Department

Kiggavik Project

Version 4

PIGA Unrestricted

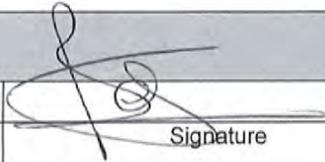
January 2016

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Nunavut Impact Review Board	1
Nunavut Water Board	1
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Approval for Use

Editor:		
Exploration Safety Health Environment and Quality Supervisor	Brad Pohler	
Title	Name	Signature

Approver:		
Vice President, Exploration	Patrick Ledru	
Title	Name	Signature

History of Revisions

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	October 2007	Updated to reflect changes in field activities/capabilities and areas of continual improvement
3	0	January 2009	Updated to reflect changes in field activities/capabilities and areas of continual improvement
3	1	May 2010	Updated to reflect changes in field activities/capabilities and areas of continual improvement
3	2	May 2012	Updated to reflect personnel changes. Made consistent with other Plans.
3	3	May 2013	Updated to reflect personnel titles
4	0	January 2015	Revisions for increased clarity and updated template
4	1	January 2016	Updated to reflect changes in operations and personnel.

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Acronyms and Abbreviations

Term	Definition
AREVA	AREVA Resources Canada Inc.
SHEQ	Safety Health Environment and Quality
WMMP	Wildlife Mitigation and Monitoring Plan

1 Introduction

This Noise Abatement Plan will be in effect for the duration of the Kiggavik Project and associated activities. The Project is located approximately 80 km west of Baker Lake and is operated by AREVA Resources Canada Inc. (AREVA).

The Kiggavik camp is a temporary fly-in camp that is seasonally occupied. Exploration activities and occasional environmental studies take place during the summer months. Supplies to operate the camp and field program are moved overland in the winter months. Mobilization of personnel and camp opening typically takes place the end of May or early June, with the site closed and personnel demobilized by September of each year. Noise generation is expected during camp opening and close, throughout exploration operations, and during the winter road use.

Noise controls and abatement serve a combination of environmental and occupational health and safety purposes. The focus of this abatement plan is on control of environmental noise for the protection of wildlife.

1.1 Revision to Plan

The Kiggavik Noise Abatement Plan is reviewed regularly and updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this plan.

1.2 Responsibilities

The District Geologist, Nunavut is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Safety Health Environment and Quality (SHEQ) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 Activities Requiring Noise Reduction

Small amounts of noise are generated during regular camp activities; however this plan has been developed specifically for drilling rigs, generators, vehicles and aircraft (fixed-wing and helicopters) which are the main contributors of noise during exploration operations. To decrease the amount of noise, the following are implemented:

- Drilling rigs are equipped with mufflers or other appropriate noise abatement equipment;
- Generators are equipped with mufflers; and
- ATVs are equipped with mufflers.

To reduce aircraft noise, altitude restrictions are put in place as described in the Wildlife Mitigation and Monitoring Plan (WMMP). During long range flights (i.e., Baker Lake to Kiggavik site) aircraft fly at a minimum of 610 m above ground level, except during take-off and landing, when ceiling conditions do not permit or when safety risks arise. For relatively shorter transportation flights (e.g., movement of staff and equipment between camp and work areas) aircraft fly at a minimum of 300 m above ground level, except during take-off and landing, when ceiling conditions do not permit, or when safety risks arise. Low-flying flights may need to be conducted at lower altitudes for geophysical surveys, but these surveys are preceded by reconnaissance survey as described in the WMMP. As per the WMMP, all activities are suspended if 50 or more caribou are within 2 km of the activity and aircraft do not land within 1 km of a herd.



AREVA Resources Canada Inc.
Radiation Protection Plan

Exploration Department

Kiggavik Project

Version 6 Revision 4

PIGA Unrestricted

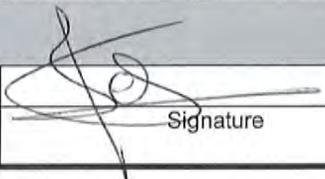
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History of Revisions

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	October 2007	Update to reflect changes in field activities/capabilities and goals of continual improvement
3	0	August 2008	Update to reflect changes in field activities/capabilities and goals of continual improvement
4	0	January 2009	Update to reflect changes in field activities/capabilities and goals of continual improvement
5	0	January 2010	Update to reflect changes in field activities/capabilities and goals of continual improvement
5	1	May 2011	Updated to reflect changes in personnel position titles.
6	0	June 2012	Updated to reflect changes in personnel titles and positions. Grammatical corrections.
6	1	May 2013	Updated to reflect changes in personnel titles
6	2	May 2014	Updated to align with the Exploration IMS Manual
6	3	January 2015	Improved formatting and minor edits for clarity
6	4	January 2016	Updated to reflect changes in field operations and personnel.

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Acronyms and Abbreviations

Term	Definition
ALARA	As Low as Reasonably Achievable
AREVA	AREVA Resources Canada Inc.
CNSC	Canadian Nuclear Safety Commission
IMS	Integrated Management System
NORM	Naturally Occurring Radioactive Materials
SHEQ	Safety Health Environment and Quality
TDG	Transportation of Dangerous Goods
WSCC	Workers' Safety and Compensation Commission

1 Introduction

This AREVA Resources Canada Inc. (AREVA) Radiation Protection Plan will be in effect for the duration of the Kiggavik Project located about 80 km west of Baker Lake. The Radiation Protection Program has been prepared to meet the requirements of the Nunavut Occupational Health and Safety Regulations, Mineral Exploration best practices, and the AREVA Corporate Integrated Management System (IMS). Although current activities are not regulated by the Canadian Nuclear Safety Commission (CNSC), the Radiation Protection Plan is designed in accordance with the CNSC Regulations.

The Radiation Protection Plan includes the following administrative elements:

- Program documentation
- Training
- Designation of Occupational Workers
- Dose limits and dose levels
- Obligations of Occupational Workers
- Pregnant Occupational Workers

The Radiation Protection Plan includes the following program elements:

- Exposure As Low as Reasonably Achievable (ALARA)
- Radiological monitoring
- Dosimetry monitoring
- Management of radioactive materials
- Shipping of radioactive materials
- Site abandonment and restoration
- Emergency response

1.1 Revisions to Plan

The Kiggavik Radiation Protection Plan is reviewed regularly and is updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this plan.

1.2 Responsibilities

The District Geologist, Nunavut is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Safety, Health, Environment and Quality (SHEQ) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 Administrative Elements

2.1 Program Documentation

The Radiation Protection Program is comprised of a series of key documents, which include the Routine Radiological Monitoring Schedule and procedures for Shipping Radioactive Material. The Radiation Protection Program includes comprehensive work instructions for worker dosimetry, radiological monitoring and the safe handling of radioactive materials.

To ensure occupational exposures are managed in accordance with the ALARA principle, radiological parameters are monitored against defined Action and Administrative levels. The Action and Administrative levels define values of radiological parameters above which intervention may be required and the corresponding mitigative measures to be followed.

2.2 Training

AREVA provides necessary training to all its employees and contractors to ensure worker safety and protection of the environment during exploration activities. The training programs provided are designed to meet the requirements of the CNSC *Uranium Mines and Mills Regulations*, Workers' Safety and Compensation Commission (WSCC) requirements under the *Mine Health and Safety Act and Regulations*, *ISO 14001:2004 and OHSAS 18001:2007*.

All new employees, including contractors, receive appropriate radiation protection training prior to beginning work. This includes instruction on the origins of ionizing radiation, the types of radiation, health risks, and the principles of radiation safety, protection and regulatory compliance. Training also includes the safe handling, management and disposition of radioactive materials such as drill muds, cuttings, and radioactive core. Training may be in the form of a PowerPoint presentation or interactive display and may occur before arrival to site or once arrived at site.

All visitors at the Kiggavik site for more than 72 hours, or who will be left without an escort will receive radiation protection training. Visitors who have not received training must be escorted on site at all times.

Personnel supervising the shipment of radioactive materials must possess a valid TDG certificate in accordance with Transport Canada *Transportation of Dangerous Goods Regulations*. If radioactive materials are to be transported by aircraft, TDG training is to include the necessary aviation components for Class 7 materials. If contractors have their own training program they must submit their documentation. Support personnel providing assistance during

preparation and shipment of radioactive material do not require TDG training as long as they are working under the direct supervision of trained individuals.

AREVA field personnel and contractors establishing temporary work camps and/or handle fuel, lubricants and radioactive material require spill response training. If the contractors have their own training program they must submit evidence of the training program as per *EXP-820, Training, Awareness and Competence*. Training for AREVA employees is provided in accordance with the Spill Contingency Plan. The Spill Contingency Plan is provided to Contractors, and should the contractors not have an acceptable training program in place, AREVA will supply the training material and/or provide the training as required.

2.3 Occupational Workers

Workers exposed to Naturally Occurring Radioactive Materials (NORM) as a result of their regular duties are designated as occupationally exposed workers for exploration projects. The designation of a person as an Occupational (NORM) Worker is conducted in accordance with *EXP-740-01, Occupational Worker Assessment*.

2.3.1 Dose Limits and Dose Levels

An Occupational Worker is informed of the risks associated with radiation to which the worker may be exposed in the course of their work, and the applicable dose limits, during radiation protection training. Occupational Workers are limited to a maximum annual effective dose of 50 mSv in a one year dosimetry period, not to exceed 100 mSv in a five year dosimetry period (or 20 mSv/year over five years). Administrative control levels have been defined in *EXP-740-03, DRD Usage/Action and Administrative Levels for Gamma Radiation* to limit dose. Administrative levels are set to less than 0.01 mSv per day and less than 0.05 mSv per week. An Action level is set to 5 mSv per quarter. In the event of an emergency and the consequent immediate and urgent remedial work, the effective dose shall not exceed 500 mSv. A pregnant Occupational Worker is limited to 4 mSv for the balance of the pregnancy once notification has been made to the employer. The relaxation of normal dose limits in emergency situations does not apply to pregnant workers. Occupational Workers are informed of their radiation dose levels in writing, annually.

2.3.2 Obligations of Occupational Workers

AREVA Exploration workers deemed to be Occupational Workers are obligated to provide information required to identify them to the National Dose Registry (i.e. given name, surname, previous surname, SIN, gender, date and province and country of birth) by completing *EXP-740-01-01, Employee Information Form*.

2.3.3 Pregnant Occupational Workers

Occupational Workers are informed during training of the risks associated with radiation to which the worker may be exposed in the course of their work during orientation training. Occupational Workers are informed of their obligation to inform their employer when they become pregnant and are informed of the applicable effective dose limit of 4 mSv for the balance of the pregnancy.

3 Program Elements

3.1 ALARA

Radiation protection has its foundation in the As Low As Reasonably Achievable (ALARA) principle. The commitment to maintain worker doses ALARA is established through AREVA's Radiation Protection policy. This policy is established by senior management and is approved by the President and Chief Executive Officer. This Plan and the Radiation Protection Procedures follow the ALARA principle.

3.2 Radiological Monitoring

Routine radiological monitoring consists of dosimetry monitoring and contamination control. Dosimetry monitoring is conducted to determine and document worker exposures to radiological components which include gamma radiation, radon progeny (RnP) and long-lived radioactive dusts (LLRD). Contamination control measures are in place to minimize the spread of radioactive materials into unintended locations. Radiological monitoring is conducted in accordance with the *EXP-740, Routine Radiological Monitoring Schedule* and associated work instructions.

3.3 Management of Radioactive Materials

3.3.1 Radioisotopes

Nuclear materials and radiation devices are used for exploration and instrument calibration. The possession, use, storage, and disposal of nuclear materials and radiation devices are carried out in strict accordance with CNSC *Nuclear Substances and Radiation Devices Regulations* and *EXP-752-02 Safe Handling and Use of Exploration Sources*. The radioisotopes are licensed under the McClean Lake Operating Licence.

3.3.2 Core Storage

In the absence of territorial mineral exploration regulations, the storage and disposal of radioactive materials arising from project activities are to be carried out in accordance with Saskatchewan *Mineral Industry Environmental Protection Regulations, 1996*.

Permanent and long-term storage areas of radioactive material must be located at least 30 m from the main camp and at least 100 m from the high water mark of all water bodies.

As required by Aboriginal Affairs and Northern Development Canada (AANDC), the gamma radiation dose rates at 1 m from the surface of a storage area should be reduced to 1 $\mu\text{Sv/h}$ and in no instances exceed 2.5 $\mu\text{Sv/h}$. Should the levels be exceeded, the Land Use Inspector must be contacted. Radioactive storage areas must be appropriately labelled with radiation warning signs and fenced.

3.3.3 Disposition of Drill Cuttings

During drilling activities, drill mud solids or cuttings in non-mineralized zones are deposited on the ground, in a selected natural low-lying depression. This natural depression must be located, at a minimum, 31 m beyond the ordinary high level water mark of any nearby water bodies, and where direct flow into the water body is not possible. A radiological survey is conducted before and after drilling to ensure elevated readings are not occurring. If necessary, depressions are backfilled and contoured, as much as possible, back to natural pre-existing conditions.

When mineralized core is intercepted, drill mud and cuttings are collected in appropriate containers and categorized as radioactive through appropriate radiation measurements. Drill mud or cuttings with uranium content greater than 0.05% will be collected and stored at the radioactive storage compound with an appropriate containment system in place. Down hole disposal of cuttings is not often practical at Kiggavik. Drill holes are sealed by cementing/grouting the upper 30 m of bedrock or the entire depth of the hole, depending on the presence of mineralization or otherwise approved of by the appropriate regulatory agencies in writing.

3.4 Shipping of Radioactive Materials

Shipping and receiving radioactive material is carried out in accordance with the CNSC *Packaging and Transport of Nuclear Substances Regulations*, the Transport Canada *Transportation of Dangerous Goods Regulations*, and the AREVA EXP-752 *Shipping Radioactive Material procedure* and work instructions. Kiggavik personnel trained in the International Air Transport Association (IATA) *Dangerous Goods Regulations* complete the packaging and shipment of radioactive materials.

3.5 Site Abandonment and Restoration

Site abandonment and restoration is carried out in accordance with the Abandonment and Restoration Plan. Gamma radiation surveys are conducted at each site prior to drilling and prior to final abandonment. Contaminated soil or cuttings are collected in appropriate containers and stored in the radioactive storage compound for future handling, which may include transfer to an operating mine site. Drill sites are cleaned to ensure that the gamma dose rate at a height of 1 m from surface is less than 1 $\mu\text{Sv/h}$ above ambient background.

Materials and equipment leaving the Kiggavik site are monitored for contamination in accordance with the *EXP-740, Routine Radiological Monitoring Schedule*. Materials or equipment that cannot be decontaminated to meet unrestricted release criteria are either stored in the radioactive storage compound or shipped to a licensed facility such as the McClean Lake Operation in accordance with the CNSC *Packaging and Transport of Nuclear Substances Regulations*, the Transport Canada *Transportation of Dangerous Goods Regulations*, and the AREVA *EXP-752 Shipping Radioactive Materials* procedure and work instructions.

3.6 Emergency Response

Emergencies could include such incidents as spills, lost or damaged radioactive sources and transportation incidents. Emergencies involving radioactive materials are responded to in accordance with the Emergency Response Manual. In the event of an incident involving radioactive material, immediate actions are taken to minimize worker exposures. In the event of any incident involving radioactive material, the SHEQ Supervisor or designate is notified immediately, and the incident is reported to the Vice President, Exploration within 24 hours and appropriately investigated. Emergency response is co-ordinated through the corporate Emergency Response and Assistance Plan (ERAP) that details the organization, responsibilities, procedures and mitigative measures to be followed in the event of an offsite emergency involving the transport of radioactive material. Environmental emergencies are secondary to the safety of personnel. In the event of any incident involving a radiation source, federal and territorial agencies are notified in accordance with applicable regulations.

The uncontrolled or accidental release of any radioactive materials including drill mud solids and cuttings is considered a spill. Spills of radioactive material are appropriately reported and responded to in accordance with the Spill Contingency Plan. In the event of a spill, radioactive materials are collected and necessary site remediation undertaken to meet the site abandonment criteria of less than 1 $\mu\text{Sv/h}$ above background at a height of 1 m. In accordance with the Spill Contingency Plan, in the event of a spill involving radioactive material, actions are taken to contain the spill, limit the spread of contamination and to control access to the spill area. Appropriate radiological and dosimetry monitoring is performed to ensure worker doses remain ALARA. Mitigation measures to be followed include recovery of radioactive material and decontamination of affected areas. Material collected during the clean-up is stored in appropriate containers in the radioactive storage compound for future handling.

In the event a radiation source is damaged, it is removed from service immediately and stored in a secure location. The removal of a damaged source from site is coordinated with the SHEQ Supervisor, Safety and Radiation Coordinator and the McClean Lake Operation Radiation Protection Group as per *EXP-752-02 Safe Handling and Use of Exploration Sources*. If at any time it appears that a radiation source has been lost, misplaced or stolen, the Project Geologist or designate, the SHEQ Supervisor, the Vice President, Exploration, the McClean Lake Radiation Protection Group, and the Safety and Radiation Coordinator are notified immediately.

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AREVA Resources Canada Inc.
Spill Contingency Plan

Exploration Department

Kiggavik Project

Version 7 Revision 4

PIGA Unrestricted

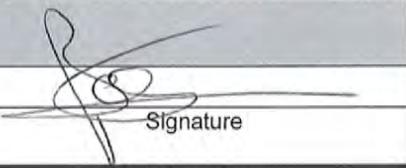
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Editor:		
Exploration Safety Health Environment and Quality Supervisor	Bradley Pohler	
Title	Name	Signature

Approver:		
Vice President, Exploration	Patrick Ledru	
Title	Name	Signature

History of Revisions

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	October 2007	Update to reflect changes in field activities/capabilities and goals of continual improvement
2	1	May 2008	Updated to reflect comments and conditions received by the Nunavut Water Board associated with the issuance of water licence no. 2BE-KIG0812
3	0	January 2009	Update to reflect changes in field activities/capabilities and goals of continual improvement
4	0	March 2009	Updated to reflect changes in field activities/capabilities and goals of continual improvement
5	0	January 2010	Updated to reflect changes in field activities/capabilities and goals of continual improvement
6	0	May 2011	Updated to reflect personnel titles, grammatical changes, reorganized information and clarified responsibilities. Made consistent with other Plans and Manual and updated to reflect changes in fuel storage and equipment.
7		May 2012	Updated to reflect personnel changes, grammatical changes, reorganized information and clarified responsibilities. Made consistent with other Plans.
7	1	May 2013	Updated to reflect personnel changes, and correction of grammatical errors.
7	2	May 2014	Updated infrastructure list, surface land administration, and proximity to water mark
7	3	January 2015	Minor edits for improved clarity and incorporation of new template
7	4	January 2016	Updated spill response to include AANDC Manager of Field Operations. Updated spill preventative measures.

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Acronyms and Abbreviations

Term	Definition
AANDC	Aboriginal Affairs and Northern Development Canada
AREVA	AREVA Resources Canada Inc.
CCME	Canadian Council of Ministers of the Environment
CEPA	Canadian Environmental Protection Act
ECOP	Environmental Code of Practice
EC	Environment Canada
FIRSTS	Federal Identification Registry for Storage Tank Systems
GN-DoE	Government of Nunavut, Department of Environment
IOL	Inuit Owned Land
KIA	Kivalliq Inuit Association
NWB	Nunavut Water Board
SHEQ	Safety Health Environment and Quality

1 Introduction

This Spill Contingency Plan (Plan) applies to the Kiggavik Project located approximately 80 km west of Baker Lake, Nunavut. The Plan is made available at the Kiggavik Site and the AREVA Resources Canada Inc. (AREVA) Baker Lake Office.

1.1 Purpose and Scope

The primary objective of the Plan is to help prevent or reduce the potential of spills of pollutants and prevent, reduce or eliminate any adverse effects that may result. As such, the Plan provides information and guidance on actions important for the prevention of spills and procedures to detect and respond to spills if they occur. The Plan evokes a risk management approach when considering potential spill events. By implementing effective spill prevention, the risk of spills can be reduced in magnitude and perhaps avoided.

Furthermore, the purpose of this plan is to identify safe, effective and efficient response methods. This Plan is intended to satisfy Nunavut R-068-93 *Spill Contingency Planning and Reporting Regulations*. As per the regulations, “spill” is defined as “...a discharge of a contaminant in contravention of the Act or regulations made under the Act or a permit or license issued under the Act or regulations made under the Act.” AREVA’s working definition of a spill is defined as any accidental discharge of a hazardous material to the environment.

1.2 Revision to Plan

The Plan is reviewed regularly and updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this Plan.

1.3 Responsibilities

The District Geologist, Nunavut is responsible to ensure this plan is implemented with the assistance of the following personnel:

- Project Geologist
- Facility and Logistics Coordinator, Kiggavik
- Safety Health Environment and Quality (SHEQ) Supervisor
- Or designates

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 Site Information

2.1 Location

The Kiggavik site, located in the Kivalliq Region of Nunavut, supports the exploration of the Kiggavik mineral leases and the St. Tropez claims which will be converted to lease in 2015.

Exploration of the Kiggavik mineral leases is a joint venture between AREVA, Japan-Canada Uranium Company Limited and Daewoo International Corporation, with AREVA being the operator. The surface rights for 31 mineral leases on Inuit Owned Land (IOL) are administered by the Kivalliq Inuit Association (KIA) while six mineral leases remain on Crown land. The Crown land covers the Jane prospect on the south-west portion of the Project with surface rights administered by Aboriginal Affairs and Northern Development Canada (AANDC).

The St. Tropez area, which is north-east of the Kiggavik site, is encompassed within the IOL surface parcel BL-19 with surface rights administered by the KIA. The St. Tropez area is wholly owned and operated by AREVA out of the Kiggavik site.

There is an existing temporary exploration camp at the Kiggavik site which can accommodate approximately 60 people. The Kiggavik camp is located at the following coordinates:

- UTM 14W 564530 E 7146879 N
 - Latitude: 64° 26' 29" N
 - Longitude: 97° 39' 34" W

In 2007, the temporary camp accommodated approximately 32 persons, was expanded to accommodate approximately 50 persons in 2008 and 60 in 2009. Currently there is one shed and core storage located at the Andrew Lake drill site, as well as core storage at the Kiggavik site and Pointer Lake. Detailed site maps showing topography can be found in Appendix III. The camp currently consists of the following:

- One storage shed/back-up generator/shop
- One generator building (housing current generator)
- Helicopter storage/shop
- Three helicopter pads
- One washroom/dry building constructed with separate male/female facilities
- One kitchen with storage
- One wooden office
- 15 wooden sleeping units (one is a first aid shack)
- Wooden boardwalk throughout camp
- Five prospector tents (core logging tents)

- Three weather havens (2 for sleeping units, 1 for office)
- One mechanical services room
- Grey water collection area
- Industrial incinerator
- Core storage
- Radioactive materials storage compound
- Eight bulk fuel storage tanks (50,000 L capacity per tank)

There is a fuel esker containing one shed and eight bulk fuel tanks. Three bulk tanks are for Jet A-1 aviation fuel and five are for diesel fuel. Additional fuel drums within secondary containment may also be temporarily stored at the esker.

2.2 Petroleum and Chemical Product Storage and Inventory

The table below provides a list of products used, along with the maximum amount stored and type of storage. AREVA maintains an inventory of all petroleum and chemical products on site.

Table 2-1 Petroleum and Chemical Storage

Chemical/Material	Amount	Storage Type
Diesel Fuel	250,000 L	EnviroTanks
Jet B Fuel	150,000 L	EnviroTanks
Diesel Fuel	5 x 205 L (820 L)	Secondary Containment
Gasoline	1,025 L	Secondary Containment
Generator Oil	20 x 20L (400 L)	Secondary Containment
Hydraulic Oil	20 x 20L (400 L)	Secondary Containment
Engine Oil	20 x 20L (400 L)	Secondary Containment
Propane	75 x 100 lb (7500 lb)	Secondary Containment
Grease (for grease gun)	5 cases x 12 tubes (60 tubes)	Secondary Containment
Salt	50,000 lbs	Secondary Containment
Cement	15,000 lbs	Secondary Containment

2.2.1 Fuel Storage

To accommodate increased fuel demand and reduce the potential of fuel spills, bulk fuel storage tanks were installed. The eight double-walled steel EnviroTanks, each with a capacity of 50,000 L were installed at the esker located west of the Kiggavik camp. Three tanks on the north side of the esker are for the storage of Jet A-1 fuel, and five tanks on the south side of the esker are for the storage of diesel fuel as shown in Figure 2.1. The coordinates for the fuel cache are 14W 561512 7145240.



Figure 2.1 Kiggavik Fuel Cache

The site layout and tanks were designed by a professional engineer and were installed by a registered company/petroleum contractor to ensure compliance with the Canadian Council of Ministers of the Environment (CCME) *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products* (CCME COP, 2003). In 2007, Golder Associates (Golder) conducted an engineering assessment to identify potential issues with the installation of storage tanks. Recommendations were provided for the foundation support for the storage tanks. To mitigate the potential issues described in the report, Golder recommended that the tanks be placed on timbers located under each saddle to provide an increased bearing area. The use of timbers is a deviation from the CCME COP, however it should be noted that this is common practice in the area and AREVA received permission from the Fire Marshal, Tim Hinds with the Government of Nunavut-Community and Government Services.

The design basis, operation and maintenance requirements for all petroleum storage and handling on site are based on the CCME ECOP for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products and in compliance with the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*, under the *Canadian Environmental Protection Act, 1999* (CEPA 1999). The fuel storage system at the Kiggavik site has been registered with Environment Canada (EC) through an online database, the Federal Identification Registry for Storage Tank Systems (FIRSTS).

Double walled steel EnviroTanks and associated pump meet the requirements of secondary containment within their own structure. For further secondary containment, rubberized berms or other suitable lined structures may be used during fuel transfer to minimize the potential for spills. Absorbent

padding may be used to control dripping fuel. Further protection against spills is provided by high level alarms, overfill preventers, and catch basins around each fill pipe.

The fuel is transported to the Kiggavik fuel cache during the winter via ground transport using tundra trucks such as cat challengers, case 4-track units, and delta foremosts (See Figure 2.2). With the exception of the deltas, the fuel is hauled with steel sleighs loaded with 10,000 to 15,000 litre fuel tanks containing P-50 diesel or Jet A-1 fuel respectively. The deltas do not pull sleighs, but instead have a deck with crane installed for offloading materials. Fuels are then transferred from the tanks to the EnviroTanks located at the Kiggavik fuel cache. Unleaded gasoline and propane cylinders may be brought to the Kiggavik site during the winter haul or by aircraft from Baker Lake.



Figure 2.2 Winter Haul of Materials and Fuel

Diesel fuel is transferred from the EnviroTanks to double-walled fuel tanks for use in camp and/or drill sites. There is also a fuel cache located at the Kiggavik Camp (14W 564464, 7146782). This fuel cache includes double walled fuel tanks used to supply the generators. All fuel containers are labelled, identifying the contents and the name "AREVA". Should fuel drums be used, the 205 L drums are stored within secondary containment. Secondary containment is used for all liquid fuels, and lubricants, and drill additives are stored in sea containers to avoid adverse weather conditions. All secondary containment systems being used are capable of containing 110% capacity of the petroleum products and other hazardous materials and hazardous waste products (See Figure 2.3).



Figure 2.3 Fuel berms

Absorbent matting and/or drip pans must be placed under all areas where fuel leaks are likely to occur (e.g. fuel line hose connections, fuelling stations, generators, water pump), and these areas must be inspected regularly.

Waste oil, waste filters, and cleaned-up spill materials are contained in ring top barrels within secondary containment. Degreasing agents used for maintenance of equipment parts and grease are also contained in ring top barrels within secondary containment. These hazardous wastes are stored in the storage shed during the season, and later transferred to a sea container until they are removed from site during the winter haul. The materials are then disposed of at an approved facility.

2.3 Petroleum Product Transfer

To minimize fuel spillage associated with dispensing of product, all dispensing and tank filling operations are attended and involve the use of manually controlled nozzles equipped with automatic shut off mechanisms. Smoking, sparks or open flames are prohibited in fuel storage and fuelling areas at all times. Petroleum transfer operations will be carried out by trained personnel.

2.4 Location and Content of Spill Kits

Spill kits can vary in size and content depending on supplier and manufacturer however to remain consistent and provide adequate spill supplies, AREVA has chosen two types of spill kits which are considered to be standard. The kits generally include the following contents, or similar products:

1. Universal Emergency Response Kit 30Gallon/135L

- Sorbant capacity of 96L
- 4 socks (3" X 10')
- 75 pads
- 1 drain cover
- 1 caution tape
- 2 pairs nitrile gloves
- 2 pairs safety goggles
- 2 protective coveralls
- 5 disposable bags
- 1 instruction book

2. Universal Overpack Kits 95 US Gallon Drums

- Sorbant capacity of 275L
- 4 socks (3" x 10')
- 5 socks (3" x 4')
- 50 pads
- 5 pillows
- 1 roll
- 1 drain cover
- 1 caution tape
- 2 pairs nitrile gloves
- 2 pairs safety goggles
- 2 protective coveralls
- 10 disposable bags
- 1 instruction book

A variety of spill kits are available and other kits than those listed above may be purchased for a variety of reasons (availability, intended use, etc.). All spill kits contain an itemized list of its contents and an inventory must be conducted following use and may be completed each season if deemed necessary.



Figure 2.4 Example of Spill Kits available at Project site

In addition, the following spill response material is also readily available in the generator building for spill response:

- Plugging compound
- Bulk supplies of oil absorbent pads and socks
- Aluminium or brass shovels or tools
- Bonding cables

Due to the volume of fuel being stored in the fuel tank storage system and the remote nature of the sites, at least one of the Bulk Storage Site Spill Kits 95 US Gallon Spill Kits will be present for each 100,000L of fuel being stored.

In addition, at least one empty fuel drum and a pump will be located at each fuel cache and tank storage system in the event of damaged or leaking drums. Fire extinguishers of the proper type, size and number will be stationed in each building, at the fuel tank storage system and near each site where equipment is normally serviced and anywhere else it is deemed advisable. A supply of sealable 20-litre steel pails or 205-litre drums will be available for the collection and storage of used absorbent materials.

2.5 Orientation

All personnel at camp (AREVA employees, contractors, and long term visitors) are given formal orientation upon arrival at camp. The Spill Contingency Plan is reviewed during orientation which and includes the location of the Material Safety Data Sheets, location of spill kits and additional supplies or tools. Personnel are trained to be watchful for any leaks or spills. Where leaks or spills are most likely to occur, personnel are instructed in the proper use of equipment and materials. They are also trained in the onsite spill response and reporting, and how to collect, store and dispose of spilled product.

3 Potential Hazards, Mitigation and Preventative Measures

3.1 Potential Hazards

Potential sources for spills have been identified as follows:

- Drums of P-50 diesel (four drums), gasoline, waste fuel, and waste oil may leak or rupture
- Overfilling of tank(s) at the fuel cache of Jet A-1 or P-50 diesel
- Transfer of fuel between EnviroTanks, drums and fuel tanks
- Transportation of fuel during winter haul
- Fire at the fuel cache
- Collision at the cache
- Vandalism of the fuel cache
- Propane cylinders: propane leaks may occur at the valves
- Refuelling equipment such as diamond drill equipment, helicopters, camp generator, stoves, incinerator, wheeled vehicles, snowmobiles and pumps
- Incidents involving leaking or dripping fuels and oils may occur due to malfunctions, impact damage, lack of regular maintenance, improper storage, or faulty operation
- Damaged lead/acid batteries causing spills of acid
- Improper drilling or transport of cuttings bags causing a spill of radiologically contaminated drill cuttings or drill return water

3.2 Mitigation and Preventative Measures

The Environmental Code of Practice discusses how to conduct activities so as to minimize the risk of spills. In addition, the following measures will further minimize the potential for spills during fuel handling, transfer and storage, and drilling activities:

- Fuel transfer hoses with cam lock mechanisms used when transferring bulk fuel deliveries into the bulk storage tanks
- Carefully monitor fuel content in the receiving vessel during transfer
- Always have additional absorbent pads on hand while transferring fuel
- Clean up drips and minor leaks immediately
- Regularly inspect drums, tanks and hoses for leaks or potential to leak and for proper storage
- Create fuel caches that are located at least 31 m from the normal high-water mark of any water body
- Inventory and reconciliation procedures developed to ensure tanks are not overtopped and to ensure that tank leakage is not occurring
- Overfill protection on tanks include visual and audible alarms; catch basins around fill pipe
- Additional secondary containment at transfer locations; corrosion protection

- Train personnel, especially those who will be operators, in proper fuel handling and spill response procedures. This training is to include a “mock” spill, review of spill kit contents and their use and reporting.
- Pre-inspection of drilling to develop site-specific plans to mitigate the risk of a spill of drill return water. Mitigation measure may include filter berms, aqua berms, sandbags, or additional sump pumps.

3.2.1 Spill of Fuel from Metal Drums on Tundra

Should drums be used, the metal drums are stored in such a manner that they are not susceptible to tipping over, rolling or otherwise being unstable. Care is exercised so that nothing can cause damage to metal fuel drums by falling or rolling onto or into them. The use of a ramp or a cushion (e.g. automotive tire) while unloading metal fuel drums from aircrafts lessens the possibility of damage.

3.2.2 Spill of Fuel from Fuel Cache

To prevent spillage during the filling of the fuel cache system, the following items will be in place:

- Visible and audible high level alarm
- Automatic high liquid shut off device
- Manual dips are conducted in conjunction with the inventory and reconciliation procedures by fuel delivery personnel and site personnel
- Site personnel log all deliveries and fuel dips to coordinate the filling of the Envirotanks with the contractor delivery personnel
- All tanks are double-walled
- Spill/Overfill protection – catch basins around the fill pipe will collect any liquid spilled during connecting or disconnecting of the fill hose
- Corrosion Protection – provided by painting of the tanks
- Where drums are used, the drums will be placed in appropriated lined structures for fuel transfer from tank to drum

Personnel conducting fuel transfers are to be adequately trained in the procedure and spill contingency. Most releases at a fuel tank storage system are due to piping and line failure. This system of tanks are independent of each other and do not require any piping. Spills or leaks are known to occur due to improper management of tanks prior to installation. All tanks located at the Kiggavik site have been inspected by a qualified person prior to filling and again prior to initial use.

3.2.3 Winter Fuel Hauling

Refer to Winter Road Plan for further details regarding transport, safety and training requirements used to minimize hazards generated during the winter haul.

3.2.4 Leak of Liquid Fuel from Distribution Lines

Stability of all storage tanks and distribution assemblies is of utmost importance to ensure that the risk of damage is minimized. All stands for reservoir tanks and fuel tanks are constructed to strength standards beyond those required. Distribution lines from reservoir tanks and fuel tanks are fitted with appropriate shut-off valves immediately downstream from the tank. All valves are closed when the tank is not in use. All associated distribution lines are installed in such a way to prevent being chafed in the wind, chewed on by animals or tripped on by humans. This is done by securing it to rigid structures, encasing it in armour or any other effective manner. These measures apply broadly to oil, jet fuel, gasoline, and propane set-ups.

3.2.5 Spill of Liquid Fuel into Lake Water

Fuel must be at a minimum of 31 m from ordinary high water mark on stable and level ground unless approved by regulatory agencies. Refuelling must not take place below the high water mark of any water body under any circumstance.

3.2.6 Release of Propane

Propane is stored in certified containers and is inspected and monitored on a regular basis for any signs of deterioration or corrosion. Containers are secured and fastened in an upright position to ensure there is no risk of damage to the regulator in the event of a fall. In the event that larger propane tanks are introduced on site, only qualified gas fitters will connect or disconnect the piping.

3.2.7 Spill of Battery Acid

Acquisition of non-spillable batteries reduces the risk of a spill of this type. These batteries can be shipped by air as they are exempt from UN2800 classification. All batteries are protected from damage by proper securing during transport and safe storage when not in use.

3.2.8 Fire at the Fuel Cache

Grounding cables minimize the potential of static discharge and potential fire, and are available during all transfers of bulk diesel or jet fuel.

3.2.9 Crash at Fuel Storage Tanks

To reduce the risk of a crash at the fuel cache, there is clear communication between aircraft (fixed wing and helicopters), wind socks are used, and further crash protection will be in place should additional vehicles be introduced to the operation.

3.2.10 Spill of Radiologically Contaminated Drill Cuttings

During drilling activities, non-mineralized drill mud solids or cuttings are deposited in low-lying areas. When mineralized core is intercepted, all drill mud and cuttings are collected in appropriate containers and categorized as radioactive through appropriate radiation measurements in accordance with work instructions. A gamma survey is also conducted before and after drilling activities at each hole to ensure there is no radiologically contaminated material at the site.

3.2.11 Spill of Potentially Contaminated Drill Return Water

Return water from drilling activities, including general drainage from the drill footprint, are diverted into low-lying areas to keep these waters from directly entering lakes and streams. Low lying depressions where non-mineralized drill cuttings and drill return water are deposited are monitored while in use. Additional water diversion methods will be utilized as necessary depending on the drilling location and may include addition of filter berms, aqua berms, sand bags, and sump pumps.

4 Spill Response

4.1 Response to a Spill – Containment and Clean-Up

In the case of any spill or other environmental emergency, it is necessary to immediately react in the most safe and environmentally responsible manner. No spill or incident is so minor that it can be ignored. The basic steps of the response plan are as follows:

Ensure the safety of all persons at all times

The safety of yourself and others is the most important consideration when responding to a spill. As such, all actions that you perform as part of your spill response must only be undertaken if they can be undertaken in a safe manner. If an action cannot be undertaken in a safe manner, or if you do not feel that you are adequately trained or equipped to respond to a spill, you must evacuate all personnel to a safe area upwind from the spill. You will then request assistance from trained emergency responders with the appropriate resources to manage the spill safely and effectively.

Your responsibilities when responding to a spill are as follows:

- Act safely, using appropriate personal protective equipment and work practice
- Respect the safety of others in the area
- Refuse to perform activities that you feel are unsafe
- Inform those involved or in the area if you believe that their actions, or proposed actions, are unsafe. This includes colleagues, first responders, contractors, members of the public, etc.

Identify and find the spill substance and its source

Individual discovering the spill shall:

- Move upwind of the material
- Call for help – contact direct Supervisor and Facility and Logistics Coordinator, Kiggavik
- Attempt to stop leak if safe to do so
- Attempt to contain spilled material if safe to do so

Facility and Logistics Coordinator, Kiggavik (or designate) shall:

- Designate responders and proceed to the scene of the spill
- The responders (including the Facility and Logistics Coordinator, Kiggavik if necessary) shall attempt to stop further spillage and contain the spilled material

- Complete documentation of the spill using the Spill Report Form, and contact the NT-NU 24-Hour Spill Report Line immediately as well as the appropriate regulatory agencies (see Section 5 for Spill Reporting requirements).

SHEQ Supervisor shall:

- Provide assistance and expertise in the response to a spill
- Once under control, shall interview the individual who discovered the spill. Noting name, time discovered, and details on how the spill occurred, any actions taken by the individual to stop the spill
- Submit Spill Report to regulatory agencies within seven calendar days of the incident
- Submit Detailed Spill Report to regulatory agencies within 30 days of the incident

Responders shall:

- Position themselves upwind of the spill
- Determine what has been spilled
- Consult the Material Safety Data Sheet (MSDS) for the product to determine the appropriate personal protective equipment and to understand the physical properties of what was spilled
- If the spilled substance is flammable (Gasoline or Jet Fuel), eliminate all ignition sources and shut off machinery in the area
- Take actions to ensure the leak or spill has been stopped at the source (i.e. shut off valves, reconnect hoses, etc.)
- Contain spill with appropriate material and equipment (i.e. spill response kit, etc.). Refer to the MSDS if this is a controlled substance. Pump large spills into barrels or other suitable container as available
- **Ensure that grounding or bonding cables are used for all flammable product transfers**
- Control access to the spill area and keep all bystanders away. If necessary, barricade the spill area. Do not use flares unless you are certain the spilled material and its vapours are not flammable or explosive.
- Keep spilled material out of waterways. Use aluminium/non-sparking shovels to dig trenches or make soil and sand barriers or use the placement of absorbent socks as barriers
- For fuel or oil spills, place contaminated absorbent and associated materials into steel pails or drums for storage in a sea container for removal from site to an approved facility
- For radioactive material, place material into appropriate container (i.e. cuttings bag or IP3 pail) to be stored in radioactive storage compound
- If a spill has entered flowing water, take a water sample immediately upstream of the spill and downstream (e.g., 50 m, 150 m and 500 m from spill)

The following table outlines spill supplies and their use during spill response. Items not stored in spill kits are available with replacement items in the back-up generator building, more commonly referred to as the Lonegull.

Table 4-1 Spill Response Supplies

Incident	Spill Supplies	Use
Wet Spill	Drums with removable lids that contain bailers	For manual removal of large liquid spills Empty drums
	Folded sweeps and white rolls	Skimming of gas or diesel from water body
	Socks, peat moss	Containment of wet spill on land
	Pads, rolls, bags of dry absorbent	Cleanup of wet spills
Punctured Drum	Overpack (plastic drum) Plug 'n Dyke	Place overpack overtop of leaking drum, lay overpack and drum on its side, then flip upright, or use Plug 'n Dyke or other plugging compounds to seal and stop leak
Dry Spill	Plastic sheet (roll), mallet, spikes, knife	Covering dry spills to protect from wind and rain

If necessary ask for help and wait for others with the appropriate training and/or equipment to arrive. Acting inappropriately can often be dangerous to you, to others, and to the environment.

Implement any necessary cleanup and/or remedial action in a safe manner; this may be coordinated and or conducted by a third party consultant, if necessary.

Report the spill as per Section 5 of this Plan once it is safe to do so. Do not delay reporting as there are legal requirements in this regard.

4.2 Examples of Spill Scenarios

4.2.1 Fuel Spill from Metal Drums or Fuel Tanks

Report the spill to the Facility and SHEQ Supervisor or designates immediately. A puncture or rupture of containers containing liquid fuels should initially be assessed for risk of ignition. Sources of ignition will be extinguished or isolated from the spill area if safe to do so. While using appropriate personal protective equipment as described in the MSDS, efforts should be undertaken to plug punctures with appropriate material from the spill kit (plugging compound or other improvised materials). Ruptures or holes should be high-centered to stop further spillage of fuel. Absorbent materials should be used to absorb spilled fuel. A containment berm should be built using available materials such as soil, snow, absorbent socks, portable berms and/or tarps to contain a large spill.

Remove the spilled products using absorbent material and place all recovered waste material into appropriate containers (metal cans, pails or drums in good condition). All containers will be stored in a

sea container until the material can be transported to an approved facility. High-centered ruptures will be used as a point of entry for manually-operated fuel transfer pump suction tubes, and remaining fuel is removed to a sound drum. Small amounts of contaminated soil, vegetation or gravel is removed and placed into sealable steel drums or pail and then disposed of appropriately. Large areas of spilled product on the ground are only to be remediated after consultation with AREVA SHEQ personnel and regulators to avoid unnecessary damage to the environment. Before commencing removal of soil or vegetation regulatory agencies will be contacted. If spill of significant volume occurs at one of the fuel storage tanks, attempt to prevent the spread of the fuel and immediately and contact AREVA personnel to provide assistance with the spill response and clean-up.

4.2.2 Leak of Liquid Fuel from Distribution Lines

A detected leak from a distribution line assembly is to be initially assessed for risk of ignition. If safe to do so, sources of ignition are to be extinguished or isolated from the leak and the shut-off valve on the tank and/or distribution line is to be turned off. Report the spill to the Facility and SHEQ Supervisor or designates immediately. Absorbent material is placed on the spilled fuel; if spilled onto snow or ice it is scooped up with an aluminum (non-sparking) shovel and stored in an appropriate sealable steel container. Final disposal of these materials is done after consultation with the SHEQ group and the appropriate regulatory agencies.

4.2.3 Spill of Liquid Fuel into Lake Water

Identify the source of the spill and prevent further release of fuel. Report the spill to the Facility and SHEQ Supervisor or designates immediately. Never attempt to contain or clean up a spill of gasoline on water, the risk of fire is simply too high. Confinement needs to occur as close to the release point as possible. Prior to attempting any clean up on water, a site specific safety plan needs to be developed that factors in water safety aspects. After vapours have dissipated, the collection of liquid diesel or lubricating oil in lake water is attempted with floating booms of petroleum absorbent material. For larger spills of diesel or lubricating oil, raw liquid can often be removed by skimming. Absorbent pads can be used to collect small spills. All fuel skimmed or wicked off of the water surface as well as spent absorbent materials must be disposed of, in appropriate sealable steel containers. Ultimate disposal of these materials shall only be done after consultation with the SHEQ Group and the appropriate regulatory agencies.

4.2.4 Release of Propane

Where propane has been released, report the spill to the Facility and Logistics Coordinator, Kiggavik and SHEQ Supervisor or designates immediately. Personnel shall withdraw from the area immediately upon identifying a leak and shall not return until the leak is stopped and all the vapours have diffused. Contact will be made with the proper agency for disposal instructions of a defective container.

- No attempt should be made to contain a propane release
- Water spray can be used to knock down vapours and to reduce the risk of ignition
- Small fires can be extinguished with dry chemical or CO₂

4.2.5 Fire at Fuel Cache

In the event that a fire occurs at the fuel cache, it is AREVA's primary intentions to ensure the safety of the site personnel by allowing the fire to burn. Report the spill to the Facility and Logistics Coordinator, Kiggavik and SHEQ Supervisor or designates immediately. Appropriate third party personnel will be contacted to ensure proper response and clean-up occurs. In the event of a fire anywhere on site, the Government of Nunavut, Department of Environment (GN DoE) shall be contacted. This includes the local Conservation Officer in Baker Lake and the Environmental Compliance Manager.

4.2.6 Spill of Radiologically Contaminated Drill Cuttings

Should mineralized drill cuttings be spilled, report the spill to the Facility and Logistics Coordinator, Kiggavik and SHEQ Supervisor or designates immediately. Any amount of radioactive materials must be collected into appropriate storage containers (i.e. cuttings bag or IP3 pail). The site will be remediated as much as practical, meeting/exceeding the minimum necessary abandonment criteria of less than 1 $\mu\text{Sv/h}$ above background at a height of 1 m.

4.2.7 Spill of Drill Return Water or Cuttings into Water

In the event of a spill of any amount of potentially contaminated/drill return water or cuttings into a water body, any activities which are the possible cause will cease until a review of the incident has taken place. Report the spill to the Facility and Logistics Coordinator, Kiggavik and SHEQ Supervisor or designates immediately. Water and potentially sediment samples will be taken and gamma survey conducted on the affected area. Activities will continue once the District Geologist, Nunavut or designate is satisfied with the corrective measures taken.

5 Spill Reporting Requirements

This Plan is initiated by the Project Geologist or designate, which includes initiating response, documenting associated activities and reporting the spill within 24 hours to the NT-NU 24-HOUR SPILL REPORT LINE. All emergency contact phone numbers are located in Appendix I Contact List.

Based on Environment Canada's recommendation, all releases of harmful substances, regardless of quantity are immediately reportable where the release is:

- Near or into a water body
- Near or into a designated sensitive environment or sensitive wildlife habitat
- Poses an imminent threat to human health or safety
- Poses an imminent threat to listed species at risk or its critical habitat

The Government of Nunavut *Spill Contingency Planning and Reporting Regulations* consider any spill of flammable liquids greater than 100 L a reportable spill. In addition, any quantity of spilled radioactive material is reportable. The following table (Schedule B) is adapted from the *Spill Contingency Planning and Reporting Regulations* and outlines the quantities of spilled product that requires reporting to the Government of Nunavut-Department of Environment (GN-DoE).

SCHEDULE B

(Section 9)

<i>Item No.</i>	<i>TDGA Class</i>	<i>Description of Contaminant</i>	<i>Amount Spoiled</i>
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 l.
3.	2.2	Compressed gas (non-corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100 l.
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 l
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25 kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 l or 50 kg
11.	5.2	Organic Peroxides	1 l or 1 kg
12.	6.1	Poisonous substances	5 l or 5 kg
13.	6.2	Infectious substances	Any amount
14.	7	Radioactive	Any amount
15.	8	Corrosive substances	5 l or 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 l or 50 kg
17.	9.2	Environmentally hazardous	1 l or 1 kg
18.	9.3	Dangerous wastes	5 l or 5 kg
19.	9.1 (in part)	PCB mixtures of 5 or more parts per million	0.5 l or 0.5 kg
20.	None	Other contaminants	100 l or 100 kg

If you are in doubt as to whether or not a spill is reportable, it is best to report the spill.

5.1 Spill Response Contact List

The Exploration Emergency Contacts is available in Appendix I of this Plan. The list is also made available in drill rigs and field offices.

5.2 Reporting Requirements

1. Collect Required Information

During spill response, the following information should be generated and reported (complete the Spill Report Form found in Appendix II):

- Date and time of spill
- Location of spill
- Direction the spill is moving
- Name of contact person at location of spill, and phone number where applicable
- Type and quantity of contaminant
- Cause of spill
- Whether spill is contained or stopped
- Description of the existing contaminant
- Action taken to contain, recover, clean-up and dispose of spilled material

2. Report

It is the responsibility of the senior AREVA staff on site to report spills to regulatory agencies. Contractors are asked to report all spills to the Project Geologist or designate immediately who will notify the following agencies/people (See Appendix I Exploration Emergency Contacts).

- Project Geologist or designate (if not on site during incident)
- District Geologist, Nunavut
- Facility and Logistics Coordinator, Kiggavik
- SHEQ Supervisor (if not on site during incident)
- NT-NU 24-Hour Spill Report Line (within 24hours) by phone; use the information collected for the spill report form
- Coordinator, SHEQ Exploration
- Vice President, Exploration
- Manager, Nunavut Affairs and Baker Lake office
- AANDC Manager of Field Operations (within 24hours)
- A copy of the written spill report form must be submitted to the GN-DoE, AANDC (Water Resources Office and Manager of Field Operations), NWB and Environment Canada (EC) within seven calendar days of the incident
- A detailed report must be submitted to the GN-DoE, AANDC, NWB and EC within 30 days
- Submit a copy of the spill report form and detailed report to Kivalliq Inuit Association (KIA)

6 Training and Practice Drills

All employees and contractors must be familiar with the resources for spill response which include this Plan, MSDS sheets, and training for spill response. Involvement of other employees or third parties may occasionally be required. Annual refreshers are conducted to review the procedures within this plan. Practice drills are conducted to familiarize field-personnel with emergency response equipment and ensure awareness of product hazards.

7 References

AREVA Resources Canada Inc. 2013. Environmental Code of Practice. June 2013.

AREVA Resources Canada Inc. 2011. Kiggavik Project Winter Road Plan. May 2011.

Canadian Council of Ministers of the Environment. *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products*. 2003.

Canadian Council of Ministers of the Environment. *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products*. 2003

Environment Canada. 2008. *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*. June 2008.

Fire Marshal, Tim Hinds with the Government of Nunavut-Community and Government Services via email (Trevor Carlson, AREVA) on November 20, 2007.

Government of Nunavut Environmental Protection Service Department of Sustainable Development. *Contingency Planning and Spill Reporting in Nunavut*.

Government of Nunavut. 2010. *Environmental Protection Act*. March 2010.

Government of Nunavut R-068-93. 1998. *Spill Contingency Planning and Reporting Regulations*. July 1998.

Indian and Northern Affairs Canada (INAC). 2007. *Guidelines for Spill Contingency Planning*. April 2007.

Northwest Territories-Nunavut Spill Report Form. Available at: <http://gov.nu.ca/environment/documents/spill-response>

Appendix I **Exploration Emergency Contacts**

Available at:

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EXPLORATION EMERGENCY CONTACTS

ARC Public Relations Office Manager, Communications	866-99AREVA 306-343-4503
Vice President, Exploration – Patrick Ledru	306-343-4078 (Business) 306-291-3638 (Cell)
Director, Exploration Projects – Craig Cutts	306-343-4668 (Business) 306-244-6203 (Home) 306-230-3973 (Cell) (only when in field)
Coordinator, SHEQ Exploration – Stephanie Forseille	306-343-4693 (Business) 306-467-4820 (Home)
District Geologist – West Athabasca – Dwayne Morrison	306-343-4669 (Business) 306-955-7636 (Home) 306-291-5780 (Cell)
District Geologist – Nunavut - John Robbins	306-343-4513 (Business) 306-955-7418 (Home) 306-361-4520 (Cell)

Saskatchewan

Police (RCMP) Regina-central dispatch	306-310-7267
Spill Control Center	800-667-7525
Fire	800-667-9660
Saskatchewan Ministry of Environment (SMOE) • Andrew Rempel, Ecological Protection Specialist • Rayelle Boyer, Ecological Protection Specialist	306-953-2400 Prince Albert Office 306- 236-7553 Meadow Lake Office
Injury (When in Vicinity of Saskatchewan Mine or Exploration Site)	
McClellan Lake (Safety & Health)	306-633-2177 (Ext 405 or 403)
Points North (Paramedic)	306-361-6241
Key Lake	306-884-2100 (Ext 4545)
Cigar Lake	306-633-2072 (Ext 3206)
McArthur River	306-633-2001 (Ext 8888)
Air Ambulance (Saskatchewan)	888-782-8247
Saskatchewan Labour (LWRS)	800-667-5023

Nunavut

Police (RCMP) - Baker Lake	867-793-1111
Spill Control Center	867-920-8130
Fire – Baker Lake CO; GN DoE	867-793-2944; 867-975-7748
Nunavut Regulatory Contacts	
Kivalliq Inuit Association (KIA) • Jeff Hart, Water & Marine Environment Specialist	867-793-4468 Baker Lake
Aboriginal Affairs and Northern Development Canada (AANDC) • Henry Kablalik, Resource Management Officer III (Kivalliq Region) • Christine Wilson, Water Resource Officer – Kivalliq Region	867-645-2831 Rankin Inlet 867-975-4296 Iqaluit
Nunavut Water Board (NWB) • Sean Joseph, Technical Advisor • Phyllis Beaulieu, Manager Licensing	867-360-6369 Gjoa Haven 867-360-6338 Gjoa Haven
Injury (When in Vicinity of Nunavut Exploration Site)	
Baker Lake Office	867-793-2000
Baker Lake Health Centre	867-793-2816
Nunavut (Kiggavik Project) Camp Phone	306-683-9562 or 306-683-7048
Air Ambulance (Nunavut)	867-645-4455 (Rankin Inlet)
Mine Inspector (Nunavut WSCC)	867-979-8527 and 1-800-661-0792

Alberta

Police (RCMP) - Fort Chipewyan	780-697-3665
Spill Control Center	800-222-6514
Fire	780-427-3473 or 310-3473-no area code
Injury (When in Vicinity of Alberta Exploration Site)	
Air Ambulance (Alberta)	800-661-3822