



2015



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AREVA Resources Canada Inc.

KIGGAVIK PROJECT FIELD PROGRAM

2015 ANNUAL REPORT

Date of issue: January 2016



January 29, 2016

VIA EMAIL & MAIL

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Development Canada
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Dear All:

Re: Kiggavik Project Field Program 2015 Annual Report

AANDC Land Use Permit N2014C0001
KIA Land Use Licence KVL306C02
NWB Water License 2BE-KIG1318

Please find enclosed, the 2015 AREVA Resources Canada Inc. (AREVA) Annual Report for the Kiggavik Project exploration field program. The hard copies of these documents have been sent via regular mail. AREVA believes this annual report provides a comprehensive summary of the activities conducted and fulfills the Nunavut Impact Review Board (NIRB) screening decision Condition 5, Aboriginal Affairs and Northern Development Canada (AANDC) permit Condition No. 6, and Nunavut Water Board (NWB) License Part B, Item 2. Should you have any questions or comments, please do not hesitate to contact myself at (306) 343-4035 or Bradley.Pohler@areva.com, or John Robbins at (306) 343-4513 or John.Robbins@areva.com.

Regards,

Brad Pohler

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Enclosure: Kiggavik Project Field Program 2015 Annual Report
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Kiggavik Project Field Program

2015 Annual Report

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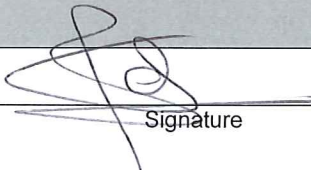
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EXECUTIVE SUMMARY

The following Annual Report provides a summary of the 2015 Kiggavik Project exploration field program conducted by AREVA Resources Canada Inc. (AREVA). This submission is required by Part B, Item 2 of Licence no. 2BE-KIG1318 issued by the Nunavut Water Board (NWB) and condition six of the Land Use Permit N2014C0001 issued by Aboriginal Affairs and Northern Development Canada (AANDC).

The 2015 field program included geophysical surveys to identify potential areas for further exploration and drilling operations to evaluate areas for potential uranium mineralization. Operations were based out of the Kiggavik camp with support provided by helicopter services and the Baker Lake office. The Kiggavik camp was opened on June 11, 2015 and operations were complete and camp closed by August 27, 2015. During this period, a total of 8,855 metres were drilled in 35 drill holes using diamond core equipment.

The Kiggavik Project Management Plans were implemented throughout the season to prevent or reduce any potential adverse effects from exploration activities. AREVA also maintained its ISO 14001: 2004 and OHSAS 18001: 2007 certifications for the Integrated Management System. Occupational health, safety and radiation protection programs were implemented to ensure workers performed in a safe and responsible manner and were not exposed to adverse effects from uranium exploration activities. There were no lost time incidents involving AREVA personnel or contractors. A community engagement program was carried out to support all aspects of the Kiggavik Project, including the exploration field program. The Management Plans and Integrated Management System were effective in guiding the exploration operations toward a successful season.

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1 Summary of Kiggavik 2015 Field Program

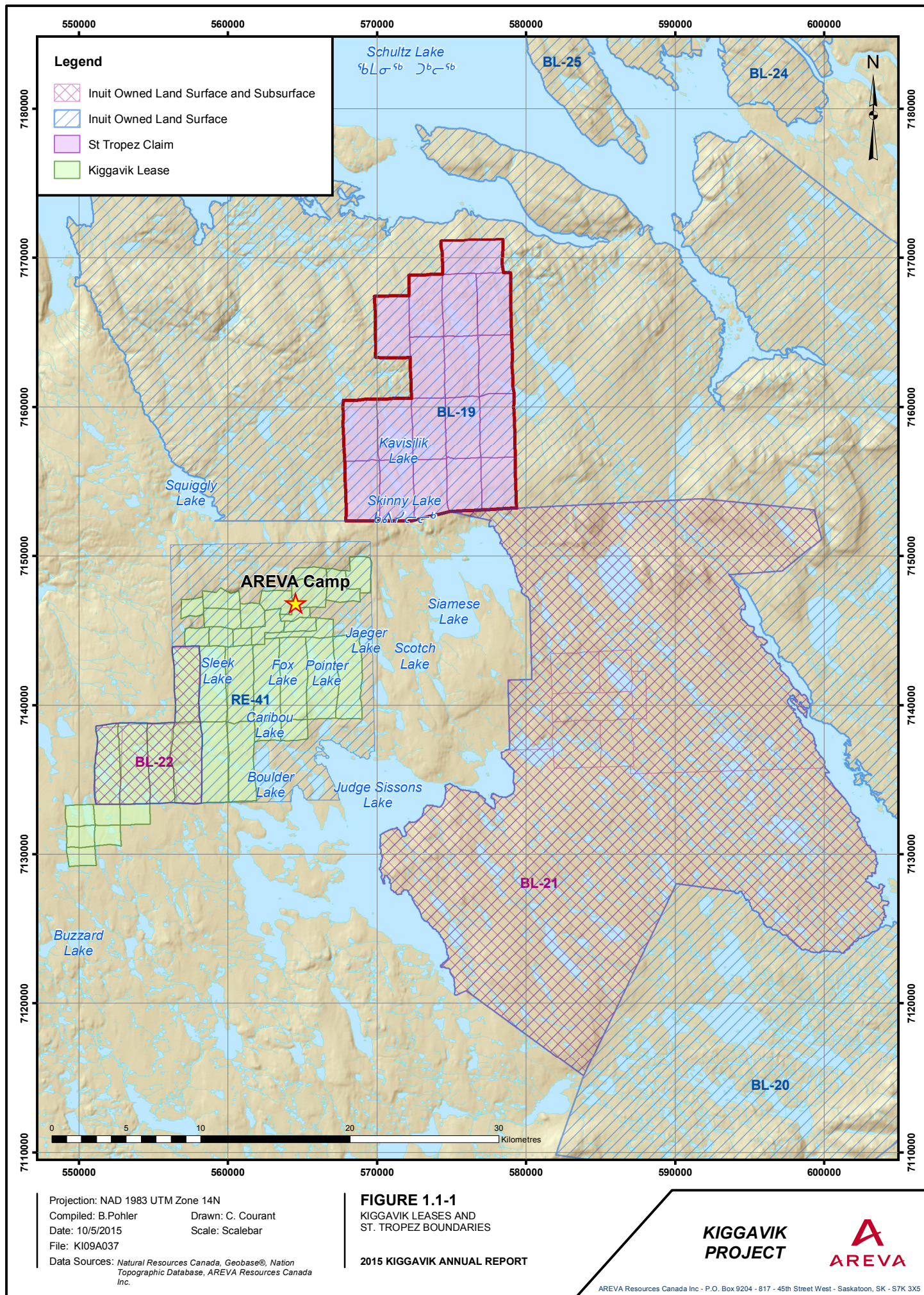
1.1 General

The Kiggavik uranium exploration project (Kiggavik Project) is located 80 kilometres (km) west of Baker Lake, Nunavut and is operated by AREVA Resources Canada Inc. (AREVA). The project includes the Kiggavik and St. Tropez mineral leases collectively termed the Kiggavik Project (See Figure 1.1-1). During the 2015 field program, AREVA and its contractors completed 8,855 metres (m) of exploration drilling on the Kiggavik Project leases. Ground gravity, magnetic, and VLF geophysical surveys were completed on nine grid areas for a total of 346.6 km. Staking occurred for eight separate claims totalling approximately 4,707 additional hectares. No prospecting, geological mapping, thermistor installation or packer-testing were conducted in 2015.

Operations were based out of the Kiggavik camp which opened on June 11, 2015. The remaining drilling and support staff mobilized to site June 13 to support drilling operations that commenced on June 16. The camp accommodated a maximum of 40 persons with an average of 32 persons during the season. Support was provided by the Baker Lake office and transport was provided by helicopter services. Drilling was complete August 22 and camp closed on August 27, 2015. Main Project contributors are shown in Table 1.1-1.

Table 1.1-1: Kiggavik Project Contributors

Activity	Contributors
Management	AREVA
Environment, Safety and Radiation Protection	AREVA
Geological logging and probing	AREVA
Camp Operations & Maintenance	AREVA; Peter's Expediting Ltd.
Wildlife Monitoring	AREVA; Peter's Expediting Ltd.
Expediting	AREVA & Peter's Expediting Ltd.
Fuel and other Overland Transportation	Peter's Expediting Ltd.
Drilling	Boart Longyear
Helicopter and Logistics	Kivallingmiut Aviation (Great Slave Helicopters)
Occupational First Aid & Catering	5136 Nunavut Ltd (1984 Inc.)
Ground Geophysics – ground gravity survey	MWH Geo-Surveys Inc.
Ground Geophysics – Magnetics/VLF	AREVA; MWH Geo-Survey Inc.



Projection: NAD 1983 UTM Zone 14N
 Compiled: B.Pohler Drawn: C. Courant
 Date: 10/5/2015 Scale: Scalebar
 File: KI09A037
 Data Sources: Natural Resources Canada, Geobase®, Nation
 Topographic Database, AREVA Resources Canada
 Inc.

FIGURE 1.1-1
 KIGGAVIK LEASES AND
 ST. TROPEZ BOUNDARIES

2015 KIGGAVIK ANNUAL REPORT

**KIGGAVIK
 PROJECT**



1.2 Drilling, Sampling and Testing

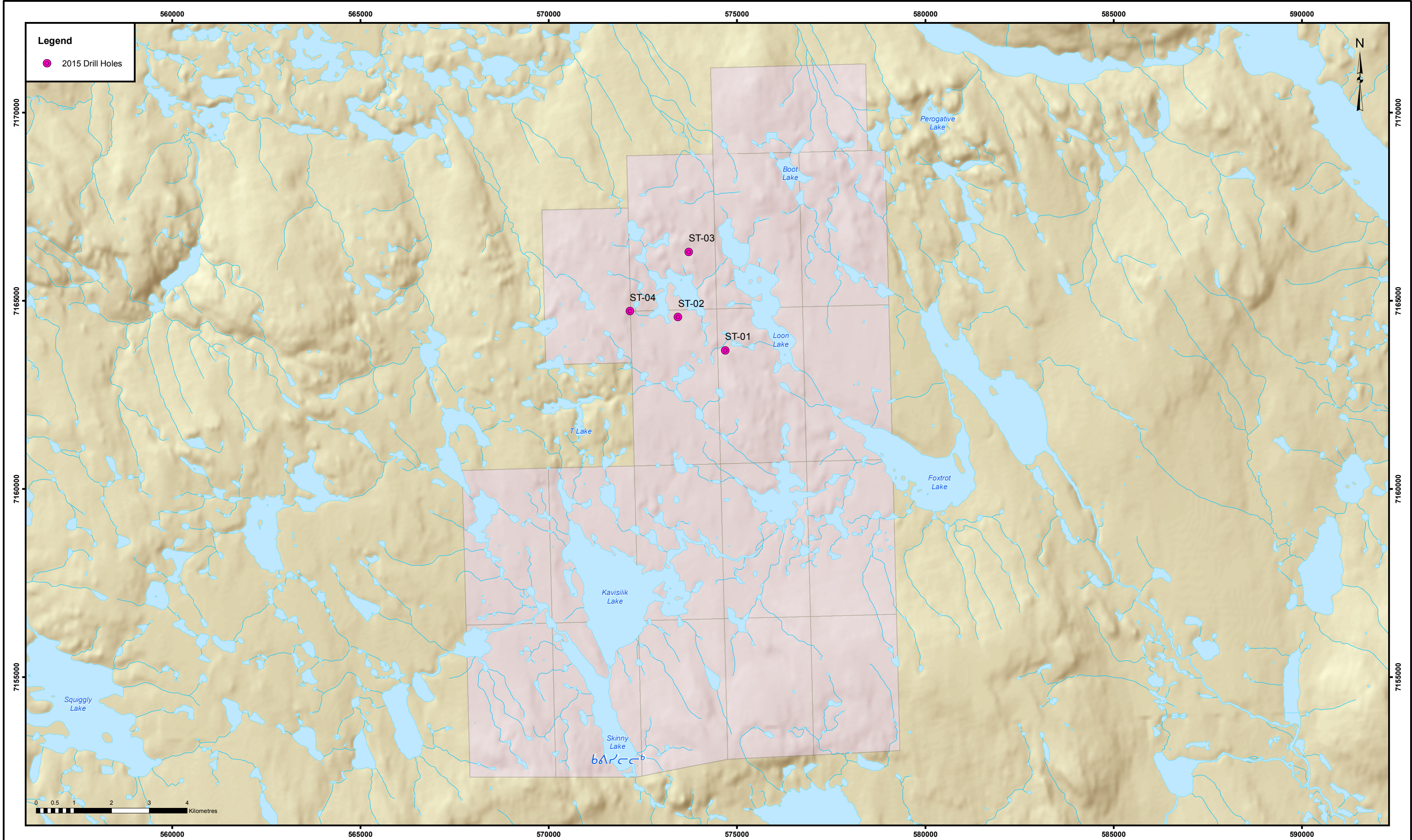
Geological exploration was primarily diamond drilling in St. Tropez, BS, Andrew Lake North, 85W, Caribou, Hotel90, Jane Extension, and Contact grids (See Figure 1.2-1 and Figure 1.2-2). Additionally, two research drill holes were also completed in the Andrew Lake deposit and in the Center Zone deposit.

As per the NWB Licence, Part F, Item 7, AREVA must record the depth of permafrost where drilling activity has penetrated below the permafrost layer. The pneumatic packer testing data was not conducted as these are activities specific to mine development. As further mine development activities are conducted, the relevant data will be provided in subsequent annual reports.

All drill core was logged and core samples (non-mineralized and mineralized) were collected for laboratory testing. Refer to Table 1.2-1 for a summary of the 2015 drilling program.

Table 1.2-1: Summary of 2015 Drill Holes

HOLE ID	Zone	UTM X Easting	UTM Y Northing	Azimuth /Dip	Start	Finish	Depth (m)
85W-009	85W	557577	7144540	200/-80	June16	June 21	384
85W-010	85W	557669	7144590	200/-80	June 22	June 26	304
85W-011	85W	557497	7144534	180/-65	June 27	July 1	312
85W-012	85W	557751	7144991	200/-75	July 1	July 3	150
85W-013	85W	557609	7144636	240/-75	July 4	July 8	273
85W-014	85W	557720	7142456	180/-80	July 9	July 13	141
BS-03	BS Grid	551509	7137861	180/-72	July 14	July 18	270
BS-04	BS Grid	551764	7137988	160/-75	July 19	July 24	267
BS-05	BS Grid	552130	7138133	180/-70	July 25	July 30	309
CONT-016	Contact Grid	550135	7129682	180/-80	June 18	June 21	273
CONT-017	Contact Grid	550226	7129802	125/-82	June 22	June 27	378
CONT-018	Contact Grid	550226	7129802	125/-55	June 27	June 30	201
CONT-019	Contact Grid	550264	7129840	125/-70	July 1	July 4	234
CONT-020	Contact Grid	550277	7129903	125/-75	July 4	July 9	279
CONT-021	Contact Grid	550277	7129903	125/-55	July 10	July 14	204
CONT-022	Contact Grid	550016	7129598	120/-70	July 15	July 18	229
CONT-023	Contact Grid	549991	7129553	120/-70	July 18	July 23	204
CONT-024	Contact Grid	549963	7129511	120/-70	July 24	July 26	144
CONT-025	Contact Grid	549814	7129421	125/-75	July 26	July 31	297
CONT-026	Contact Grid	549724	7129422	130/-65	July 31	Aug 5	246
CONT-027	Contact Grid	550869	7130364	125/-70	Aug 5	Aug 9	259
ST-01	St-Tropez project	574682	7163682	180/-80	July 13	July 18	315
ST-02	St-Tropez project	573435	7164567	210/-75	July 19	July 25	300
ST-03	St-Tropez project	573720	7166298	240/-45	July 26	July 28	114



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Data Sources: Natural Resources Canada, Geobase®, Nation
Topographic Database, AREVA Resources Canada
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FIGURE 1.2-2

2015 DRILLING ST TROPEZ AREA

2015 KIGGAVIK ANNUAL REPORT

HOLE ID	Zone	UTM X Easting	UTM Y Northing	Azimuth /Dip	Start	Finish	Depth (m)
ST-04	St-Tropez project	572155	7164728	200/-75	July 29	Aug 3	322
AND-15-01	Andrew L. C-DDH	553382	7134623	310/-70	July 31	Aug 4	309
AND-15-02	Andrew L. North	553313	7135458	195/-80	Aug 5	Aug 8	282
AND-15-03	Andrew L. North	553172	7135472	195/-80	Aug 8	Aug 11	225
AND-15-04	Andrew L. North	553428	7135454	180/-80	Aug 12	Aug 14	238
CZ-15-01	Center Zone	565882	7147296	155/-70	Aug 4	Aug 7	162
JE-03	Jane extension	552790	7132338	160/-75	Aug 9	Aug 11	168
JE-04	Jane extension	553001	7132531	170/-75	Aug 12	Aug 15	291
JE-05	Jane extension	553147	7132348	220/-70	Aug 16	Aug 19	267
CARB-009	Caribou	564056	7138012	160/-75	Aug 15	Aug 17	267
HOT90-01	Hotel 90	552583	7131160	160/-65	Aug 20	Aug 22	237
TOTAL:							8,855 m

1.2.1 85 West

Results of 2015 program (6 holes/1,564 m):

The 2015 drilling at 85 West encountered a massive sequence of fresh to altered Hudsonian granite in the northern portion of the area and Woodburn metasediments in the vicinity west of Sleek Lake. The follow-up of the initial discovery hole in 2014 successfully extended the known mineralization in the area. Three of the five holes drilled in the 85 West northern portion encountered mineralization, the two other holes only outlined prospective alteration. 85W-014 testing the forward gravity modelling in the vicinity west of Sleek Lake encountered 72 metres of overburden and is considered the reason for the gravity anomaly in the area.

1.2.2 BS Grid

Results of 2015 program (3 holes/846 m):

All three holes drilled at BS Grid intersected prevalent granite and other minor intrusives with marginal amounts of structure consisting of fracturing and local proto-breccia as well as localized weak bleaching and chlorite alteration. Only BS-03 encountered a notable structured and altered zone between 182.2-219.2 metres. No mineralization was intersected.

1.2.3 Contact

Results of 2015 program (12 holes/2,948 m):

At Contact in 2015, drilling tested a structural corridor along a NE-SW trend that is outlined by geophysics and that contains Contact mineralization. Lithologies consisted of dominantly Archean granitic gneiss with lesser amounts of syeno-granite/granite intrusions and variable amount of generally narrow lamprophyres. Seven drill holes encountered mineralization the mineralization commonly observed within structural zones coupled with varying degrees of alteration.

1.2.4 St. Tropez

Results of 2015 program (4 holes/1,051 m):

ST-01 and ST-03 intersected metavolcanics throughout with local variable albitization while ST-04 encountered essentially granite that was strongly altered to 130.5 metres and weakly altered to fresh from 130.5-246.8 metres. Alternating intervals of strongly altered granitic gneiss and granite from 246.8-322.0 metres. A large fault zone was observed in ST-01 and none of the three bore holes intersected mineralization.

ST-02 encountered metavolcanics in the upper portion of the hole and granitic gneiss towards the end of the hole. A large fault zone intersected between 220.0-234.4 metres is considered the contact between the metavolcanics and the granitic gneiss. Trace mineralization was observed between 193.3-193.5 metres associated with strong alteration.

1.2.5 Andrew Lake and Kiggavik Center Zone

Results of 2015 program (2 holes/471 m):

The two holes drilled at Kiggavik in 2015 were designed as reference drill holes to gathered additional information regarding the structural settings and uranium mineralization of the Andrew Lake and Kiggavik Centre Zone Deposits. AND-15-01 encountered dominant metasediments and minor granite and granitic gneiss and CZ-15-01 prevalent psammopelite and quartzite with minor schist and syenite. The holes were mineralized.

1.2.6 Andrew Lake North

Results of 2015 program (3 holes/745 m):

The three holes drilled within the Andrew North gravity anomaly intersected prevalent granite and minor psammopelitic gneiss and granitic gneiss, in addition minor faulting, quartz breccias,

and localized alteration and bleaching was recorded. None of the drill holes encountered mineralization.

1.2.7 Jane Extension

Results of 2015 program (3 holes/726 m):

Drilling at Jane Extension defined alteration associated with structures within both the Woodburn Group metasediments and the Archean granitic gneisses. Quartz breccias were seen in all of the holes. The target area outlined many features that occur in known deposits but no mineralization was intersected.

1.2.8 Caribou

Results of 2015 program (1 hole/267 m):

CARB-09 encountered weakly altered pelitic gneiss with local intervals of bleaching and argillization associated with structural intervals and no mineralization.

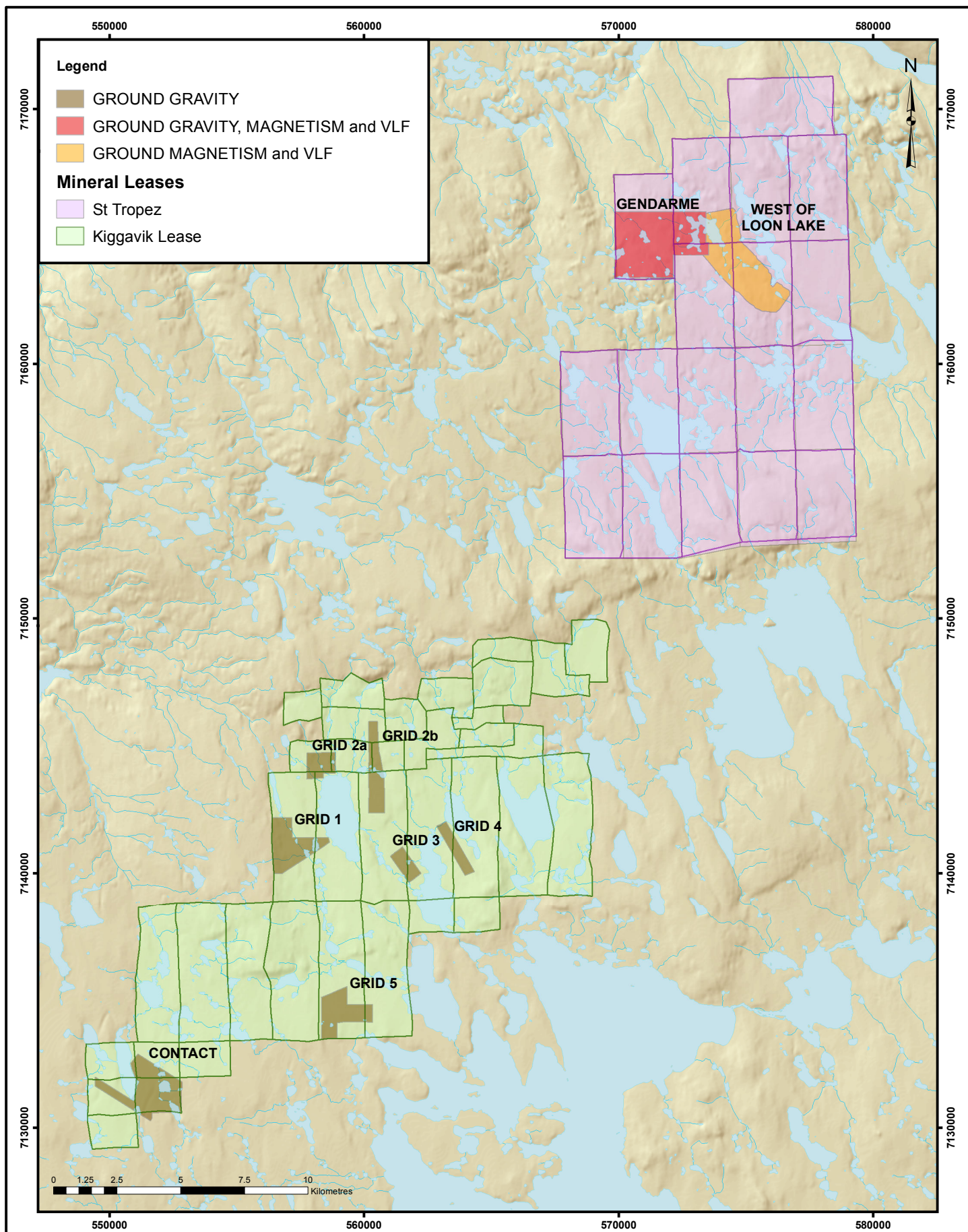
1.2.9 Hotel90

Results of 2015 program (1 hole/237 m):

HOT90-01 intersected weak to moderate primary hematite rich granitic gneiss. No mineralization was observed.

1.3 Geophysics

A ground geophysical program was completed in June/July 2015. Seven grids were surveyed on the Kiggavik lease and two grids were covered in the St Tropez lease as shown by Figure 1.3-1: *2015 Geophysical Surveys* and listed in Table 1.3-1: *2015 Ground Geophysics Program*.



Projection: NAD 1983 UTM Zone 14N
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 File: KI02A015
 Data Sources: Natural Resources Canada, Geobase®, Nation
 Topographic Database, AREVA Resources Canada
 Inc.

FIGURE 1.3-1
 2015 GEOPHYSICAL SURVEYS
 2015 KIGGAVIK Annual Report

**KIGGAVIK
 PROJECT**



Table 1.3-1: 2015 Ground Geophysics Program

Lease	Grid name	Gravity (kilometers)	Magnetics & VLF-EM (kilometers)
Kiggavik	Grid1	14.28	0.00
	Grid2a	6.34	0.00
	Grid2b	8.91	0.00
	Grid3	5.07	0.00
	Grid4	6.79	0.00
	Grid5	13.68	0.00
	Contact 2015	20.26	0.00
St Tropez	Gendarme	73.95	73.95
	West of Loon Lake	61.70	61.70
Total		210.98	135.65

In the Kiggavik area, the ground survey consisted of acquiring gravity data to assist in the levelling of historical surveys and to link "floating" grids. In the St Tropez area two types of ground surveys were conducted:

- a ground gravity survey on the Gendarme grid, and
- Magnetic and VLF surveys on both the Gendarme and the West of Loon Lake grids.

MWH Geo-Surveys Inc. was the contractor who performed both the ground gravity, magnetic, and VLF surveys.

AREVA personnel were in charge of data QA/QC to ensure that the work was completed in a safe and environmentally responsible manner and that personnel adhered to AREVA standards and procedures.

1.4 Inspections

Inspections of the field activities were carried out by Aboriginal Affairs and Northern Development Canada (AANDC) on July 23, 2015 and the Kivalliq Inuit Association (KIA) on August 19, 2015. Refer to Appendix A for further detail regarding compliance.

1.4.1 Aboriginal Affairs and Northern Development Canada

An inspection was conducted by the AANDC Water Resource Officer on July 23, 2015 for the Land Use Permit N2014C0001. The inspectors visited the Kiggavik camp, drilling area, and fuel storage areas. The recommendations and/or concerns were provided in the Water Licence Inspection Report, and are outlined in Table 1.4-1. The inspector did not identify any unacceptable conditions within the camp area.

Table 1.4-1: AANDC Inspection – July 23, 2015

RECOMMENDATIONS/CONCERNS	ACTION TAKEN
1. The 2014 spill was mentioned by the inspector. The inspector was concerned that if a rainfall event caused the spill, cuttings may not be stored appropriately.	1. AREVA chooses discharge locations at each drill site on a site by site basis. As required by the current water license issued by the NWB, discharge sites are located at a minimum of 31 m beyond the ordinary high water mark of any nearby water bodies. All drill mud solids or cuttings in non-mineralized zones are deposited on the ground, in a natural low-lying depression. Discharge locations are regularly inspected during drilling operations to ensure proper containment.
2. A 2015 spill of non-mineralized cuttings into a nearby water body (N64° 25' 18" W 97° 48' 17") was mentioned by the inspector. Concern was noted regarding the lack of	2. AREVA provided two spill reports to the regulators which indicate the spill response procedures used during a spill involving drill cuttings. In addition, the spill contingency plan was updated to

RECOMMENDATIONS/CONCERNS	ACTION TAKEN
information available in the Spill Contingency Plan regarding prevention and emergency response to cuttings spills.	outline preventative measures implemented at drill sites.
3. The inspector noted that the Spill Contingency Plan contact information should include the AANDC emergency contact.	3. The Spill Contingency Plan was updated to include the AANDC contact and reads: <i>AANDC Manager of Field Operations</i> as specified under Part H Item 4(b) of the current Nunavut Water License.

1.4.2 Kivalliq Inuit Association

The KIA conducted an inspection of the Kiggavik camp and fuel storage areas on August 19, 2015 for the Land Use Licence KVL306C02. The inspector noted that items in previous inspection were all addressed including radioactive compound secured, waste properly disposed of, and no contaminated soil present. Additionally, it was noted that the site was well-kept, material was appropriately stored and off the ground, and spill kits were available where necessary. The inspector had no recommendations following the 2015 site inspection.

2 Summary of Planned Activities for 2016

2.1 General

No drilling, geophysics, prospecting, or geological mapping are planned for the 2016 field season.

The plan for the upcoming field season consists of a small summer program of approximately two weeks to transition Kiggavik camp into care and maintenance mode. Additional necessary maintenance will be completed as required. The crew will commence mobilization in early July. All operations will be conducted from Baker Lake with support provided by helicopter services and AREVA's Baker Lake office.

2.2 Winter Haul

The drilling contractor equipment and storage seacans will be moved from the Kiggavik campsite to Baker Lake during the 2016 Winter Haul. From Baker Lake, the equipment will be shipped via marine transport to a southern destination of the drilling contractor's choosing.

2.3 Environmental Monitoring

The 2016 environmental monitoring program will continue to be conducted by AREVA staff during the short summer program with support provided by maintenance crew as necessary. Wildlife monitoring will be conducted by Wildlife Monitors from Baker Lake and the maintenance crew on site. AREVA staff will be responsible for the implementation of the Management Plans which were designed to ensure compliance with regulatory conditions and internal AREVA requirements (see Appendix C).

3 Environmental Monitoring and Protection

AREVA is committed to taking every reasonable precaution toward ensuring the protection and conservation of the natural environment. This commitment is reflected in AREVA's Environmental Policy and is supported through a comprehensive environmental program for the exploration activities at the Kiggavik Project.

The 2015 field season was conducted in accordance with the ISO 14001:2004 certification for the Exploration Department's Environmental Management System. The ISO 14001 standard outlines the requirements for an Environmental Management System which enable an organization to implement a policy and objectives which address legal requirements and significant environmental aspects. The standard supports environmental protection and prevention of pollution in balance with socio-economic needs.

The following Management Plans were submitted to regulatory agencies prior to commencing the field season:

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

These Plans ensure compliance with regulatory conditions and internal AREVA requirements and guide the development of best management practices and procedures to mitigate any potential adverse environmental impacts. AREVA intends to operate in accordance with commitments made in the Plans; however, such Plans are living documents and lessons learned during the field season and AREVA's commitment to continual improvement occasionally warrant revision of these Plans. The Plans were made available to personnel throughout the 2015 field season, and have been included with the submission of this Annual

Report (refer to Appendix C). The following sections summarize the implementation and overall effectiveness of these plans during the field season.

3.1 Uranium Exploration Plan

The Uranium Exploration Plan is designed to meet the requirements of the Water Licence issued by the Nunavut Water Board (2BE-KIG1318) and the *Mineral Exploration Guidelines of Saskatchewan*, also referred to as Best Management Practices (BMPs). Although current activities are not regulated by the Canadian Nuclear Safety Commission (CNSC), the Uranium Exploration Plan is designed in accordance with the CNSC Regulations. The plan discusses activities related to uranium exploration including:

- Training requirements
- Drilling practices
- Core storage and logging
- Radioisotopes
- Spills
- Shipping radioactive material
- Site abandonment and restoration

Drill core samples and two sets of research core (low specific activity) were shipped on September 1, 2015 via marine transport from Baker Lake, Nunavut to Ste. Catherine, Quebec. The shipment was then transported via truck to the AREVA Marshalling Yard in Saskatoon, Saskatchewan. The split drill core samples from the 2015 exploration program were transported by truck to the Saskatchewan Research Council (SRC) located in Saskatoon, Saskatchewan. The two sets of cores from reference drill holes were transported to the Moffatt Lake Core Storage area for future exploration research. The Shippers Declaration for Dangerous Goods was completed by appropriately trained AREVA staff in conjunction with the carrier Nunavut Sealink & Supply Inc. (NSSI).

3.2 Waste Management Plan

In accordance with AREVA's Environmental Policy, a Waste Management Plan was developed to guide waste segregation, storage, and disposal while mitigating potential adverse environmental impacts. AREVA is committed to ensuring waste generated at the Kiggavik Project site is collected, stored, transported and disposed of in accordance with regulatory requirements. The Waste Management Plan is reviewed and revised upon the identification of new waste streams, new handling methods or requirements and improved logistics.

In the development of this plan, potential waste streams were identified, followed by identification of a treatment strategy and disposal plan. All site staff and contractors are trained in the aspects required to effectively adhere to the plan (i.e. proper identification of waste, proper storage methods, proper handling and transport methods).

All drill cuttings with a uranium concentration greater than 0.05 percent are collected and stored in the radioactive storage compound for future management (Photograph 3.2-1). Food, paper and non-treated wood waste are incinerated onsite (Photograph 3.2-2).



Photograph 3.2-1: Kiggavik Radioactive Storage Compound



Photograph 3.2-2: Kiggavik Camp Incinerator

As outlined in the conditions of the Nunavut Water Board Licence No. 2BE-KIG1318, hazardous waste generated through the course of the operation must be disposed of at a licensed facility. Following the completion of the 2015 field season, hazardous waste was shipped via marine transport to a licensed disposal facility in Quebec. The shipment contained both hazardous and non-hazardous waste including waste ash, used filters, punctured aerosol cans, waste oil, waste fuel, and absorbent rags and was disposed of by Qikiqtaaluk Environmental at Solva-Rec Environmental Inc. No radioactive wastes were shipped offsite. Trained AREVA personnel were involved in the entire shipping process and verified the disposal of the waste at the licensed facility. Table 3.2-1 is an inventory of the hazardous waste that was disposed of following the 2015 season.

Table 3.2-1: Hazardous Waste Shipment Inventory

Waste Ash Drums (205 L)	Used Filter Drums (205 L)	Aerosol Can Drums (205 L)	Waste Oil Drums (205 L)	Waste Fuel Drums (205 L)	Oil/Fuel Drums (205 L)	Absorbent Rags (1 m³)
19	4	2	14	10	2	8

An inventory of all waste and material remaining on site was recorded upon seasonal shutdown and is summarized in Table 3.2-2.

Table 3.2-2: Kiggavik Site End of Season Inventory 2015

Type of Waste/Product	Quantity	Storage Method
Waste oil and fuel	None	Shipped to Solva-Rec Environmental Inc. following the 2015 field season. See Table 3.2-1: Hazardous Waste Shipment Inventory.
Incinerator Ashes	None	Shipped to Solva-Rec Environmental Inc. following the 2015 field season. See Table 3.2-1: Hazardous Waste Shipment Inventory.
Diesel Fuel	5 – 379 L double walled slip tanks	Double walled slip tanks stored on timbers off ground near the generator building for future program use.
Scrap metal and scrap drilling supplies (rubber hose plastic pails)	Approximately 20,000 pounds	Loaded inside one sea container at site to be transported to Baker Lake over the winter road in 2016.
Scrap drill rods	Approximately 40,000 pounds	Drill rods loaded on top of trailer to be transported to Baker Lake over the winter road in 2016.
Engine filters Oil and Fuel	None	Shipped to Solva-Rec Environmental Inc. following the 2015 field season. See Table 3.2-1: Hazardous Waste Shipment Inventory.
Oil contaminated rags	None	Shipped to Solva-Rec Environmental Inc. following the 2015 field season. See Table 3.2-1: Hazardous Waste Shipment Inventory.
Empty/used paint cans	None	Shipped to Solva-Rec Environmental Inc. following the 2015 field season. See Table 3.2-1: Hazardous Waste Shipment Inventory.
Small Generator and small engine Oil	5 – 1 L jugs	In secondary containment in generator building. Plans to remove off site summer of 2016.
Jet Fuel	4200 L	Stored in the Enviro-tanks at fuel cache for 2016 use.
Diesel Fuel	47800 L	Stored in the Enviro-tanks at fuel cache for future program use.
Gasoline	1 – 20 L plastic jerry cans	Stored inside wooden storage building at site in mini berm. Plans to remove off site summer of 2016, or use during 2016 program.
Large Generator Oil	1 – 20 liter pails 15W 40 oil	Stored inside building on secondary containment. Plans to remove off site

Type of Waste/Product	Quantity	Storage Method
		summer of 2016.
Propane	24 – 100 lb bottle	Upright in a locked fence compound.
Calcium Chloride	1000 Bags – 50, 000 lbs	Stored inside a sea container to be transported to Baker Lake over the winter road in 2016.
Cement	3 Bags – 1800 lbs	Stored inside a sea container to be transported to Baker Lake over the winter road in 2016.
Boart Longyear Supplies	<u>Left at Camp Fall 2015</u> 30 pails -Hydrex Hydraulic Oil MV-36 60 cases - Motor oil 15-40 x 16L 36 cases - 2 cycle oil x 12L 65 – pails Linseed Soap 30 pails - Natural blue Cleaner 8 boxes (6 cans per box) Spray Paint 4 gallons Industrial Paint 10 cans Spray Foam 8 cans Brake Cleaner 13 cans Power Lube Spray 30 cans Starting Fluid 30 pails Rod Grease 40 cases Lube Grease (grease guns) 17 cases Kleene Flow Diesel Fuel Conditioner 30 cases Anti-Freeze 5 cases Fast Orange Cleaner 3 pails Solvent Cleaner 11 pails Vibra Guard 4 Cases DFI Diesel Conditioner 1 pail Extreme Stuff Hole Conditioner 15 pails Pervis 12 pails Penetrol 20 pails Poly Plus 6 pails 165 Conditioner 10 pails K-Ion 65 pails AMC133	Stored inside a sea container to be transported to Baker Lake over the winter road in 2016.

3.2.1 Canada Wide Standards

Efforts to meet the *Canada-Wide Standard (CWS) for Dioxins and Furans* and the *Canada-wide Standard for Mercury Emissions* include the development and implementation of a Waste Management Plan involving waste inventory, diversion and sorting prior to incineration. Waste materials incinerated include food waste, paper, untreated wood products and toilet wastes. Remaining wastes are sorted and stored in sea containers on site until they are removed via the winter haul to be shipped to a licensed disposal facility.

3.3 Water Consumption and Management

As outlined in the conditions of the Nunavut Water Board Licence No. 2BE-KIG1318, the domestic camp water is limited to 10 cubic metres per day (m³/day), and the drill water is limited to 289 m³/day for a total maximum consumption of 299 m³/day. Drilling during low flow artesian was compliant with Part F, Item 6 of the Licence and is further described in Section 3.3.2.

3.3.1 Camp and Drill Water Use

Domestic camp water was drawn from the local unnamed lake for hygienic use, and water sources proximal to drilling activities were used to support drilling. The locations of the domestic and drilling water sources are listed below in Table 3.3-1 and Table 3.3-2: Drilling Water Source Coordinates respectively.

Table 3.3-1: Domestic Water Source Coordinates

Location Name	Use	Coordinates	
		Lat/Long	UTM
Camp	Emergency water source (i.e. Firefighting)	64° 26' 31.78" N 97° 39' 30.83" W	14W 7146969N 564570E
Unnamed Lake	Hygienic water source	64° 26' 36.93" N 97° 39' 49.51" W	14W 7147123N 564317E

Table 3.3-2: Drilling Water Source Coordinates

Location Name	Hole-ID	Coordinates	
		Lat/Long	UTM
Contact	CONT-016	64° 17' 20.23" N 97° 58' 28.36" W	14W 7129614N 549637E
	CONT-017		
	CONT-018		
	CONT-019		
	CONT-020		
	CONT-021		
	CONT-022		
	CONT-023		
	CONT-024		
	CONT-025		
	CONT-026		
	CONT-027	64° 17' 49.48" N 97° 56' 36.12" W	14W 7130544N 551131E
85W	85W-009	64° 25' 12.32" N 97° 48' 17.28" W	14W 7144369N 557578E
	85W-010		
	85W-011		
	85W-013		
	85W-012	64° 25' 27.79" N 97° 48' 19.74" W	14W 7144847N 557536E
	85W-014	64° 24' 07.64" N 97° 48' 09.56" W	14W 7142527N 557719E
St. Tropez	ST-01	64° 35' 27.72" N 97° 26' 08.16" W	14W 7163801N 574892E
	ST-02	64° 35' 50.99" N 97° 28' 11.93" W	14W 7164481N 573229E
	ST-03	64° 36' 30.76" N 97° 27' 37.02" W	14W 7165723N 573663E
	ST-04	64° 36' 02.94" N 97° 29' 24.31" W	14W 7164828N 572258E
BS Grid	BS-03	64° 21' 48.61" N 97° 55' 58.53" W	14W 7137954N 551512E
	BS-04	64° 21' 43.07" N 97° 55' 38.16" W	14W 7137787N 551788E
	BS-05		
Andrew Lake North	AND-15-01	64° 19' 58.41" N 97° 53' 47.21" W	14W 7134573N 553332E
	AND-15-02	64° 20' 21.52" N 97° 53' 31.23" W	14W 7135292N 553534E
	AND-15-03		
	AND-15-04		
Jane Extension	JE-03	64° 18' 48.87" N 97° 54' 15.90" W	14W 7132414N 552984E
	JE-04		
	JE-05		
Caribou	CARB-009	64° 21' 42.75" N 97° 40' 32.65" W	14W 7138006N 563930E
Hotel90	HOT90-01	64° 18' 04.24" N 97° 54' 54.06" W	14W 7131024N 552495E
Kiggavik Center Zone	CZ-01	64° 26' 16.81" N 97° 38' 26.28" W	14W 7146524N 565443E

Domestic camp water was pumped from the unnamed lake into holding tanks with marked volumes. These tanks were filled daily, and a water meter measured the cumulative amount of water used. The water meter values were recorded and calculated to ensure the daily allowance was not exceeded. The daily domestic water use limit of 10 m³ was not exceeded at any time during season. The maximum amount of water use recorded in one day was 6.38 m³ on June 12 when the tanks were initially filled with water (Table 3.3-3).

The drilling contractor, Boart Longyear, used water pumps at each drill capable of pumping a maximum of approximately 81.76 m³/day. New water meters were installed on the water pumps at the drilling rigs on June 18, 2015 in order to better reflect daily water usage for drilling operations. Daily readings by the drilling contractor were required at all three drilling rigs to demonstrate compliance with the 289 m³/day licence condition. On August 6, the total water use for domestic and drilling purposes was 302.72 m³/day exceeding the total maximum consumption of 299 m³/day. Water readings were not taken at Drill 2 for August 3, 4 and 5, leading to an incorrect total daily consumption of water for August 6. Therefore, no exceedances have been reported for this season (Table 3.3-3).

Table 3.3-3: Daily Water Use

Month	Date	Total camp (m³)	Drill 1 (m³)	Drill 2 (m³)	Drill 3 (m³)	Total Water Use (m³)
June	12	6.38	0.00	0.00	0.00	6.38
	13	2.01	0.00	0.00	0.00	2.01
	14	0.00 [†]	0.00	0.00	0.00	0.00
	15	3.34	0.00	0.00	0.00	3.34
	16	0.00	0.00	0.00	0.00	0.00
	17	5.07	0.00	0.00	0.00	5.07
	18	0.00 [†]	0.00	0.00	0.00	0.00
	19	4.58	24.00	49.00	0.00	77.58
	20	2.64	45.00	48.90	0.00	96.54
	21	3.51	21.00	0.00 [†]	0.00	24.51
	22	3.53	42.00	100.60	0.00	146.13
	23	2.65	62.00	49.00	0.00	113.65
	24	2.89	59.00	46.00	0.00	107.89
	25	3.07	61.00	39.50	0.00	103.57
	26	3.90	27.50	56.00	0.00	87.40
	27	2.66	52.50	65.50	0.00	120.66
	28	3.73	52.40	60.00	0.00	116.13
	29	3.54	52.60	61.00	0.00	117.14
	30	2.61	54.00	59.00	0.00	115.61
July	1	2.70	29.00	50.00	0.00	81.70
	2	2.99	49.00	13.00	0.00	64.99

Month	Date	Total camp (m ³)	Drill 1 (m ³)	Drill 2 (m ³)	Drill 3 (m ³)	Total Water Use (m ³)
	3	2.35	23.00	63.00	0.00	88.35
	4	2.70	42.00	39.00	0.00	83.70
	5	2.71	56.00	21.00	0.00	79.71
	6	3.11	36.00	61.00	0.00	100.11
	7	2.84	58.00	41.50	0.00	102.34
	8	4.02	66.00	41.10	0.00	111.12
	9	2.91	16.00	44.40	0.00	63.31
	10	2.67	37.00	40.00	0.00	79.67
	11	3.78	144.00	41.40	0.00	189.18
	12	3.38	37.00	38.60	0.00	78.98
	13	3.44	79.00	0.00	0.00	82.44
	14	2.80	37.00	0.00 [†]	25.00	64.80
	15	2.74	61.00	107.00	55.00	225.74
	16	3.22	68.00	35.80	55.60	162.62
	17	2.73	72.00	30.20	54.60	159.53
	18	2.69	34.00	45.00	23.80	105.49
	19	3.50	45.00	0.00	3.00	51.50
	20	3.01	29.00	48.00	56.00	136.01
	21	3.05	60.00	45.00	60.90	168.95
	22	2.45	72.00	48.00	61.10	183.55
	23	3.45	71.00	71.30	60.00	205.75
	24	3.30	38.00	48.90	65.00	155.20
	25	3.47	49.00	45.50	0.00	97.97
	26	3.91	61.00	45.50	52.20	162.61
	27	3.31	56.00	134.20	5.10	198.61
	28	2.94	65.00	66.10	96.70	230.74
	29	2.92	64.00	74.10	11.00	152.02
	30	2.48	0.00 [†]	66.10	58.00	126.58
	31	2.83	87.00	71.50	57.00	218.33
August	1	3.40	64.00	0.00 [†]	56.00	123.40
	2	3.51	64.00	71.10	58.30	196.91
	3	2.66	31.00	0.00 [†]	0.00	33.66
	4	2.96	90.00	0.00 [†]	0.00	92.96
	5	3.24	42.00	0.00 [†]	0.00	45.24
	6	3.62	63.00	236.10	0.00	302.72
	7	6.41	63.00	50.60	0.00	120.01
	8	0.00 [†]	50.00	0.00 [†]	0.00	50.00
	9	3.25	0.00	82.40	0.00	85.65
	10	4.86	67.00	25.30	0.00	97.16
	11	2.40	93.00	49.30	0.00	144.70
	12	3.22	35.00	65.00	0.00	103.22
	13	3.78	51.00	48.80	0.00	103.58
	14	2.14	46.00	48.20	0.00	96.34
	15	3.58	24.00	17.00	0.00	44.58
	16	3.40	26.00	79.00	0.00	108.40
	17	3.50	55.00	0.00 [†]	0.00	58.50

Month	Date	Total camp (m ³)	Drill 1 (m ³)	Drill 2 (m ³)	Drill 3 (m ³)	Total Water Use (m ³)
	18	3.33	0.00	49.00	0.00	52.33
	19	3.26	0.00	0.00	0.00	3.26
	20	2.50	0.00	70.60	0.00	73.10
	21	2.84	0.00	20.40	0.00	23.24
	22	2.84	0.00	57.00	0.00	59.84
	23	0.00	0.00	0.00	0.00	0.00
	24	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00
	26	0.00	0.00	0.00	0.00	0.00
	27	0.00	0.00	0.00	0.00	0.00
	28	0.00	0.00	0.00	0.00	0.00
	29	0.00	0.00	0.00	0.00	0.00
	30	0.00	0.00	0.00	0.00	0.00
	31	0.00	0.00	0.00	0.00	0.00

† Daily water readings were not recorded.

3.3.2 Artesians

As per the NWB Licence, Part F, Item 6 (c), AREVA must provide information on all artesian flows encountered, with GPS coordinates, dates, and flow rates, depth, permafrost, aquifer and packer testing data with associated water quality analytical results. Pneumatic packer testing and thermistor installation is specific to mine development and are not standard practices for exploration drilling. The definitive permafrost depths were unknown for the artesian discussed below. Should there be packer testing data available or thermistors installed in the future, AREVA will provide the associated data when artesian are encountered.

While drilling in the Andrew area, one artesian flow was intersected. As per Part F item 6 (c) of the NWB licence, refer to Table 3.3-4 for the relevant artesian information including location, date, flow rate, and depth. Water samples were taken directly from the artesian flows, and the corresponding water analysis results are shown in Table 3.3-5.

Table 3.3-4: Artesian Location, Date, Flow and Depth

	Coordinates		Date	Flow Rate (L/min)	Depth (m)
	Lat/Long	UTM			
AND-15-02	64° 20' 27.00" N 97° 53' 47.48" W	14W 7135458N 553313E	August 8, 2015	20	280.5

Table 3.3-5: Artesian Water Results

Parameter	Units	AND-15-02	CCME†
Bicarbonate	mg/L	46	

Parameter	Units	AND-15-02	CCME [†]
Carbonate	mg/L	<1	
Chloride	mg/L	4.2	
Hydroxide	mg/L	<1	
P. alkalinity	mg/L	<1	
pH	pH units	6.88	6.5-9
Specific conductivity	uS/cm	80	
Sum of Ions	mg/L	69	
Total alkalinity	mg/L	38	
Total hardness	mg/L	30	
Nitrate (calc. from NO ₂ +NO ₃ -N)	mg/L	<0.04	13
Nitrite+Nitrate nitrogen	mg/L	<0.01	
Mercury	ug/L	<0.02	0.026
Fluoride	mg/L	0.22	
Total dissolved solids	mg/L	137	
Total suspended solids	mg/L	5	
Calcium	mg/L	8.2	
Magnesium	mg/L	2.4	
Potassium	mg/L	0.8	
Sodium	mg/L	6.7	
Sulfate	mg/L	0.8	
Aluminum	mg/L	0.058	0.005 (pH < 6.5) 0.1 (pH ≥ 6.5)
Antimony	mg/L	<0.0002	
Arsenic	ug/L	0.5	5
Barium	mg/L	0.053	
Beryllium	mg/L	<0.0001	
Boron	mg/L	<0.01	29 Short-term 1.5 Long-term
Cadmium	mg/L	<0.00001	0.001 Short-term 0.00009 Long-term
Chromium	mg/L	0.0014	
Cobalt	mg/L	<0.0001	
Copper	mg/L	0.0020	0.002 (if hardness unknown) 0.004 (hardness>180 mg/L)
Iron	mg/L	0.59	0.3 (Long-term)
Lead	mg/L	0.0001	0.001 (if hardness unknown) 0.007 (hardness >180 mg/L)
Lithium	ug/L	1.6	
Manganese	mg/L	0.0070	
Molybdenum	mg/L	0.0002	0.073
Nickel	mg/L	0.0010	0.025 (if hardness unknown) 0.15 (hardness >180 mg/L)
Selenium	mg/L	<0.0001	0.001
Silver	mg/L	<0.00005	0.0001
Strontium	mg/L	0.032	
Thallium	mg/L	<0.0002	0.0008
Tin	mg/L	<0.0001	
Titanium	mg/L	0.0013	
Uranium	ug/L	1.7	33 Short-term

Parameter	Units	AND-15-02	CCME [†]
			15 Long-term
Vanadium	mg/L	0.0002	
Zinc	mg/L	0.0024	0.03

[†]Canadian Council Ministers of Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999.

While drilling the AND-15-02 hole, an artesian flow of 20 L/min was encountered at 2:00 am at a depth of 280.5 m. As shown in the results above, the AND-15-02 artesian had elevated levels of iron. The flow was contained in the designated discharge area with no potential for harm to aquatic life. The total depth of the hole was 282 m and was completed and capped on August 8. None of the other three holes in the Andrew area intercepted any artesian.

3.4 Spill Contingency Plan

In accordance with existing legislation and requirements, AREVA maintains a Spill Contingency Plan for the Kiggavik Project. The objectives of this plan are to:

- Identify the potential for and the appropriate response to spills at the Project
- Provide procedures for prevention or mitigate adverse environmental effects through effective and efficient response
- Identify personnel and their responsibilities
- Identify emergency contacts
- Describe reporting requirements

To implement the plan effectively, all site staff and contractors receive orientation on the location of the Safety Data Sheets (SDS), spill kit locations, and spill response supplies and tools. Personnel are trained to identify the probable location of potential leaks and spills and the response should leaks or spills be identified. Additional training for mock spill scenarios is provided as necessary. Spill prevention is implemented through use of secondary containment, availability of spill kits where hazards exist, conducting inspections at all storage locations, and providing SDS sheets. Spill response is reviewed with all site personnel, and the site supervisors or designates are aware of spill reporting procedures.

3.4.1 Fuel Cache

The primary fuel storage area is located on an esker 3.5 km southwest of the Kiggavik camp. The fuel cache includes eight 50,000 L double walled steel Envirotanks that are registered with Environment Canada, and were installed in accordance with Canadian Council for Ministers of the Environment (CCME) – *Environmental Code of Practice for Aboveground and Underground*

Storage Tank Systems Containing Petroleum and Allied Petroleum Products. Three Envirotanks are used for jet fuel and five for diesel fuel (Photograph 3.4-1).



Photograph 3.4-1: Kiggavik Fuel Cache

A small number of 205 L diesel fuel drums are used to fuel the geostoves and incinerator and are stored within secondary containment berms. Five double walled slip tanks containing diesel are used to fuel the camp generator. All fuel containers are labeled, identifying the contents and AREVA's name. The camp fuel storage is located at 64° 26' 25.82" N, 97° 39' 39.05" W (14W 564464, 7146782).

3.4.2 Reportable Spill

While drilling in the 85W area on June 17, 2015, drill cuttings mobilized into a water body located at 64°25'12.32" N, 97°48'17.27" W (14W 557578 7144369). The spill was detected during a routine drill inspection by the Safety, Health, Environment, and Quality Supervisor and Project Geologist (Photograph 3.4-2). Reporting was completed in accordance with the NWB licence Part H item five and the AANDC Land Use Permit N2014C0001 item 32. In addition to immediate notification to the NT-NU Spill Report Line, the thirty day report summarizing the incident and corrective actions was distributed to regulators. The impacted spill area was estimated to be approximately 2,000 m² (Photograph 3.4-3).



Photograph 3.4-2: Unauthorized Cuttings Discharge near 85W-009 on June 17, 2015



Photograph 3.4-3: Unauthorized Cuttings Discharge to Unnamed Lake June 17, 2015

Non-mineralized drill cuttings located at 64°25'17.91" N, 97°48'17.18" W (14W 557576 7144542) were washed downhill away from the drilling rig due to the presence of runoff in the area. The excess clean water line further facilitated the downhill migration of the cuttings into a water body approximately 120 m to the west. A ground survey of the area was immediately

conducted and indicated that the spill was a combination of runoff water, drill return water, and cuttings from the installation of the casing (Photograph 3.4-4 and Photograph 3.4-5).



Photograph 3.4-4: Spill Water Mixture June 17, 2015



Photograph 3.4-5: Runoff Water Mixed with Drill Cuttings June 17, 2015

Various corrective and preventative measures were implemented following the spill identification. To limit the spatial extent of the spill, the pump discharging clean water was stopped and the hose was relocated and extended away from the affected area. All drill crews on site were subsequently instructed not to place their excess clean water hoses in places that could create a potential uncontrolled runoff into a water body and to alert AREVA staff if discharge fluids are accumulating around the drill. A sump pump and wood chip sock berm were placed at the bottleneck of the spill to further reduce the transport of sediments towards the small water body (Photograph 3.4-6).



Photograph 3.4-6: Installation of Filter Socks and Sump Pump June 17, 2015

An Autmess 6150 AD radiation detection device was used to scan the spill area immediately following the spill with an additional survey the following day. The surveys indicated no radioactive contamination in the area as a result of the spill. The site was monitored over the days following the spill and by June 18 the white discoloration of the water was no longer visible (Photograph 3.4-7).



Photograph 3.4-7: Aerial Survey of Spill Area on June 18, 2015

A surface water grab sample was obtained the day of the spill and again one month later. The samples were sent to the Saskatchewan Research Council (SRC) for analysis and results are shown in Table 3.4-1 below.

The placement of drill discharge sites and follow-up inspection by AREVA staff and contractors was reviewed to ensure all personnel were aware of the requirements. It was concluded through the water sample and radiometric survey that the spill consisted of non-mineralized drill cuttings, and was turbid water flowing from the drill site location into the small water body. Future drill sites will utilize a sump pump near the drill hole during operations where drill return water is a risk. Additionally, four new Aqua Berms were acquired which will provide better containment in high risk drilling areas. The berms are flexible and are better able to conform to the uneven terrain where drilling is occurring.

Table 3.4-1: 85W Spill Water Results

Parameter	Unit	Spill Sample June 17, 2015	30 Day Sample July 17, 2015	CCME†
Bicarbonate	mg/L	15	8	
Carbonate	mg/L	<1	<1	
Chloride	mg/L	2.0	0.3	
Hydroxide	mg/L	<1	<1	
P. alkalinity	mg/L	<1	<1	
pH	pH units	6.90	6.74	6.5-9
Specific conductivity	uS/cm	38	19	
Sum of ions	mg/L	38	11	
Total alkalinity	mg/L	12	7	
Total hardness	mg/L	27	8	
Nitrate	mg/L	0.08	<0.04	13
Mercury	ug/L	<0.02	<0.02	0.026
Fluoride	mg/L	0.06	0.06	
Total dissolved solids	mg/L	253	21	
Total suspended solids	mg/L	7	<1	
Calcium	mg/L	5.4	1.9	
Magnesium	mg/L	3.4	0.7	
Potassium	mg/L	9.3	<0.1	
Sodium	mg/L	1.5	<0.1	
Sulfate	mg/L	1.7	0.3	
Aluminum	mg/L	2.12	0.037	0.005 (pH < 6.5) 0.1 (pH > 6.5)
Antimony	mg/L	<0.0002	<0.002	
Arsenic	ug/L	0.8	0.2	5
Barium	mg/L	0.18	0.026	
Beryllium	mg/L	0.0003	<0.001	
Boron	mg/L	<0.01	<0.01	29 Short-term 1.5 Long-term
Cadmium	mg/L	0.00008	<0.00001	0.001 Short-term 0.00009 Long-term
Chromium	mg/L	0.0032	<0.0005	
Cobalt	mg/L	0.0011	<0.0001	
Copper	mg/L	0.0071	0.0011	0.002 (if hardness unknown) 0.004 (hardness>180 mg/L)
Iron	mg/L	2.24	0.26	0.3 (Long-term)
Lead	mg/L	0.0021	<0.0001	0.001 (if hardness unknown) 0.007 (hardness >180 mg/L)
Lithium	ug/L	2.9	0.3	
Manganese	mg/L	0.032	0.0055	
Molybdenum	mg/L	0.0002	<0.0001	0.073
Nickel	mg/L	0.0046	0.0006	0.025 (if hardness unknown)

Parameter	Unit	Spill Sample June 17, 2015	30 Day Sample July 17, 2015	CCME†
				0.15 (hardness >180 mg/L)
Selenium	mg/L	<0.0001	<0.0001	0.001
Silver	mg/L	<0.00005	<0.00005	0.0001
Strontium	mg/L	0.026	0.0088	
Thallium	mg/L	<0.0002	<0.0002	0.0008
Tin	mg/L	<0.0001	<0.0001	
Titanium	mg/L	0.0050	0.0005	
Uranium	ug/L	0.8	<0.1	33 Short-term 15 Long-term
Vanadium	mg/L	0.0035	<0.0001	
Zinc	mg/L	0.035	0.002	0.03

† Canadian Council Ministers of Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999.

3.5 Noise Abatement Plan

A Noise Abatement Plan was developed to mitigate the effects from noise generated during camp set-up, camp operation, winter road use, helicopter use, and drilling activities. Noise controls and abatement serve a combination of environmental and occupational health and safety purposes. The focus of the plan is the control of environmental noise for the protection of wildlife.

Implementation of the plan ensures that drill rigs and vehicles are equipped with mufflers and/or silencers and are subject to commitments made in the Wildlife Mitigation and Monitoring Plan regarding required minimum flying altitudes and the take-off and landing of aircraft.

The plan is reviewed by all site staff, contractors, and AREVA contract administrators to ensure all contractors operating drill rigs, vehicles or aircraft are aware of requirements. Frequent review allows for revision to occur with the expansion of infrastructure, changing field programs and the identification of improved practices.

3.6 Wildlife Mitigation and Monitoring Plan

The Wildlife Mitigation and Monitoring Plan (WMMP) was developed to monitor and reduce disturbance to wildlife, particularly caribou. The plan incorporated recommendations from the Government of Nunavut – Department of Environment (GN-DoE), Environment Canada (EC) and the Beverly and Qamanirjuaq Caribou Management Board (BQCMB); as well as conditions

from the NIRB, Kivalliq Inuit Association (KIA), Aboriginal Affairs and Northern Development Canada (AANDC) and the Nunavut Water Board (NWB). The plan is designed to protect wildlife from Project activities, increase the current understanding of wildlife interactions with human development and aid in determining the effectiveness of mitigation measures.

The objective of the WMMP is to prevent or reduce any potential adverse effects from exploration activities on wildlife. The plan was implemented by Wildlife Monitors from the Baker Lake community, as well as AREVA staff. Wildlife monitoring and mitigation measures were summarized in monthly reports, and distributed to the Baker Lake Hunter and Trapper's Organization (HTO), the KIA, the Baker Lake Conservation Officer, AANDC, and the GN-DoE Regional Biologist. The reports are also publicly available at www.kiggavik.ca/resources/.

3.6.1 Summary of Wildlife Monitoring Activities and Results

The Kiggavik personnel and Wildlife Monitors implement the WMMP through providing regular reports of wildlife sightings. Observation methods vary with sightings provided from the personnel in camp, the field, aerial flights, and the Wildlife Monitors. Wildlife logs are placed in the camp kitchen, camp office and in each helicopter for ease of recording. During site orientation, personnel are informed of the wildlife log locations and are encouraged to record all sightings. Animals present regularly around camp such as the ptarmigan, siksik and arctic hare were often not recorded each day they were observed, thus being under recorded by this method. The Government of Northwest Territories (GNWT) also provides collar data that enables proper implementation of the WMMP by avoiding migrating Caribou.

Ground-based monitoring was primarily conducted by the Wildlife Monitor and additional data was collected from incidental field observations by personnel. The Wildlife Monitors discussed sightings with the Safety, Health, Environment, and Quality (SHEQ) Supervisor, while the remainder of Kiggavik personnel recorded sightings which were collected and discussed during weekly safety meetings. The Wildlife Monitor observed wildlife activity from five height-of-land (HOL) locations around camp and occasionally visited areas outside of camp where required. When caribou were observed in the area, the Wildlife Monitor was responsible for assisting in the determination of herd movements and proximity to activity. Occasionally the Wildlife Monitor was flown to elevated locations for ease of monitoring the herd movements. The SHEQ Supervisor and designate recorded all observations in a spreadsheet for inclusion in the monthly reports. As shown in Table 3.6-1, there was a total of 12 species documented from 107 wildlife sightings.

Table 3.6-1: Summary of Wildlife Sightings

Species (common name)	Wildlife Sightings	Total Number Observed	Range of Individuals per Sighting	Timeline of Sightings		Observation Method		
				Initial	Final	Field Observation*	Aerial	Camp*
Arctic Fox	3	3	1	Jun-17	Aug-17	X	X	X
Arctic Hare	1	1	1	Jun-25	Jun-25			X
Bald Eagle	1	1	1	Jun-25	Jun-25			X
Caribou	32	45,549†	1 – 10,000	Jun-15	Aug-15	X	X	X
Eagle	2	2	1	Jul-10	Jul-16		X	
Grizzly Bear	1	3	3	Jun-29	Jun-29	X		
Muskox	42	556	1-50	Jun-16	Aug-19	X	X	X
Juvenile Ptarmigan	1	1	1	Jul-15	Jul-15			X
Sandhill Cranes	5	28	1 - 12	Jun-23	Aug-20	X		
Canadian Geese‡	4	47	2-20	Jun-21	Aug-19			X
Wolverine	1	1	1	Aug-1	Aug-1		X	
Wolf	14	20	1 - 3	Jun-15	Aug-5	X	X	X
Total	107	46,212						

* Wildlife Monitor sightings were often recorded as camp sightings, but were also included in the field observations.

†From July 2 to July 14, caribou herds numbering in the thousands migrated through the area. The number observed is overestimated due to repeat reporting of the same herds.

3.6.2 Wildlife Mitigation Summary

Mitigation measures were implemented for caribou herds and deterrence measures for grizzly bears and wolves. As shown in Table 3.6-1, three grizzly bears and 20 wolves were observed during the season. Many wolf sightings were repeat observations of a pack of three wolves denning near one of the geophysical survey areas. The frequency of predatory species sightings was likely due to caribou migrations in the area.

3.6.2.1 Caribou Migration

During caribou migrations, mitigation measures were implemented as required by the Nunavut Impact Review Board (NIRB) 2007 screening decision and the WMMP. During the post calving period from May 15 to July 15, operations were suspended within 10 km of areas occupied by cows and calves. Occasional shutdown was required after July 15 when herds greater than 50

caribou were within two kilometers of operations. Caribou herds numbering in the thousands were intermittently present during the post calving period, thus causing temporary shutdown of drilling operations and helicopter activity. Aircraft pilots abided by the altitude restrictions and did not land within one km of herds.

Caribou migrated through the area from July 2 to July 14. Aerial observation of the caribou herd was noted on July 2 approximately 40 km East of camp. On July 12, all drilling operations were shutdown to allow a dispersed caribou herd to pass undisturbed. While drilling remained on standby, non-essential flights were grounded and the helicopters did not take off or land within one kilometer of caribou herds. Following a survey by the wildlife monitor, one rig was approved to restart operations the evening of July 12 when the large herd moved southwest towards the second rig. A smaller herd of caribou remained near the second drilling rig until July 14 when drilling was approved to resume. A smaller herd was present near one drilling rig on August 9, but quickly moved out of the area (Photograph 3.6-1). Large herds were absent during the remainder of the season.



Photograph 3.6-1: Small Caribou Herd – August 9, 2015

3.6.2.2 *Deterrence Measures*

As outlined in the WMMP, deterrent measures were implemented to ensure the safety of personnel. These interventions were necessary on one occasion. A grizzly bear sow and two cubs approached within 500 m of a three-person field crew while conducting a ground survey. One helicopter and the wildlife monitor were sent to the area to extract the field crew. The wildlife monitor remained stationed near an active drilling rig in the area to ensure the grizzly bear had moved away. The survey crew returned to the field the following day completing work in a different area to avoid unnecessary wildlife interactions. There were no physical interactions between bears or wolves with project personnel during the 2015 field season.

3.7 Abandonment and Restoration Plan

The Abandonment and Restoration Plan was developed to address permit conditions, regulations and industry standards for seasonal operation, shut-down and final closure. This plan is frequently reviewed and revised to reflect the expansion of infrastructure, cost estimates, changing field programs and the identification of improved reclamation practices.

The objectives of the plan are to:

- Protect human health
- Reduce or eliminate environmental effects
- Re-establish conditions to similar pre-exploration land use
- Establish physical and chemical stability of disturbed areas

3.7.1 Seasonal Shutdown

As required by the Abandonment and Restoration Plan, the following activities were conducted for the seasonal shutdown of the Kiggavik camp during the last week of August:

- All equipment stored in secure buildings or containers
- Plywood placed over windows and doors to prevent inadvertent opening
- Pumps and hoses drained and dismantled
- Inventory of chemicals, products and wastes securely stored on site (See Table 3.2-2)
- Final inspection of all storage areas and secondary containment
- Removal of chemicals or storage in secure buildings
- Drill rigs dismantled and stored appropriately
- Generator shut down and winterized
- Waterlines drained, flushed and winterized with antifreeze

All personnel vacated the site by August 27, 2015. Photograph 3.7-1 and Photograph 3.7-2 shows the Kiggavik camp during seasonal shutdown on August 27, 2015.



Photograph 3.7-1: Kiggavik Camp Seasonal Shutdown



Photograph 3.7-2: Kiggavik Camp Seasonal Shutdown

3.7.2 Progressive Reclamation

The Abandonment and Restoration Plan has been implemented to ensure drill site stability. Consistent with the objective to return lands to a state similar to pre-exploration use, AREVA

intends to implement progressive restoration practices and incorporate new abandonment and/or reclamation methods and procedures, where applicable. Radiologically or chemically contaminated soil or cuttings are collected inside industrial bulk bags and stored in the radioactive storage compound for future management, which may include transfer to an approved site. The gamma radiation one meter (m) from the boundary of the radioactive storage compound is reduced as much as practical to less than one micro Sievert per hour ($\mu\text{Sv/h}$) and in no instances exceeding $2.5 \mu\text{Sv/h}$. Where collected cuttings are non-mineralized (i.e. gamma radiation readings less than one $\mu\text{Sv/h}$), they are used to re-establish physical stability by levelling depressions that may have formed from permafrost thaw around drill locations. Where inadequate fill material is available, excess material from the End grid discharge or gravel another location will be used to fill larger depressions.

To minimize the affected footprint and the amount of physical reclamation required, there is a focused effort on proper planning of infrastructure placement and drill sites. Reclamation techniques are currently being investigated and when required, will be implemented under the direction and approval of experienced consultants, community members and regulatory agencies. During a meeting with available members of the Baker Lake Community, Land and Resources Committee (CLARC), the CLARC stated a preference that any re-vegetation occurs without seeding or fertilization interventions.

3.7.2.1 End East Grid Sink Hole Reclamation

During a 2014 AANDC annual inspection, a sink hole was discovered at $64^{\circ}20'42.21''$ N, $97^{\circ}50'24.37''$ W (14W 556030 7135977) in the End East grid that was approximately two meters in diameter (Photograph 3.7-3). It is believed that the sink hole was created due to drilling activities in the area during the 2014 drilling program.



Photograph 3.7-3: Sink Hole Discovered at EE-05

The area was identified during a 2014 inspection and reclamation work was completed during the 2015 season. Throughout the 2015 season non-mineralized drill cuttings were deposited in the sink hole from various locations. Additionally, 30 cubic meters of gravel was obtained from Baker Lake and shipped to site during the 2015 winter haul for use as additional fill. Approximately 15 bags of cuttings and 15 bags (one cubic meter bags) of gravel were used to completely fill the sink hole (Photograph 3.7-4 and Photograph 3.7-5).



Photograph 3.7-4: Filling Sink Hole at EE-05



Photograph 3.7-5: Completed Work at EE-05

3.7.2.2 Drill Hole Reclamation

Drill sites are inspected prior to and following the completion of drilling activities to assess the impact drilling is having in the region. The area is examined, size of impact is recorded, and a photograph is taken if necessary to record the remediation completed. Remaining garbage and drilling debris is also removed from the site. All sites were inspected and remediated as necessary following the completion of drilling in an area.

Upon finalizing a post drilling inspection in the Contact area, a slight depression from drilling activities was discovered near the CONT-027 drill hole (Photograph 3.7-6 and Photograph 3.7-7). Non-mineralized drill cuttings collected from that drill hole were used to level out the depression and restore physical stability in the area (Photograph 3.7-8).



Photograph 3.7-6: CONT-027 Pre Drill Inspection August 5, 2015



Photograph 3.7-7: CONT-027 Post Drill Inspection August 12, 2015



Photograph 3.7-8: CONT-027 Post Drill Remediation August 12, 2015

3.7.2.3 *Chemical and Radiological Restoration*

Drill sites are inspected for fuel stained soil and undergo a gamma survey for radioactive contamination. Gamma surveys are conducted prior to commencing drilling activities and following the completion of drilling. Should it be required, drill sites are remediated to the greatest extent possible to ensure the gamma dose rate 1 m above surface is less than 1 $\mu\text{Sv/h}$ above background. Following remediation activities, another gamma survey would be conducted to ensure levels have been reduced to below 1 $\mu\text{Sv/h}$ above background.

As shown in Table 3.7-1, gamma surveys were conducted for each drill location both before and after drilling. Readings with the Ludlum 2221 (Ludlum) Scaler Ratemeter and Trimble GPS PRO-XRT were made at one second intervals at one meter above ground. Due to technical difficulties with the Ludlum early in the 2015 field season, an alternative method using the Automess 6150 AD (Automess) was developed and implemented for the remainder of the season. Using the Automess, 49 readings were manually recorded on a 5 m grid spacing for 900 m² around the drill hole for both pre and post gamma surveys. During the 2015 field season, all gamma survey dose rates were below 1 $\mu\text{Sv/h}$ as shown in Figure 3.7-1 to Figure 3.7-33 of Appendix B.

Table 3.7-1: 2015 Drill Hole Gamma Surveys

Drill Hole	Pre-gamma Date	Pre-Survey Instrument Method	Post-gamma Date	Post-Survey Instrument Method	Figure Number	Dose Rate Less Than 1 (µSv/h)
85W-009	15-Jun-15	Ludlum	22-Jun-15	Ludlum	Figure 3.7-1	Yes
85W-010	15-Jun-15	Ludlum	2-Jul-15	Ludlum	Figure 3.7-2	Yes
85W-011	26-Jun-15	Ludlum	7-Jul-15	Automess	Figure 3.7-3	Yes
85W-012	20-Jun-15	Ludlum	7-Jul-15	Automess	Figure 3.7-4	Yes
85W-013	3-Jul-15	Automess	10-Jul-15	Automess	Figure 3.7-5	Yes
85W-014	20-Jun-15	Ludlum	17-Jul-15	Automess	Figure 3.7-6	Yes
BS-03	13-Jul-15	Automess	24-Jul-15	Automess	Figure 3.7-7	Yes
BS-04	18-Jul-15	Automess	30-Jul-15	Automess	Figure 3.7-8	Yes
BS-05	25-Jul-15	Automess	8-Aug-15	Automess	Figure 3.7-9	Yes
CONT-016	19-Jun-15	Ludlum	7-Jul-15	Automess	Figure 3.7-10	Yes
CONT-017	19-Jun-15	Ludlum	7-Jul-15	Automess	Figure 3.7-11	Yes
CONT-018						
CONT-019	30-Jun-15	Ludlum	7-Jul-15	Automess	Figure 3.7-12	Yes
CONT-020	4-Jul-15	Automess	16-Jul-15	Automess	Figure 3.7-13	Yes
CONT-021						
CONT-022	14-Jul-15	Automess	26-Jul-15	Automess	Figure 3.7-14	Yes
CONT-023	18-Jul-15	Automess	26-Jul-15	Automess	Figure 3.7-15	Yes
CONT-024	23-Jul-15	Automess	29-Jul-15	Automess	Figure 3.7-16	Yes
CONT-025	26-Jul-15	Automess	5-Aug-15	Automess	Figure 3.7-17	Yes
CONT-026	31-Jul-15	Automess	6-Aug-15	Automess	Figure 3.7-18	Yes
CONT-027	5-Aug-15	Automess	12-Aug-15	Automess	Figure 3.7-19	Yes
ST-01	14-Jul-15	Automess	23-Jul-15	Automess	Figure 3.7-20	Yes
ST-02	14-Jul-15	Automess	28-Jul-15	Automess	Figure 3.7-21	Yes
ST-03	23-Jul-15	Automess	6-Aug-15	Automess	Figure 3.7-22	Yes
ST-04	28-Jul-15	Automess	6-Aug-15	Automess	Figure 3.7-23	Yes
AND-15-01	29-Jul-15	Automess	5-Aug-15	Automess	Figure 3.7-24	Yes
AND-15-02	5-Aug-15	Automess	11-Aug-15	Automess	Figure 3.7-25	Yes
AND-15-03	9-Aug-15	Automess	16-Aug-15	Automess	Figure 3.7-26	Yes
AND-15-04	11-Aug-15	Automess	16-Aug-15	Automess	Figure 3.7-27	Yes
CZ-15-01	2-Aug-15	Automess	7-Aug-15	Automess	Figure 3.7-28	Yes
JE-03	9-Aug-15	Automess	20-Aug-15	Automess	Figure 3.7-29	Yes
JE-04	12-Aug-15	Automess	20-Aug-15	Automess	Figure 3.7-30	Yes
JE-05	16-Aug-15	Automess	20-Aug-15	Automess	Figure 3.7-31	Yes
CARB-009	15-Aug-15	Automess	24-Aug-15	Automess	Figure 3.7-32	Yes
HOT90-01	20-Aug-15	Automess	24-Aug-15	Automess	Figure 3.7-33	Yes

4 Effects of the Project on Human Health

AREVA is committed to providing a healthy and safe work environment for all employees and contractors and to ensuring work is performed in a safe and responsible manner. To meet this commitment, AREVA takes every reasonable precaution to ensure the health and safety of personnel to mitigate the potential harmful effects of uranium exploration activities. This commitment is supported through a comprehensive Health and Safety Program.

4.1 Health and Safety Program

The Health and Safety Program ensures work activities are performed in a safe and responsible manner and that they are conducted in accordance with the Nunavut *Mine Health and Safety Regulations*, exploration best practices and AREVA safety requirements. AREVA completed the 2015 field season in accordance with its OHSAS 18001: 2007 certification for the Exploration Department's Health and Safety Management System. The OHSAS 18001 standard provides the minimum requirements for a comprehensive Health and Safety Management System which allows an organization to proactively minimize occupational health and safety risks and to continually improve its health and safety performance. An external audit completed in 2014 concluded that the health and safety program meets all health and safety requirements.

The Project Geologist was responsible for overseeing the Health and Safety Program with the assistance of the SHEQ Supervisor to ensure worker safety and protection of the environment. All Kiggavik personnel received orientation and appropriate safety training prior to commencing work. Employees and contractors were also required to participate in weekly safety meetings to discuss and reinforce safety issues, reinforce good work practices, and act as the Occupational Health and Safety Committee (OHC). The meeting minutes were forwarded monthly to the Workers' Safety and Compensation Commission (WSCC) Mines Inspector. The monthly accident summary was forwarded to the WSCC Mines Inspector, which outlined the three first aids that occurred during the field program. There were no lost time accidents involving AREVA or contractor personnel.

4.2 Radiation Protection

To prevent radiation exposure during drilling, the Radiation Protection program was implemented to ensure work activities were performed in a safe and responsible manner. The results of the radiation monitoring program indicate that the work activities did not pose a health risk to workers or the public.

The Radiation Protection program was completed using:

- Gamma dosimetry which included optically stimulated luminescent dosimeters (OLDs) and direct reading dosimeters (DRDs/Canaries) for personal dosimetry;
- Automess 6150 AD survey instrument for gamma radiation monitoring;
- Ludlum 2221 with Trimble Pro-Xrt for pre and post gamma surveys;
- Automess 6150 AD survey instrument for pre and post gamma surveys;
- Ludlum 2929 survey instrument and swipes for contamination monitoring; and
- Alpha monitors for radon progeny and long lived radioactive dust (LLRD) monitoring.

The Radiation Protection Program is supported through a comprehensive series of work instructions for worker dosimetry, radiological monitoring, contamination control and the safe handling of radioactive materials.

4.2.1 Radiation Protection Plan

The Radiation Protection Plan for the Kiggavik Project is designed to meet the requirements of the applicable Nunavut Occupational Health and Safety Regulations, exploration best management practices, and AREVA's Integrated Management System (IMS). Although current activities are not regulated by the CNSC, the Radiation Protection Plan is designed in accordance with CNSC Regulations. The Radiation Protection Plan guides the implementation of the Radiation Protection Program to keep exposures As Low as Reasonably Achievable (ALARA) through ongoing monitoring, management of radioactive materials, and proper abandonment and restoration. The plan is implemented through routine radiation monitoring by AREVA personnel. This includes dosimetry monitoring to determine worker exposure, management of radioisotopes, shipping and receiving of radioactive material, the collection and storage of radioactive materials, and emergency response planning.

All AREVA employees and contractors receive appropriate radiation protection training prior to beginning work to ensure worker safety and protection of the environment. This includes the designation and obligations of Occupational Workers, dose levels and dose limits, and relevant

hazards. Personnel involved with the shipment of radioactive materials received the required training in Transportation of Dangerous Goods (TDG) Class 7 Radioactive Material for both ground and air transport.

4.2.1.1 Radiological Monitoring

As part of the Radiation Protection Program, workplace radiological monitoring was performed for gamma radiation, Radon Progeny (RnP) and Long-Lived Radioactive Dust (LLRD) to detect potentially abnormal conditions and estimate worker doses. Appropriate personal protective equipment and ventilation methods were used during all work activities, and continuous monitoring was conducted for LLRD and RnP in the geology core shacks. A summary of the radiological monitoring results is provided in Table 4.2-1. Working Level (WL) is the unit of concentration of radon progeny equivalent to the potential alpha energy concentration that results from 3.7 Bq of each radon decay product. LLRD is expressed in units of becquerel per cubic meter (Bq/m³) which refers to number of Bq inhaled or ingested and is used to determine the dose received from radioactive dusts.

Table 4.2-1: Radiological Area Monitoring Results

Radiation Type	Minimum	Maximum	Average
Radon Progeny (WL)	0.00010	0.0012	0.00040
Long-Lived Radioactive Dust (Bq/m ³)	0.00020	0.0053	0.00230

Contamination control measures are implemented to minimize the spread of radioactive materials. When gamma dose rates on contact with the core exceed 10 µSv/h, contamination monitoring is conducted and the affected surface or equipment cleaned if necessary.

4.2.1.2 Radiation Exposure

The total effective dose of Kiggavik personnel considers gamma radiation and the results from area monitoring for RnP and LLRD in units of millisieverts (mSv). This cumulative dose is compared to dosimetry limits to confirm the adequacy of the Radiation Protection Program.

Gamma Exposures

Radiation exposure during uranium exploration activities primarily originates from external gamma radiation emitted from mineralized core, rock and drill cuttings. Worker exposures to gamma radiation were measured using optically stimulated luminescent dosimeters (OLDs) provided by the licensed dosimetry provider, Landauer Inc. For exposure control, workers

handling and logging radioactive drill core and rock samples were also issued direct reading dosimeters (DRDs) or Canaries. Action and Administrative Levels are set for gamma radiation dose rates which are which measured by the DRD or Canaries. Worker gamma radiation exposures ranged from 0.020 mSv to 0.040 mSv with an average exposure of 0.028 mSv which are well below the public dose limit of 1 mSv/year.

Radon Progeny and Long-Lived Radioactive Dust Exposures

Worker exposures to RnP and LLRD are estimated from industry-accepted area monitoring techniques and occupancy time information. Worker exposures to RnP and LLRD ranged from 0.00040 mSv to 0.0060 mSv with an average exposure of 0.0022 mSv.

Total Effective Exposure

As per the *Radiation Protection Regulations*, the maximum annual dose for an occupational worker is 50 millisievert per year (mSv/year) or an average of 20 mSv/year over 5 years. The maximum annual dose for a member of the public is 1 mSv/year. Total effective exposure for Kiggavik personnel was calculated for each individual based on OLD results, RnP and LLRD radiological monitoring results and time occupancy information. As shown in Figure 4.2-1, the worker radiation doses were well below regulatory dose limits for members of the public and occupational workers. The maximum dose received by an individual working at Kiggavik in 2015 was 0.040 mSv and the average dose was 0.011 mSv. Therefore, the Kiggavik personnel exposures were below the regulatory limit for members of the public.



Figure 4.2-1: 2015 Kiggavik Personnel Annual Effective Dose

5 Summary of Local Hires and Initiatives

An important aspect of the Kiggavik Project is that it brings employment and business opportunities to local residents. In 2015, local people were hired for work carried out at the Kiggavik camp and in Baker Lake. Northern companies were successful in winning contracts. In addition to providing direct employment and business contracts, AREVA sponsored several events in the Kivalliq region in 2015.

5.1 Local Employment

The Kiggavik Project provided employment to local people through direct hiring as well as by hiring local companies to supply labor services to the Project. During 2015, a Community Liaison Officer was hired to work afternoons throughout the year.

The Project contracted Inuit workers through Peter's Expediting Ltd. (PEL), a company based in Baker Lake, for the winter haul, camp operations and maintenance, wildlife monitoring, and kitchen help. The Project's drilling contractor, Boart Longyear, hired four graduates from the Arviat drill program as drill helpers at the Kiggavik site. Kivallingmiut Aviation, the helicopter contractor, also hired one local Baker Lake residents to support operations in Baker Lake. Table 5.1-1 summarizes the employment provided to local Inuit workers for the past seven years.

Table 5.1-1: Local Employment

Year		AREVA Employees	Contracted Workers	Total
2009	Inuit Workers	3	31	34
	Hours	2,993	10,205	13,198
2010	Inuit Workers	3	27	30
	Hours	3,076	6,495	9,571
2011	Inuit Workers	2*	17	19*
	Hours	2,044	4,980	7,024
2012	Inuit Workers	3*	10	13*
	Hours	1,830	4,332	6,162
2013	Inuit Workers	3**	19	22**
	Hours	2,059	6,752	8,811
2014	Inuit Workers	1	11	12
	Hours	1,239	3,352.5	4,591.5
2015	Inuit Workers	1	7***	8***
	Hours	1107	3309	4416

* Includes a non-Inuit local Community Relations Assistant from Baker Lake who worked in Baker Lake during the summer.

**Includes Inuit worker hired by AREVA to work at the Cluff Lake site.

***Includes six Inuit workers hired by PEL and one non-Inuit worker hired by Kivallingmiut Aviation who worked in Baker Lake during the summer field season.



Photograph 5.1-1: Camp Maintenance Workers



Photograph 5.1-2: Camp Maintenance Workers Closing Camp

5.2 Locally Contracted Work

Many goods and services obtained for the Kiggavik Project were contracted to local suppliers. The total value of the contracts to northern vendors in 2015 was \$2.7M, 69% of the total exploration and mine development contract expenditures of \$3.9M. Much of this work went to companies with offices in Baker Lake and Rankin Inlet. There was also accommodation and meals in other Kivalliq communities. Table 5.2-1 summarizes the value of contracts awarded to northern businesses since 2007. The work contracted to local companies in 2015 consists of:

- Diesel and jet fuel
- Expediting and transportation
- Environmental Assessment studies
- Helicopter services
- Groceries

- Meals and accommodations
- Translation services
- Cleaning services
- Labour
- Office utilities
- Construction of core boxes and core racks

Table 5.2-1: Kiggavik Project Northern Contracts

	Inuit Owned companies*	Nunavut companies**	Other Northern Companies***	Total Northern Expenditures	Total Contract Expenditures	% spent total northern	% spent Inuit owned Firms
2007	\$1.0M	\$0.90M	\$0.75	\$2.65M	\$8.5M	30%	11%
2008	\$1.75M	\$1.2M	\$1.2M	\$4.15M	\$13.7M	30%	13%
2009	\$1.4M	\$0.76M	\$0.60M	\$2.75M	\$14.5M	19%	10%
2010	\$2.2M	\$1.00M	\$0.33M	\$3.5M	\$12.5M	28%	18%
2011	\$2.4M	\$0.36M	\$0.26M	\$3.03M	\$9.2M	33%	26%
2012	\$2.2M	\$0.5M	\$0.06M	\$2.76M	\$7.1M	39%	31%
2013	\$2.30M	\$0.55	\$0.58M	\$3.43	\$6.8M	50%	34%
2014	\$3.00M	\$0.50	\$0.31M	\$3.79M	\$6.9M	55%	43%
2015	\$2.14M	\$0.34M	\$0.26M	\$2.74M	\$4.2M	65%	51%
Total	\$18.4M	\$6.1M	\$4.4M	\$28.8M	\$83.4M	35%	22%

*Companies qualifying as Inuit owned Firms

**Companies not Inuit owned Firms but with offices in Nunavut and a significant number of Inuit employees

***Northern based companies from outside of Nunavut

5.3 Sponsorships and Donations

The Kiggavik Project has sponsored community events in Baker Lake and other communities in the Kivalliq since 2006. Sponsorships were given to educational, community, cultural and sports events and celebrations. The list of events sponsored and donations given in 2015 is shown in Table 5.3-1.

Table 5.3-1: Sponsorships and Donations for 2015

Category	Organization	Activity
Community	Baker Lake Hamlet	Hamlet Days feast
	Baker Lake Hamlet	Festival By the Lake
	Baker Lake Search and Rescue	Annual General Meeting
	Coral Harbour Youth Centre	Purchase equipment
	Baker Lake Hamlet	Nunavut Day Celebrations
	Repulse Bay Hamlet	Naujaat Day Celebration
Sports and Recreation	Baker Lake	Fishing Derby
	Arviat	Danse Competition
Education	Baker Lake high school	Valentine's Day Dance
	Kivalliq Communities	Science Camp
	Baker Lake high school	Graduation award, Grad Party
	Rankin Inlet high school	Graduation award
	Chesterfield Inlet high school	Graduation award
	Arviat High School	Graduation Award
	Coral Harbour High School	Graduation Award
	Repulse Bay High School	Graduation Award
	Whale Cove High School	Graduation Award
Environment	Baker Lake Health Committee	Spring cleanup
Health & Safety	Rankin Inlet RCMP	Bicycle helmets for Bike Rodeo

6 Community Engagement

Information sharing and community engagement are requirements of the environmental assessment process as well as one of AREVA's corporate commitments. This section presents the engagement activities that were carried out by AREVA in Nunavut in 2015 primarily for the environmental assessment process. The exploration program carried out at Kiggavik was discussed at some of these events.

6.1 Information Sharing

6.1.1 Information Office

AREVA has operated an Information Office in Baker Lake since August of 2006. The office continued to be open to the public throughout 2015 on a daily basis. A bilingual Community Liaison Officer was present each afternoon to speak with visitors.

6.1.2 Kiggavik Project Community Liaison Committee

The Kiggavik Project established a Community Liaison Committee (CLC) in December 2006 as a means of maintaining community involvement in Baker Lake. Committee members are appointed by their respective organizations and a community member is elected as Chair of the Committee.

The organizations represented on the CLC are:

- Hamlet Council
- Elders Society (male and female representatives)
- District Education Authority
- Hunter and Trappers Organization
- Health Committee
- Justice Committee
- Business Community
- Aberdeen Lake People

During 2015, the Baker Lake CLC met on two occasions and visited the Kiggavik site once. The dates are shown in Table 6.1-1. Meetings were held at the AREVA Information Office in Baker Lake and were open to the public. Meeting announcements were made on the local radio with the date, time and location. Following the meetings, radio announcements were made to

provide Baker Lake residents with a meeting summary. Translation was provided and minutes were kept of each meeting. Meeting minutes are available at the information office in Baker Lake and are posted on the Kiggavik blog at www.kiggavik.ca.

The Baker Lake CLC provided community advice to the Kiggavik Project throughout the year. Following is a summary of topics discussed with the CLC:

- Updates of Project activities including the field program, the overland haul, environmental baseline work and permits
- Updates on the environmental assessment process
- Information and updates on local employment opportunities and sponsorships
- Updates on Wildlife Monitoring at Kiggavik

Table 6.1-1: Community Information, Involvement and Engagement Activities - 2015

Community	Group	Date	Purpose/ Topic
Baker Lake	Community Liaison Committee	Feb 27	Discussion of the Public Hearings about to be carried out in Baker Lake by NIRB.
		Jul 2	The Public Hearings carried out by NIRB and the path forward
		Aug 12	Visit to Kiggavik
	Hamlet Council	Jan 13	Discuss topics prior to Final NIRB Hearings
		Aug 12	End of Exploration Season Update
	Public Meeting	Feb 4	Overview of FEIS at joint meeting with NPMO and CNSC. NIRB Public Meeting same night.
Chesterfield Inlet	Hamlet Council/ Hunters and Trappers Organization	Jan 15	Discuss topics prior to NIRB Final Hearings
	Public Meeting	Feb 5	Overview of FEIS at joint meeting with NPMO and CNSC
Rankin Inlet	Public Meeting	Feb 5	Overview of FEIS at joint meeting with NPMO and CNSC
Arviat	Hunters and Trappers Organization	Jan 14	Special meeting to discuss EA issues
Regional Organizations, Inuit, Government and IPG meetings	KIA	Sep 24	Meeting with KIA staff in Rankin Inlet regarding Security deposits
	Nunavut Mine Training Roundtable	Apr 9	Annual meeting in Iqaluit
	Northern Project Management Office	Apr 15	Update meeting in Iqaluit
	Kivalliq Mayors	Sep 22	Presentation at annual meeting in Arviat

Community	Group	Date	Purpose/ Topic
	MLA for Baker Lake	July 8	Project Update meeting in Baker Lake
		Aug 12	Project Update meeting in Baker Lake
	Federal Senator for Nunavut	Apr 15	Project Update meeting in Iqaluit
Transboundary meetings	Hudson Bay Roundtable	Apr 22-24	Meeting at annual meeting in Winnipeg, MB
		Sep 23-24	Meeting at annual meeting in Rankin Inlet, NU
	Lutsel K'e	Jan 8	Meeting with Lands and Wildlife Committee re outstanding Kiggavik EA & transboundary issues
		Jan 9	Public meeting re Kiggavik EA and transboundary issues

6.1.3 Kiggavik Blog

On June 29, 2010 a new communication initiative, the Kiggavik Blog www.kiggavik.ca went live. In May 2013 the look of the website changed. This website contains project information, a schedule of events and allows for the public to ask questions. Statistics for the blog are shown in Table 6.1-2. Blog activity was highest in March and May coinciding with the Final Hearing and the NIRB report than for the remainder of the year. There were 4698 site visits in 2015, similar to 2013 and higher than 2014.

Table 6.1-2: Statistics for Kiggavik Blog

Month	Site Visits	Page views	Unique visitors	Average Pages viewed per visit
December 2015	197	492	160	2.50
November 2015	328	731	225	2.23
October 2015	193	455	163	2.36
September 2015	202	474	158	2.35
August 2015	260	557	233	2.14
July 2015	331	737	255	2.23
June 2015	3348	643	299	1.85

Month		Site Visits	Page views	Unique visitors	Average Pages viewed per visit
May 2015		653	1523	513	2.35
April 2015		431	950	337	2.20
March 2015		787	1,906	607	2.42
February 2015		562	1542	417	2.74
January 2015		406	973	303	2.40
	2015	4,698	10,983	3,670	
	2014	3,856	10,469	3,114	
	2013	4,670	13,954	3,516	
	2012	4,211	10,589	3,075	

6.1.4 Summary of Meetings and Events

AREVA has engaged in a series of initiatives to inform, consult with and involve the community in the Kiggavik Project since 2005. The initiatives and events carried out in 2015 are detailed in this section and are listed in Table 6.1-1. Included are events that were organized by AREVA as engagement for the environmental assessment and as part of community involvement. The majority of events occurred in Kivalliq communities or with organizations from Kivalliq communities. Some events took place with communities outside the Kivalliq Region. The various activities are discussed in the remainder of the section.

Hamlet Representatives

Kiggavik team members met with the Mayor and Councils of Baker Lake and Chesterfield Inlet prior to the NIRB final hearings to discuss remaining issues that Hamlets may have. Team members met a second time with the Mayor and Council of Baker Lake near the end of the summer exploration season to provide a summary of the season.

Hunters and Trappers Organizations/ Kivalliq Wildlife Board

AREVA met with the HTOs in Chesterfield Inlet and Arviat prior to the final hearings for the Kiggavik Environmental Assessment to discuss remaining issues.

6.2 Kivalliq Community Involvement

Community involvement for the Kiggavik project began in 2006. Community involvement activities for 2015 are described in this section.

The Kiggavik Project has been speaking with high school students and giving awards at graduations in the Kivalliq region since 2006. In 2015, awards for excellence in math, science and Inuktitut were given to students in the seven Kivalliq communities.

Prior to the Kiggavik Final NIRB Hearings, AREVA along with the Northern Project Management Office and the Canadian Nuclear Safety Commission held public meetings in Baker Lake, Chesterfield Inlet and Rankin Inlet.

AREVA continued its Homeland visit program in 2015 bringing a total of seven Inuit to their former homeland on two trips. Since 2006, AREVA has carried out 29 Homeland visits with 123 participants.

Appendix A Compliance with Conditions

The following sections list the conditions of the Nunavut Impact Review Board (NIRB) Screening Decision, the Aboriginal Affairs and Northern Development Canada (AANDC) Land Use Permit, the Kivalliq Inuit Association (KIA) Land Use Licence and the Nunavut Water Board (NWB) Water Licence for the Kiggavik Project and also describe the means by which the Project has achieved compliance with these conditions.

A.1 Nunavut Impact Review Board file no. 06AN085

On March 26, 2008 NIRB re-issued the original terms and conditions ([April 3, 2007 Screening Decision](#)) along with the additional terms and conditions outlined in the August 30, 2007 and January 9, 2011 letters.

A.1.1 Original NIRB Screening Decision – April 3, 2007

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
AANDC imposed mitigation measures, conditions and monitoring requirements pursuant to the Federal Land Use Permit, which require AREVA (the Proponent) to respect the sensitivities and importance of the area. These mitigation measures, conditions and monitoring requirements should be in regard to: <ul style="list-style-type: none">a. Location and Areab. Timec. Equipmentd. Methods and Techniquese. Control or Prevention of Flooding, Erosion and Subsidence of Landf. Use, Storage, Handling and Disposal	Refer to Section A.4 for AANDC permit conditions.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>of Chemical or Toxic Material</p> <ul style="list-style-type: none"> g. Wildlife and Fisheries Habitat h. Objects and Places of Recreational, Scenic and Ecological Value i. Petroleum Fuel Storage j. Matters Not Consistent with Regulations 	
<p>AANDC must consider the importance of conducting regular Land Use Inspections, pursuant to the authority of the Federal Land Use Permit, while the project is in operation. The Land Use Inspections should be focused on ensuring the Proponent is in compliance with the DIAND Caribou Protection Measures.</p>	<p>AANDC conducted a field inspection pursuant to the Federal Land Use Permit on July 23, 2015. Refer to section 1.4.1 for details on this inspection.</p>
<p>KIA imposed mitigation measures and/or Environment Terms and Conditions pursuant to the IOL Licence in regard to:</p> <ul style="list-style-type: none"> a. General Standards b. Fuel and Chemical Storage c. Campsites d. Fisheries e. Ground Disturbance f. Wildlife g. Any other conditions recommended by the appropriate Community Lands and Resource Committee (CLARC) 	<p>Refer to Section A.5 KIA Land Use Licence.</p>
<p>Additional work (related to AANDC or KIA land applications) outside the original scope of the project proposal requires screening by NIRB; NIRB recommends any renewal request to be</p>	<p>Continual communication efforts are made with all regulatory agencies and boards.</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
forwarded to them for re-screening	
GN – DOE CO's should conduct random inspections of the location from May to August to monitor compliance with DIAND Caribou Protection Measures	The Baker Lake conservation officer discussed Caribou Protection Measures implemented in the 2015 field season with the Wildlife Monitor.
GN-DOE should conduct on-going review of wildlife monitoring results as required by WMMP	Monthly wildlife reports were submitted to GN-DOE during the duration of the 2015 field season.
After receiving the annual report, GN-DOE should report to NIRB and AANDC its findings regarding the possible impact of the Project on the Beverly and Ahiak caribou herds	No AREVA action required.
AANDC permit and KIA licence subject to any findings, direction or advice received from GN-DOE as result of 2007 GN/GNWT population surveys of the Beverly and Ahiak Caribou Herds.	No AREVA action required.
AREVA to maintain a copy of Screening Decision at the site	Located in the camp office and kitchen.
AREVA is to forward copies to NIRB of all permits obtained and required for the Project.	Ongoing.
AREVA to operate in accordance with proponent commitments stated in Appendix A (see A.1.2 below)	Refer to Section A.1.2 Summary of Proponent Commitments.
AREVA shall operate in accordance with	AREVA is committed to maintaining

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
commitments made in all the Operation Plans (namely Spill Contingency, Abandonment and Restoration, Noise Abatement, Waste Management, Wildlife Mitigation and Monitoring, Radiation Safety and the Environmental Code of Practice)	compliance as part of AREVA's commitment to continuous improvement. Management Plans are continually reviewed and are submitted with this annual report.
AREVA to submit annual report to NIRB, AANDC, KIA and GN-DOE by January 31 each year that the project is in operation commencing January 31, 2008.	Annual Reports have been submitted for 2007, 2008, 2009, 2010, 2011, 2012, 2013 and 2014. This submission represents the Annual Report for the 2015 exploration field program.
Shall abide by DIAND Caribou Protection Measures (see A.2) and those mitigation measures outlined in the WMMP.	This is ongoing throughout the field season with employee/contractor training and awareness. This is monitored by AREVA staff and Wildlife Monitors. Refer to Section 3.6.
Prohibited to allow aircraft to take-off or land if groups of caribou are within 1 km of the airstrip or helipad.	Addressed in the Wildlife Mitigation and Monitoring Plan; pilots receive training and awareness; verified by a Wildlife Monitor. Refer to Section 3.6 for more information.
Update WMMP to include "Section 2.1 During June and July – To avoid injuries to caribou and humans, if one or more caribou approach within 1 km of drilling operations, then activities will be suspended until caribou leave the area." Any direction from GN-DOE or KIA regarding caribou management plan must be forwarded to NIRB.	Revised conditions established in previous Wildlife Mitigation and Monitoring Plan. GNDOE believes that 50 caribou is an appropriate threshold for the suspension of activities (December 16, 2008 letter to NIRB regarding INAC and KIA land use permit extension request). Monitoring program (including Inuit wildlife monitors) help to guide this protection measure.
Ensure no hunting or fishing without proper Nunavut authorizations	Employees and contractors made aware of required authorization during orientation and

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
	through on-going awareness. Employees request fishing licences from the SHEQ Supervisor who obtains them from the Conservation Officer.
Compliance with the <i>CWS for Dioxins and Furans</i> , and the <i>CWS for Mercury</i> . Efforts to achieve compliance reported in annual report.	Refer to Section 3.2.1.
Adherence to conditions in Appendix B <i>Archaeological and Paleontological Resources – Terms and Conditions for Land Use Permit Holders</i> (see A.1.3 below)	Refer to Section A.1.3
Shall avoid known archaeological and/or paleontological sites	Record of known sites is kept updated and sites are avoided or handled appropriately by consultants and responsible authorities.

A.1.2 Appendix A: Summary of Proponent Commitments

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Disturbance to permafrost mitigated through insulating floors of buildings, keeping sump and incinerator area small and raising incinerator above ground	In compliance through proper site planning.
Use walkways to minimize soil and vegetation disturbance	Walkways are present between all buildings at the cabin and geology areas of camp; The importance regarding the use of walkways is stressed during the site orientation.
The impact of helicopter and airplane noise and presence on wildlife and people will be	Ongoing through the implementation of the Wildlife Mitigation and Monitoring Plan; proper

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
mitigated by avoiding wildlife during flights and avoiding low flying. This will require ongoing communication and diligence.	training and awareness to all site employees/contractors. Refer to Section 3.6 for more information.
The presence of wildlife will be carefully monitored to ensure minimal disturbance. Daily wildlife siting records will be maintained and these will be used to plan work so that wildlife disturbance will be minimized. The information will also be provided to management boards and regulatory authorities.	
Use protective procedures and containments to protect water quality	Ongoing through the implementation of the Spill Contingency Plan.
Grey water treated through sumps and carefully monitored to ensure containment	Prior to the completion of the 2012 season, a punctured barrel with sand and gravel was used to construct a sump for the grey water discharge. During the 2013 inspection, it was deemed adequate by the AANDC inspector. Additional improvements were made with the addition of filter berms around the sump area to increase retention time of water in the sump area. During the 2015 inspection, it was deemed as an improvement by the AANDC inspector. The sump was continuously monitored through 2015 to ensure proper containment.
No garbage to remain on site	Ongoing through the implementation of the Waste Management Plan.
Camp to be decommissioned when no longer	Addressed in the Abandonment and

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
in use	Restoration Plan.
No fuel, drill cuttings, chemicals, wastes or sediment will be deposited into any water body as per the <i>Fisheries Act</i> , S 36(3).	Ongoing through the implementation of the Waste Management Plan and the Spill Contingency Plan; proper training and awareness is provided to all site employees/contractors. Non-compliance identified during spill in 85W area (See Section 3.4.2)
Sumps, including those created for the disposal of drill cuttings are located above the high water mark of any water body to prevent contents from entering any water body frequented by fish	No sumps are located within the high water mark of any water body.
Drilling additives or mud not to be used in connection with holes drilled through lake ice unless re-circulated or contained such that they do not enter the water or are demonstrated to be non-toxic	On ice drilling has not been conducted to date. If such activities take place in the future, all proper methods will be applied to ensure drilling additives and muds do not enter the water. AREVA uses non-toxic materials wherever possible.
Land-based drilling not to occur within 30 m of the high water mark of any water body	Ongoing through the implementation of the Environmental Code of Practice; proper training and awareness provided; regular inspections of drill sites performed by SHEQ personnel. Any drilling within 30 m of the high water mark will be under an approved licence with applicable protection and mitigation measures in place to the satisfaction of the NWB and DFO.
Material will not be stored on the surface ice of	Any materials on ice surface are for immediate

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
lakes or streams. Materials on ice surface must be for immediate use.	use and completely removed before the melting of the ice.
If artesian flow is encountered, the drill hole will be immediately plugged and permanently sealed.	As approved by the NWB on March 14, 2012, AREVA is allowed to drill while under low flow artesian conditions within all areas encompassed by the Kiggavik Lease provided the appropriate measures are implemented (as outlined in Amendment approval). The amendment was further incorporated into the licence renewal for 2BE-KIG1318. Refer to Section 3.3.2 for information regarding artesian encountered during the 2015 field season.
Winter road travel will not begin until the ground is sufficiently frozen to provide support and to avoid surface damage and rutting	In compliance and ongoing. This is done by following the Environmental Code of Practice; proper training and awareness is provided.
Locate winter road stream crossings that will minimize grades. Avoid bank disturbance and mechanized clearing immediately adjacent to any watercourse.	Committed to conduct when required and achievable.
Winter road lake and stream crossings to be constructed entirely of ice and snow materials and stream crossings are to be removed or notched prior to spring break-up.	Committed to conduct when required and achievable.

A.1.3 Appendix B: Archaeological and Palaeontological Resources

Terms and Conditions for Land Use Permit Holders (Also attached to AANDC permit).

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
AREVA shall not operate any vehicle over a known or suspected archaeological or paleontological site	In compliance; use of ATV's only permitted around camp and for limited activities; addressed through proper training and awareness; included in site orientation.
AREVA shall not remove, disturb, or displace any archaeological artifact or site, or any fossil or paleontological site	Site rule that is reinforced during orientation.
AREVA will immediately contact the Dept. of Culture, Language, Elders and Youth (CLEY) should an archaeological site or specimen, or a paleontological site or fossil be encountered or disturbed by a land use activity.	AREVA will promptly contact CLEY should any site or specimen be encountered or disturbed.
AREVA will cease any activity that disturbs an archaeological or paleontological site until permitted to proceed by CLEY	In compliance through proper training and awareness; included in site orientation.
AREVA will follow CLEY and DIAND direction in restoring disturbed sites if required	AREVA strives to promptly follow-up on all recommendations/concerns.
AREVA will provide CLEY with requested information on sites encountered in the course of land use	Any information requested on sites encountered will be provided to CLEY.
AREVA will make best efforts to ensure all those working under a permit are aware of conditions concerning archaeological or paleontological sites	Training and awareness of archaeological and paleontological protocol is included in site orientation. Copies of all permits and licences are provided on site for reference.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
AREVA shall avoid known archaeological or paleontological sites	Record of known sites is kept updated and avoided or handled by consultants on the advice/recommendations of responsible authorities.
AREVA shall have an archaeologist or paleontologist perform those functions required and permitted by CLEY.	In compliance; Previously hired an independent consultant to conduct heritage surveys and investigations.

A.1.4 Additional NIRB Terms and Conditions

Terms and conditions contained in [August 30, 2007 letter](#):

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<i>Spill Contingency Plan</i>	
AREVA to consult and implement recommendations found in the 2003 CCME guidance document PN 1326 entitled "Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Product and Allied Petroleum Products"	The site layout and tanks have been designed by a consulting professional engineer and have been installed by a registered company/petroleum contractor to ensure compliance with the <i>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, 2003</i> . 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
AREVA to revise Spill Contingency Plan regarding this amendment and conduct personnel re-training as per revised Spill Contingency Plan. AREVA to submit revised plan to NIRB and other regulators within 30 days of this decision	
Revisions to include: quantity of the proposed double-walled tanks and the site layout plan; design considerations for safe operation and	

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
maintenance; operation, maintenance and inspection procedures and an emergency response plan.	<p>placed on timbers located under each saddle to provide an increased bearing area.</p> <p>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 area Fire Marshal, Tim Hinds with the Government of Nunavut-Community and Government Services via email (Trevor Carlson, AREVA) on November 20th, 2007.</p> <p>All necessary changes and appropriate training requirements have been made in both the Project's Spill Contingency Plan and the Emergency Response Manual.</p>
Secondary containment or surface liner with adequate size and volume utilized during all fuel or hazardous substance transfers	In compliance and ongoing through the implementation of the Spill Contingency Plan and the Environmental Code of Practice.
Sufficient absorbent materials and spill kits during fuel transportation, storage and transfers are provided	In compliance and ongoing through the implementation of the Spill Contingency Plan.
<i>Drilling and Disposal of Radioactive Substances</i>	
Use of biodegradable and non-toxic additives (Canadian Environmental Protection Act lists CaCl_2 as a toxic substance)	Committed to minimize the use of CaCl_2 when drilling conditions allow.
Drill holes that encounter uranium mineralization with a content $>1.0\%$ over a length of >1 m with a meter-percent concentration greater than 5% should be sealed by cementing over the entire	Committed to conduct when required and achievable as per Uranium Exploration Plan.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
mineralization zone; this should be at least 10 m above and below each mineralization zone.	
All land-based artesian holes shall be documented, plugged and sealed with grout.	Refer to section 3.3.2 for information regarding all artesian encountered during the 2015 field season.
Core storage areas should be located at least 100 m from the high waterline of all water bodies.	Ongoing through the implementation of the Radiation Protection Program and appropriate site planning.
<i>Physical Environment</i>	
No movement of equipment or vehicles unless the ground is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel suspended if rutting occurs	Ongoing throughout field season. Importance communicated to employees and contractors during orientation and on-going awareness. ATV and snowmobile use is strictly controlled.
Additional camp facilities to be located on gravel, sand or other durable land	Is in compliance and is ongoing through site planning. All buildings/sleeping units built in 2007 and later are located on timbers placed on gravel to allow airflow underneath the building which prevents degradation to permafrost.
New sleeping units properly designed to prevent any degradation to permafrost	
Final inspections of entire site to be conducted by proponent and lead agency to ensure all areas have been reclaimed in accordance with authorizations	Addressed in the Abandonment and Restoration Plan

Terms and conditions contained in [January 9, 2009 letter](#):

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
The Proponent shall make all efforts to minimize the use of aerial surveys to obtain information about caribou. It is recommended that the Proponent employ daily stationary ground observations and satellite caribou collar data in obtaining the necessary monitoring data.	In replacement of aerial surveys, ground observations are used by the Wildlife Monitor. Satellite caribou collar data from the government is provided to AREVA. See Section 3.6 for further details on wildlife monitoring and mitigation.
The Proponent shall not conduct aerial surveys with flight altitudes less than 120 m above ground level between June 1 and August 15.	Aerial surveys are conducted for the purpose of gathering geophysical data. As included in the Wildlife Mitigation and Monitoring Plan, it is required that such surveys are conducted at an altitude \geq 120 m.
The Proponent shall not construct camps, cache fuel, conduct blasting or drilling activities, or operate ground, air, or marine based mobile equipment within 10 km of a 'designated and/or recognized caribou crossing' during periods of caribou migration.	There is no infrastructure or activities occurring within 10 km of a designated and/or recognized caribou crossing. Refer to the Wildlife Mitigation and Monitoring Plan appended to this report for further details on AREVA's requirements.
Where wildlife are present, AREVA shall maintain a minimum flight altitude of 610 m above ground level where it is safe to do so	This requirement is specified in the Wildlife Mitigation and Monitoring Plan and communicated to the helicopter pilots. Flight altitudes checks are conducted by AREVA personnel to confirm compliance.
The Proponent shall maintain a daily logbook of caribou observations and submit these records to the Government of Nunavut, Department of Environment on a monthly basis.	A wildlife log is maintained in the Kiggavik kitchen, camp office and in each helicopter for personnel to track wildlife sightings. Wildlife sightings made by the wildlife monitor are also recorded. All wildlife sightings are reported to

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
	the GN-DoE monthly during the field season. See Section 3.6 for further details on monitoring and mitigation.

A.2 DIAND Caribou Protection Measures

Note that these conditions are also required by the KIA Land Use Licence, AANDC Land Use Permit and the NIRB Screening Decision.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Caribou Protection Areas	
No activity, without approval of Land Use Inspector, between May 15 and July 15 within the Caribou Protection Areas	AREVA does not conduct any activity within the designated Caribou Protection Areas.
When caribou cows approach area of operation within the Caribou Protection Areas all personnel not required for maintenance and protection of camp and equipment must leave the area.	
Activities within the Caribou Protection Areas occurring between May and July may be permitted by the Land Use Inspector if caribou cows are not expected to use the area for calving or post-calving.	
Caribou Protection - General	
In the event that caribou cows calve outside of the Caribou Protection Areas, operations will be suspended within the area(s) occupied by cows and/or calves between May 15 and	These requirements are included in the Wildlife Monitoring and Mitigation Plan. Employees are made aware of these commitments and they are monitored by

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
July 15.	AREVA staff and Wildlife Monitors. See Section 3.6 for further information.
The following operations will be suspended in the presence of caribou cows and calves: <ul style="list-style-type: none">• blasting• overflights at < 300 m above ground• snowmobile and ATV use outside vicinity of camp	
Caribou Protection - Migration	
No operation will block or cause diversion to migration	Ongoing through the implementation of the Wildlife Mitigation and Monitoring Plan; proper training and awareness provided to all site employees/contractors. See Section 3.6 for further information.
All activities that may interfere with migration will cease during migration	
Caribou Crossing	
No camp construction, caching of fuel or blasting will occur within 10 km of a Designated Caribou Crossing between May 15 and September 1	Ongoing through the implementation of the Wildlife Mitigation and Monitoring Plan; proper training and awareness provided to all site employees/contractors. See Section 3.6 for further information.
No diamond drilling operations within 5 km of a Designated Caribou Crossing between May 15 and September 1	
Additional	
Concentrations of caribou should be avoided by low level aircraft at all times	Ongoing through the implementation of the Wildlife Mitigation and Monitoring Plan; proper training and awareness provided to all pilots. Refer to Section 3.6 for more information

A.3 Nunavut Planning Commission Keewatin Regional Land Use Plan Conformity Determination

The Kiggavik Project received a positive conformity determination for advanced exploration on December 15, 2006, which is further outlined in the table below.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<i>Archaeological Sites and Artifacts</i>	
Artifacts must be left where they are found. All land users are responsible for reporting the location of, or any removal or disturbance of, artifacts to CLEY.	During orientation, personnel are informed of their responsibility to report the discovery of archaeological sites or artifacts. They are also informed that they shall not disturb known or suspected sites or artifacts.
The NPC and CMC shall continue to hold a central registry of archaeological sites and continue to monitor land use activities to protect these sites. Information about the location and identity of archaeological sites in specific areas, and the measures necessary to protect them, shall be included in land use permits. Land users shall report the discovery of all suspended archaeological sites to CLEY.	AANDC Land Use Permit N2014C0001 and the site orientation inform all employees of these requirements.
<i>Caribou Protection</i>	
Development activities shall be prohibited on all public lands and waters within all caribou calving areas during calving season and within caribou water crossings in the Keewatin, in accordance with the terms of DIAND caribou protection measures contained in Appendix H. Development activities shall be prohibited on IOL within all caribou calving areas during calving season and	KIA Land Use Licence KVL306C02 and AANDC Land Use Permit N2014C0001 These requirements are included in the Wildlife Mitigation and Monitoring Plan. Employees are made aware of these commitments and they are monitored by AREVA staff and Wildlife Monitors. See

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
within caribou water crossings in the Keewatin, in accordance with the KIA caribou protection measures (an example of which is contained in Appendix H). These measures shall be enforced throughout the region by DIAND, KIA and DSD, to the full extent of their respective jurisdictions.	Section 3.6 for further information.
During the caribou calving, post-calving and migrating seasons, land use activities should be restricted to avoid disturbing caribou, in general, and activities will be governed more specifically by caribou protection measures such as those contained in Appendix H.	Ongoing through the implementation of the Wildlife Mitigation and Monitoring Plan; proper training and awareness provided to all site employees/contractors.
<i>Cleanup and Pollution</i>	
<p>Community residents in particular, and all land users in general, shall be actively involved in planning and conducting cleanup operations, whenever possible and practicable.</p> <p>Refuse, such as fuel drums and scrap metal, shall be recycled where possible.</p> <p>Sites containing toxic materials shall be given priority for cleanup, and the location of these sites shall be widely publicized to warn residents.</p> <p>Sites within or near caribou calving grounds, near water and near communities shall also be given priority for cleanup.</p>	The Spill Contingency Plan, Abandonment and Restoration Plan, and Waste Management Plan outline the cleanup requirements and describe the methods for handling waste. This includes proper sorting and disposal of wastes. Personnel are trained and made aware of requirements during orientation.
New occurrences of pollution, garbage and contamination caused by anyone shall be prevented. Land users shall ensure that all drums are safely recovered.	During site orientation, employees are made aware of the requirements as described in the Spill Contingency Plan.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
The principle of “the polluter pays” shall apply to a strategy for cleaning up the environment. Where it is possible to identify the person, or company or agency responsible for creating an abandoned or inactive waste site, they shall be made responsible for the cleanup and restoration of the site.	All lands will be cleaned up prior to the expiry of the existing permits and licences in accordance with the Spill Contingency Plan, Waste Management Plan, and Abandonment and Restoration Plan.
The landscape of each camp and other land use sites will be restored to its original condition to the greatest degree possible. When possible and feasible, old sites will be restored to the natural state. (Code of Good Conduct – Appendix G)	Clean-up activities are outlined within the Abandonment and Restoration Plan, and will be completed prior to the expiry of existing permits and licences.
<i>Hydrocarbon Exploration</i>	
Hydrocarbon exploration shall continue to be restricted in the area encompassing southern Southampton Island and Coats Island, as at present.	The project proposal is not for hydrocarbon exploration in the area encompassing southern Southampton Island and Coats Island (Conformity Requirement 3.8 is not applicable).
<i>Hydroelectric Development</i>	
The possible cumulative impacts of additional hydroelectric power development in Manitoba, Ontario and Quebec on the ecosystem of Hudson Bay, James Bay and Hudson Strait must be examined before more hydroelectric development proceeds.	The project proposal is not for hydroelectric development (conformity requirement 2.13 is not applicable).
<i>Local Purchase of Supplies and Services</i>	
Whenever practicable, and consistent with sound	AREVA employs people from the local

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
procurement management, land users will follow the practice of local purchase of supplies and services. (Code of Good Conduct, Appendix G)	community, and contractors employ from surrounding communities of the region. Various services and supplies are provided by local companies.
Low Level Flights	
Generally, low-level flights by aircraft at less than 300 metres should not occur where they will disturb wildlife or people. If such flights are necessary, they should only take place after consultation with the appropriate communities. All land users are responsible for reporting to the land managers any illegal or questionable low-level flight.	The project proposal does involve absolutely necessary low level flights, the proponent has or will consult with the communities, and pilots will avoid disturbance to wildlife and people. Reasonable comments on the necessity of low-level flight (NPC, 2006). These requirements are included in the Wildlife Monitoring and Mitigation Plan. Employees are made aware of these commitments and they are monitored by AREVA staff.
Low level flights shall not take place unless absolutely necessary. Should they be necessary, pilots shall avoid disturbance to people and wildlife wherever possible.	
Mine Closure and Restoration	
All proposals for mining developments shall include adequate plans for mine closure and restoration of the site.	The project proposal is not for mining development (conformity requirement 3.4 is not applicable).
Academic and / or Scientific Research	
Local and traditional knowledge shall be sought and, when available and relevant, shall be integrated with the scientific knowledge.	The project proposal does not involve academic and/or scientific research (conformity requirements are not applicable).
Research programs conducted in the Keewatin shall, where possible, rely on local services and local employment.	

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
All scientific researchers shall communicate with the communities in clear, non-technical language in Inuktitut and English. Scientific researchers shall communicate the results of their research to the communities.	
Academic and scientific researchers shall make all reasonable efforts to consults the NRI concerning research topics or fields that would be of benefit and interest to local residents.	
Transportation and/or Communications Corridors	
All parties wishing to develop a transportation and/or communications corridor shall submit to the NPC a detailed application for an amendment. This application must include an assessment of alternative routes, plus the cumulative effects of the preferred route. It shall provide reasonable options for other identifiable transportation and utility facilities. In particular, this application must meet the information requirements set out in Appendix J.	The project proposal is not for the development of a transportation and/or communications corridor (conformity requirements 5.6 and 5.7 are not applicable).
The NPC and either NIRB or a panel acting under s. 12.4.7 of the NLCA shall publicly review the proposed corridor to determine whether the proposal adequately meets the requirements of Appendix J and the guidelines of Appendix J. Once it is determined that a proposal meets the guidelines, the NPS may request the Minister of DIAND to amend the plan to include the new transportation corridor.	

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<i>Uranium Development</i>	
Uranium development shall not take place until the NPC, NIRB, the NWB, and the NWMB have reviewed all of the issues relevant to uranium exploration and mining. Any review of uranium exploration and mining shall pay particular attention to questions concerning health and environmental protection.	The project proposal is not for uranium development (conformity requirements 3.5 and 3.6 are not applicable).
Any future proposal to mine uranium must be approved by the people of the region.	

A.4 Aboriginal Affairs and Northern Development Canada

The following table lists terms and conditions of the AANDC Land Use Permit N2014C0001 (Received May 30, 2014, Expires May 29, 2016).

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall not conduct land use operation on any lands not designated in the accepted application, unless otherwise authorized in writing by the Engineer.	Ongoing through operations.
Shall remove from Territorial Lands, all scrap metal, discarded machinery and parts, barrels and kegs, buildings and building material.	All wastes will be removed upon permanent cessation of activity as per the approved Waste Management Plan and Abandonment and Restoration Plan.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall not construct an adit or drill site within 31 metres of the normal high water mark of a water body unless approval in writing is obtained from the Engineer.	Ongoing through operations. Should drilling within 31 m of the water mark be required, AREVA will seek the Engineer's approval.
Shall contact or meet with a Land Use Inspector at least 48 hours prior to commencement of the land use operation	Ongoing through regular communication prior to commencement of operations.
Shall provide notification to the Engineer of commencement of the land use operation by emailing landsmining@aandc.gc.ca or telephone at (867) 975-4283	Ongoing through regulator communication prior to commencement of operations.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>Shall submit an annual report to the Engineer by March 30 of each year of permitted activities. The report must contain, but not limited to, the following information:</p> <ul style="list-style-type: none"> a) A summary of activities undertaken for the year including b) A map showing the following items with exact coordinates (degrees/min/sec, in NAD 83): <ul style="list-style-type: none"> i. All drilling locations ii. All fuel caches iii. Any other location where activities were conducted c) A work plan for the following year, including any progressive reclamation work undertaken. 	<p>This annual report</p>
<p>Advise the Land Use Inspector at least 10 days prior to the completion of land use operation of:</p> <ul style="list-style-type: none"> a) His plan for removal or storage of equipment and materials, and b) When final clean-up and restoration of the lands used will be completed 	<p>Ongoing through regular communication. Final clean-up will occur upon permanent cessation of activities.</p>
<p>Shall complete all clean-up and restoration of lands used prior to the expiry date of the permit.</p>	<p>Noted – Restoration will be completed upon permanent cessation of activity prior to the expiry of the permit.</p>
<p>The Engineer reserves the right to impose closure to any area to the permittee in periods when dangers to natural resources are severe</p>	<p>Noted.</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall not use any equipment except of the type, size and number listed in the accepted application, unless otherwise authorized in writing by the Land Use Inspector	Ongoing.
All garbage and debris must be kept in a covered container until disposed of and must be kept as to avoid access by wildlife	Garbage is kept inside or in appropriate containers until incinerated or stored in sea-containers for disposal at a licensed facility.
Shall plug all bore holes as the land use operation progresses	All drill holes are cemented and grouted as required.
Shall refill and restore bore-hole craters as the land use operation progresses	Ongoing – Refer to Section 3.7.2. Where clean cuttings are not available, gravel will be used to backfill craters.
Shall not erect camps or store material on the surface ice of streams	Noted
Cut and cap all anchors as close to the ground as possible when completed at any drill holes	Noted
Ensure land use area is kept clean and tidy at all times	Ongoing through operations. Personnel are informed of requirements during site orientation.
Shall remove any obstruction to natural drainage caused by any part of this land use operation	Noted.
Shall not cut any stream bank unless authorized in writing by a Land Use Inspector	Noted.
Shall not construct interceptor or off-shoot drainage ditches unless approved in writing by the Land Use Inspector	Noted.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall install erosion control structures as the land use operation progress unless otherwise authorized by a Land Use Inspector	Noted.
Shall prepare the site in such a manner as to prevent rutting of the ground surface	Walkways around camp prevent rutting and ground disturbance. As well an ATV is used around camp, however its use is not permitted when ground is soft. The area is inspected regularly by AREVA site personnel.
Shall not use chemicals in connect with the land use operation without the prior approval of the Engineer	Comply with list provided in application.
Shall not to allow any drilling waste to spread to the surrounding lands	All non-radioactive drill waste is contained to a low-lying depression. All radioactive drill waste is disposed of down hole when achievable or collected and stored in long-term on-site storage facility. See 3.4.2 for drill waste in 85W area
Remove all non-combustible garbage and debris from land use area to a disposal site approved in writing by a Land Use Inspector	Currently being separated and stored for future removal off-site; some items are being backhauled off-site for disposal at an approved facility.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall dispose of all combustible waste petroleum products by removal	Noted – All waste petroleum products will be transported to a licensed facility for disposal
Shall dispose of all toxic or persistent substances in a manner as approved in writing by the Engineer	Noted
Shall dispose of all fluids used to wash machinery and equipment at the Kiggavik camp as indicated in the land use application	Noted
Shall remove and treat hydrocarbon contaminated soils on site or transport them to an approved disposal site for treatment	Noted – All hydrocarbon contaminated soils are backhauled from site for transfer to a licensed disposal facility
Shall ensure that appropriate spill response equipment and clean-up materials (e.g. shovels, pumps, barrels, drip pans, and absorbents) must be readily available during any transfer of fuel or hazardous substances, as well as at fuel caches and drill sites	Ongoing through operations. Spill kits are available at all fuel cache and drill sites.
Shall report all spills immediately in accordance with instructions contained in “Spill Report” form NWT 1752(05/93). Twenty four (24) hour spill report line (867) 920-8130.	Ongoing through operations. See Section 3.4.2.
Shall not unnecessarily damage wildlife habitat	Development and implementation of the Environmental Code of practice and the Wildlife Mitigation and Monitoring Plan; training and awareness
Shall not obstruct the movement of fish	Ongoing through operations

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall not extract water from any fish-bearing waterbody unless the water intake is equipped with a screen of appropriate mesh size to ensure that there is no entrapment of fish	Ongoing through operations. The drill contractor is aware of the requirement and continues to use the appropriate mesh size.
The operation is in an area where bears may be encountered. Proper food handling and garbage disposal procedures will lessen the likelihood of bears being attracted to the operation. Information about the latest bear detection and deterrent techniques can be obtained from the Department of Renewable Resources.	AREVA continues open communication with the local Conservation Officer to ensure proper deterrents are on hand and that personnel are aware of how to use the deterrents.
Shall not harass wildlife. This includes persistently worrying or chasing animals, or disturbing large groups of animals. Shall not hunt or fish, unless proper Nunavut authorizations have been acquired.	Ongoing through implementation of the Wildlife Mitigation and Monitoring Plan and training during site orientation.
Shall not disturb or destroy the nests or eggs of any birds. If nests are encountered and/or identified, precaution must be taken to avoid further interaction and/or disturbance. If active nests are discovered (with eggs or young), the area must be avoided until nesting is complete and the young have left the nest.	Ongoing through implementation of the Wildlife Mitigation and Monitoring Plan and training during site orientation.
Shall not feed the wildlife	Implementation of the Wildlife Monitoring and Mitigation Plan; Communicated as site rule during orientation, training and awareness.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Fuel storage must be a minimum of 31 m from normal high water mark	The main and camp fuel caches are located > 31 m from the normal high water mark.
Shall ensure re-fuelling of all equipment occurs a minimum of 31 m from the high water mark of any water body	Ongoing through proper planning, inspection, and training.
Shall not allow petroleum products to spread to surrounding lands or into water bodies and prevent access by wildlife	Fuels are properly contained within secondary containment structures.
Mark all fuel containers with Permittee's name	Ongoing.
Shall keep on hand, at all time during the land use operation, a copy of the Land Use Permit	Ongoing through operations.
Shall provide in writing to the Engineer, at least forty-eight (48) hours prior to commencement of land use operation, the following information: <ul style="list-style-type: none"> a. Person, or persons, in charge of the field operation to whom notices, orders, and reports may be served; b. Alternates; c. All the indirect methods for contacting the above person(s). 	The Kiggavik Contact list is provided to all regulators prior to commencement of field operations.
Shall submit to the Engineer a contingency plan, for chemical and petroleum spills, for use during the construction and operation of the winter road	In addition to the contractor spill response policy, AREVA also maintains the Kiggavik Spill Contingency Plan

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>Shall abide by and comply with all applicable lawful rules, acts, regulations, and by-laws of Canada, Nunavut, any Municipal or regulatory body or authority having jurisdiction the Nunavut Land Claim Agreements, and all other agreements, permits, licenses, and other instruments whatsoever related to the project</p>	<p>This commitment to compliance is ongoing through operations. Regulatory requirements are regularly reviewed to ensure that recent updates or amendments that may influence operations are noted and implemented in advance of land use operation.</p>
<p><i>Caribou Protection Measures</i></p>	
<p>Shall not, without approval, conduct any activity between May 15 and July 15 within the Caribou Protection Areas depicted on the map certified by the Engineer as the “Caribou Protection Map” annexed to the Land Use Permit.</p> <p>Upon approval by the Land Use Inspector, may operate within the Caribou Protection Areas beyond the May 15 deadline provided that when monitoring information indicates the caribou cows are approaching the area of operation, activities will cease, personnel will be removed who are not required for maintenance and protection of the camp facilities and equipment, unless otherwise directed by the Land Use Inspector. Activities may resume prior to July 15 within those parts of the Caribou Protection Areas released by the Land Use Inspector for the reason that caribou cows are not expected to use those parts for calving or post-calving.</p>	<p>AREVA does not operate within the Caribou Protection Areas depicted on the map.</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>In the event that caribou cows calve outside of the Caribou Protection Areas, the Permittee shall suspend operations within the area(s) occupied by cows and/or calves between May 15 and July 15.</p> <p>In the event that caribou cows and calves are present, the permittee shall suspend:</p> <ul style="list-style-type: none"> i. Blasting; ii. Overflights by aircraft at any altitude of less than 300 m above ground level; and iii. The use of snowmobiles and ATV (all-terrain vehicles) outside the immediate vicinity of the camp. 	<p>Compliance achieved through implementation of the Wildlife Mitigation and Monitoring Plan, which is communicated to all personnel during site orientation. See Section 3.6 for further information.</p>
<p>During migration of caribou, operation shall not be placed as to block or cause substantial diversion to migration. Activities shall cease that may interfere with migration, such as airborne geophysics surveys or movement of equipment, until the migrating caribou have passed.</p>	<p>Ongoing through implementation of the Wildlife Mitigation and Monitoring Plan. See Section 3.6 for further information.</p>
<p>Shall not, between May 15 and September 1, construct any camp, cache any fuel, or conduct any blasting within 10 km of any “Designated Crossing” as outlined on the map certified by the Engineer as the “Caribou Protection Map” annexed to this Land Use Permit.</p>	<p>AREVA will not construct camp, cache fuel, or conduct blasting within 10 km of a caribou crossing. No activities are conducted within 10 km of a caribou crossing.</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall not, between May 15 and September 1, conduct any diamond drilling operation within 5 km of any “Designated Crossing” as outlined on the map certified by the Engineer as the “Caribou Protection Map” annexed to this Land Use Permit.	AREVA will not drill within 5 km of a designated caribou crossing.
Archaeological and Paleontological Terms and Conditions	
Shall avoid any known or suspected archaeological and/or paleontological sites	Ongoing through operations and personnel are trained during site orientation
Shall not remove, disturb, or displace any archaeological artifact or site, or any paleontological site or fossil	Ongoing through operations and personnel are trained during site orientation

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>Shall immediately cease any activity should a suspected archaeological, paleontological, or burial site be discovered during the course of a land use operation. Immediately contact the AANDC Land Administration division (867) 975-4283 or (867) 975-4285 and Department of Culture, Language, Elders and Youth at (867) 934-2046 or (867) 975-5500 or 1 (866) 934-2035. Permission to resume land use operations must be obtained from the Engineer. At such time the Engineer may, at his/her discretion, require that you have an archaeologist or paleontologist perform the following functions:</p> <ul style="list-style-type: none"> a) Survey b) Inventory and documentation of the archaeological or paleontological resources of the land use area c) Assessment of potential for damage to archaeological or paleontological sites d) Mitigation e) Marking boundaries of archaeological or paleontological sites f) Site restoration 	<p>AREVA maintains a map of known archaeological sites to ensure that any new sites are properly reported if encountered during the course of land use operations. Training for personnel is provided during site orientation.</p>
<p>Shall ensure that all persons working under the authority of the permit are aware of these conditions pertaining to archaeological sites and artifacts as well as paleontological sites and fossils.</p>	<p>AREVA maintains a map of known archaeological sites to ensure that any new sites are properly reported if encountered during the course of land use operations. Training for personnel is provided during site orientation.</p>

A.5 Kivalliq Inuit Association Land Use Licence

The following table lists terms and conditions appended to KIA Land Use Licence KVL306C02 (received April 3, 2007; expiry January 3, 2015).

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<i>Licence Terms and Conditions</i>	
Compliance with all applicable regulations, laws, orders and with terms of licence. Provide KIA with written notices of non-compliance.	AREVA complies with all regulations, laws, orders and with terms of licence. Written notices are and will continue to be provided to KIA should a non-compliance occur.
Obtain and maintain such licences, permits or approvals from the federal, territorial or other governing bodies as may be necessary to enable the Licencee to undertake the permitted activities on the lands	AREVA will obtain all required authorizations.
Permit KIA reasonable access to site for purpose of inspecting	Ongoing. KIA conducted an inspection of the Kiggavik Project on August 19, 2015.
All fees required under licence due on the first of each month. AREVA responsible for reasonable costs of inspections KIA deems necessary to monitor compliance.	AREVA has provided all formally requested fees.
Obtain and maintain appropriate insurance at all times during occupation. Proof of all insurance shall be provided	Ongoing.
AREVA is required to pay the applicable licence fees if operations cease and environmental remediation reclamation occurs	Condition is recognized by AREVA.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Any damage or injury to lands or property caused by licensee will be repaired, rebuilt, replaced and restored to the satisfaction of KIA.	Addressed in the Abandonment and Restoration Plan.
Submit a Work Plan (proposed operation for upcoming year) and an Environmental Action Plan (reclamation and remediation plans) to KIA no later than September 30 th each year	Obtained agreement from KIA allowing all revised Plans to be submitted with the Annual Report in January of each year.
<i>Schedule A: General Standards</i>	
No operations on lands not covered by approved licence	In compliance and ongoing.
Contact KIA at least 48 hours prior to commencement of licensed activities	KIA has been and will continue to be notified prior to the start of each field season.
Keep all combustible garbage and debris in a covered metal container; combustible garbage burned in a suitable container; non-combustible removed to approved locations	Ongoing by implementing the Waste Management Plan; includes the proper sorting and storage of garbage; non-combustible garbage back-hauled off-site.
Sewage deposited into a sump or removed from lands	Received verbal approval from inspector to incinerate solid sewage waste and discharge liquid waste with grey water.
No metal wastes buried without consent of the KIA	In compliance through the implementation of the Waste Management Plan; proper training and awareness; proper sorting and storage.
Locate all camps on gravel, sand or other durable land. No permanent structures erected without KIA consent.	Addressed in site plans; all permanent structures have approval of KIA.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Housekeeping – keep lands free of garbage and debris	Addressed through formal daily site inspections conducted by AREVA site personnel. Expectations are reviewed during site orientation.
All man-bear interactions reported to nearest Renewable Resources Office	AREVA will continue to comply if such interactions were to occur.
Licence available for viewing in a conspicuous place on site	All site staff is made aware of its location in the camp office and kitchen.
Within 60 days of licence expiry AREVA to provide KIA with final plan showing all areas used in operations	Condition noted and will be complied with upon expiry of approvals.
All buildings, equipment and materials removed (unless otherwise authorized) at completion of operations or licence termination.	This is addressed in the Abandonment and Restoration Plan.
All burial grounds avoided and left undisturbed. All discovered sites to be reported to KIA.	Condition noted and will be complied with upon occurrence.
Operations carried out as to minimize surface disturbance	Ongoing by implementation of the Environmental Code of Practice
All disturbed areas restored	AREVA continues to implement the Abandonment and Restoration Plan.
Surface vehicles not to be used to move drill rigs or other equipment/supplies without prior authorization. Vehicle use off approved routes prohibited.	In compliance; ATV approved to be used around camp only. Most material is transported by helicopter.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
No petroleum storage containers within 12 m of the normal high water mark.	In compliance through the implementation of the Spill Contingency Plan; generally adhere to the more stringent condition of 31 m.
No petroleum or chemical products to spread to surrounding lands or waters	Ongoing through the implementation of the Environmental Code of Practice and the Spill Contingency Plan. This involves extensive preventative measures and careful monitoring. All fuel and equipment is kept at a minimum of 31 m from the high water mark
All petroleum shall be kept in approved containers marked or within a bermed area. All containers labeled with licensee name	Ongoing through the implementation of the Spill Contingency Plan.
All spills reported	Noted
All combustible waste will be incinerated or removed	Ongoing through the implementation of the Waste Management Plan; proper sorting of wastes; proper training and awareness.
All drill fluids disposed of in sump or naturally occurring contained depression. Drill fluids recycled whenever possible.	Non-mineralized drill fluids are deposited in a naturally low lying depression >31 m from any water body. Mineralized cuttings are collected and stored in the Radioactive storage compound.
No drill sumps to be located within 30 m of any water body	Instructed through Management Plans and adhered to through site planning.
All drill sumps to be restored to natural surrounding contours of the land prior to licence expiry	To be completed through the implementation of the Abandonment and Restoration Plan.
Restrict vegetation disturbance from deposit of	Ongoing throughout field season and

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
drill fluids/cuttings to the area of the sump and ground prepared for re-vegetation upon abandonment	implemented through the Abandonment and Restoration Plan.
No deposit of deleterious substances into any water body	Ongoing through the implementation of the Spill Contingency Plan.
Not cause obstruction of any stream	In Compliance through implementation of the Environmental Code of Practice; proper training and awareness.
Winter stream crossings must be removed prior to annual break-up	Condition noted.
Shall abide by Caribou Protection Measures	Measures have been integrated into the Wildlife Mitigation and Monitoring Plan.
Ensure there is not damage to wildlife habitat	Condition integrated into Wildlife Mitigation and Monitoring Plan and continued employee awareness through orientation and on-going training.
Shall cease activities that may interfere with migration or calving	Integrated into Wildlife Mitigation and Monitoring Plan and considered when planning site activities.
Shall not move any equipment or vehicles without prior testing the thickness of ice	No on ice drilling conducted to date; recommendation is implemented by contractors conducting winter haulage.
Shall suspend overland travel of equipment or vehicles if rutting occurs	Condition is noted. AREVA site personnel monitor land conditions during regular inspections of field operations and winter hauls.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Shall construct and maintain winter roads with a minimum of ten centimeters of packed snow at all times	Condition communicated to contractor carrying out winter haul.
Shall not use any equipment except of the type, size and number listed in the application	AREVA is in compliance with this list and any other amendments issued.

A.6 Nunavut Water Board Licence

The following table lists terms and conditions appended to NWB licence 2BE-KIG1318 (previous licence No.'s 2BE-KIG0812, 2BE-KIG0708 and 2BE-SIS0607).

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<i>General</i>	
Annual fees paid in advance of water use	Ongoing.
File an annual report by March 31 st containing the following: <ul style="list-style-type: none"> a. A summary report of water use and waste disposal activities; b. A list of unauthorized discharges and a summary of follow-up actions taken; c. Any revisions to the Spill Contingency Plan, Abandonment and Restoration Plan, Uranium Exploration Plan, as required by Part B, Item 7, submitted in the form of an Addendum; d. A description of all progressive and or final reclamation work undertaken, 	Fulfilled with submission of this 2015 Annual Report. Annual Reports had previously been submitted for 2007, 2008, 2009, 2010, 2011, 2012, 2013 and 2014.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>including photographic records of site conditions before, during and after completion of operations;</p> <p>e. Report all artesian flow occurrences as required under Part F, Item 6;</p> <p>f. A summary of all information requested and results of the Monitoring Program; and</p> <p>g. Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.</p>	
<p>Notify NWB of any changes in operating plans or conditions associated with the project at least 30 days prior to the change</p>	<p>Continual communication efforts are made with all regulatory agencies and boards and amendments applied for as necessary.</p>
<p>Install flow meters or other such devices, or implement suitable methods required for measuring of water volumes</p>	<p>Complete on camp water supply and all drilling rigs on June 18, 2015. Meters were installed on drilling rigs indicate total water removed from water source and are located between the water pump and the drilling rig setup. Refer to Section 3.1 for further information.</p>
<p>Include proposed implementation timetable with submitted plans for Board approval and direction and implement plans as approved</p>	<p>All plans have been implemented.</p>
<p>Review plans as required by changes in operation and/or technology, and modify the plans accordingly. Revisions to the plans shall be submitted in the form of Addendum to the Annual</p>	<p>Plans are included as an addendum to this Annual Report.</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Report.	
Every plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a plan where appropriate.	Term and conditions are considered and incorporated into the plans which are included as an addendum to this report.
Copy of Licence is maintained at site.	Available in site office and kitchen.
Shall submit one paper copy and one electronic copy of all reports, studies, and plans to the Board. Reports or studies submitted to the board shall include a detailed executive summary in Inuktitut.	Ongoing.
<i>Water Use</i>	
Obtain all camp water from a small unnamed lake located to the north of the camp or a small unnamed lake located to the east of the camp, to a maximum of ten (10) cubic metres per day. Drill water shall be obtained from water sources, proximal to the drilling targets, to a maximum of two-hundred and eighty nine (289) cubic metres per day. The total volume of water for the purposes of this Licence shall not exceed two hundred ninety nine (299) cubic metres per day.	Ongoing compliance through the field season is demonstrated in Section 3.1.
Streams cannot be used as a water source unless authorized and approved by the Board in	Streams were not used as water sources.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
writing.	
Notify NWB of potential drawdown of a water source at least 30 days prior to commencement of use of water, submit to the Board for approval in writing, the following: volume required, hydrological overview of the water body, details of impacts, and proposed mitigation measures.	Condition is noted. NWB will be notified as required.
Water intake hoses have screens of appropriated mesh size to ensure fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.	Ongoing. All water pumps are inspected by AREVA site personnel to ensure compliance with this condition. The appropriate mesh size is described in the Department of Fisheries and Oceans Freshwater Intake End-of-Pipe Fish Screen Guideline.
Shall not remove any material from below the ordinary high water mark of any water body	Training and awareness. Inspections are conducted to ensure compliance.
Shall not cause erosion to banks of any body of water	Condition met throughout the field season.
Implement sediment and erosion controls prior to and maintained during operation	Condition noted. Preventative and mitigation measures are in place for sediment and erosion control during drilling activities.
<i>Waste Disposal</i>	
Waste disposal is a minimum of 31 m from ordinary high water mark of any water body such that the quality, quantity or flow of water is not impaired, unless otherwise approved by the Board in writing.	Waste disposal sites are located more than 31 m from the high water mark.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>Shall not practice on-site land filling of domestic waste, unless otherwise approved by the Board in writing.</p> <p>AREVA is authorized to dispose of all acceptable food waste, paper waste and untreated wood products in an incinerator.</p> <p>AREVA shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood to prevent the deposition of waste materials of incomplete combustion and/or leachate from contaminated ash residual, from impacting surrounding waters, unless otherwise approved by the Board in writing.</p>	<p>As per the Waste Management Plan, wastes are managed and sorted, the incinerator is then used to dispose of acceptable waste and the remaining materials are stored on site for future disposal at a licensed facility.</p>
<p>Provide authorization from all communities in Nunavut receiving wastes from the Kiggavik Project prior to backhauling and disposal of wastes</p>	<p>Received written consent from the Hamlet of Baker Lake in 2007, forwarded to NWB. No waste was disposed of in any community in 2015.</p>
<p>Backhaul and dispose of all hazardous wastes, waste oil and non-combustible waste at a licensed waste disposal site</p>	<p>Hazardous waste generated during 2015 was backhauled during the field season and disposed of at an licensed facility.</p>
<p>Shall maintain records of all waste backhauled and records of confirmation of proper disposal of backhauled waste.</p>	<p>Waste manifests are completed for all waste backhauled, and records are available.</p>
<p>Contain all grey water in a sump 31 m from the ordinary high water mark of any water body, at a site where direct flow into a water body is not possible and no additional impacts are created, unless otherwise approved by the Board in</p>	<p>Currently grey water is being placed in a sump which is comprised of a punctured barrel buried in the ground and filled with sand/gravel for filtration. The location is</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
writing.	greater than 100 m from any water body.
<p>Shall contain all toilet wastes in latrine pits or use incineration, chemical, portable or composting toilets. Latrine pits shall be located at a distance of at least thirty one (31) metres above the ordinary high water mark of any water body, treated with lime and covered with native material to achieve the pre-existing natural contours of the land prior to abandonment.</p> <p>Shall dispose of all toilet wastes through incineration, chemical or composting toilets. Any remaining residue generated through the course of the operation shall be backhauled and disposed of in an approved waste disposal site.</p>	<p>Sewage waste is collected and incinerated. The ashes are backhauled for disposal in an approved waste disposal site.</p>
Shall ensure that any hazardous materials, including waste oil, receive proper treatment and disposal at an approved treatment facility.	Hazardous materials are stored on site until they are backhauled for shipment to a licensed facility.
<i>Camps, Access Infrastructures and Operations</i>	
Shall not erect camps or store material on the surface of frozen streams or lakes including the immediate banks except what is for immediate use. Camps shall be located such as to minimize impacts on surface drainage.	Operation is seasonal from May to September. Informed through training and awareness. The camp does not impact surface drainage.
Conduct activities in a way to minimize impacts on surface drainage	Drainage and flow are considered prior to activities.
Winter lake and stream crossings shall be constructed entirely of water, ice or snow. Choose locations that minimize disturbance by	This is ongoing through proper selection of routes for the Winter Haul of materials.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
locating ice bridges in an area that requires the minimum approach grading and the shortest crossing route. Stream crossings shall be removed or the ice notched prior to spring break-up.	
With respect to access road, pad construction or earthworks, the deposition debris or sediment into or onto any water body is prohibited. These materials shall be disposed a distance of at least thirty one (31) metres from the ordinary high water mark in such a fashion that they do not enter the water.	Currently the site is not accessed by road; however should there be construction or earthworks in the future, this item has been noted. Compliance is achieved through training, awareness and project planning.
Shall not mobilize heavy equipment or vehicles for trenching or other activities unless the ground is capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel of equipment or vehicles shall be suspend if rutting occurs	The winter haul is performed only when the ground is capable of supporting the equipment or vehicles without rutting.
<i>Drilling Operations</i>	
AREVA to review and revise Uranium Exploration Plan as required by changes in operation and/or technology. Revisions to Plan submitted as addendum with Annual Report.	Board approved AREVA's original Uranium Exploration Plan submitted October 17, 2007. As part of AREVA's commitment to continual improvement, Management Plans are reviewed regularly and the current plans are included in Appendix C.
AREVA shall not conduct any land based drilling within thirty-one (31) metres of the ordinary high water mark of any water body with the exception of the End Grid Lake area as identified in the	Any drilling within 31 m of the high water mark will be under an approved licence amendment with applicable protection and mitigation measures in place to the

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
application received dated October 9, 2008.	satisfaction of the NWB and DFO.
Drill waste (water, chips, muds, salts) from land-based drilling are disposed of in properly constructed sump or natural depression	Use natural depressions, supplemented by temporary sandbag berms and visually monitoring flow. These areas are regularly inspected by AREVA staff. There was a failure to contain drilling waste on one occasion (See Section 3.4.2). Progressive reclamation underway (See Section 3.7.2).
Drill mud solids or cuttings with a uranium concentration greater than 0.05 percent are to be collected and then disposed of down the drill hole and sealed.	Due to difficulty disposal down the drill hole, this material is collected in bags and should the radiation levels exceed 1 µSv/h, the bags are stored in the radioactive storage compound at the Kiggavik Camp for future handling. All drill holes are sealed.
<p>AREVA is permitted to drill under low flow artesian conditions within all areas encompassed by the Kiggavik Lease provided that appropriate measures are implemented to prevent induced contamination of groundwater or salinization of surface waters and that AREVA adheres to the following:</p> <ul style="list-style-type: none"> a. Shall analyze water encountered from the artesian flow to confirm the quality of the water as per Part J, Item 12; b. Shall adhere to the operational and mitigation measures as outlined in the technical support document "Drilling in Low Flow Artesian Conditions" submitted 	When low flow artesian (≤ 95 L/min) are intercepted during drilling operations, the operational and mitigation measures are implemented as per the Technical Support Document submitted with the March 29, 2012 application. Refer to Section 3.3.2 for details regarding all artesian flows encountered during the season.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>as part of the application dated March 29, 2011.</p> <p>c. Shall provide as part of the Annual Report required by Part B, Item 2, information on all artesian flow encountered, with GPS coordinates, dates, and flow rates, depth, permafrost, aquifer and Packer testing data and associated water quality analytical results.</p>	
<p>Record the depth of permafrost – include in annual report</p>	<p>The pneumatic packer testing and installation of thermistors did not occur through the 2015 season as these are activities specific to baseline studies for mine development. The permafrost depths are therefore estimated based upon previous thermistor locations (See Section 1.2).</p>
<p>No on-ice drilling</p>	<p>On ice drilling will only occur under applicable approved licence amendments with appropriate protection and mitigation measures in place to the satisfaction all regulatory bodies.</p>
<p>When conducting drilling within 31 m of the ordinary high water mark of End Grid Lake, activities are to be on stable ground such as frozen tundra or bedrock, to prevent disturbance to the natural ground and limit erosion and sedimentation.</p>	<p>Drill platforms are located on stable ground and set up on timbers to prevent ground disturbance and damage to permafrost.</p>
<p>AREVA shall establish water quality conditions of</p>	<p>There were no drill holes completed within</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
adjacent waters or waters immediately downstream prior to and upon completion of any drilling program within 31 m of the high water mark proximal to the End Grid Lake Area.	31 m of the End Grid Lake high water mark.
If artesian flow is encountered in areas other than the Kiggavik Lease, drill holes shall be immediately sealed and permanently capped to prevent induced contamination of groundwater or salinization of surface waters. AREVA shall report all artesian flow occurrences within the Annual Report, including the location (GPS coordinates) and dates.	There were no artesian flows encountered outside the Kiggavik Lease.
<i>Modifications</i>	
<p>AREVA may, without written consent from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:</p> <ol style="list-style-type: none"> AREVA has notified the Board in writing at least 60 days prior to beginning Modifications; Modifications do not place AREVA in contravention of the Licence or the <i>Act</i> Modifications are consistent with the NIRB Screening Decision; The Board has not, during the 60 days following notification of the proposed Modifications, informed AREVA that 	Management is aware of these conditions and will comply to them if modifications are required.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
<p>review of the proposal will require more than 60 days; and</p> <p>e. The Board has not rejected the proposed Modifications.</p>	
<p>Modifications for which all of the conditions referred to in Part G, Item 1 have not been met can be carried out only with written approval from the Board.</p>	Noted
<p>AREVA shall provide as-built plans and drawings of the Modifications within 90 days of completion. These plans and drawings shall be stamped by an Engineer.</p>	Noted
<p><i>Spill Contingency Planning</i></p>	
<p>AREVA shall review the Spill Contingency Plan as required by changes in operation and/or technology and modify the Plan accordingly. Revisions to the Plan are to be submitted in the form of an Addendum to be included with the Annual Report.</p>	<p>The plan is reviewed at least annually and reviews are submitted with the annual report.</p>
<p>Prevent any chemicals, petroleum products or wastes associated with the project from entering water. All sumps and fuel caches shall be located at least 31 m from the ordinary high water mark of any adjacent water body and inspected on a regular basis. An exception to this condition is provided for activities within 31 m of End Grid Lake.</p>	<p>Non-compliance noted in Section 3.4.2; however in compliance through the implementation of the Spill Contingency Plan, proper training and awareness. All drilling sites are inspected regularly by AREVA staff. Double walled tanks are used at the drills and secondary containment is used for chemical or petroleum products.</p>

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Equipment maintenance and servicing conducted only in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other waste and contain potential spills.	Addressed through training and regular inspections.
<p>If an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, AREVA shall:</p> <ul style="list-style-type: none"> a. Employ the approved Spill Contingency Plan b. Report the spill immediately to the 24-Hour Spill Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and c. For each spill occurrence, submit to the Inspector, no later than 30 days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS locations of the spill, and the measures take to contain and clean up the spill site. 	See Section 3.4.2. Addressed through training and inspections.
Shall, in addition to Part H, Item 5, regardless of the quantity of releases of harmful substances, report to the NWT/NU Spill Line if the release is near or into a water body.	See summary of spill of drill cuttings in Section 3.4.2.
While drilling is occurring within the 31 m high water mark at End Grid, AREVA may allow a limited supply of fuel within 31 m of the ordinary high water mark to support the drilling operations, provided that secondary containment is made	Noted. There was no drilling conducted within 31 m of End Grid Lake during the 2015 season.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
available for the storage of fuel and all external pumps and motorized equipment used.	
<i>Abandonment and Restoration or Temporary Closing</i>	
AREVA to review and revise Abandonment and Restoration Plan as required by changes in operation and/or technology. Revisions to Plan submitted as addendum with Annual Report.	Noted. Revisions are submitted with the annual report.
Complete restoration work prior to the expiry of this Licence	Addressed in the Abandonment and Restoration Plan.
Shall carry out progressive reclamation of any components of the project no longer required for AREVA's operations.	Reclamation to ensure chemical stability occurs in a progressive manner; best management practices for reclamation to ensure physical stability of surface disturbance are currently being investigated (See Section 3.7)
All sumps are backfilled to pre-existing natural contours of the land.	This will be done where required to the satisfaction of the inspector. For progressive reclamation underway see Section 3.7.2.
Remove all site infrastructure, site material, including all fuel caches, drums, barrels, buildings and contents, docks, water pumps and lines, material and equipment prior to the expiry of the Licence.	Addressed in the Abandonment and Restoration Plan.
All roads and airstrip, if any, shall be re-graded to match natural contour to reduce erosion.	Currently not required.
Remove any culverts and restore the drainage to	Currently not required.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
match the natural channel. Measures shall be implemented to minimize erosion and sedimentation.	
To promote growth of vegetation and the needed microclimate for seed deposition, all disturbed surfaces shall be prepared by ripping, grading or scarifying the surface to conform to natural topography.	Addressed in the Abandonment and Restoration Plan.
Shall reclaim areas that have been contaminated by hydrocarbons from normal fuel transfer procedures to meet objectives as outlined in the Government of Nunavut's (GN) <i>Environmental Guideline for Site Remediation</i> (2009). The use of reclaimed soils for the purpose of back fill or general site grading may be carried out only upon consultation and approval by the GN, Department of Environment and an Inspector.	This is addressed in the Abandonment and Restoration Plan and the Spill Contingency Plan.
Drill core must be stored greater than 31 m above the ordinary high water mark of any adjacent water body, where direct flow into a water body is not possible and no additional impacts are created.	Core is transported from the drill location to the Kiggavik camp on a daily basis and stored greater than 31 m above the high water mark of the nearest water body.
Long term storage of core will not exceed radiation measurements of greater than 1.0 μSv at 1 m from the surface and not to exceed 2.5 μSv	Implemented Radiation Protection Plan; regular inspections and monitoring are conducted by AREVA site personnel.
Drill holes and disturbed areas to be restored to natural conditions immediately upon completion of drilling. Any drill hole that encounters	Completed as required for all drill holes to date.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION	
mineralization with uranium content greater than 1.0 percent over a length greater than 1 m, and with a meter-percent concentration greater than 5.0 will be sealed by grouting over the entire length of the mineralization zone and not less than 10 m above or below each mineralization zone.		
Seal by cementing the upper 30 m of bedrock or entire depth of hole, whichever is less	Completed as required for all drill holes to date.	
If the radiation levels for the stored core exceed the levels identified in Part I, Item 12, AREVA shall submit to the AANDC Water Resources Inspector, a detailed report of test results and the proposed long term core handling and mitigation measures for the long term storage or removal.	Condition is noted; AREVA is committed to its compliance if required	
Shall contour and stabilise all disturbed areas to a pre-disturbed state upon completion of work.	Addressed in the Abandonment and Restoration Plan	
Monitoring Program		
Measure and record, in cubic metres, daily water quantities for camp, drilling and other purposes.	Conducted and recorded daily by site staff. Please refer to Section 3.3.1 for further details.	
Provide GPS coordinates (in degrees, minutes and seconds of latitude and longitude) of all locations where water sources are utilized for all purposes.	Completed; refer to Section 3.3.1 for GPS coordinates.	
Provide GPS coordinates (in degrees, minutes	Incinerator	64° 26' 26.97" N

RECOMMENDATION/CONDITION	COMPLIANCE ACTION	
and seconds of latitude and longitude) of all waste locations		97° 39' 30.47" W
	Grey Water Discharge Point (south of Kitchen)	64° 26' 26.75" N 97° 39' 31.68" W
Provide follow-up monitoring and analytical results of the potable water supply previously utilized under previous Licences, in order to assess the oil and grease contamination during the Licence term and investigate the source of contamination and possible mitigation measures required. Plans to address this matter shall be submitted to the NWB within the Annual Report.	Lab analysis was determined to be subject to error. AREVA re-sampled the camp water supply referenced under Licence 2BE-KIG0708 on June 27, 2009. Analysis conducted by the Saskatchewan Research Council (SRC) Laboratory showed no traces of grease and oil	
All sampling, preservation and analysis to be conducted in accordance with the <i>Standard Methods for the Examination of Water and Wastewater</i>	Noted	
All analyses shall be performed in an accredited lab (ISO/IEC Standard 17025). The accreditation shall be current and in good standing.	SRC is accredited by the Canadian Association for Environmental Analytical Laboratories (CAEAL) for environmental testing procedures. Accreditation ensures that procedures, facilities, and methods conform to the internationally recognized ISO 17025 standard. AREVA commits to only using labs that are adequately accredited.	
Additional monitoring requirements may be requested by the Inspector.	Noted	
Where uranium mineralization has been encountered, under Part I, Items 13 and 14,	Ongoing, refer to Section 3.7.2.2	

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
AREVA shall monitor the drill sumps and core storage areas to provide the necessary data needed in order to assess and ensure that mitigation measures required for restoration under the Abandonment and Restoration Plan have been completed.	
All data, monitoring results and information required by this “Monitoring” section to be included in the Annual Report.	In compliance through submission of this Annual Report
<p>AREVA shall establish water quality conditions prior to and upon completion of drilling at the End Grid Lake areas as identified in the application dated October 9, 2008 in accordance with Part F, Item 10, and monitoring shall include the following:</p> <p>Total Suspended Solids</p> <p>pH</p> <p>Electrical Conductivity</p> <p>Total Trace Metals as determined by a standard ICP Scan (to include at a minimum, the following elements: Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn), and</p> <p>Trace Arsenic and Mercury</p>	There were no drill holes completed within 31 m of the ordinary high water mark at the End Grid areas.
AREVA shall determine GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) of all drill hole locations within the 31 m ordinary high water mark in the End Grid area and provide these locations on a map of suitable scale for review as part of the annual	There was no drilling within 31 m of the ordinary high water mark at the End Grid area.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
report.	
<p>AREVA shall determine water quality of low-flow artesian conditions identified in Part F, Item 6, by including the following analyses:</p> <p>Total Suspended Solids</p> <p>pH</p> <p>Electrical Conductivity</p> <p>Total Trace Metals as determined by a standard ICP Scan (to include at a minimum, the following elements: Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn), and</p> <p>Trace Arsenic and Mercury</p>	<p>Completed for the one artesian encountered during the season (See Section 3.3.2)</p>

Appendix B Gamma Survey Results

Legend

Drill Hole

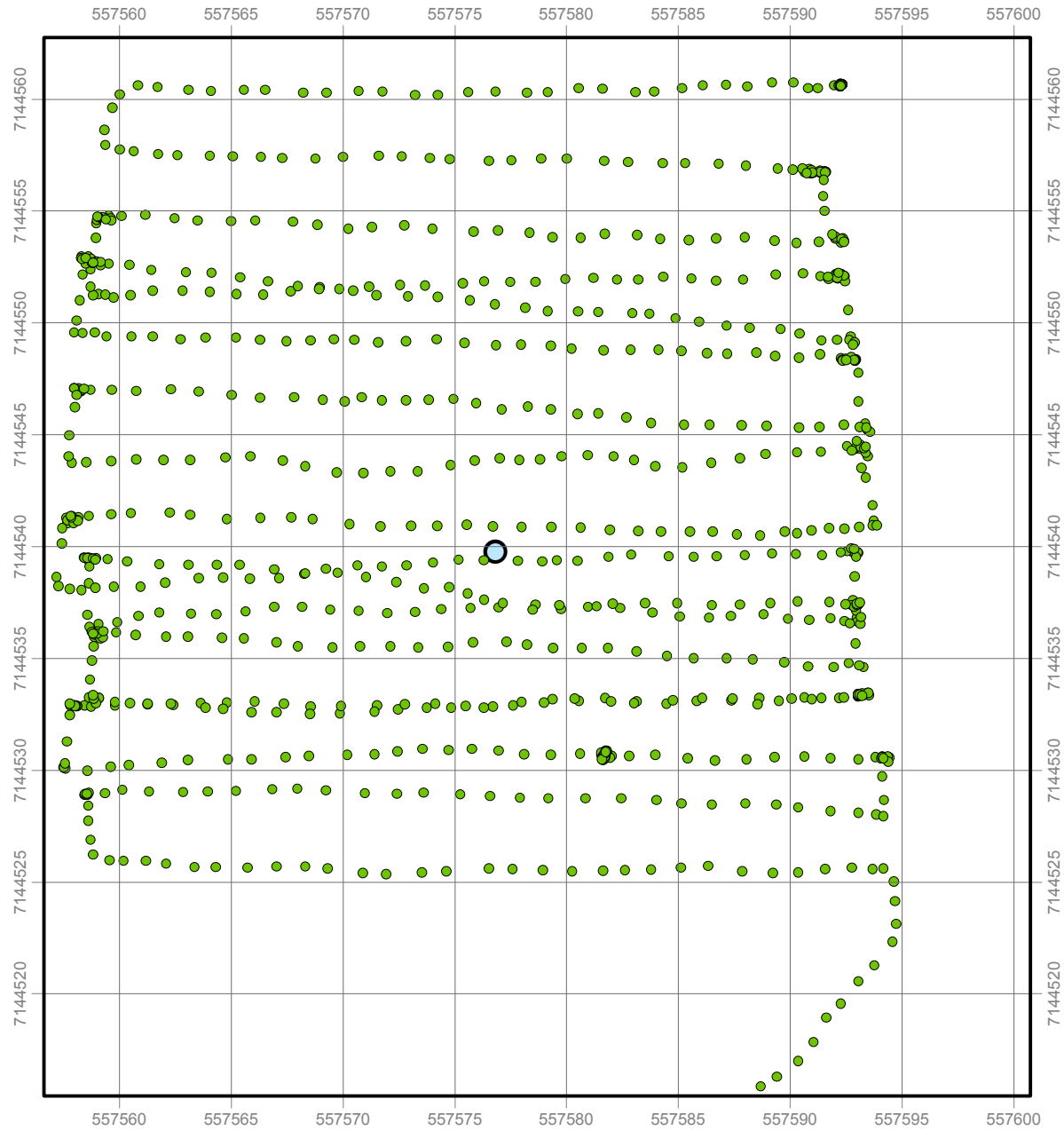
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

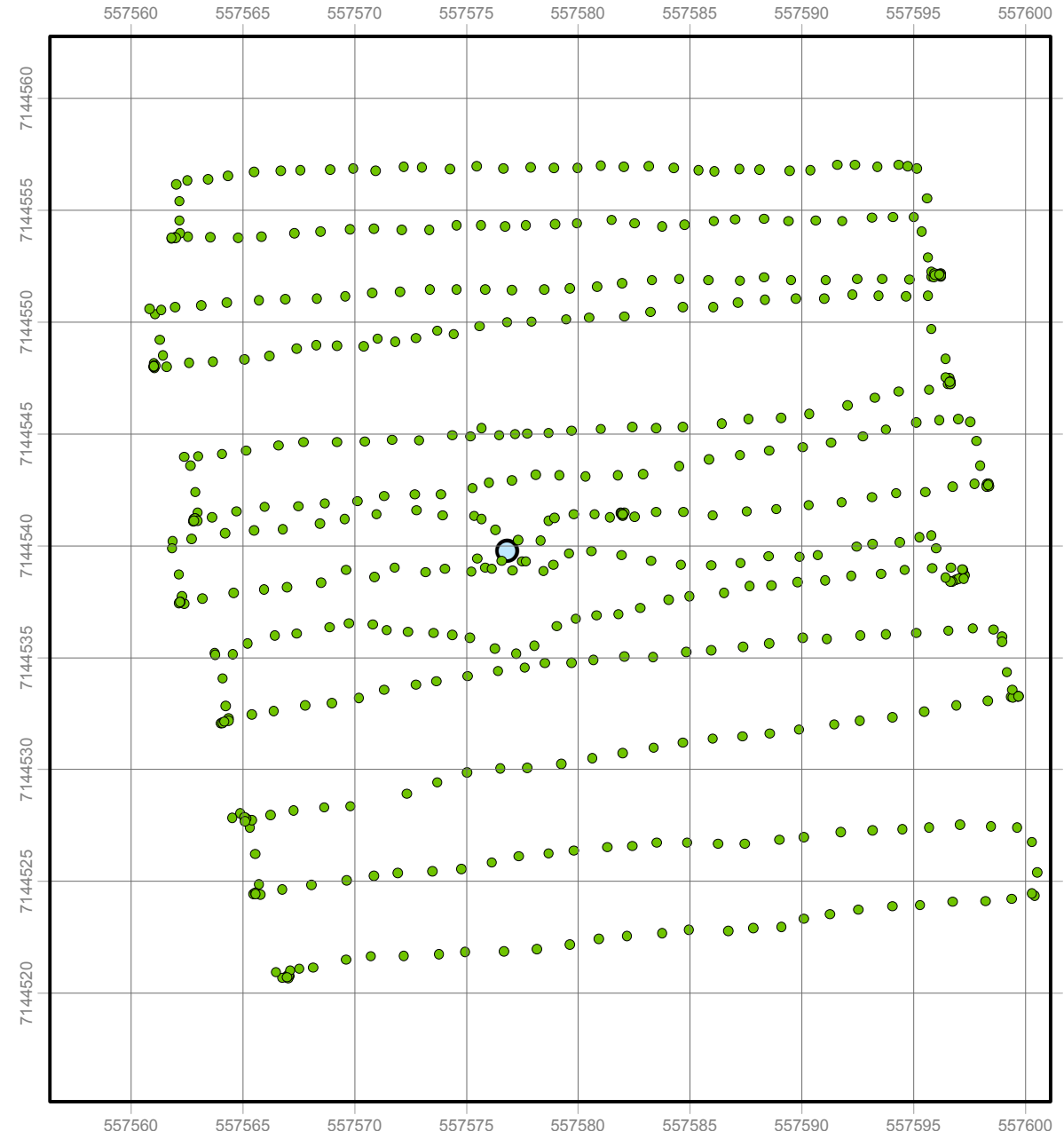
1.0 - 2.5 μSv

> 2.5 μSv



85W-009
Pre Gamma Survey

Point Count: 1063
Min-Max: 0.039 - 0.075 μSv



85W-009
Post Gamma Survey

Point Count: 527
Min-Max: 0.044 - 0.221 μSv

Legend

Drill Hole

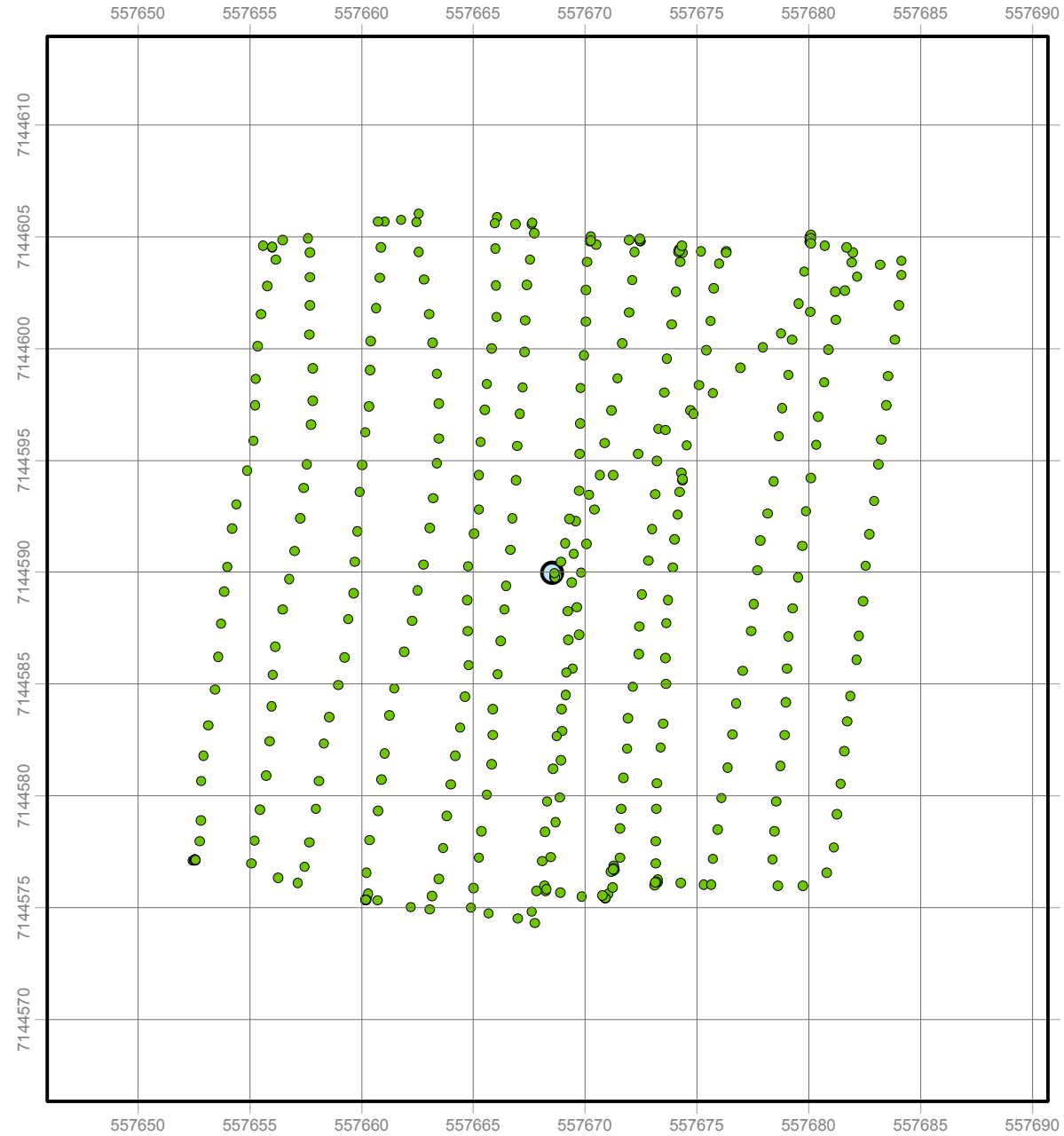
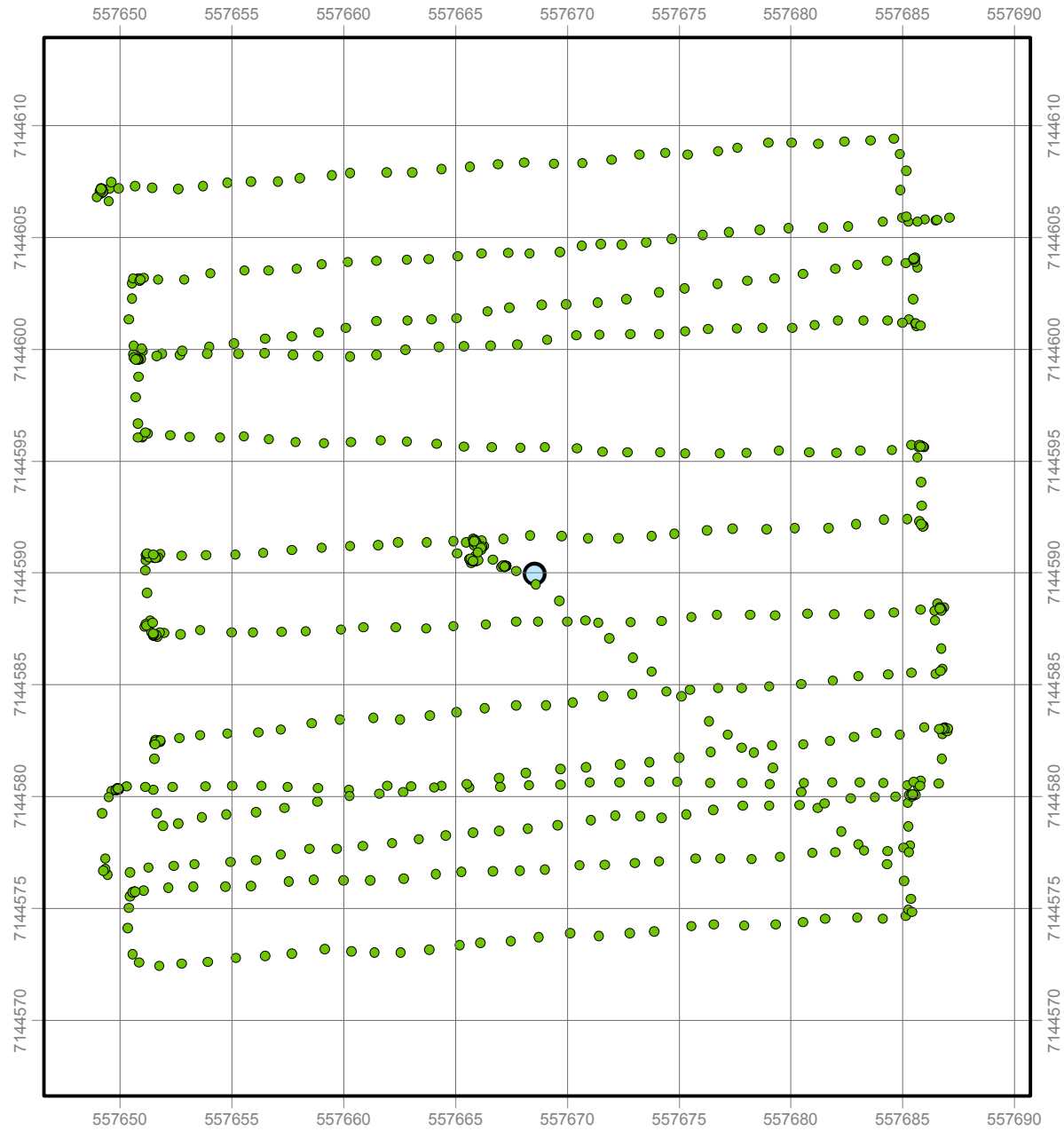
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv



Legend

Drill Hole

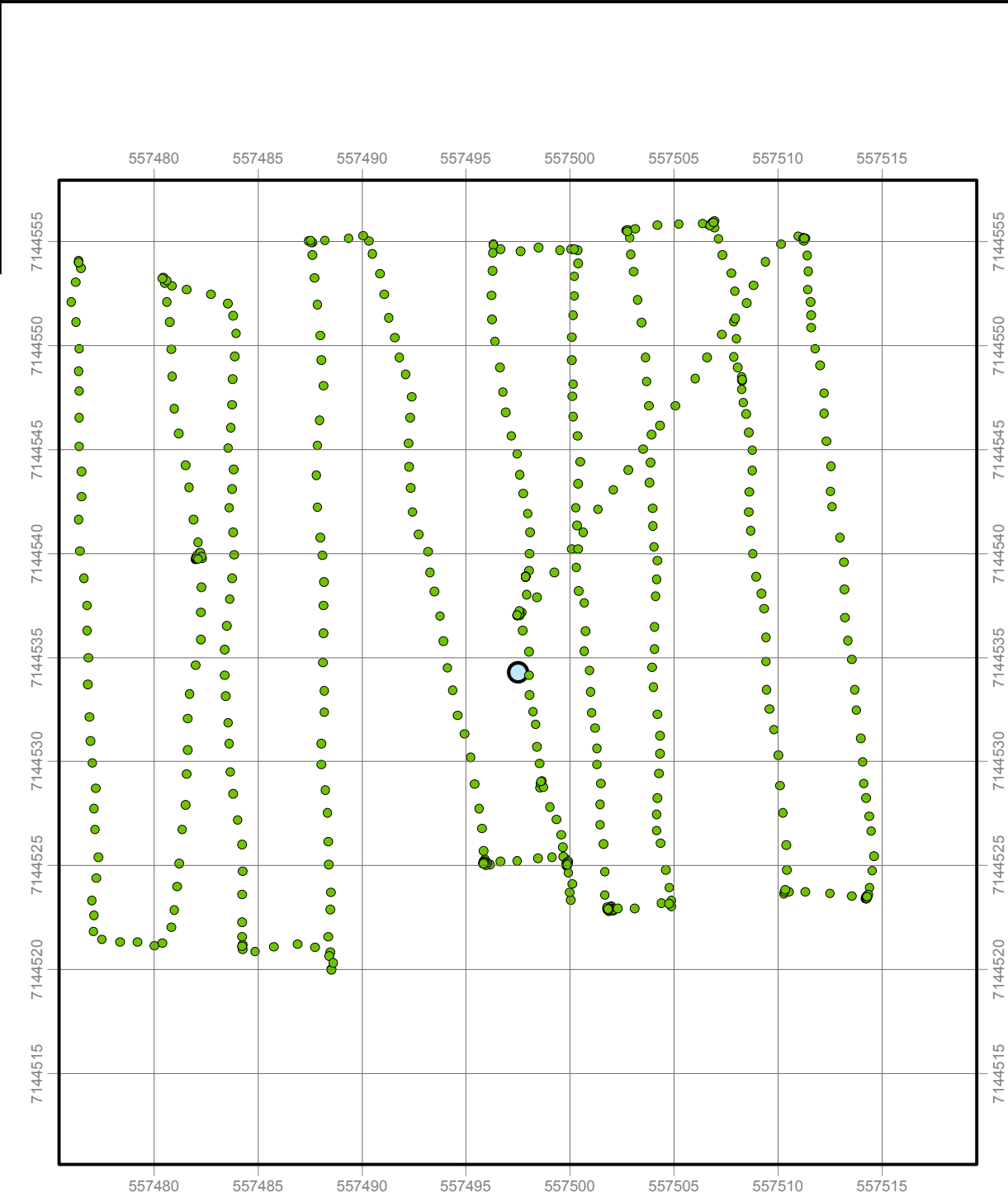
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

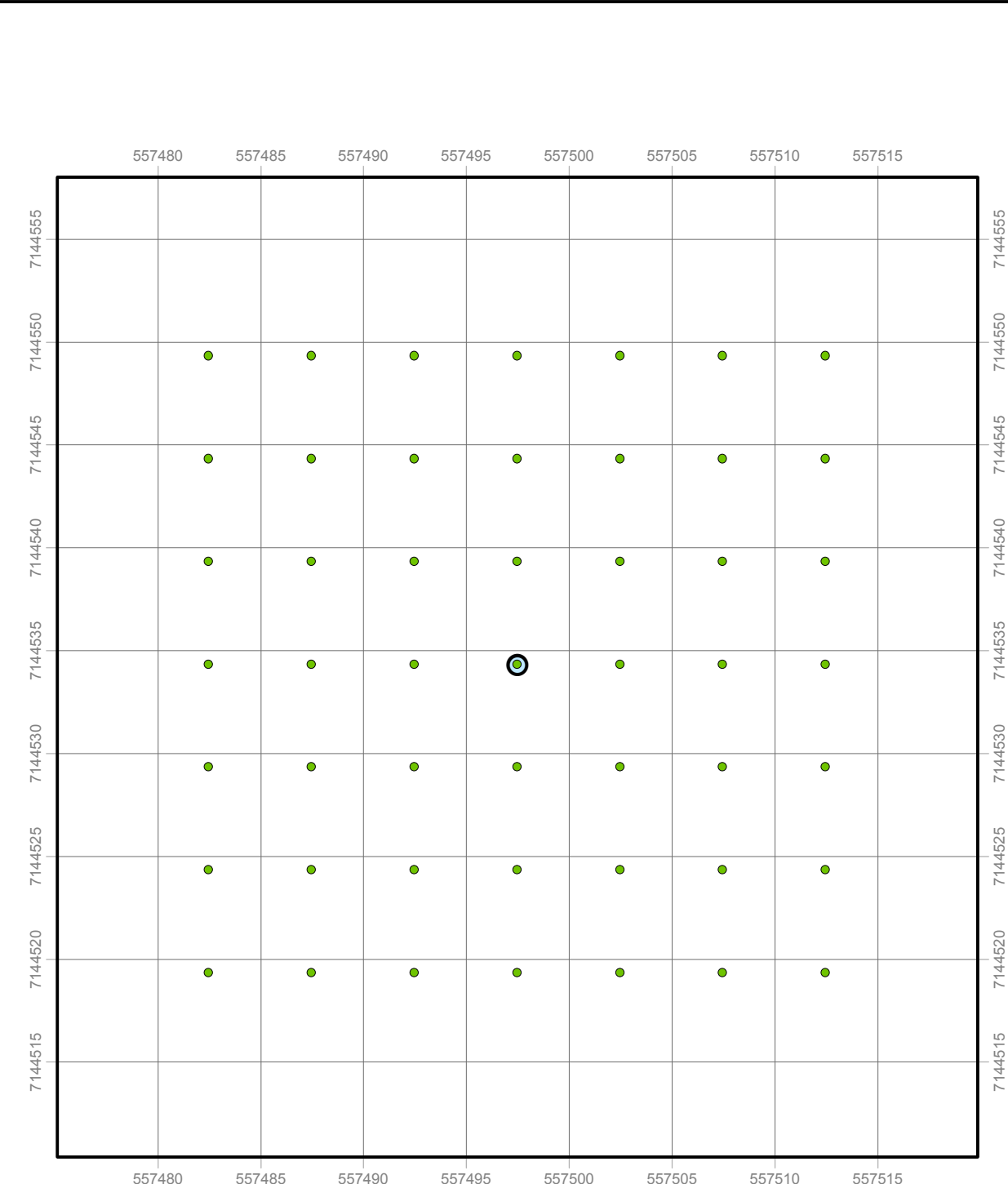


85W-011

Pre Gamma Survey

Point Count: 573

Min-Max: 0.031 - 0.060 μSv



85W-011

Post Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.23 μSv

Legend

Drill Hole

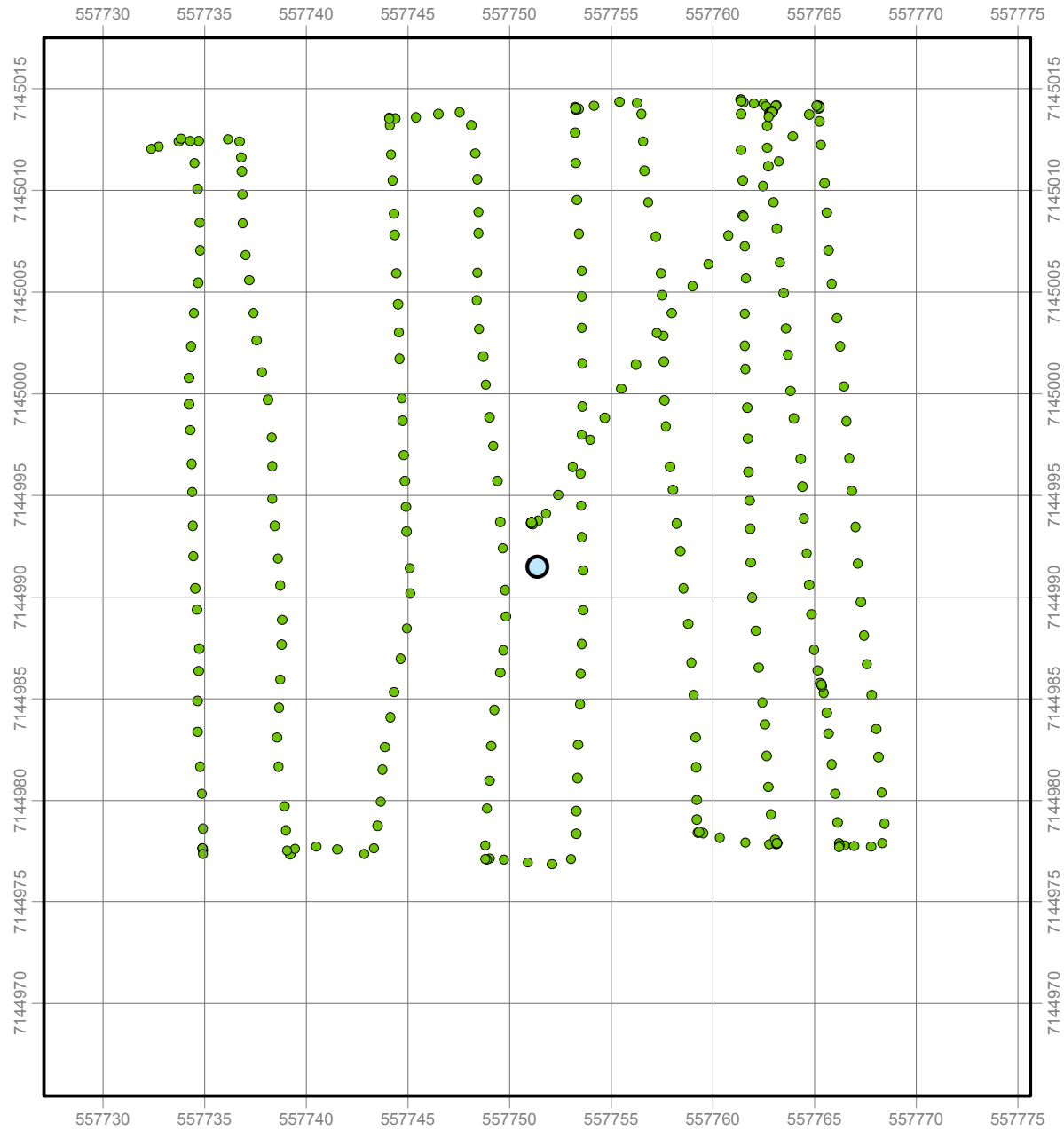
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

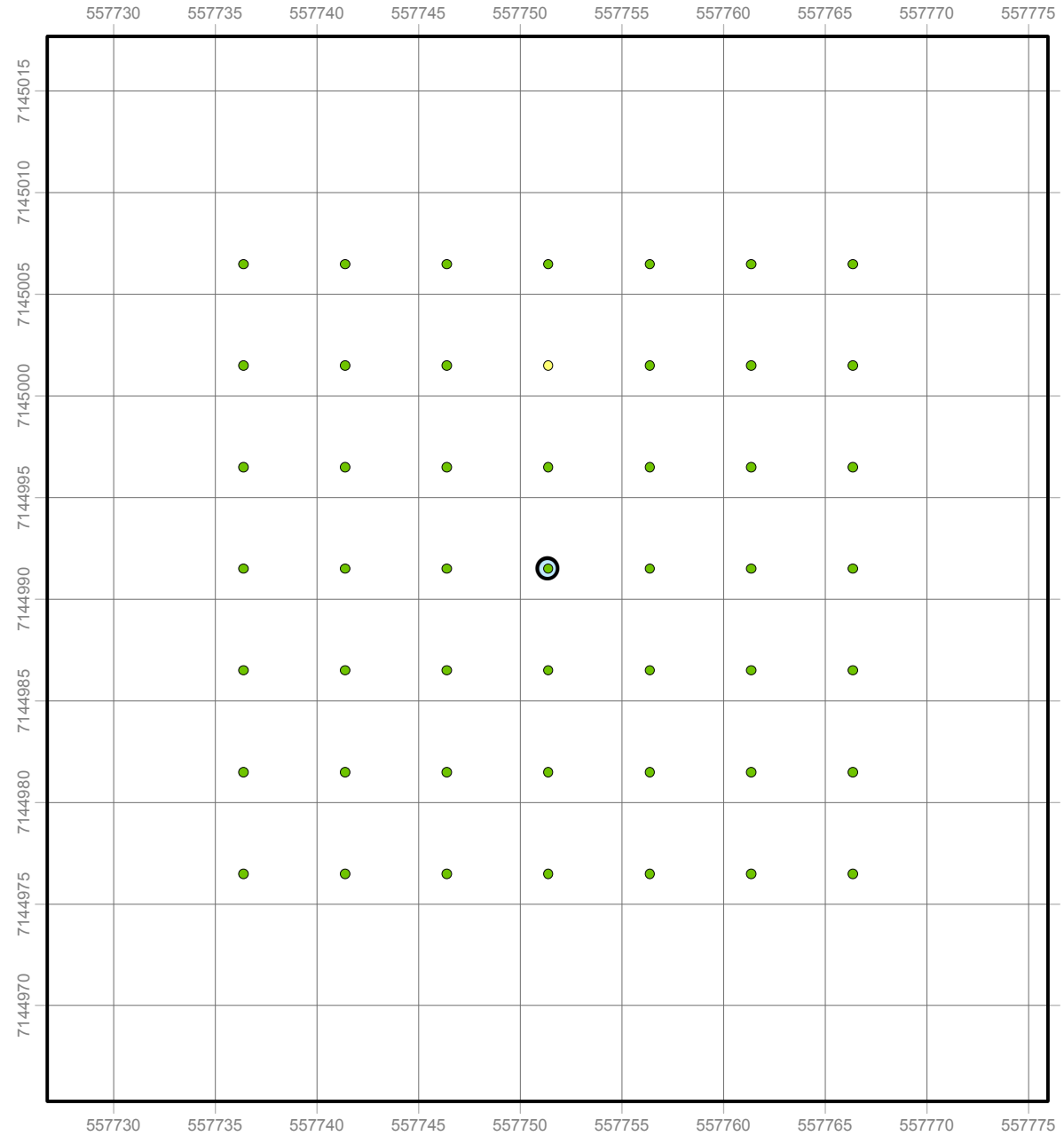


85W-012

Pre Gamma Survey

Point Count: 362

Min-Max: 0.054 - 0.098 μSv



85W-012

Post Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.32 μSv

Legend

Drill Hole

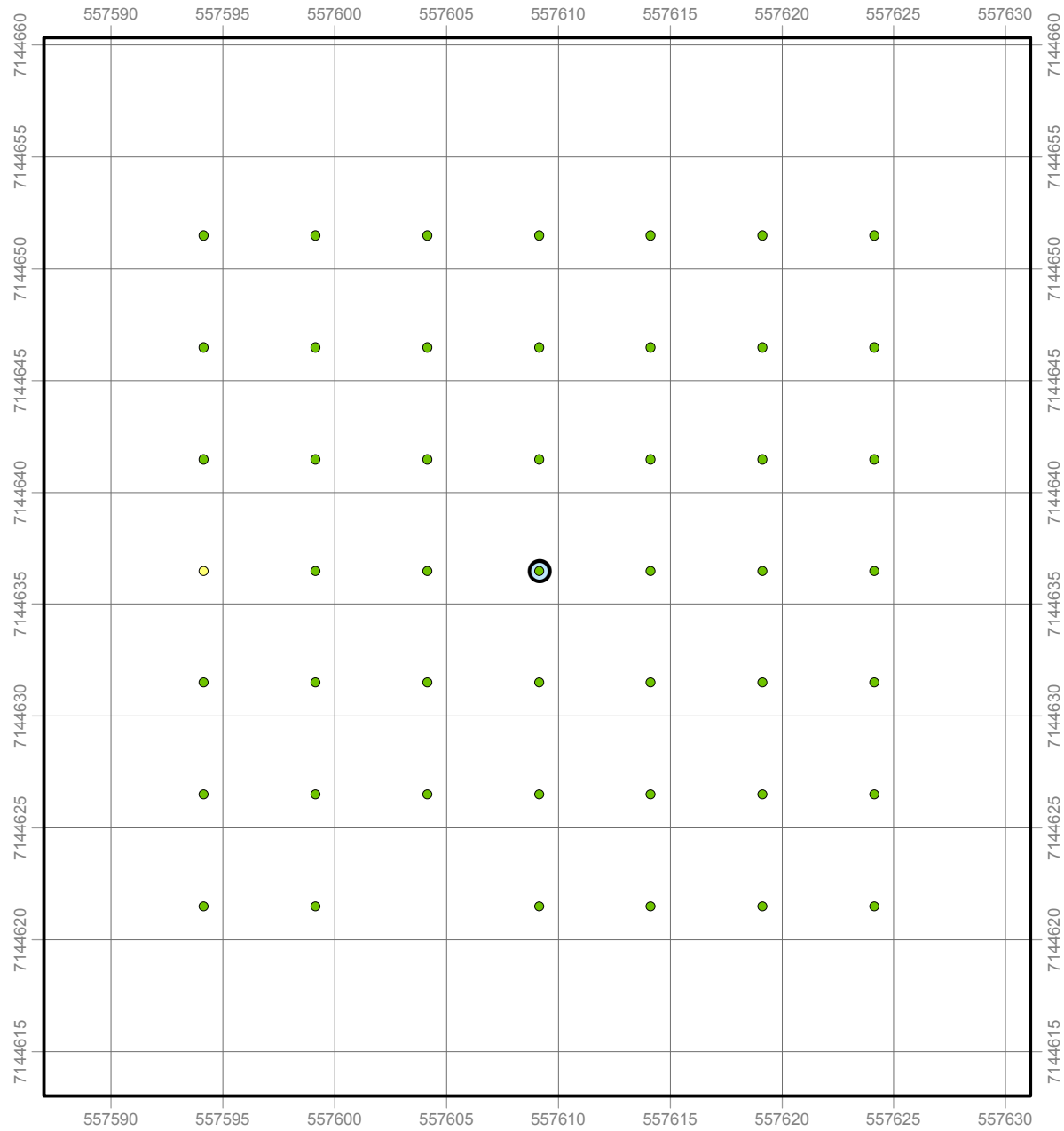
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

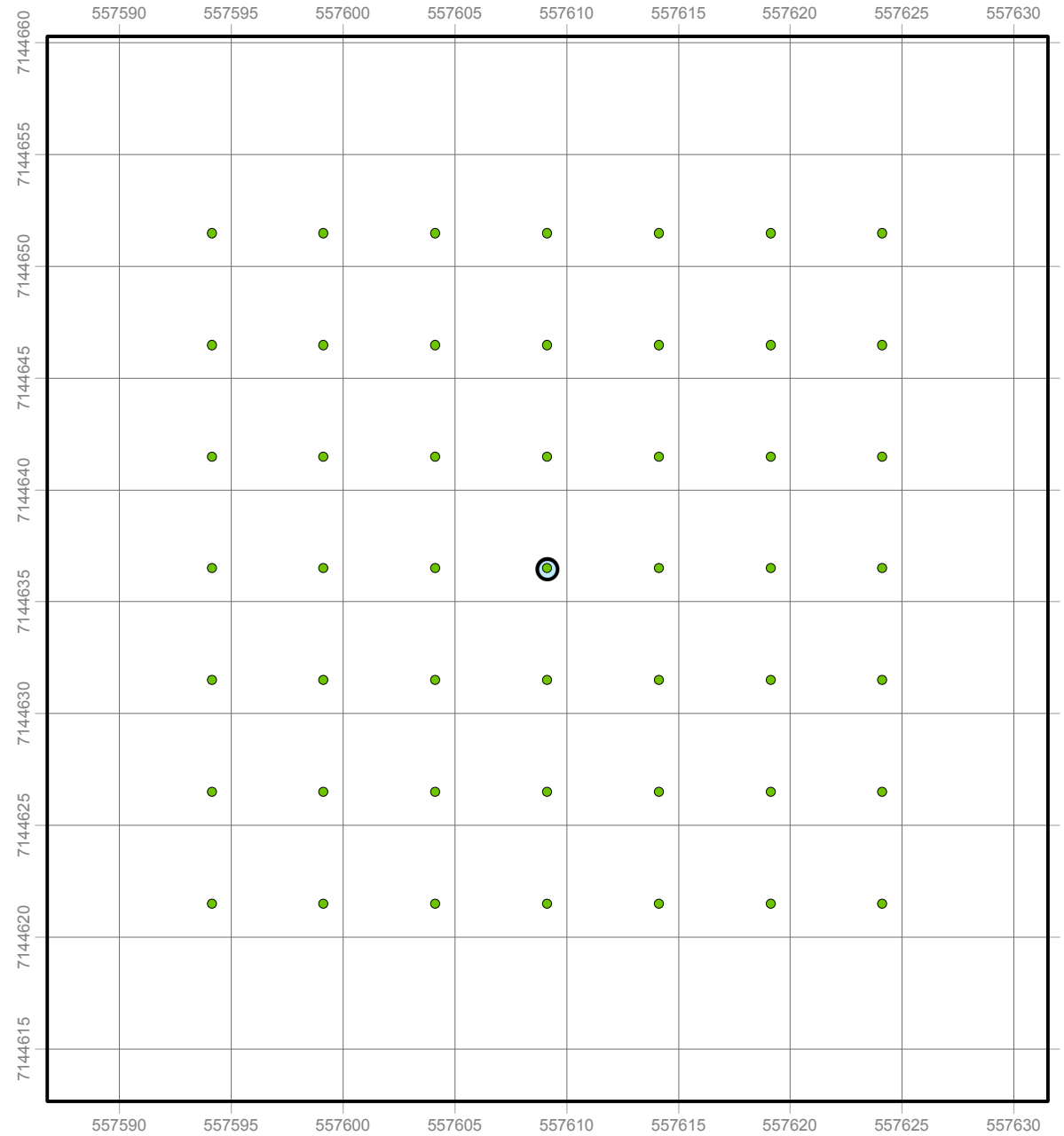


85W-013

Pre Gamma Survey

Point Count: 48

Min-Max: 0 - 0.5 μSv



85W-013

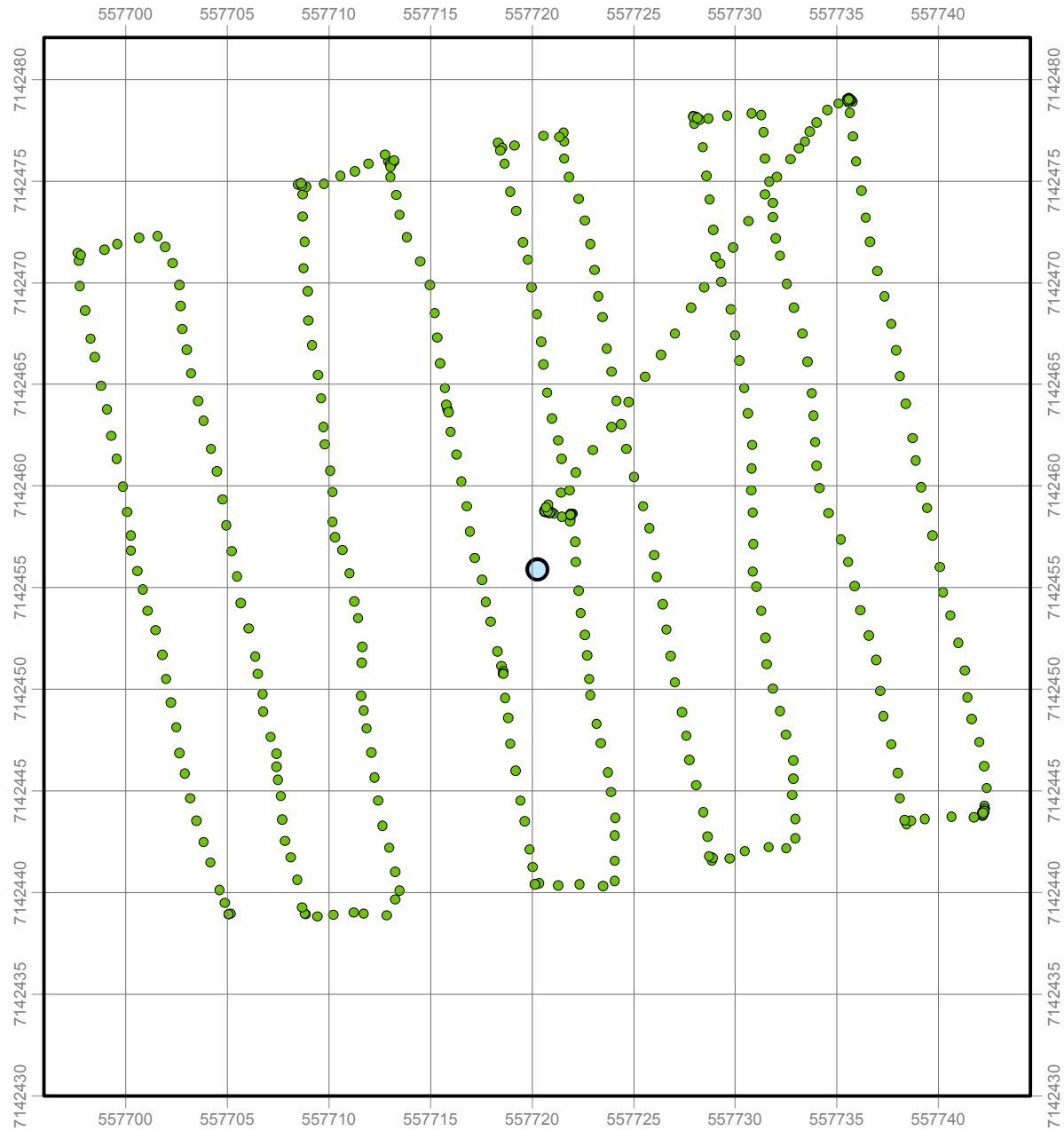
Post Gamma Survey

Point Count: 49

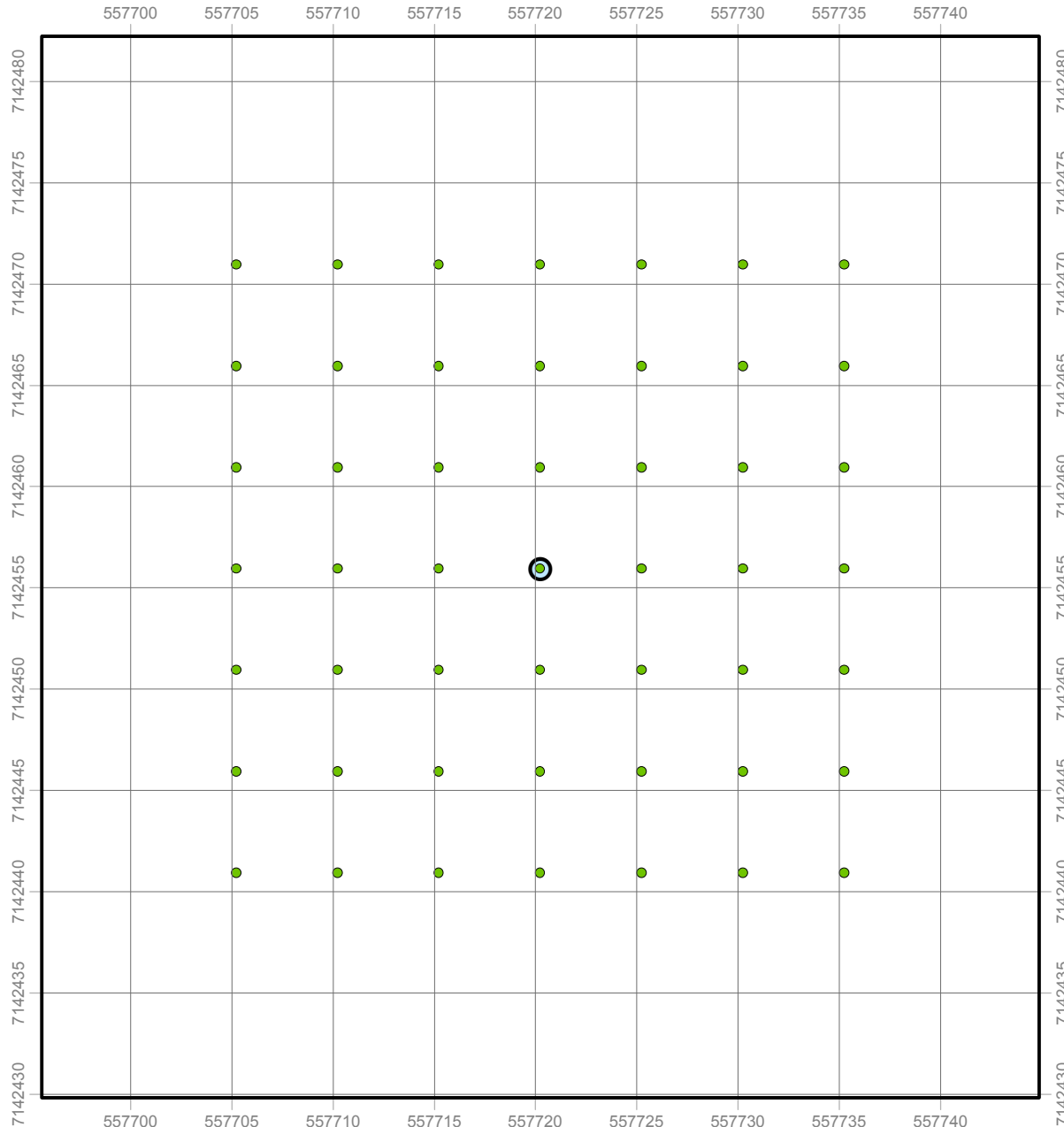
Min-Max: 0.01 - 0.21 μSv

Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



85W-014
Pre Gamma Survey
 Point Count: 463
 Min-Max: 0.043 - 0.081 μSv



85W-014
Post Gamma Survey
 Point Count: 49
 Min-Max: 0.01 - 0.3 μSv

Legend

Drill Hole

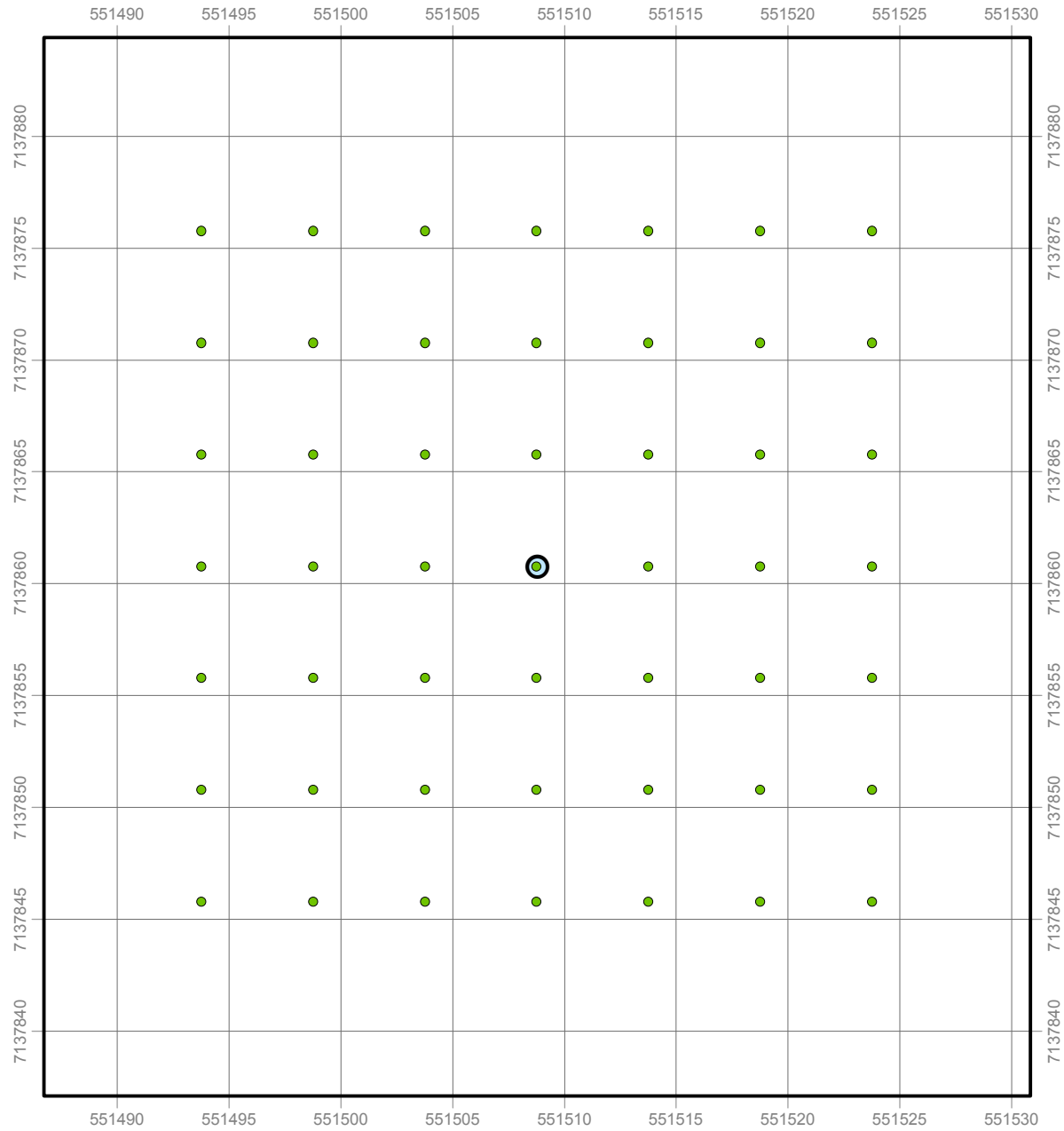
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

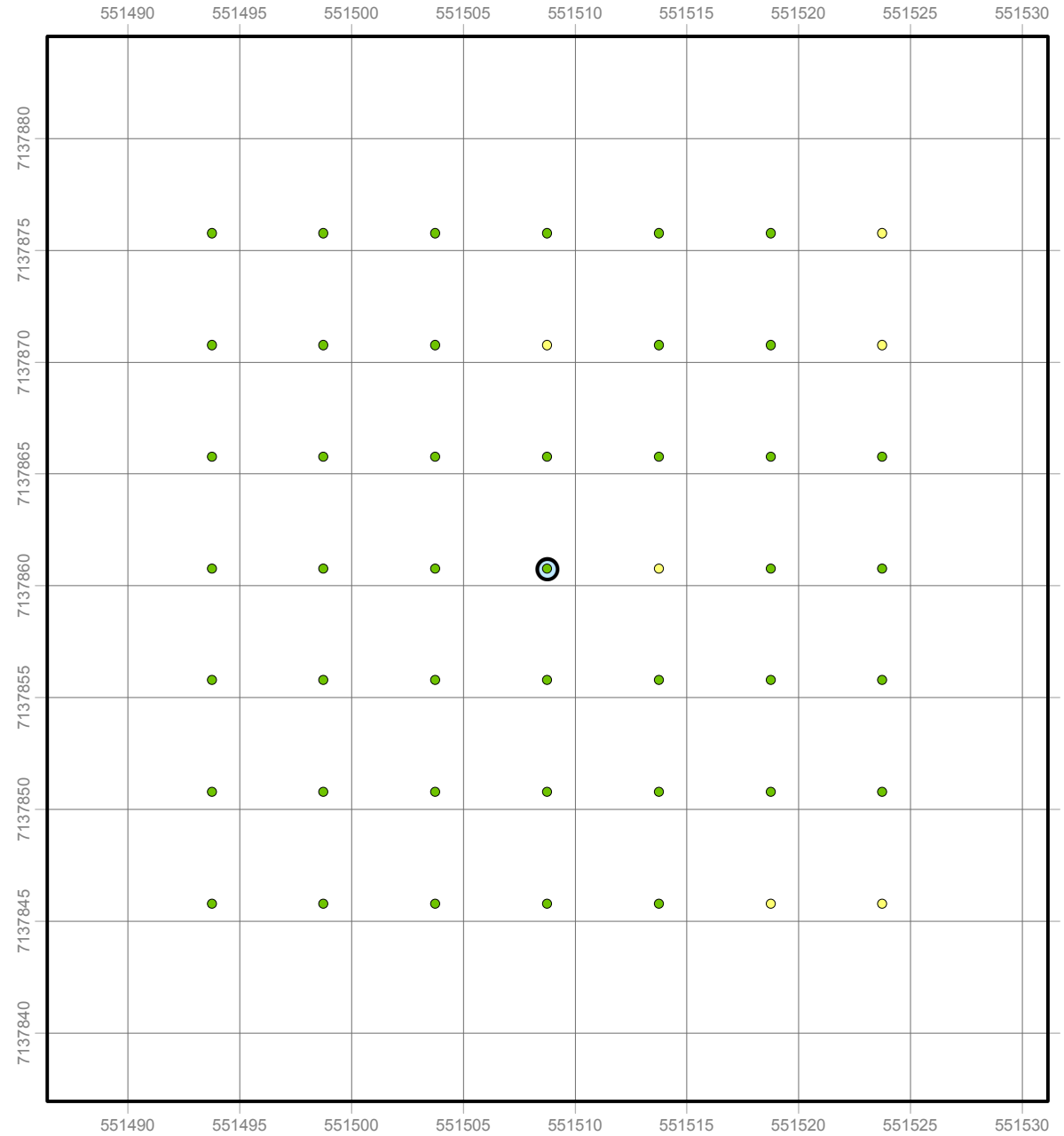
1.0 - 2.5 μSv

> 2.5 μSv



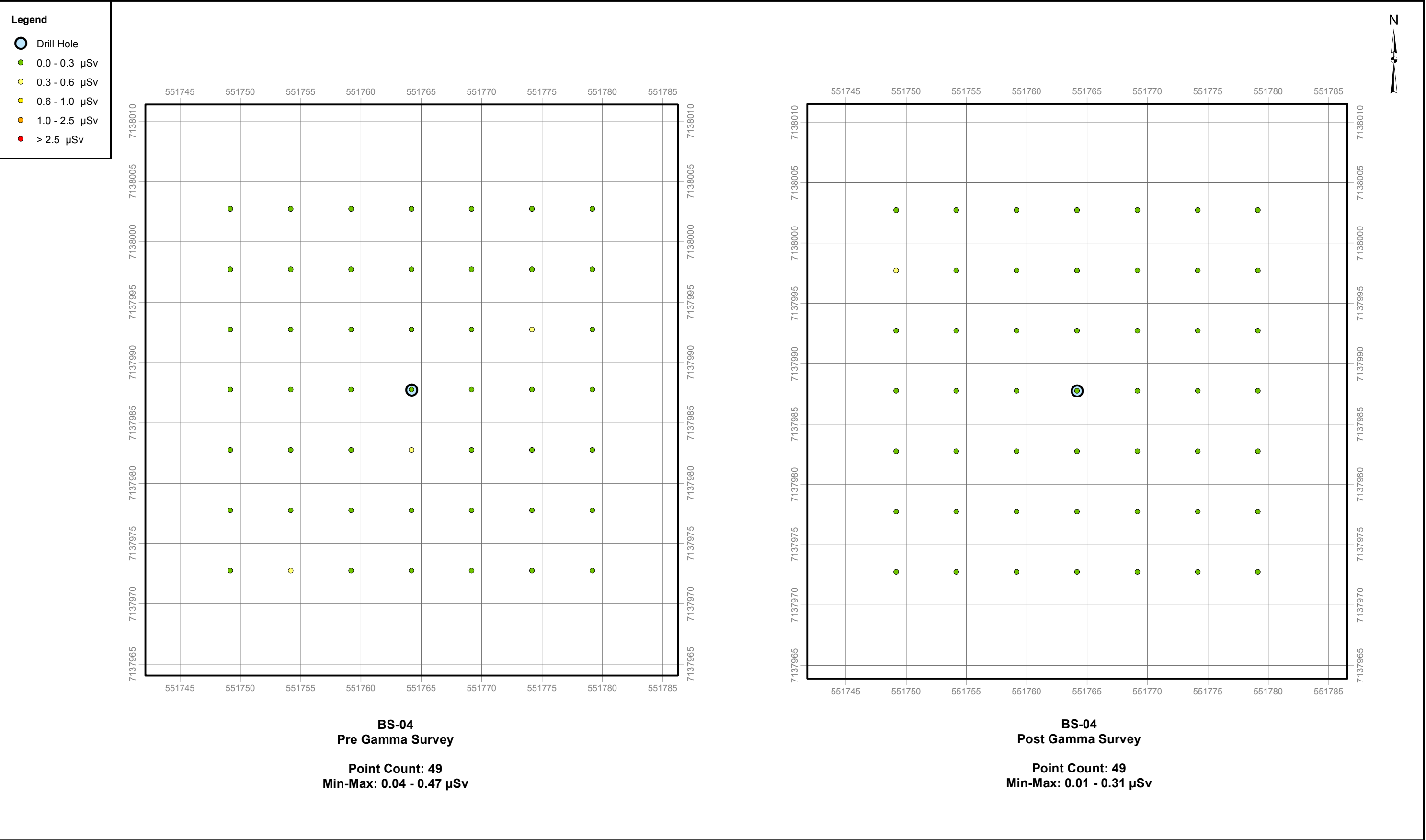
BS-03
Pre Gamma Survey

Point Count: 49
Min-Max: 0.02 - 0.27 μSv



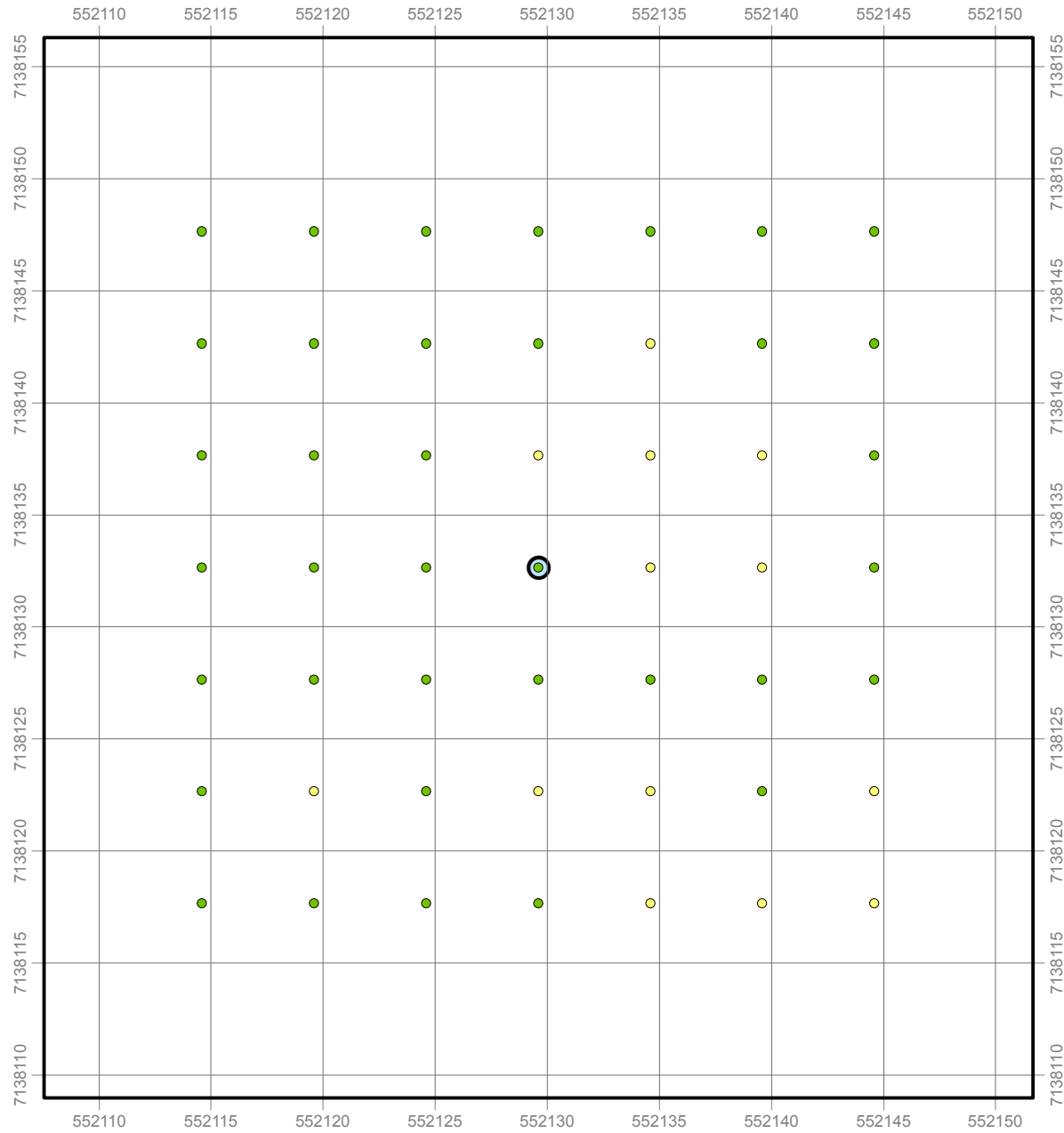
BS-03
Post Gamma Survey

Point Count: 49
Min-Max: 0.08 - 0.36 μSv



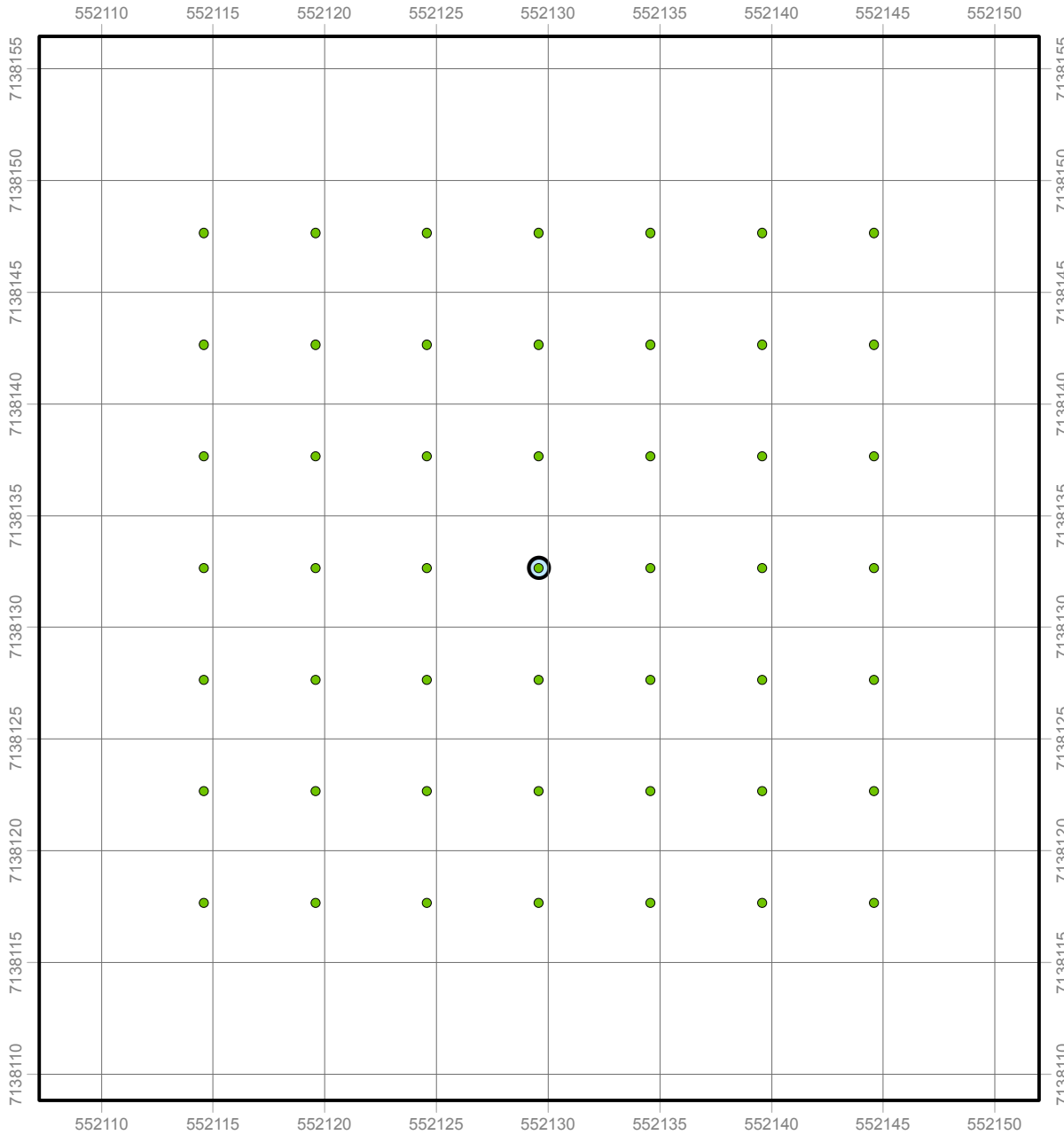
Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



BS-05
Pre Gamma Survey

Point Count: 49
Min-Max: 0.15 - 0.42 μSv



BS-05
Post Gamma Survey

Point Count: 49
Min-Max: 0.02 - 0.24 μSv



Legend

Drill Hole

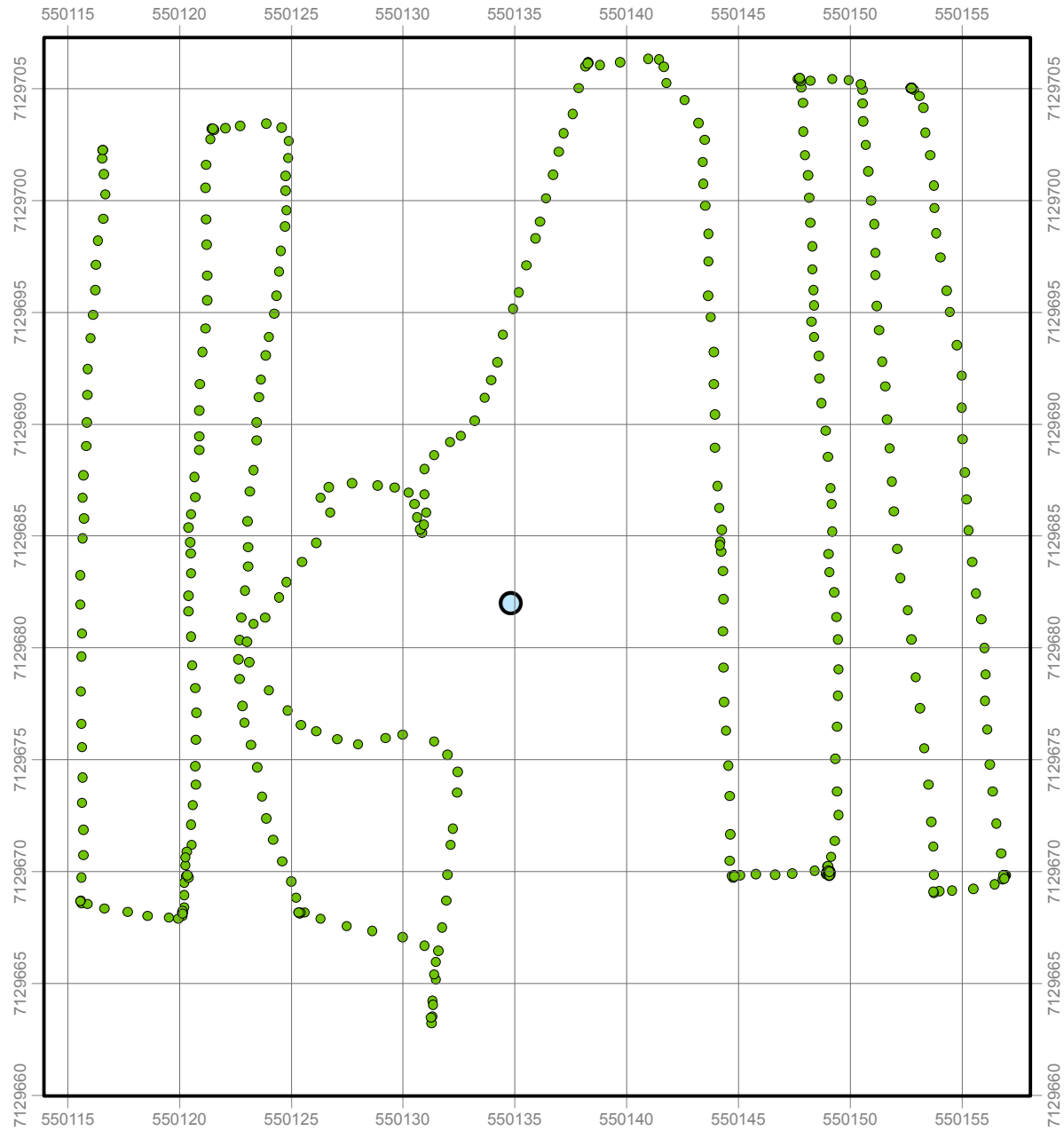
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

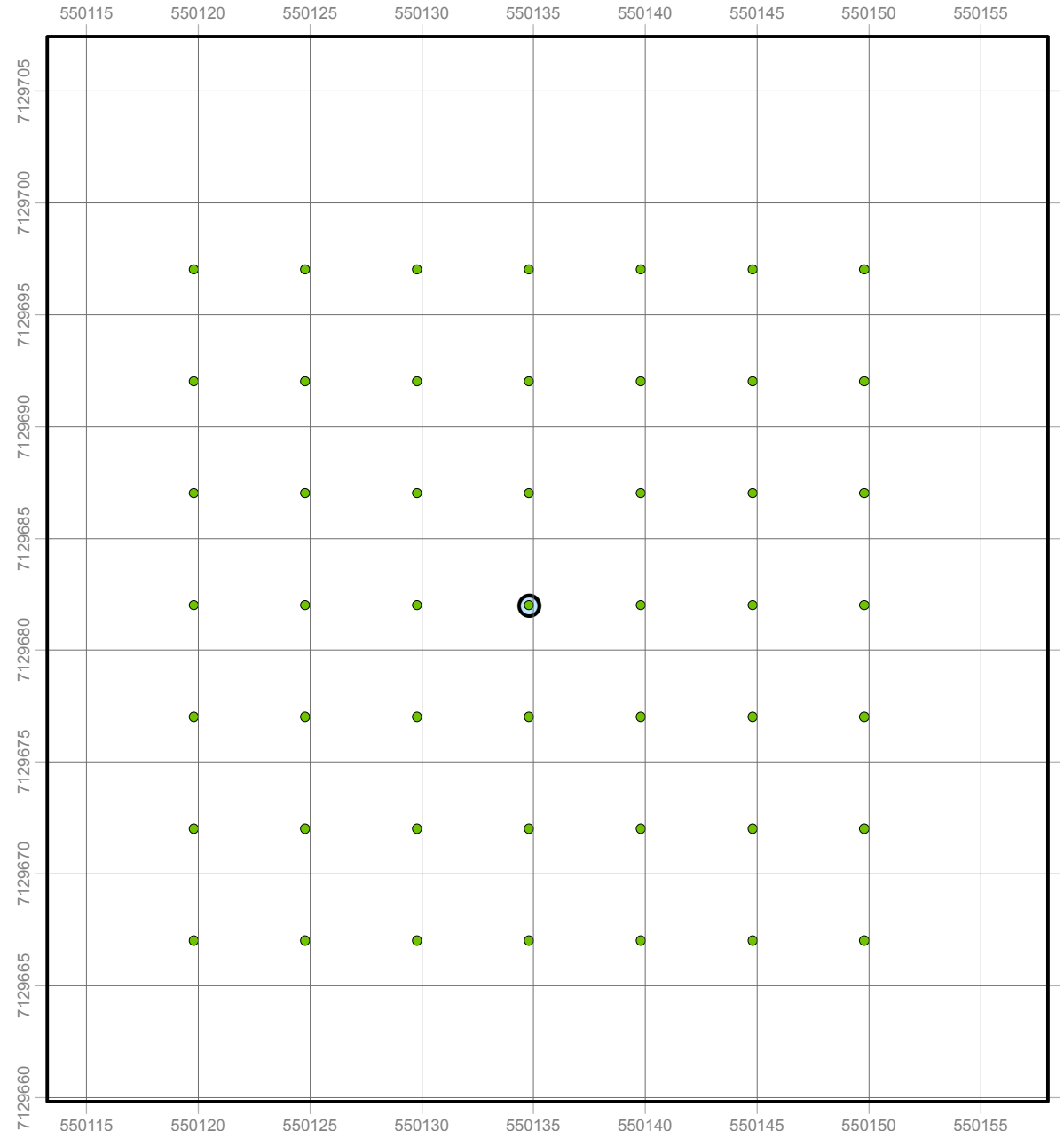


CONT-016

Pre Gamma Survey

Point Count: 474

Min-Max: 0.053 - 0.090 μSv



CONT-016

Post Gamma Survey

Point Count: 49

Min-Max: 0.0 - 0.24 μSv

Legend

Drill Hole

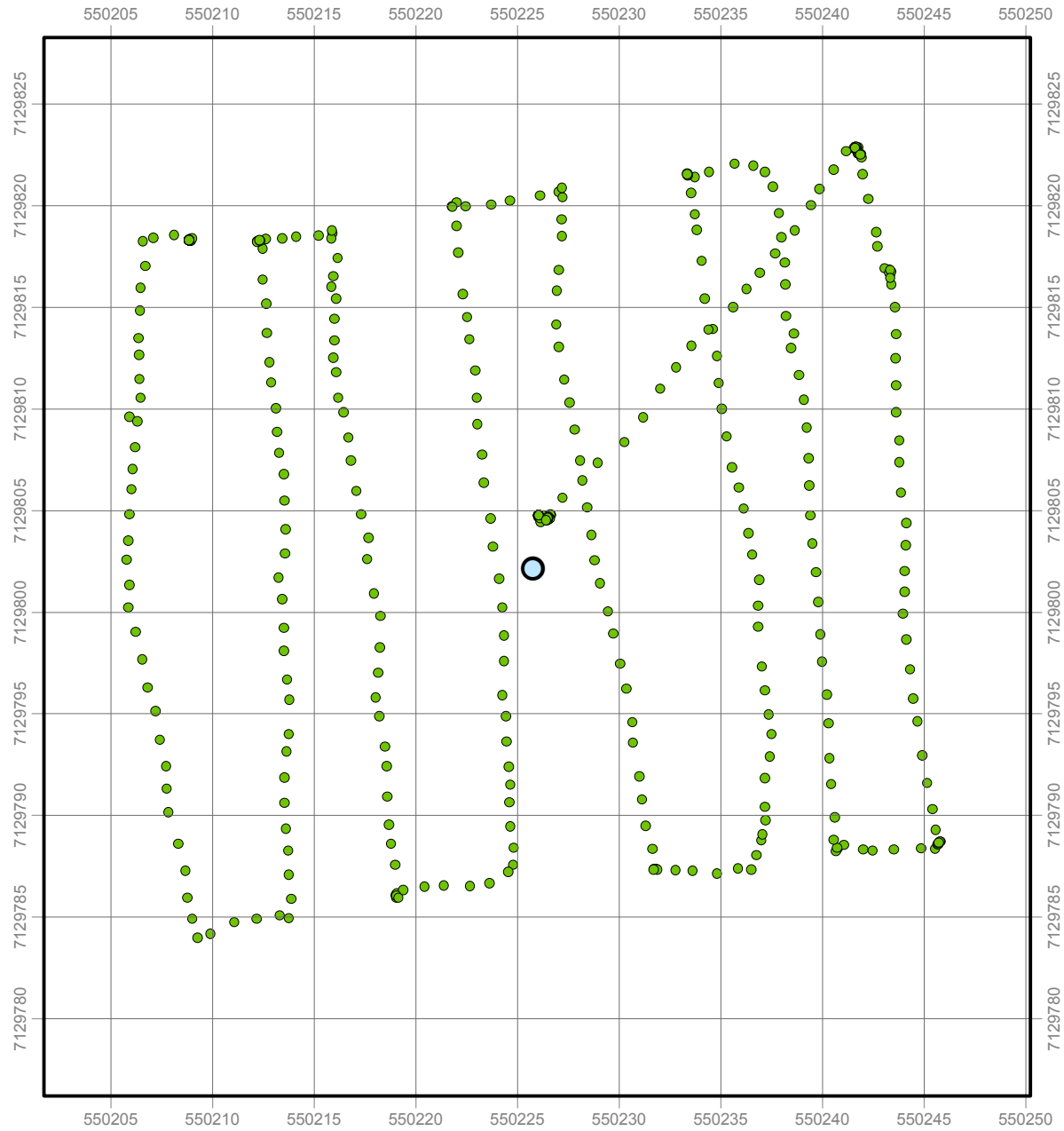
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

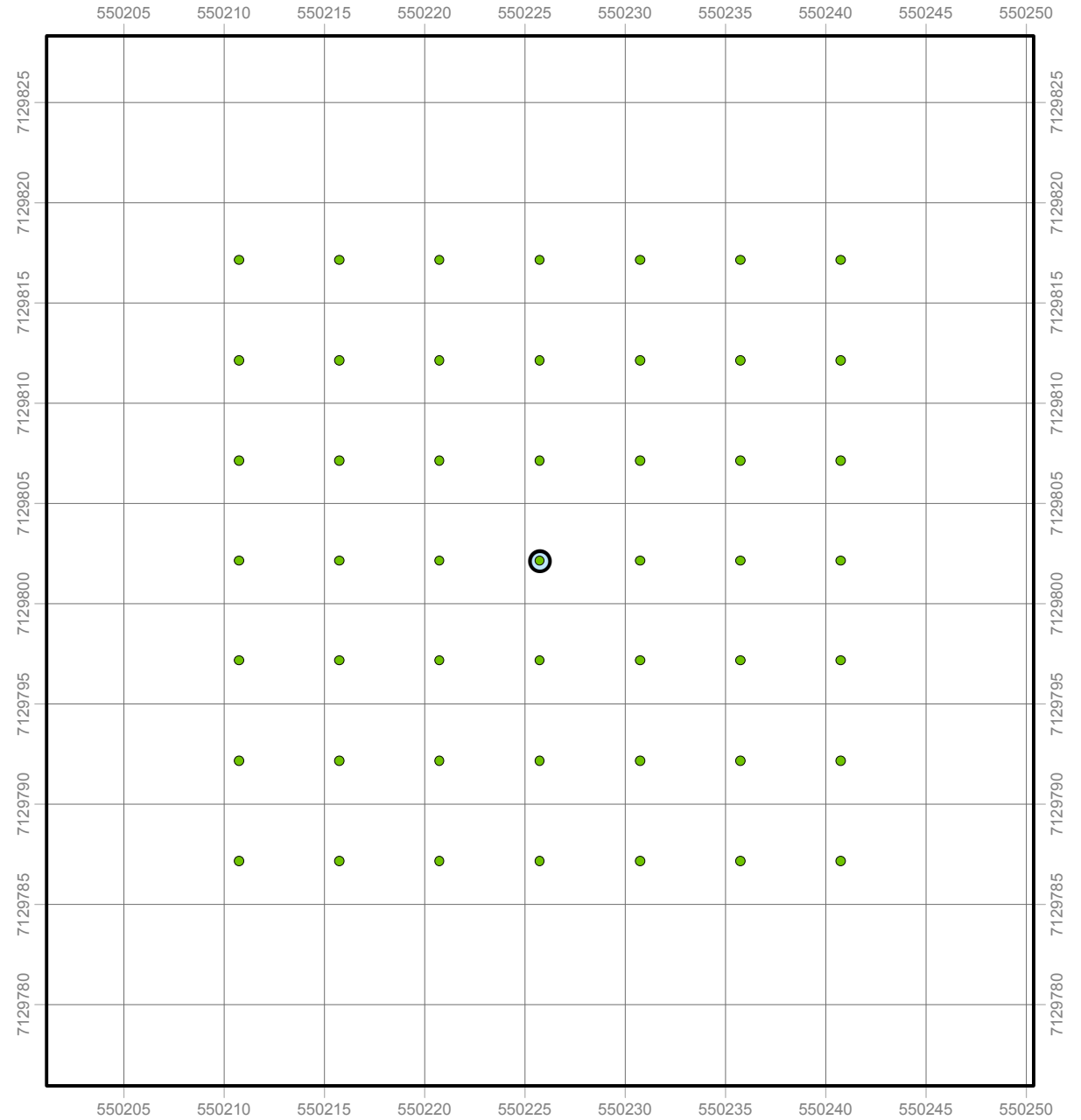


CONT-017/CONT-018

Pre Gamma Survey

Point Count: 475

Min-Max: 0.058 - 0.101 μSv



CONT-017/CONT-018

Post Gamma Survey

Point Count: 49

Min-Max: 0.0 - 0.27 μSv

Legend

Drill Hole

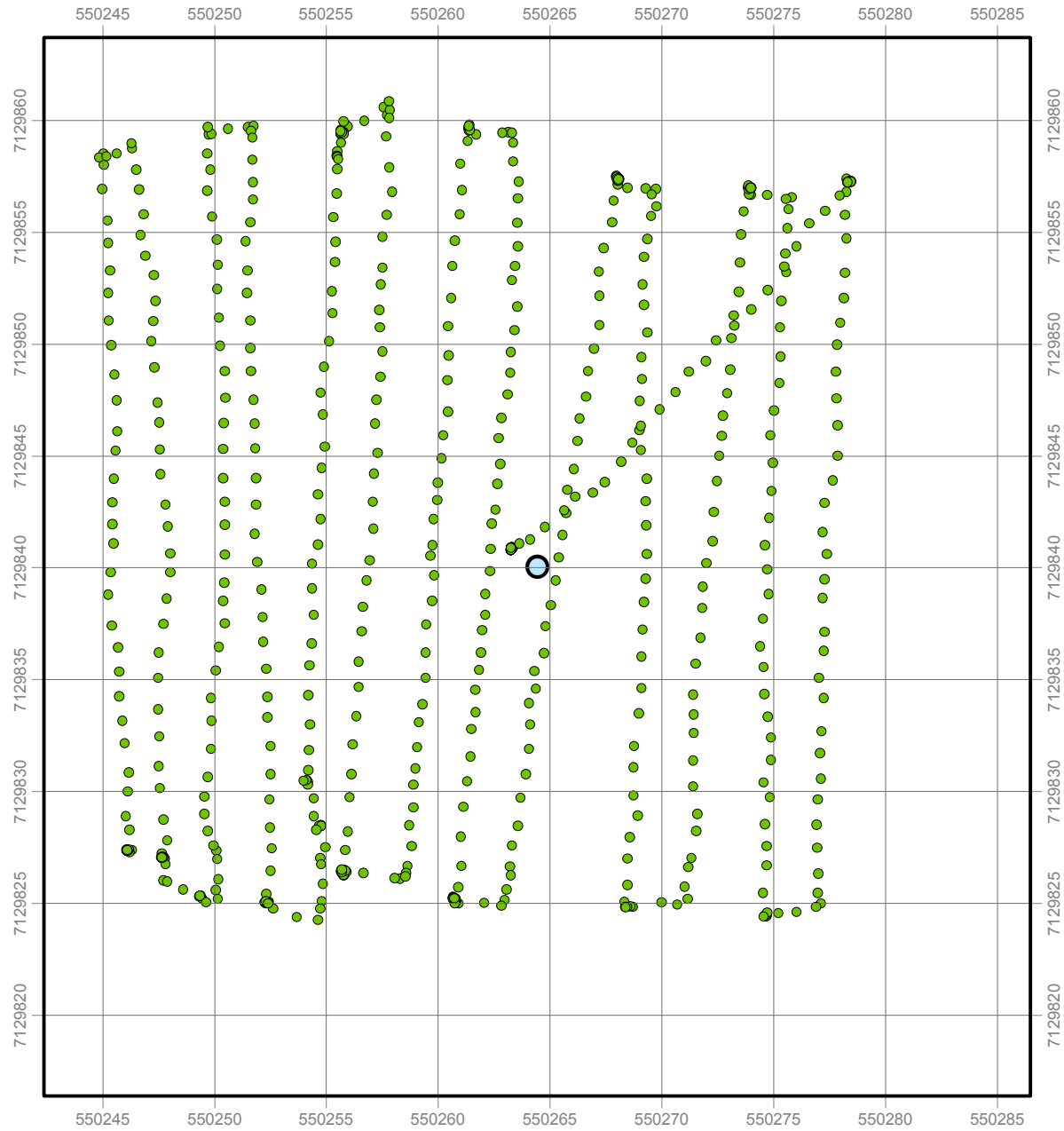
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

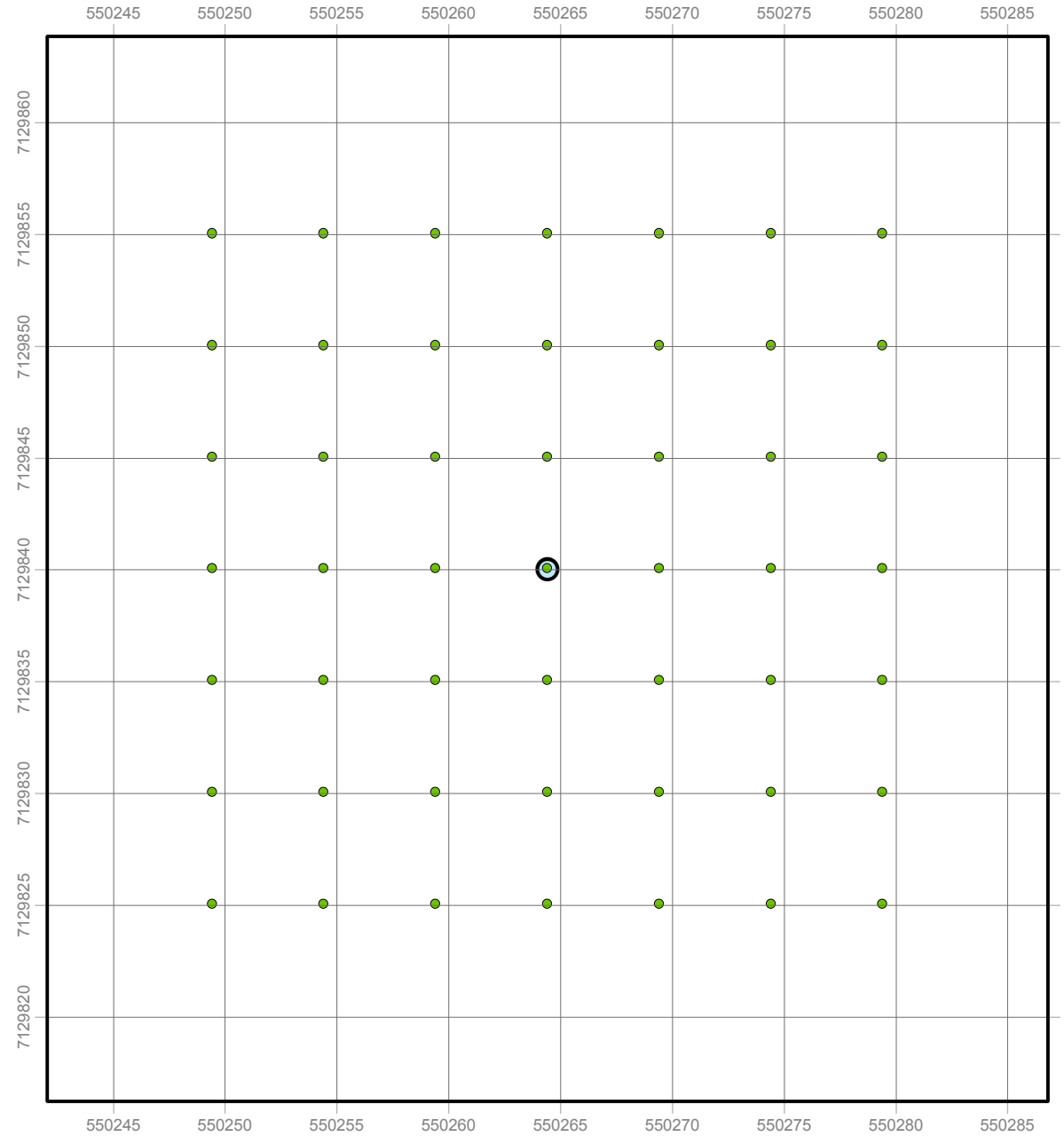
1.0 - 2.5 μSv

> 2.5 μSv



CONT-019
Pre Gamma Survey

Point Count: 814
Min-Max: 0.057 - 0.102 μSv

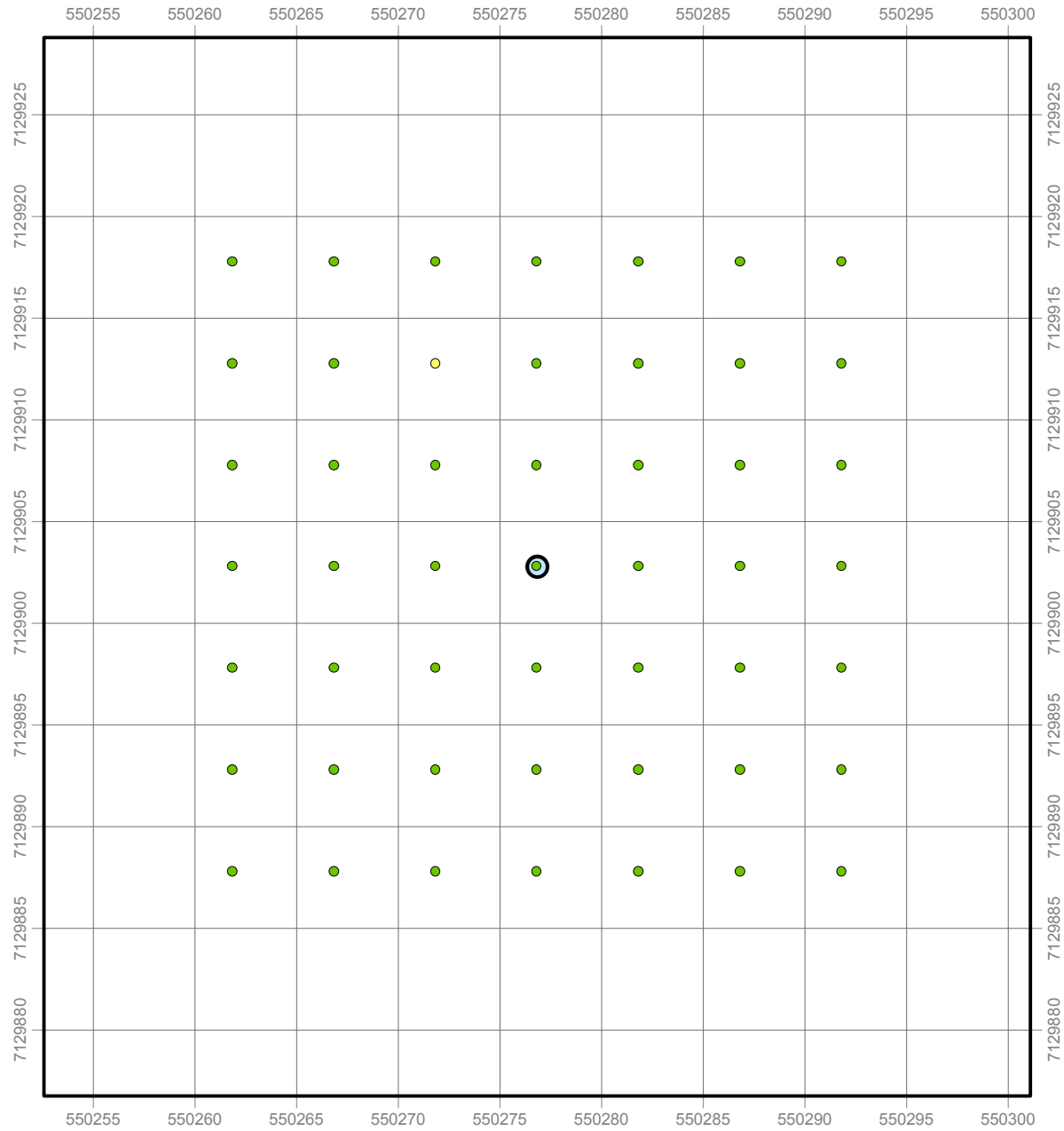


CONT-019
Post Gamma Survey

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

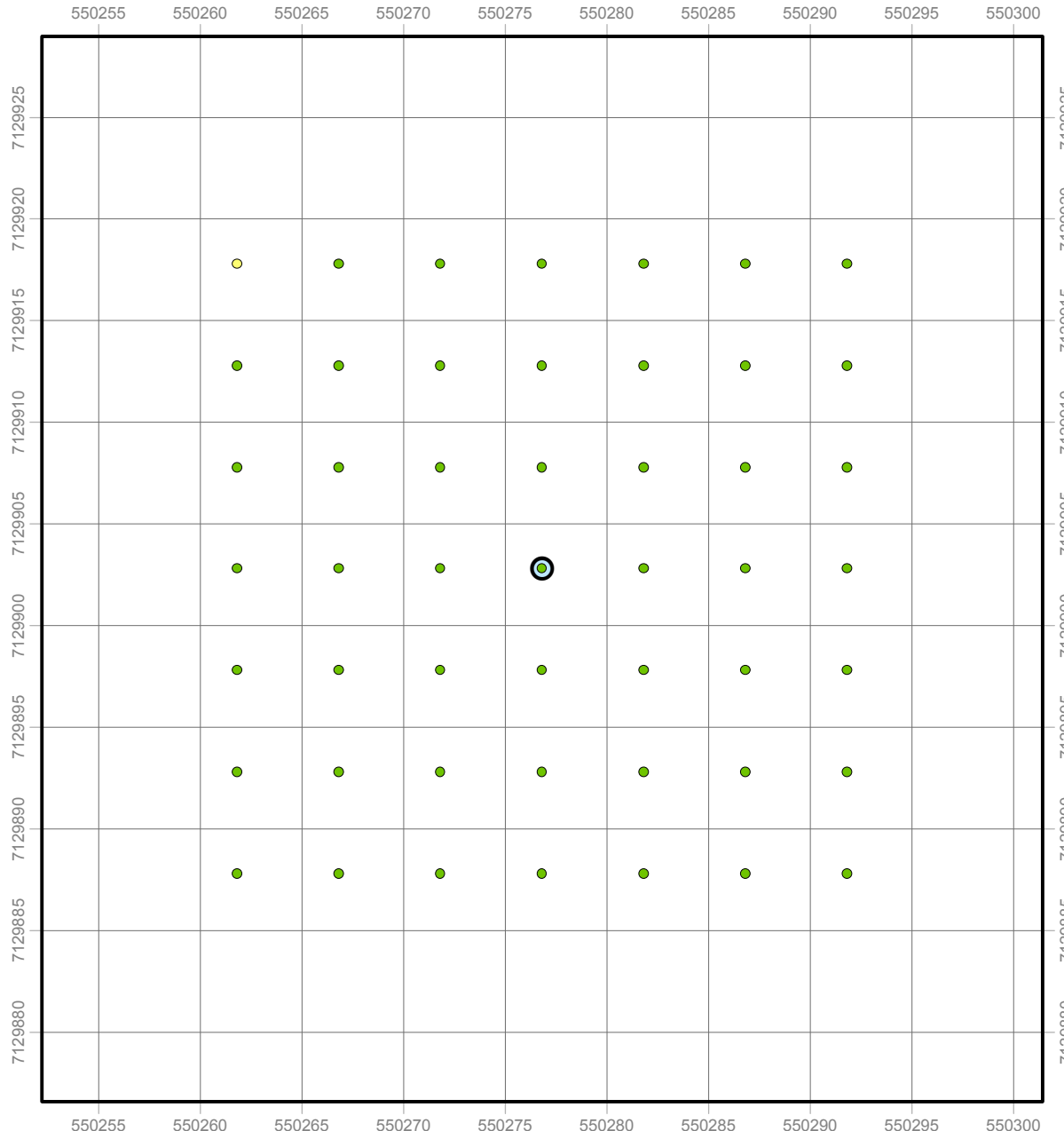
Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



CONT-020/CONT-021
Pre Gamma Survey

Point Count: 49
Min-Max: 0.01 - 0.32 μSv



CONT-020/CONT-021
Post Gamma Survey

Point Count: 49
Min-Max: 0.01 - 0.31 μSv



Legend

Drill Hole

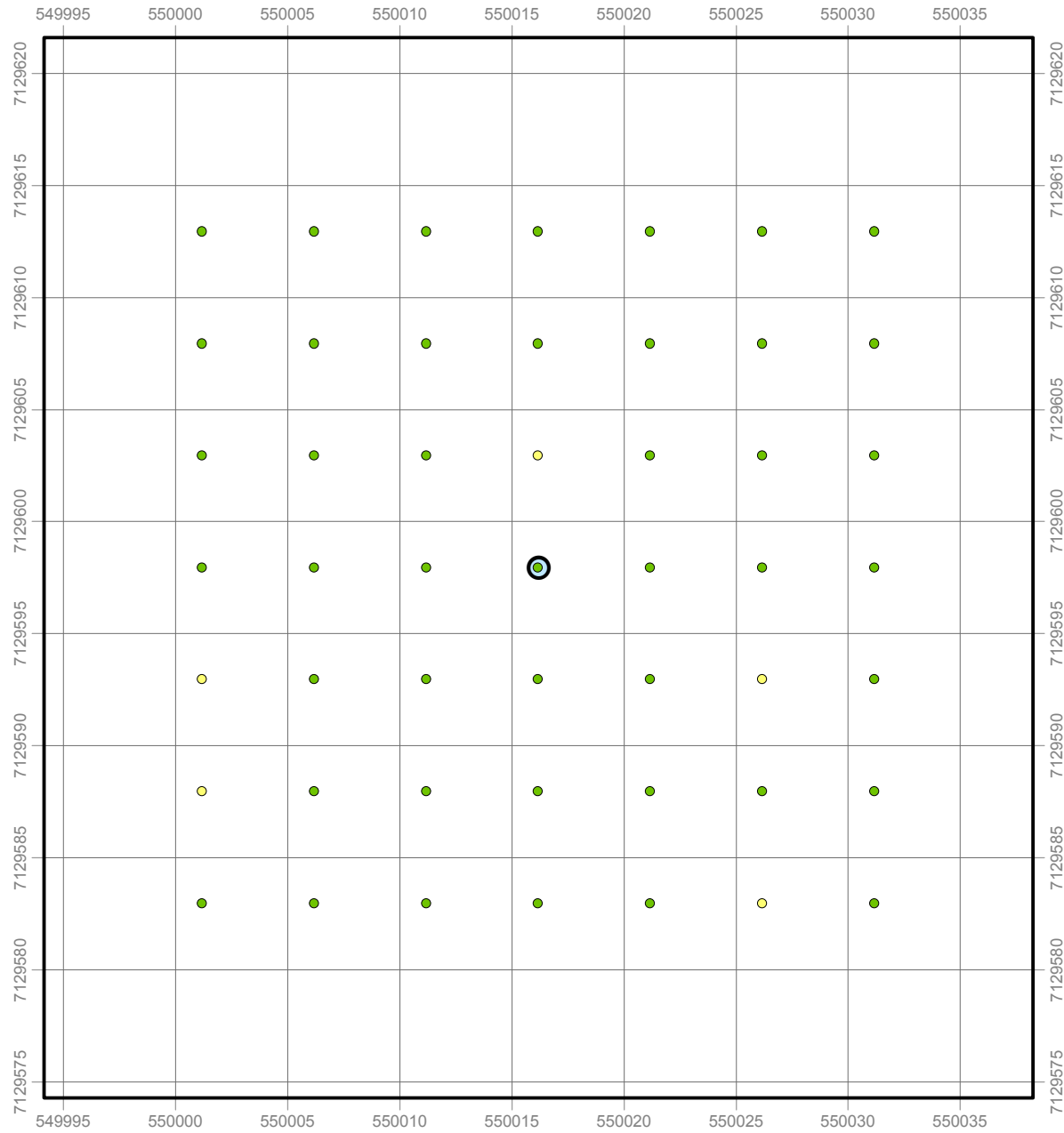
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

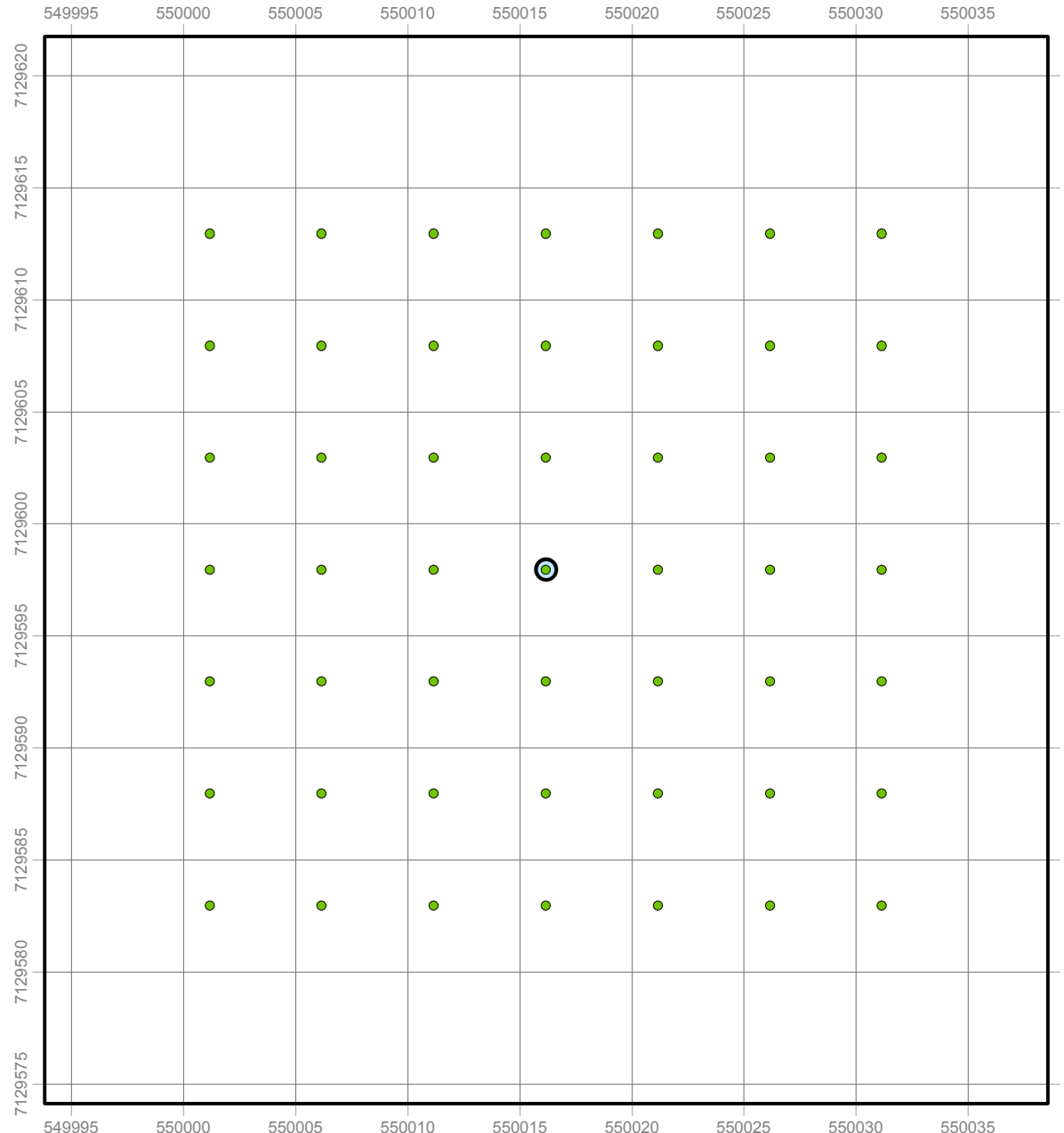
1.0 - 2.5 μSv

> 2.5 μSv



CONT-022
Pre Gamma Survey

Point Count: 49
Min-Max: 0.02 - 0.43 μSv



CONT-022
Post Gamma Survey

Point Count: 49
Min-Max: 0.01 - 0.25 μSv

Legend

Drill Hole

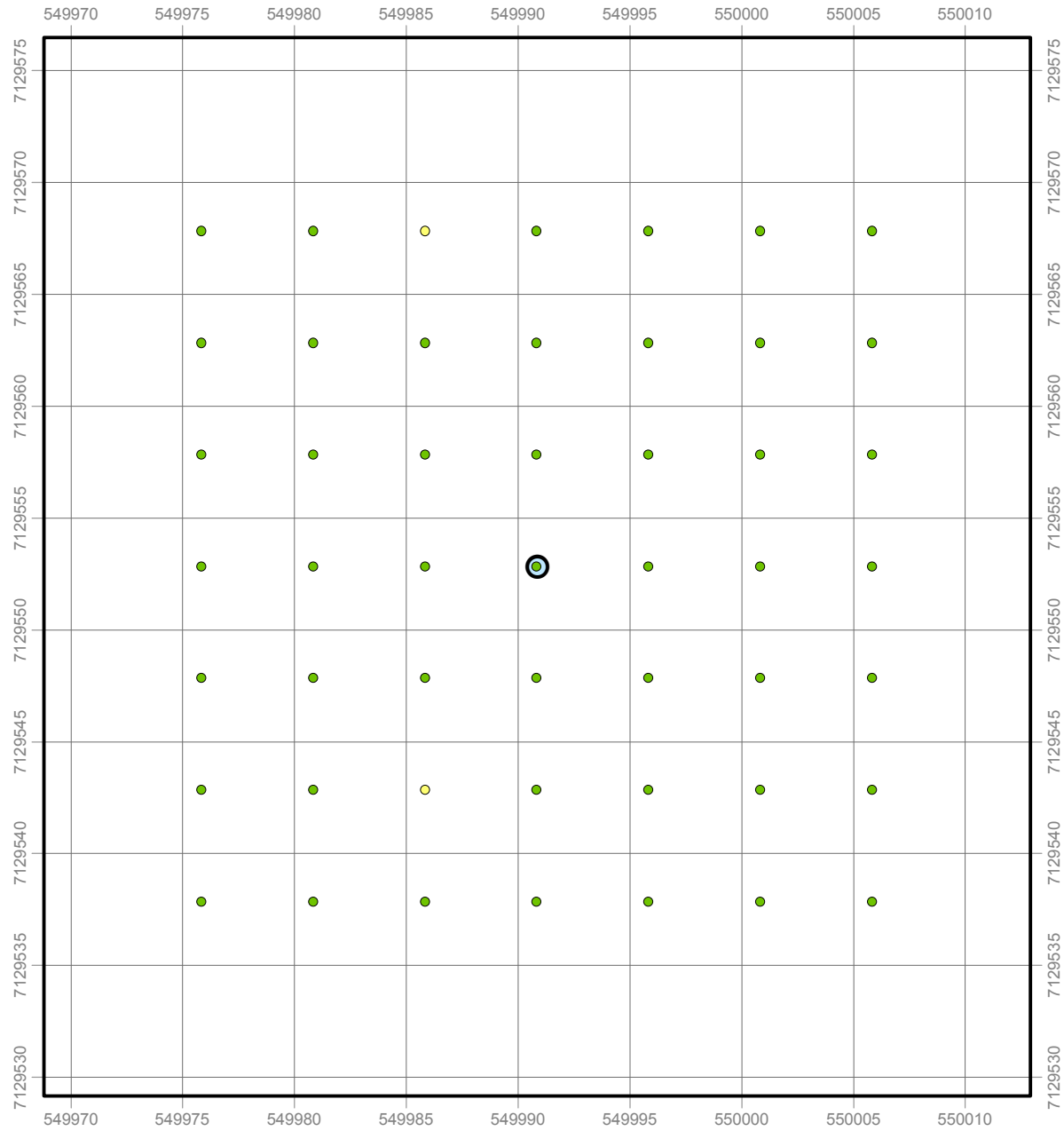
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

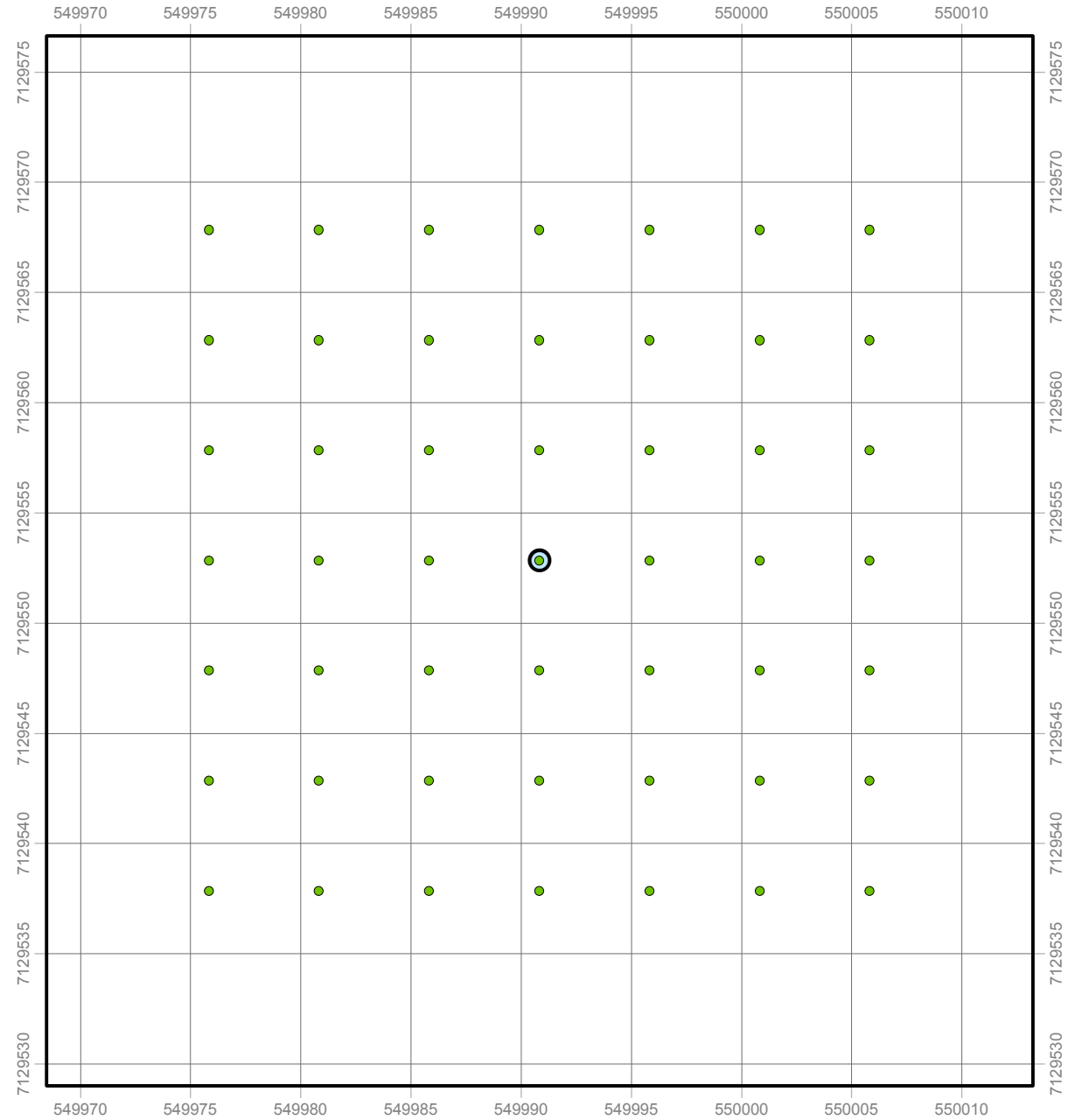


CONT-023

Pre Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.38 μSv



CONT-023

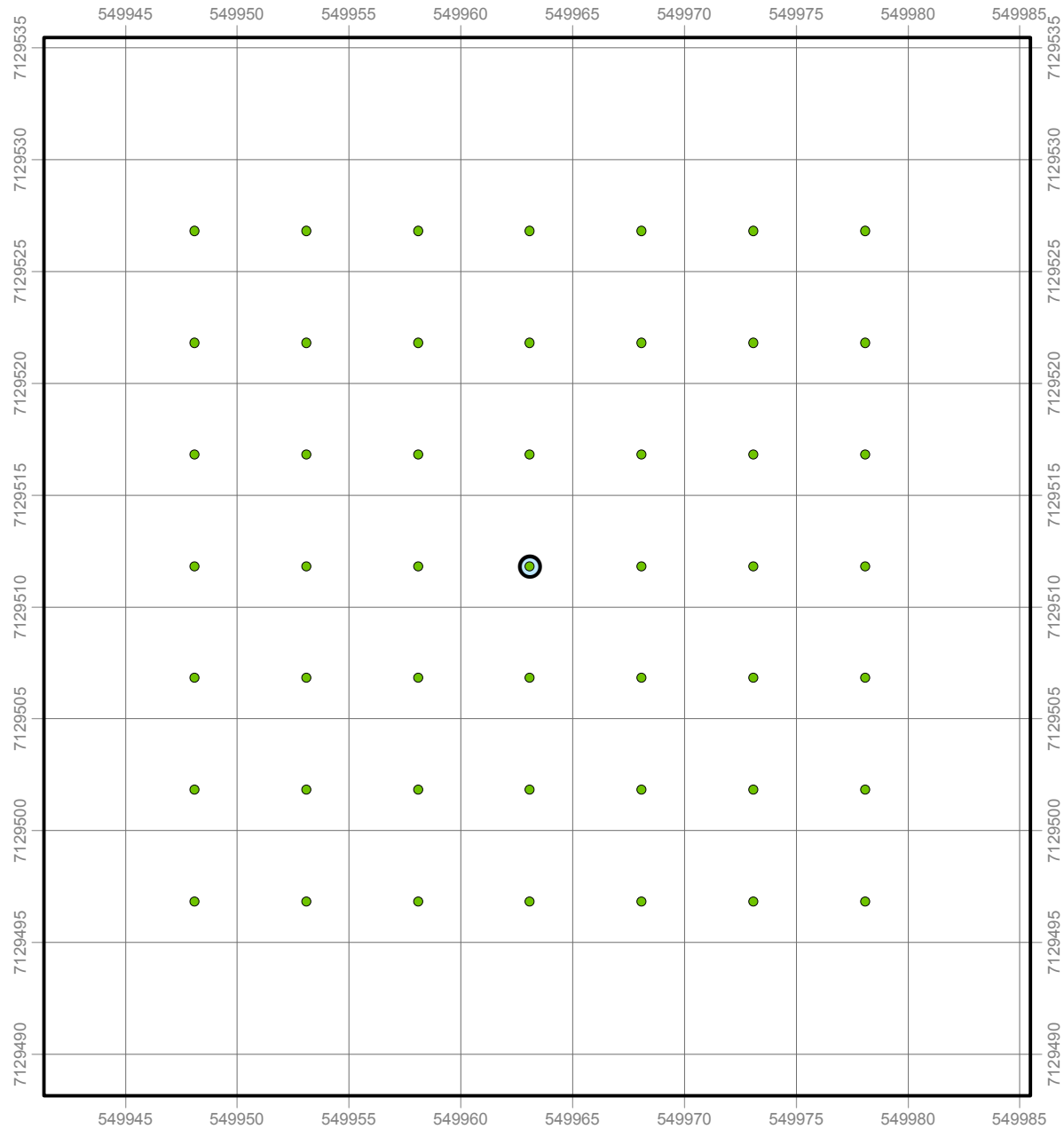
Post Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.28 μSv

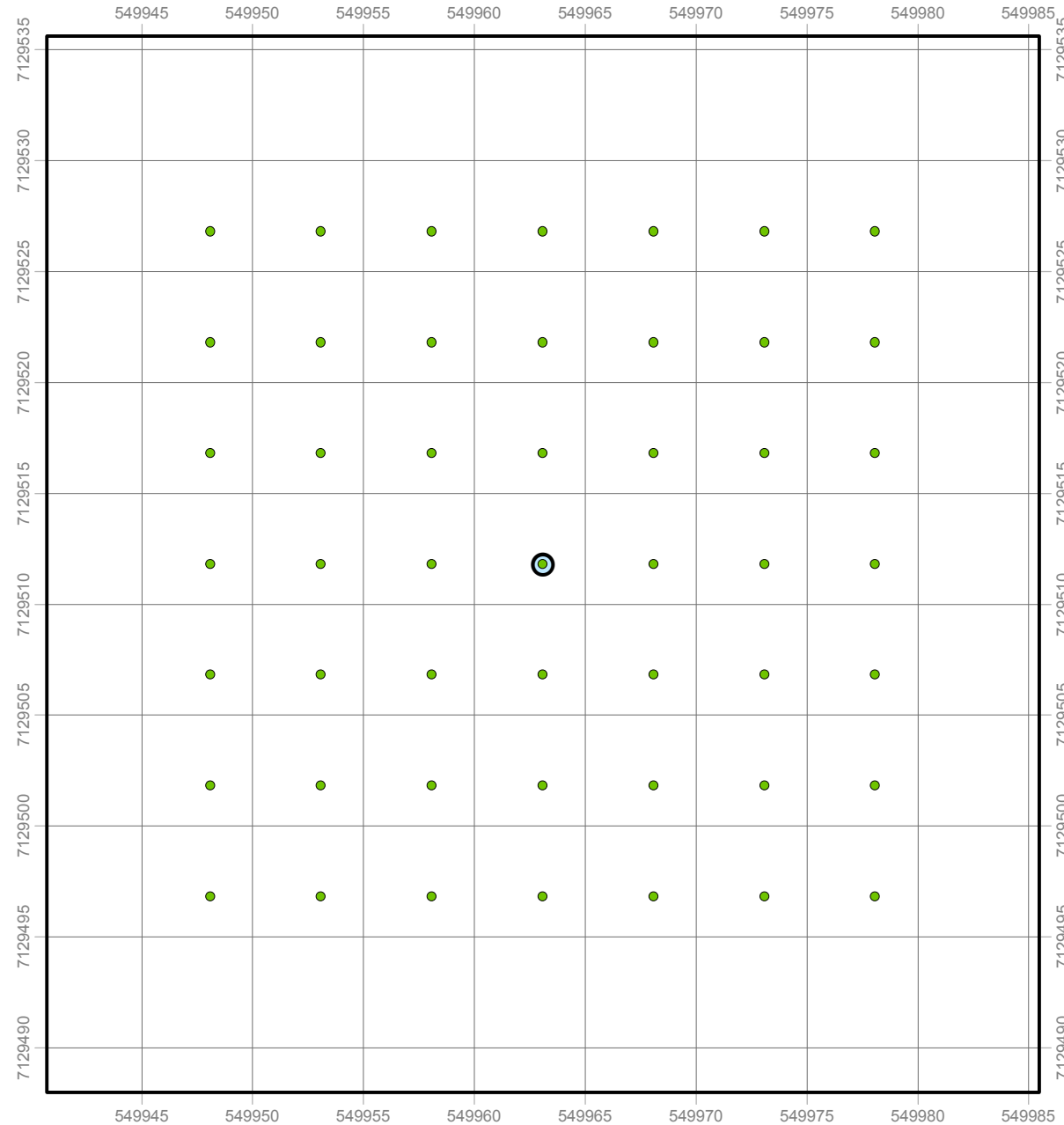
Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



CONT-024
Pre Gamma Survey

Point Count: 49
Min-Max: 0.12 - 0.28 μSv



CONT-024
Post Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.27 μSv

Legend

Drill Hole

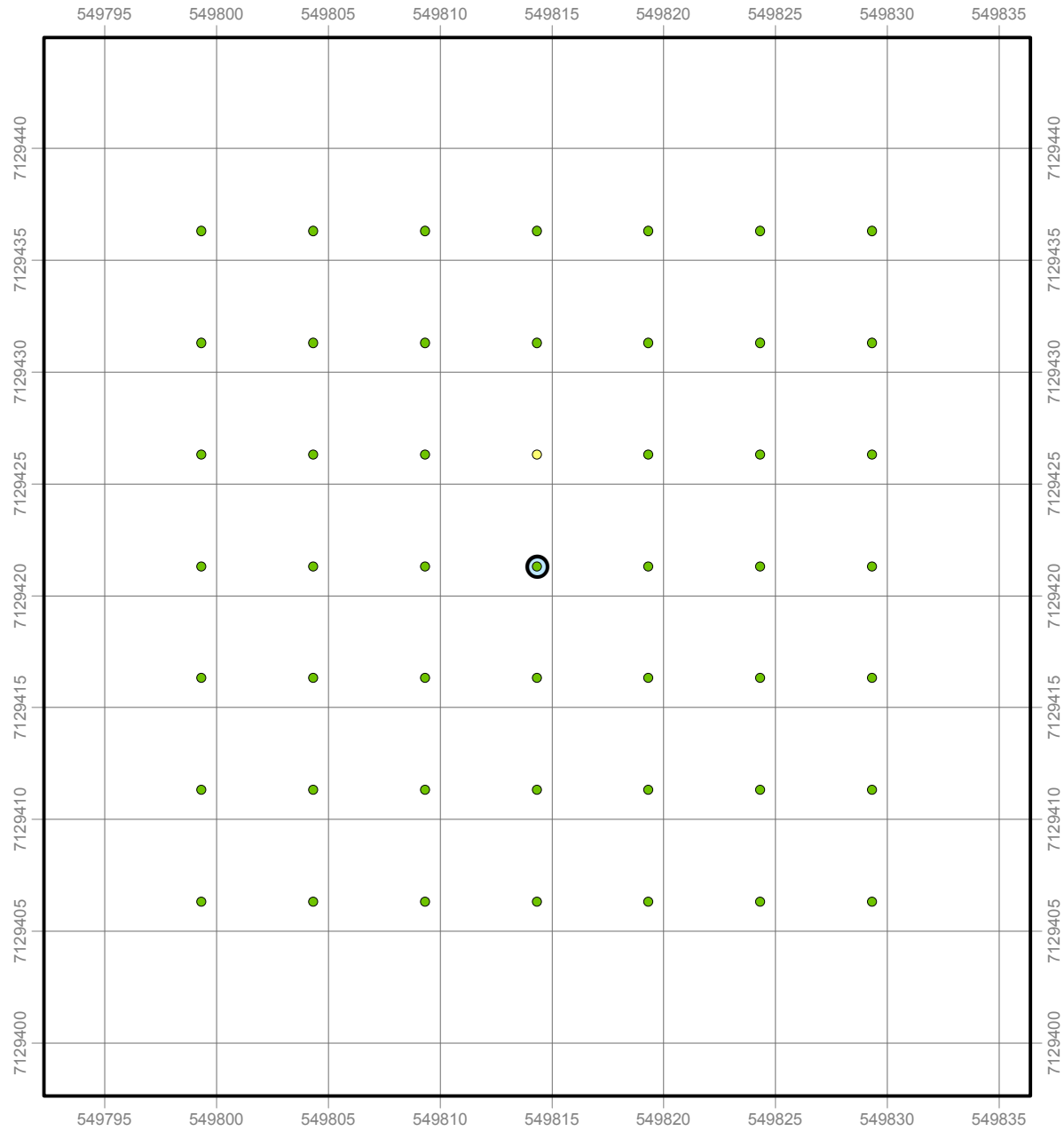
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

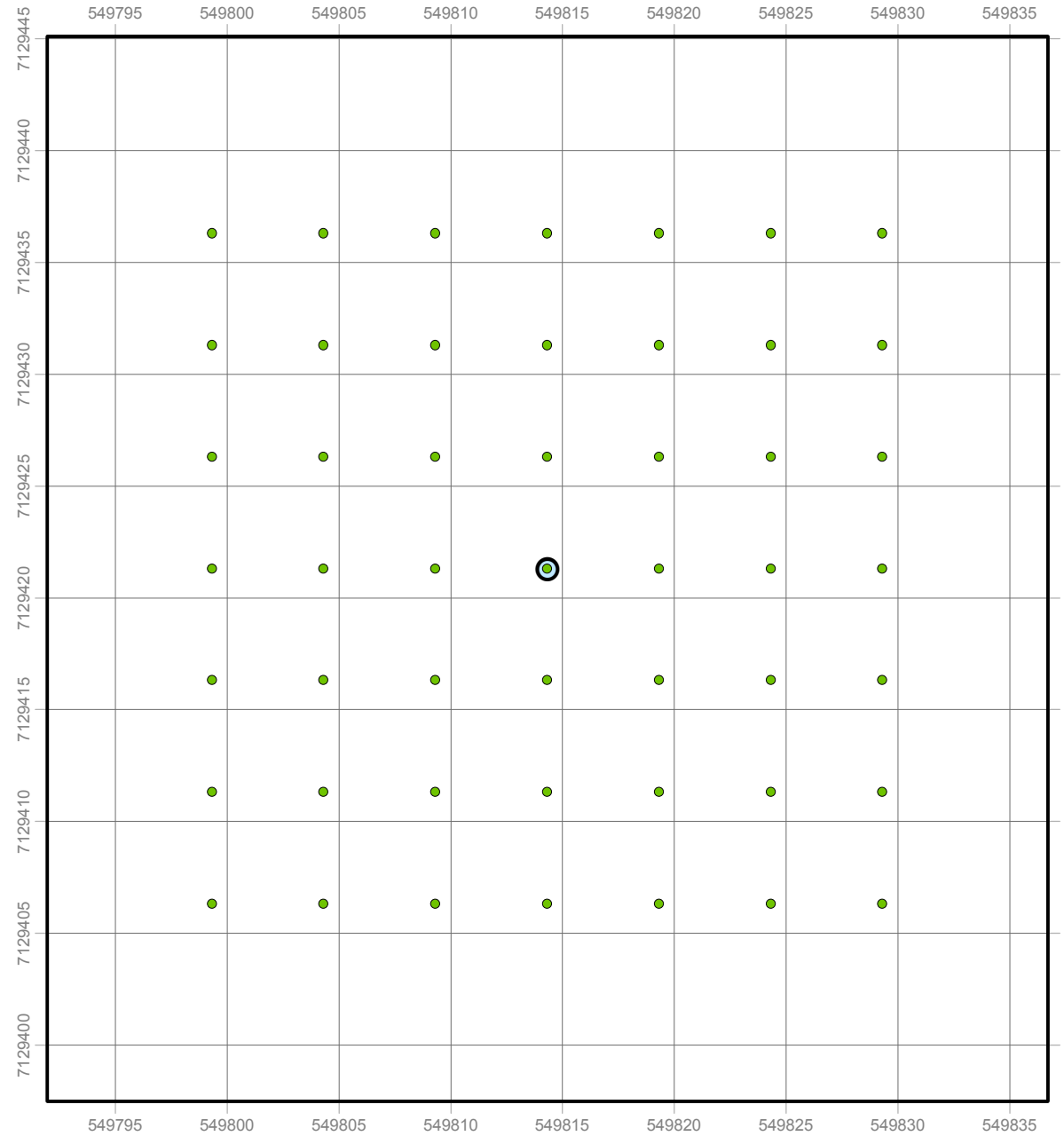


CONT-025

Pre Gamma Survey

Point Count: 49

Min-Max: 0.02 - 0.31 μSv



CONT-025

Post Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.25 μSv

Legend

Drill Hole

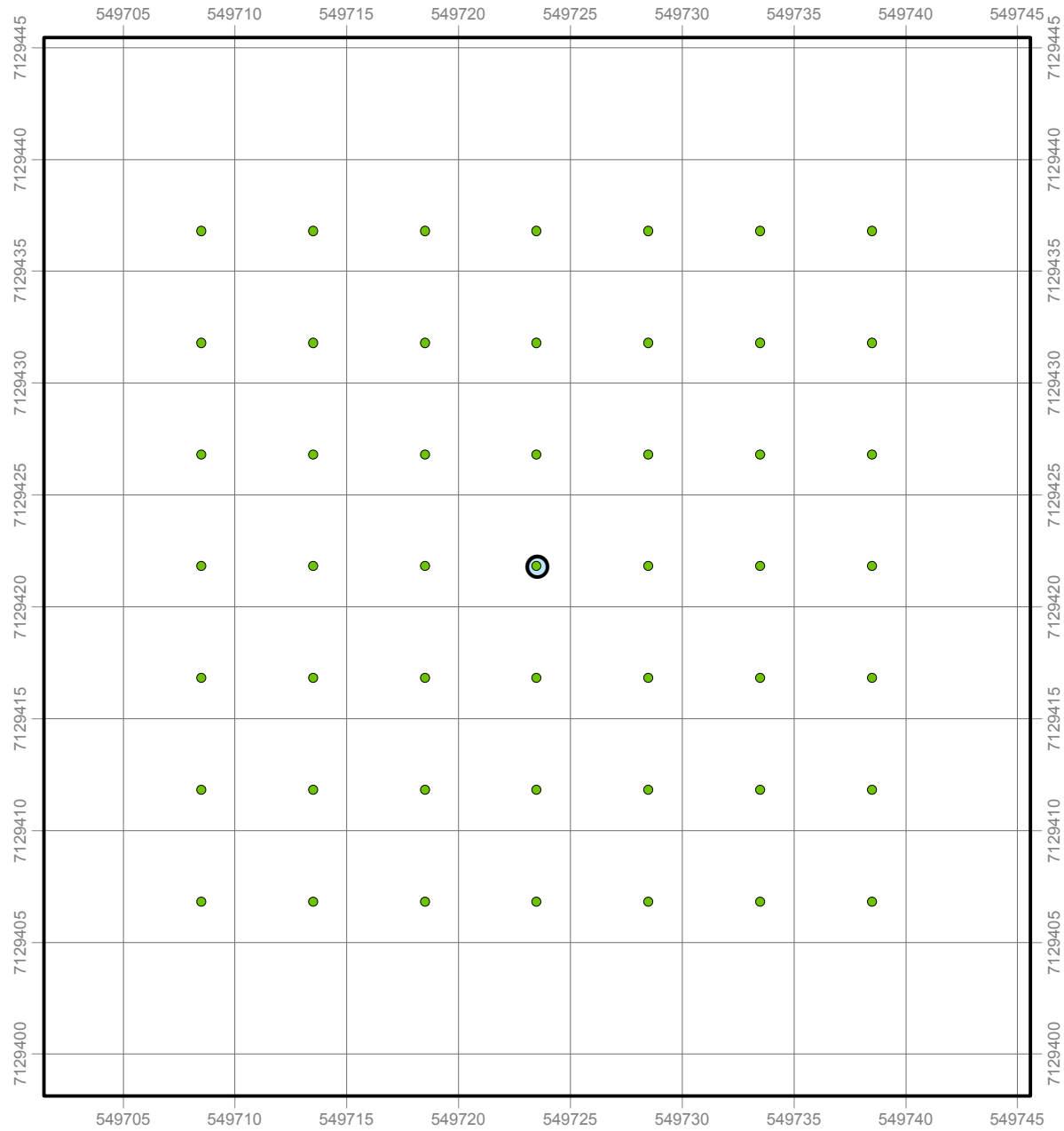
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

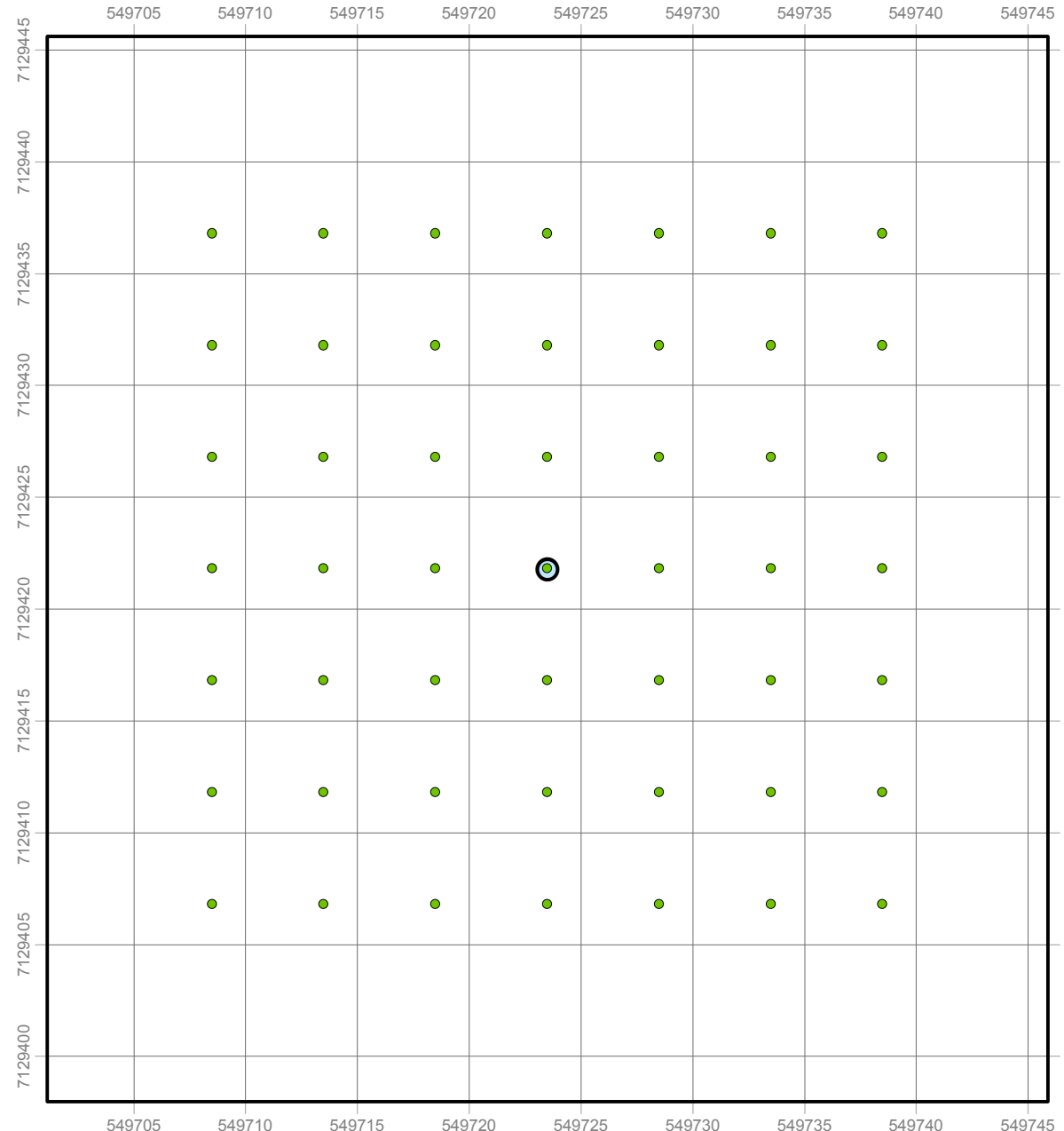
1.0 - 2.5 μSv

> 2.5 μSv



CONT-026
Pre Gamma Survey

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



CONT-026
Post Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.24 μSv

Legend

Drill Hole

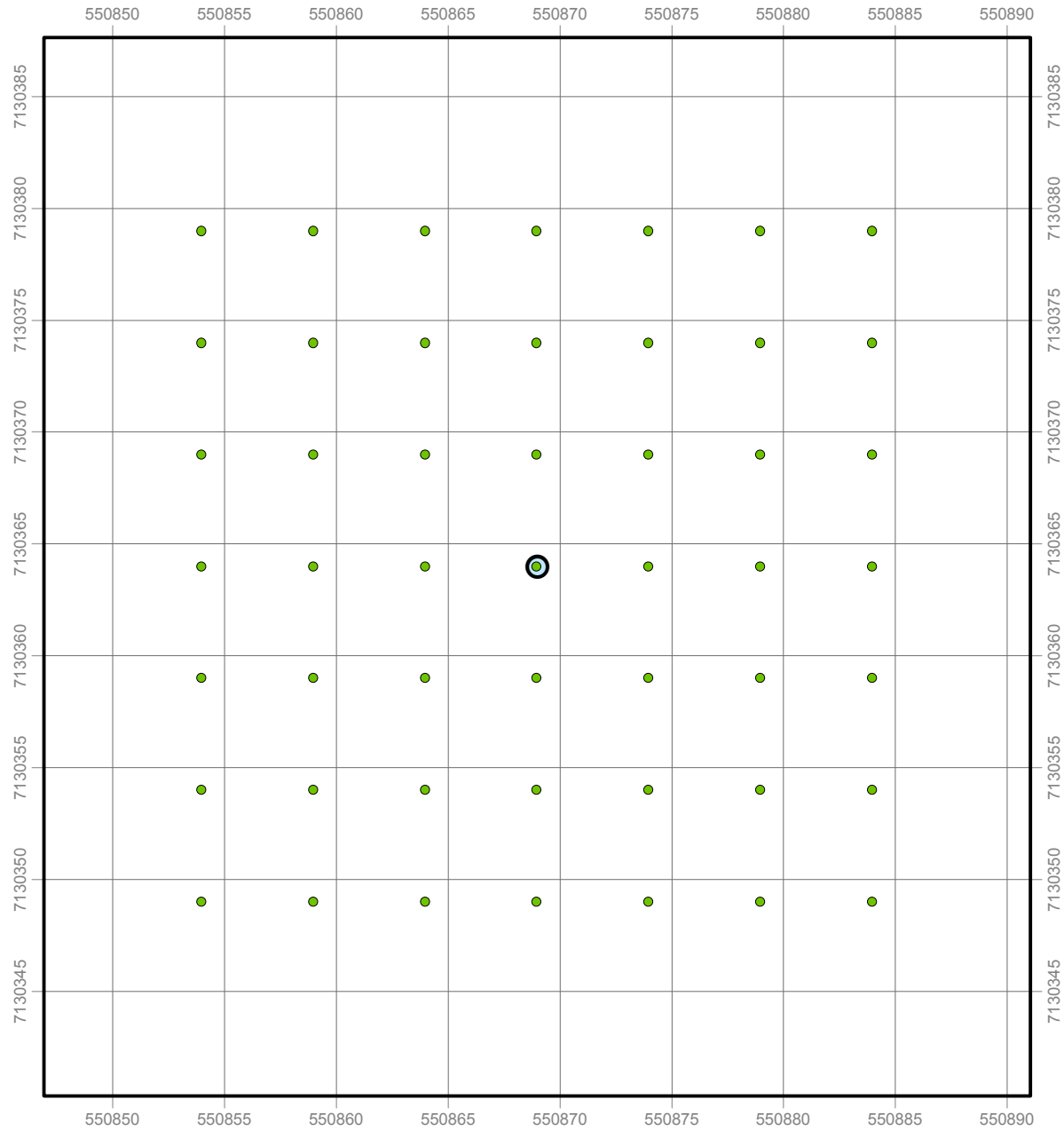
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

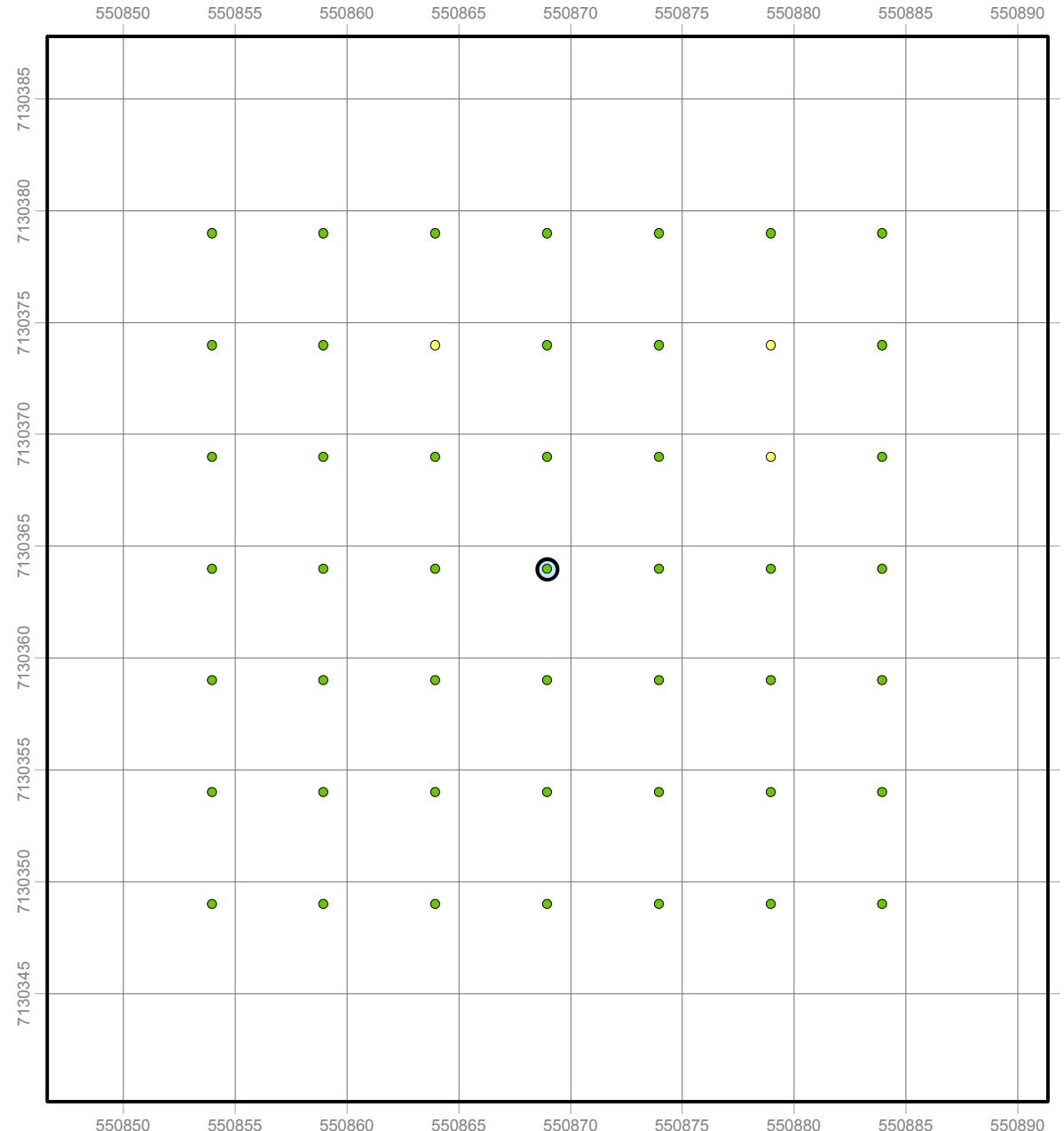
1.0 - 2.5 μSv

> 2.5 μSv



CONT-027
Pre Gamma Survey

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



CONT-027
Post Gamma Survey

Point Count: 49
Min-Max: 0.1 - 0.48 μSv

Legend

Drill Hole

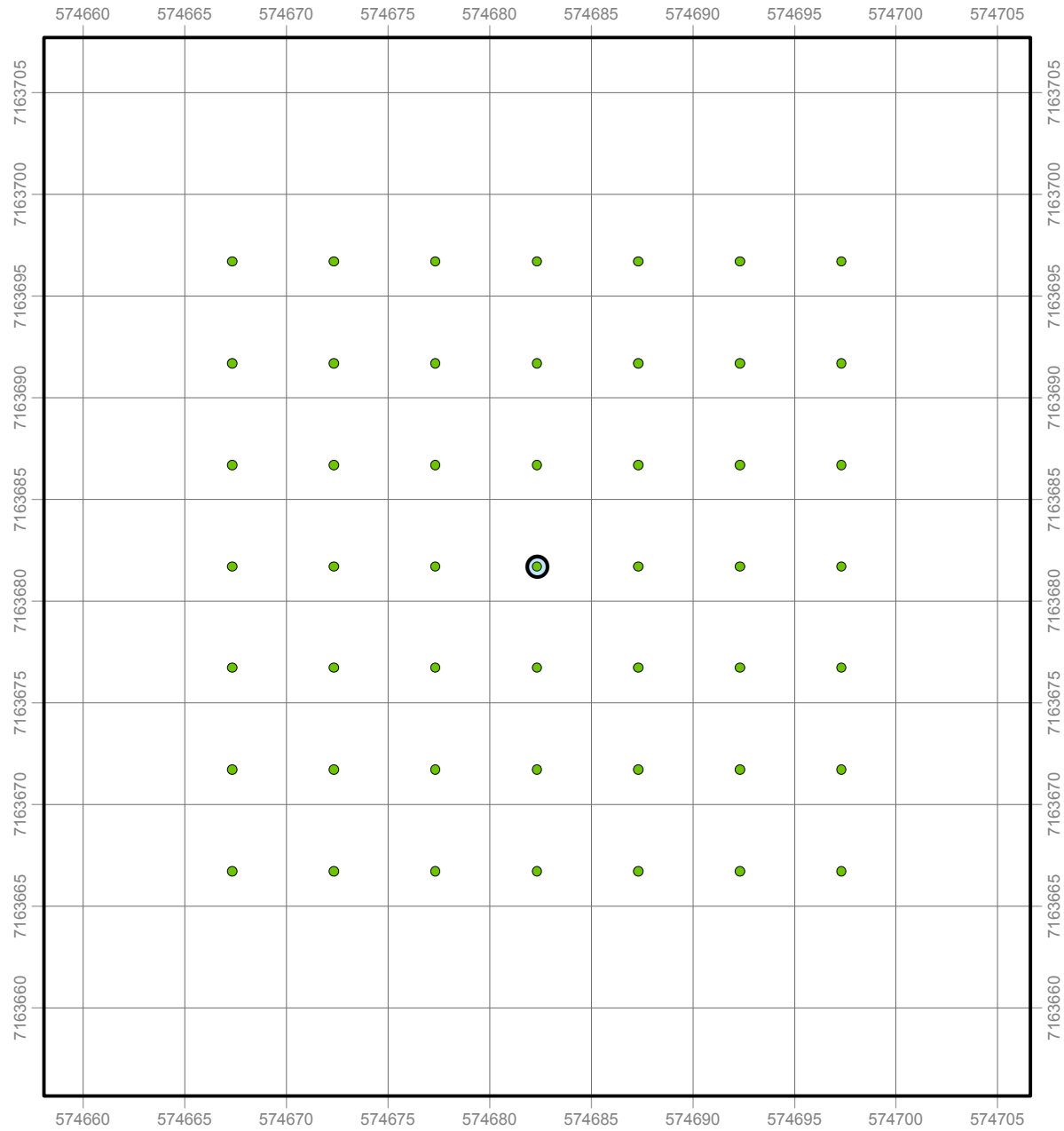
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

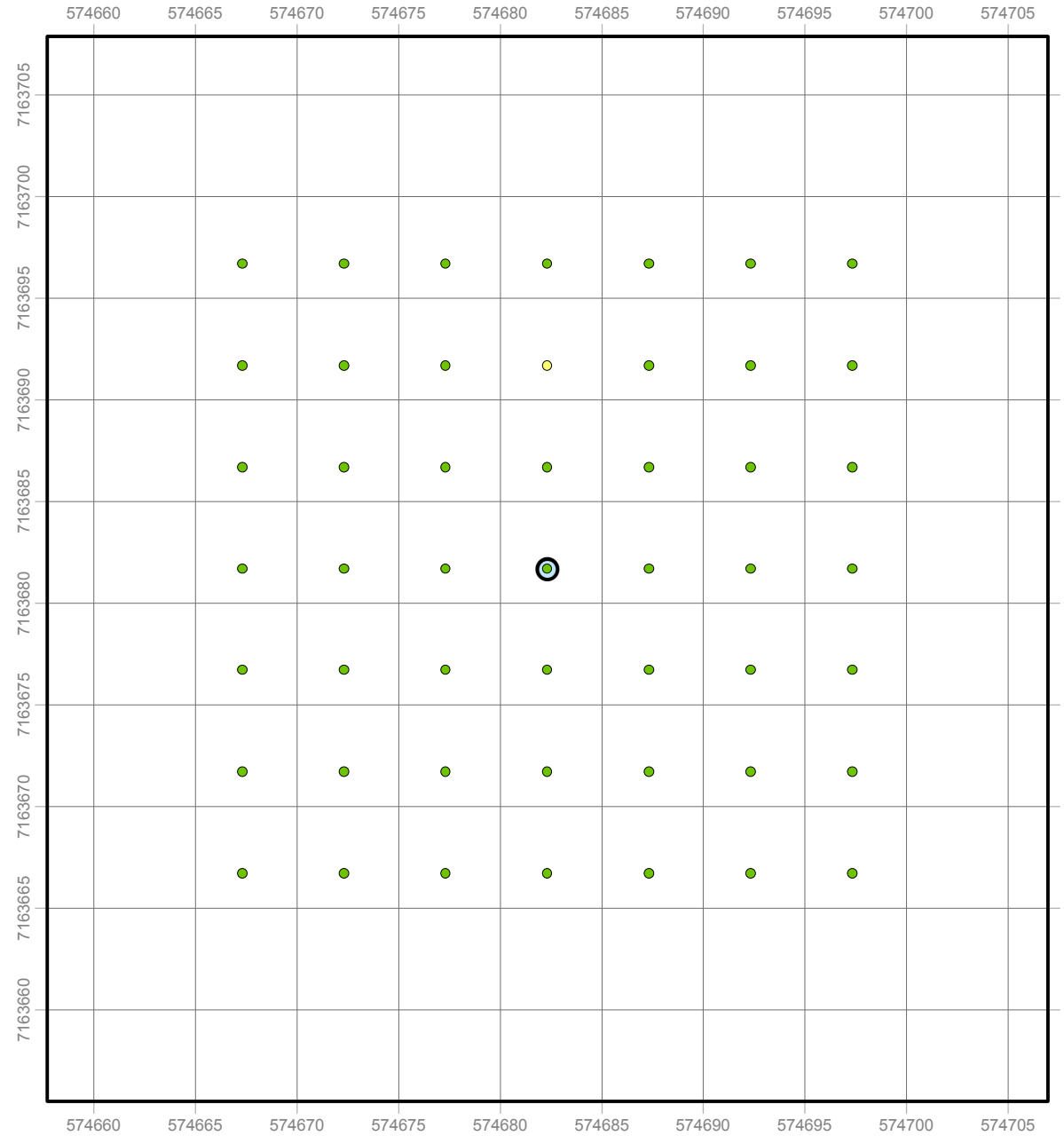


ST-01

Pre Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.28 μSv



ST-01

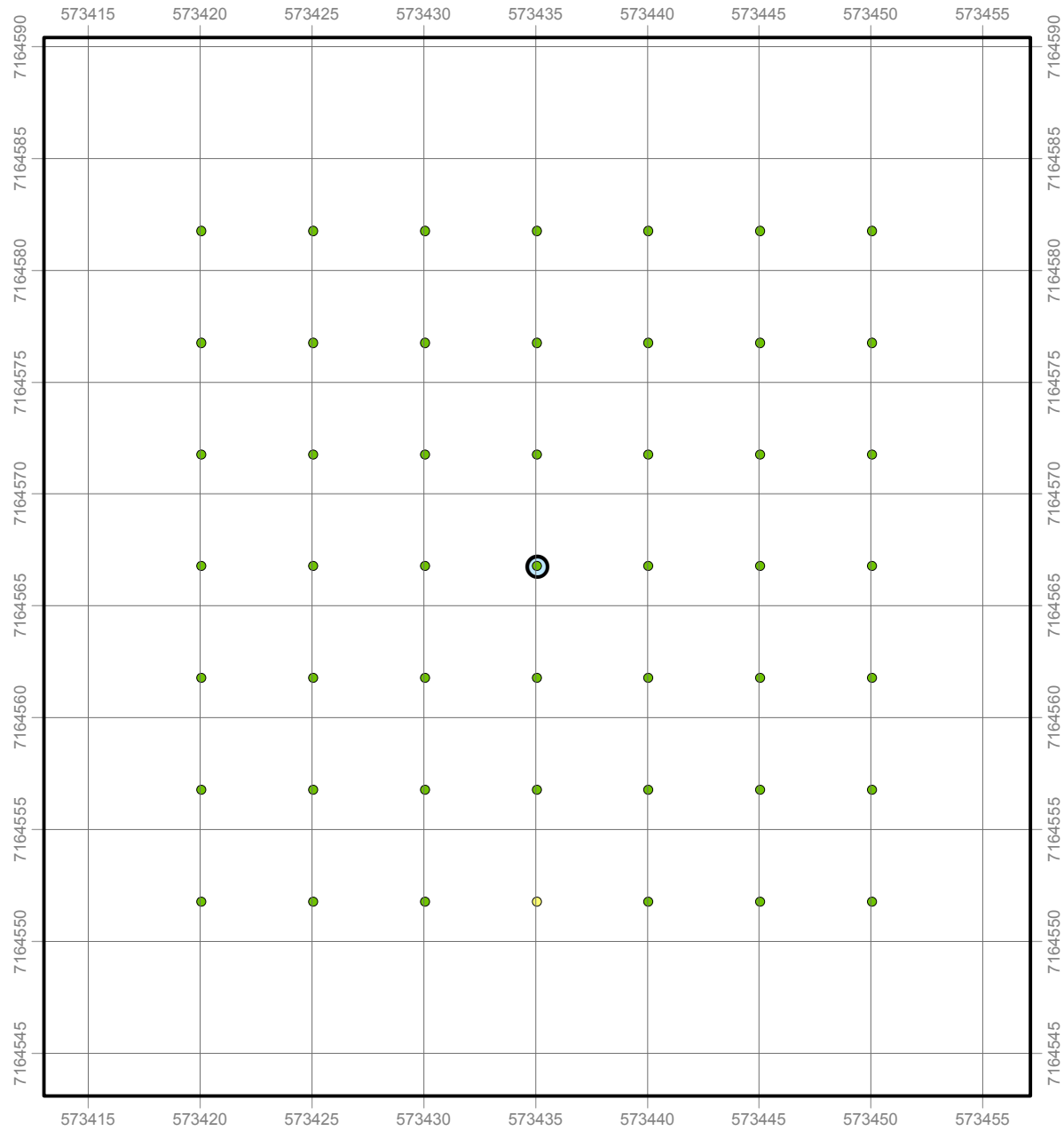
Post Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.34 μSv

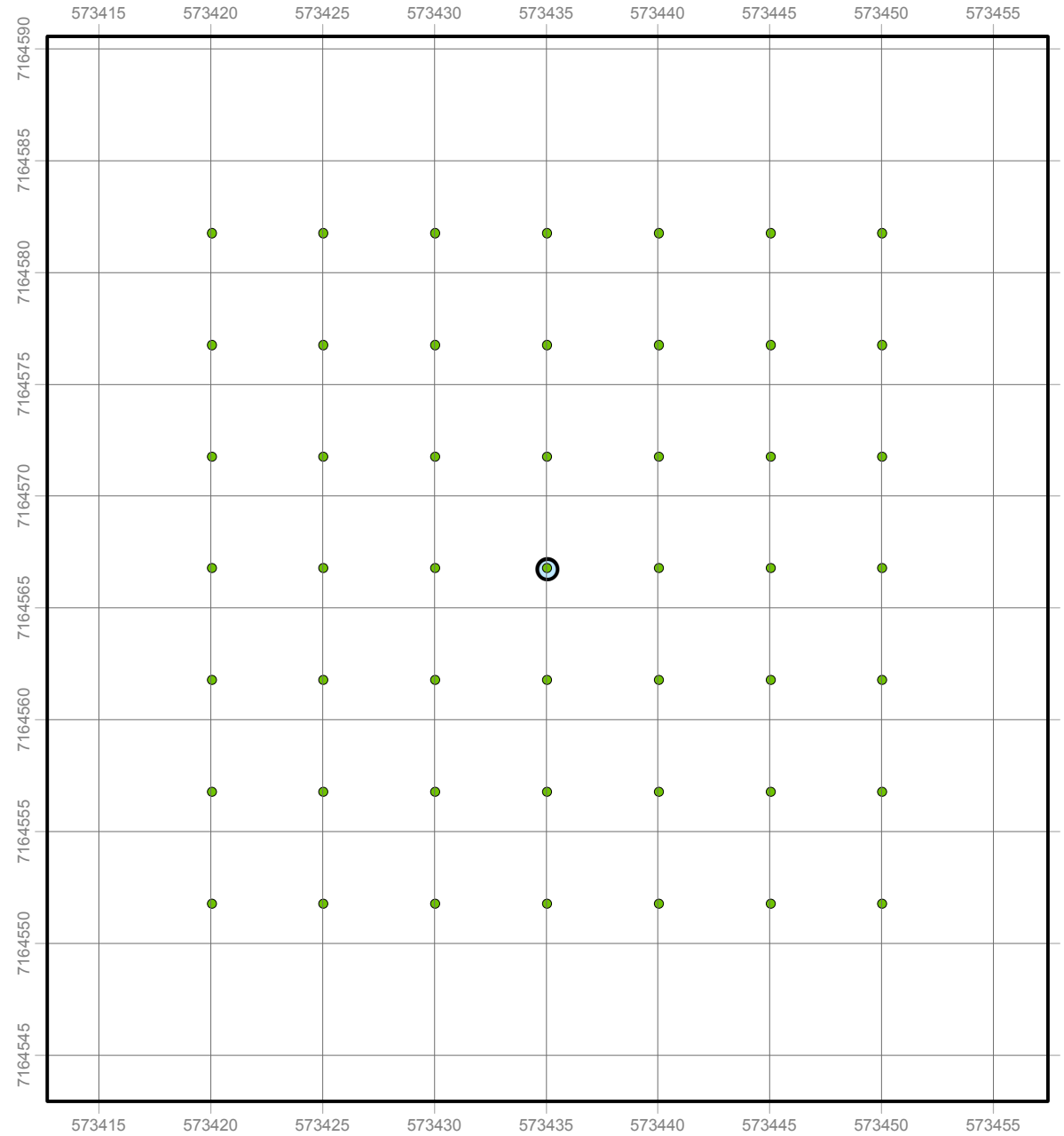
Legend

- Drill Hole
- 0.0 - 0.3 µSv
- 0.3 - 0.6 µSv
- 0.6 - 1.0 µSv
- 1.0 - 2.5 µSv
- > 2.5 µSv



ST-02
Pre Gamma Survey

Point Count: 49
Min-Max: 0.04 - 0.36 µSv



ST-02
Post Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.28 µSv

Legend

Drill Hole

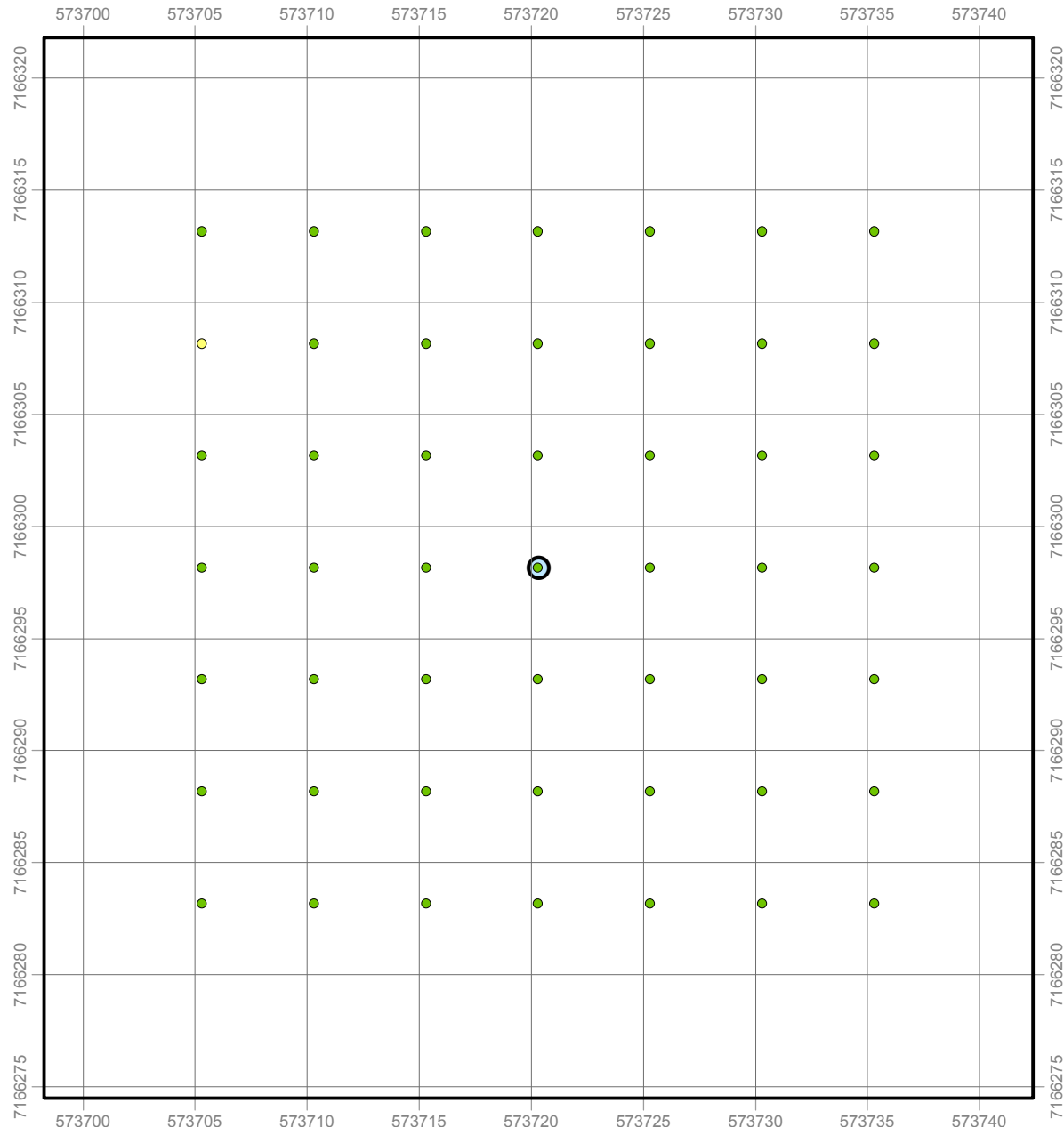
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

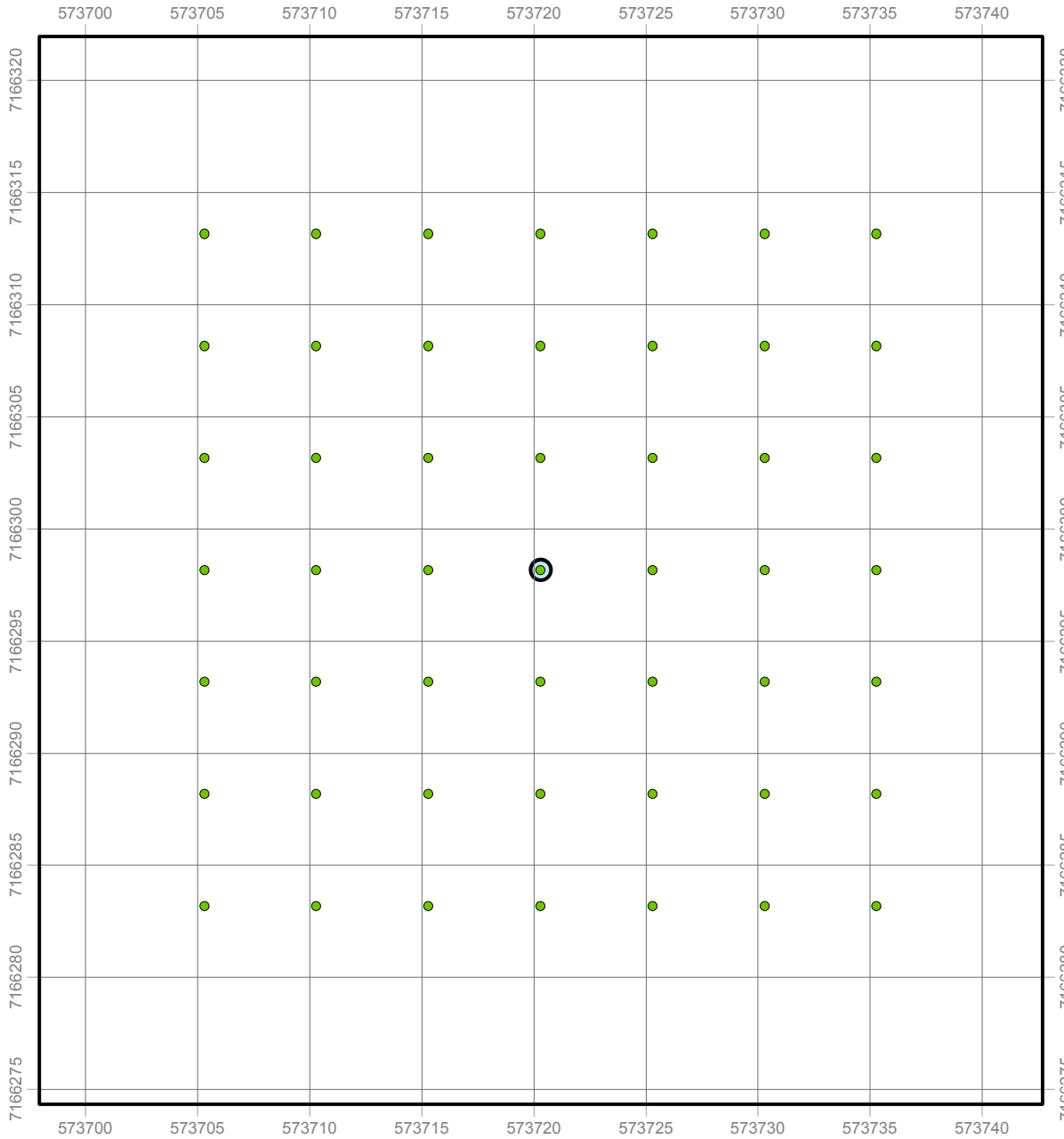
1.0 - 2.5 μSv

> 2.5 μSv



ST-03
Pre Gamma Survey

Point Count: 49
Min-Max: 0.02 - 0.32 μSv

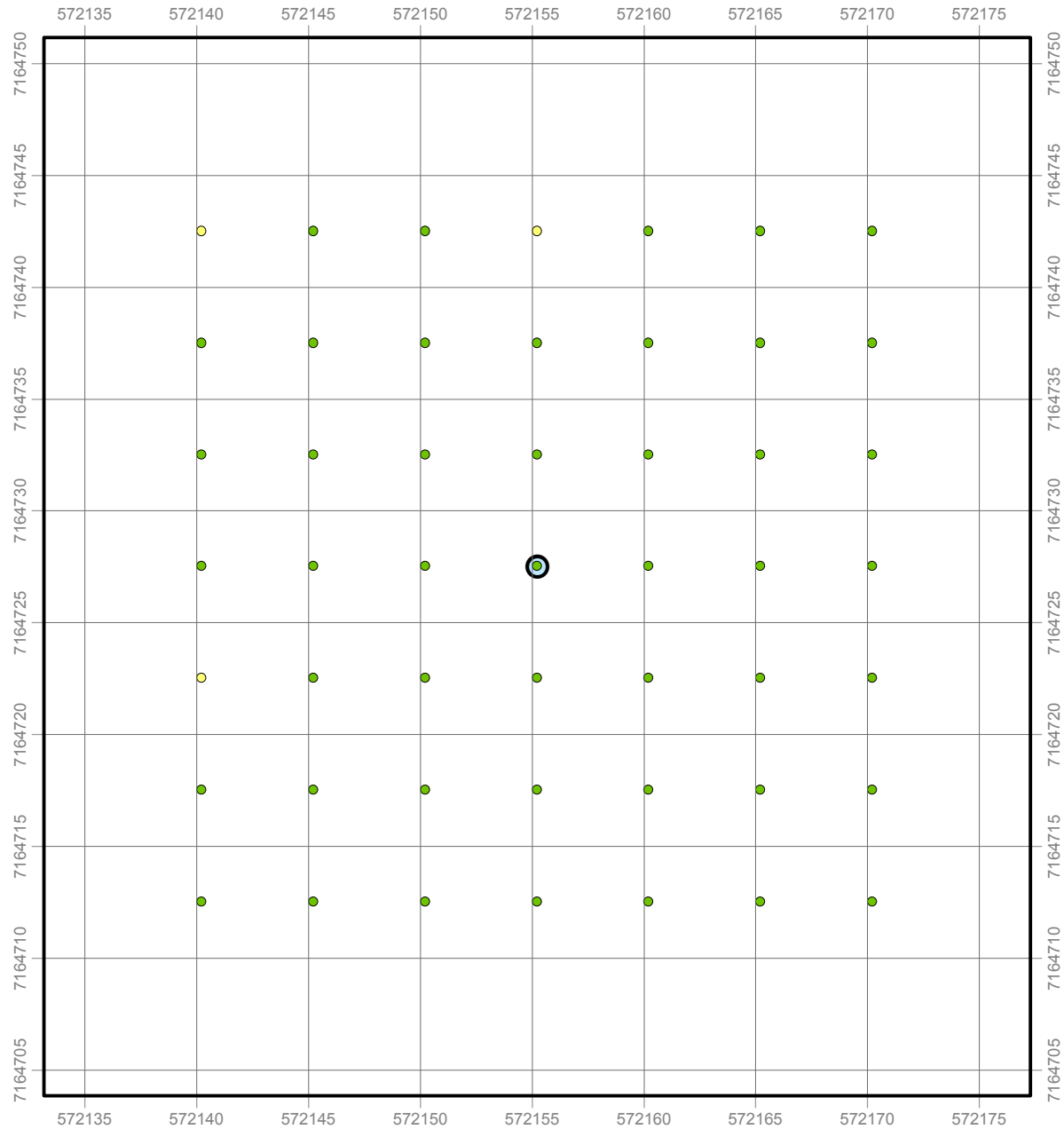


ST-03
Post Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.26 μSv

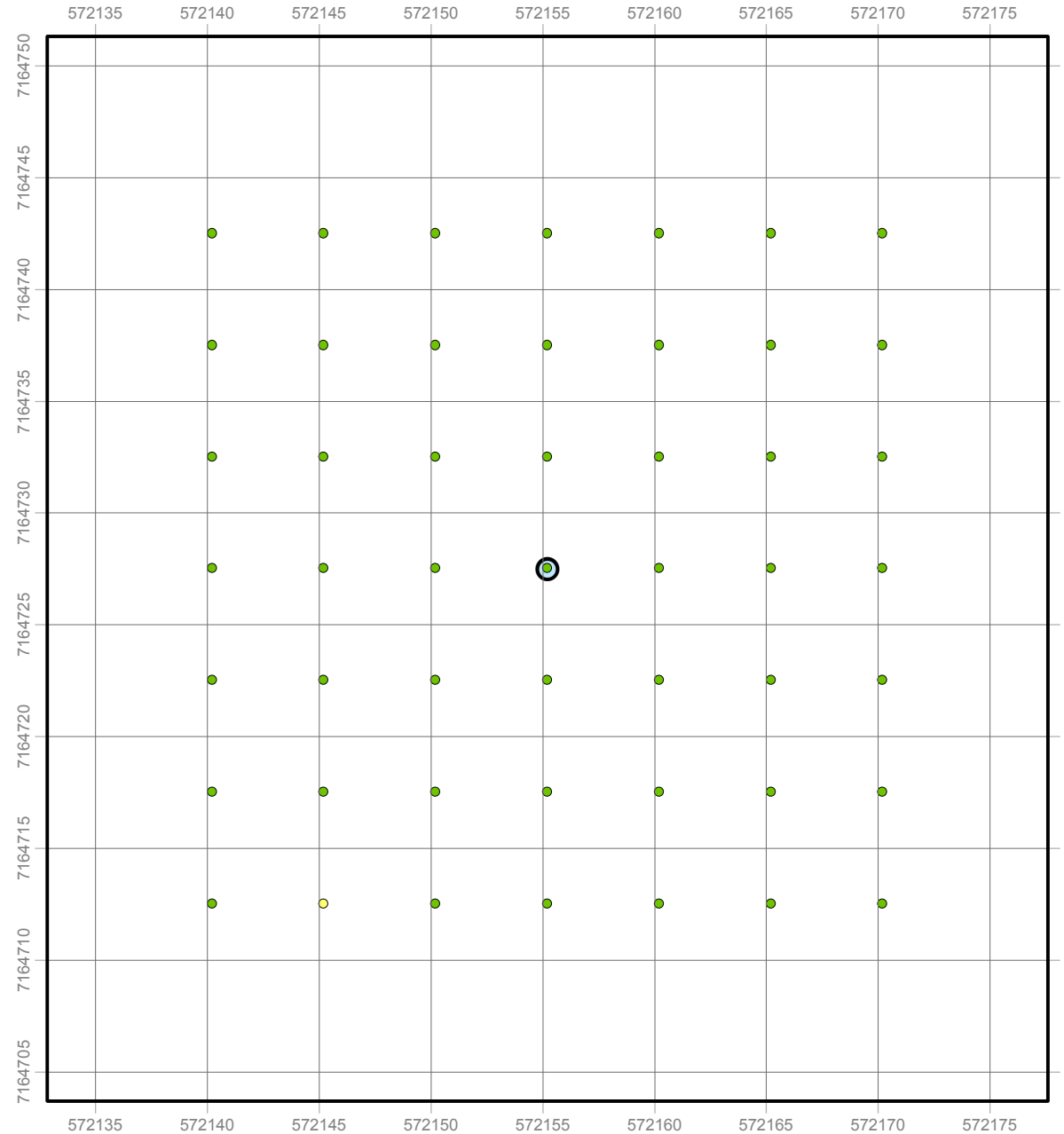
Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



ST-04
Pre Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.36 μSv

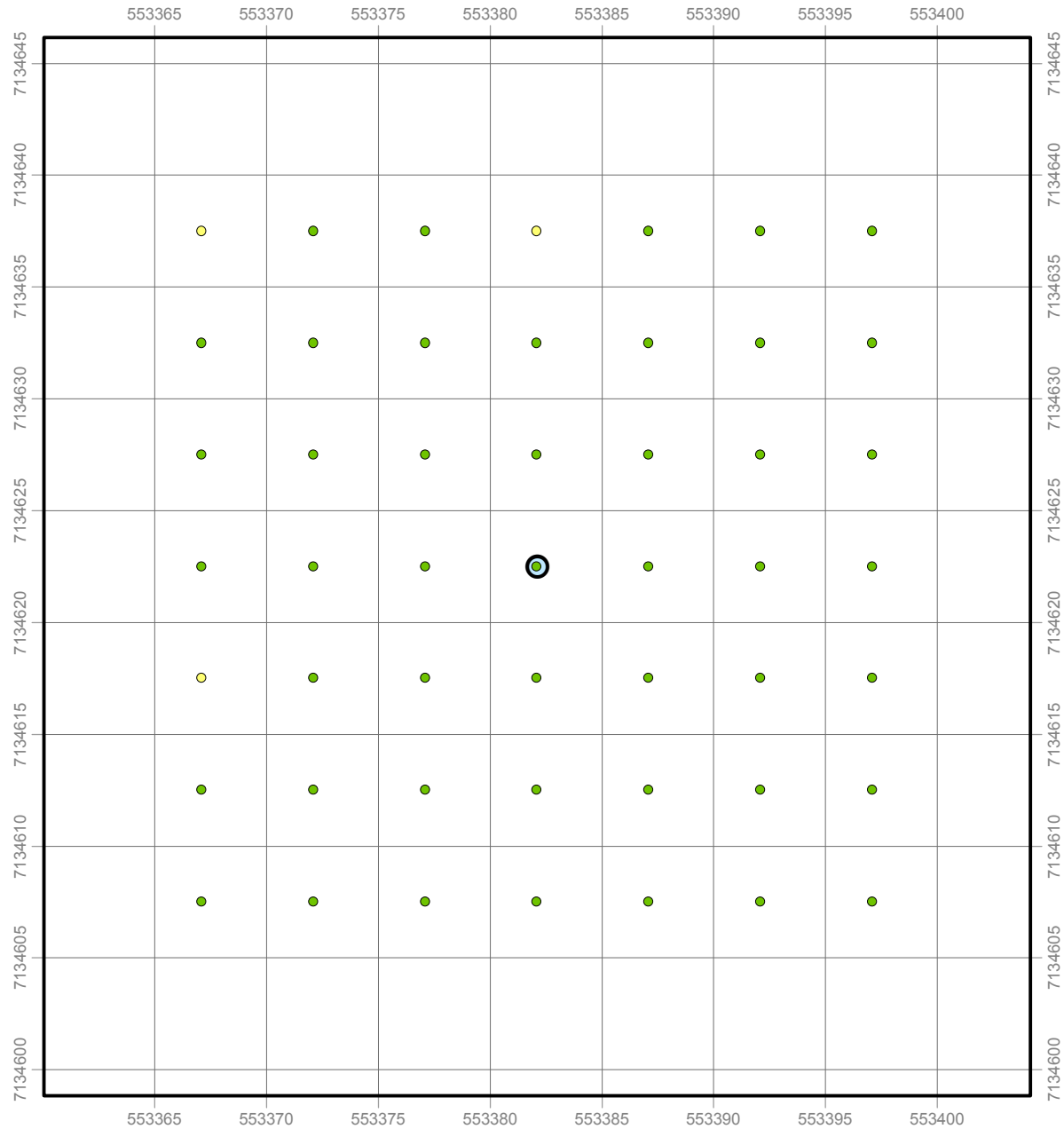


ST-04
Post Gamma Survey

Point Count: 49
Min-Max: 0.01 - 0.32 μSv

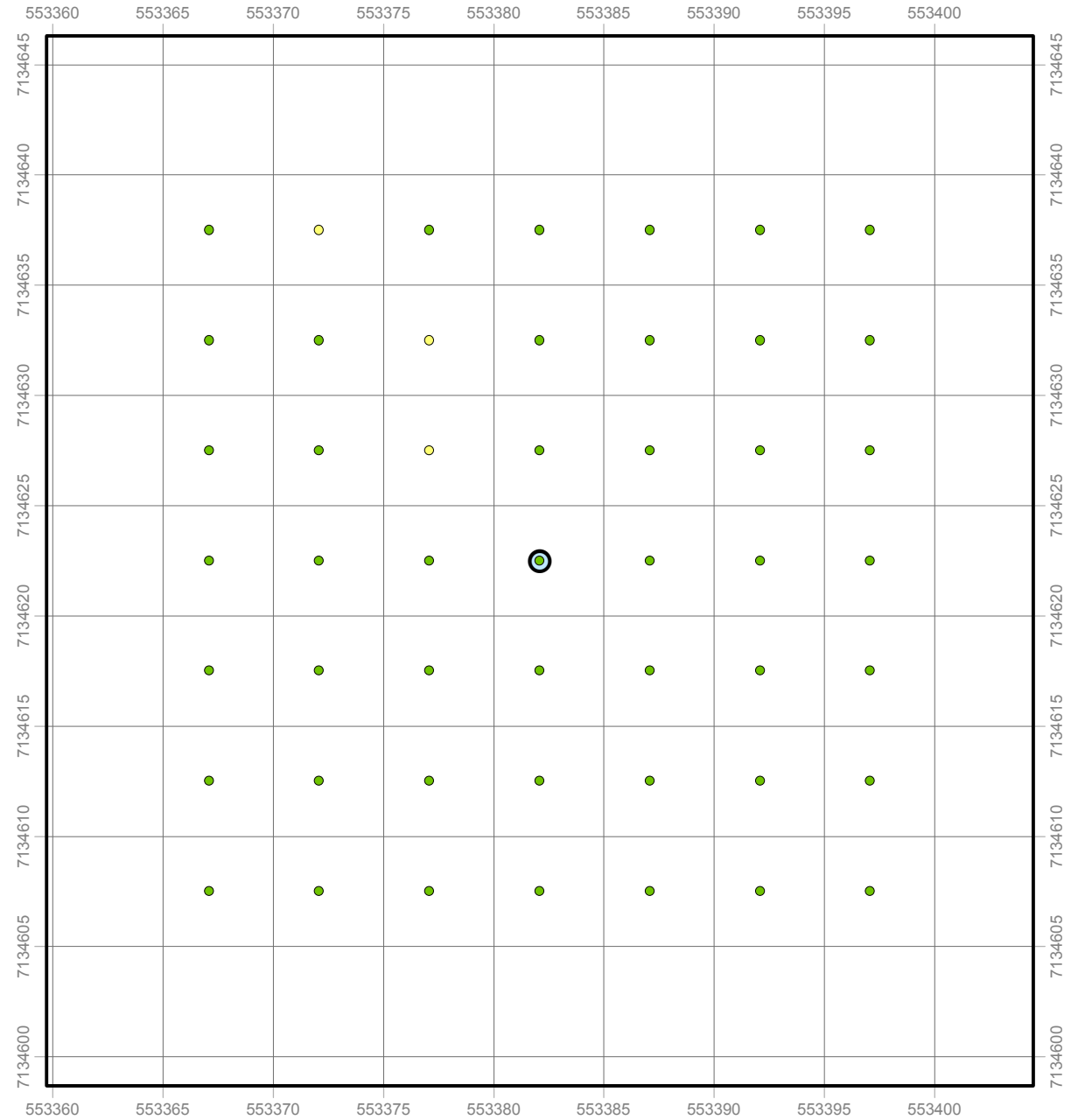
Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



AND-15-01
Pre Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.36 μSv

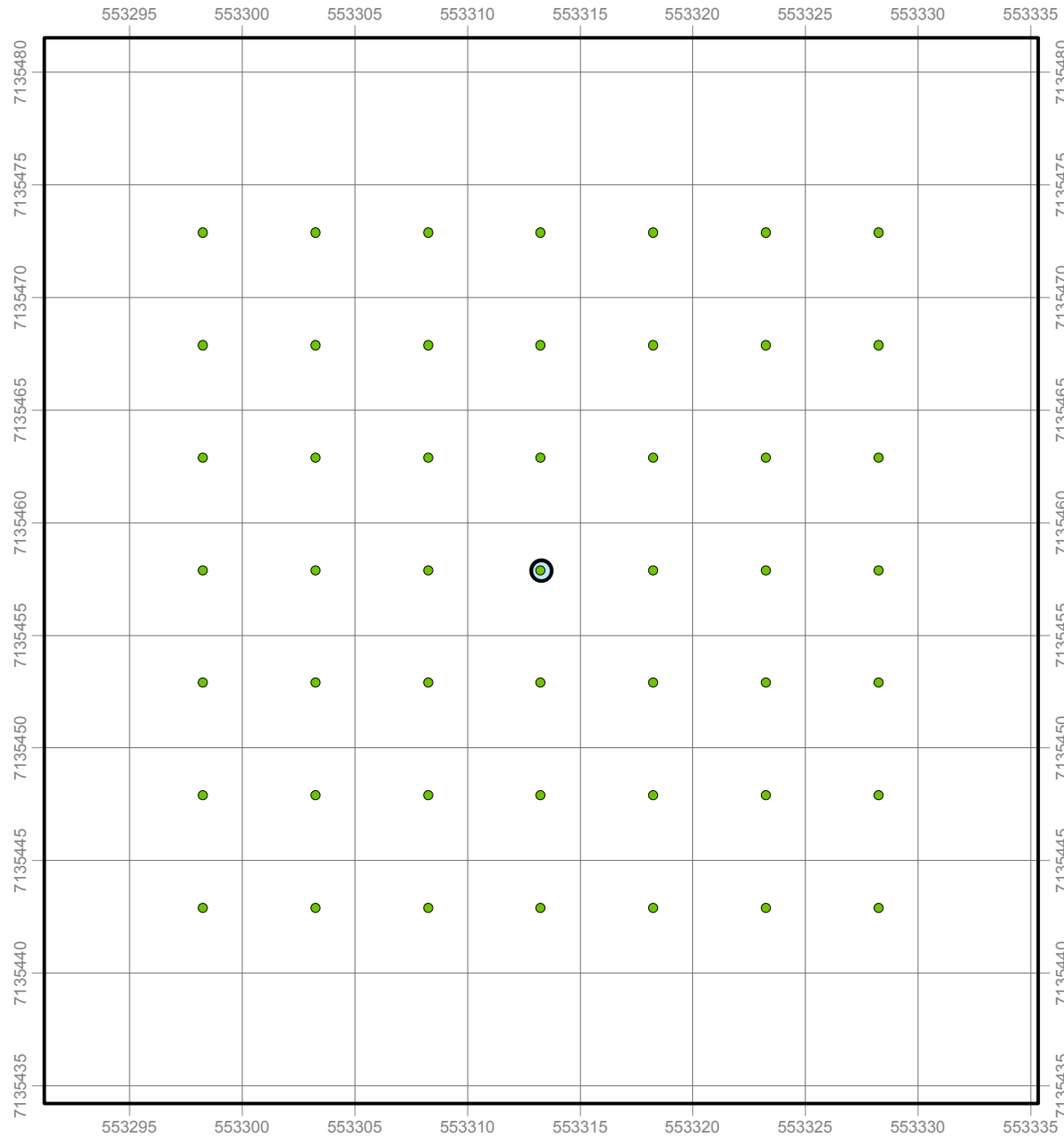


AND-15-01
Post Gamma Survey

Point Count: 49
Min-Max: 0.01 - 0.41 μSv

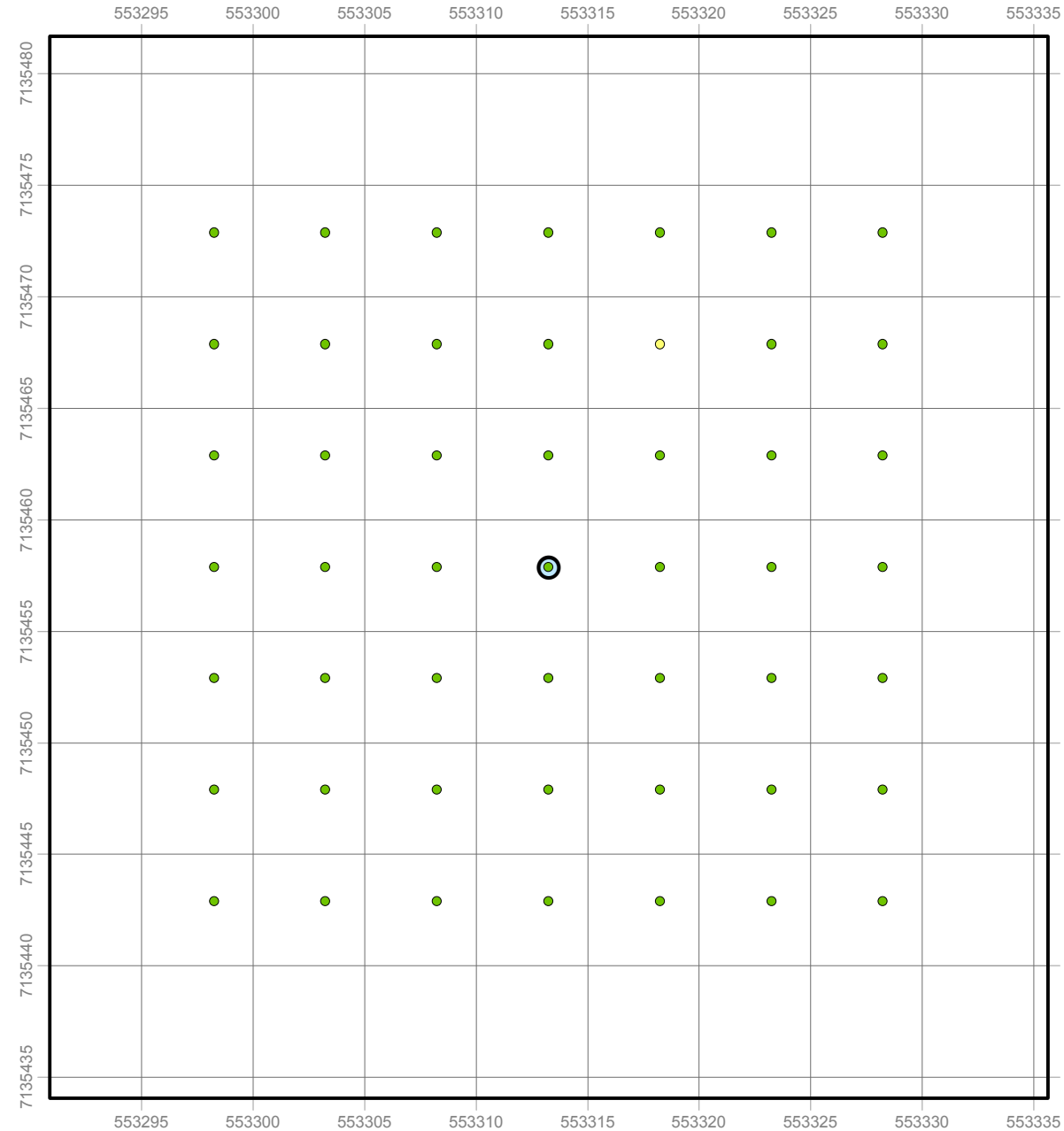
Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



AND-15-02
Pre Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.17 μSv



AND-15-02
Post Gamma Survey

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

Legend

Drill Hole

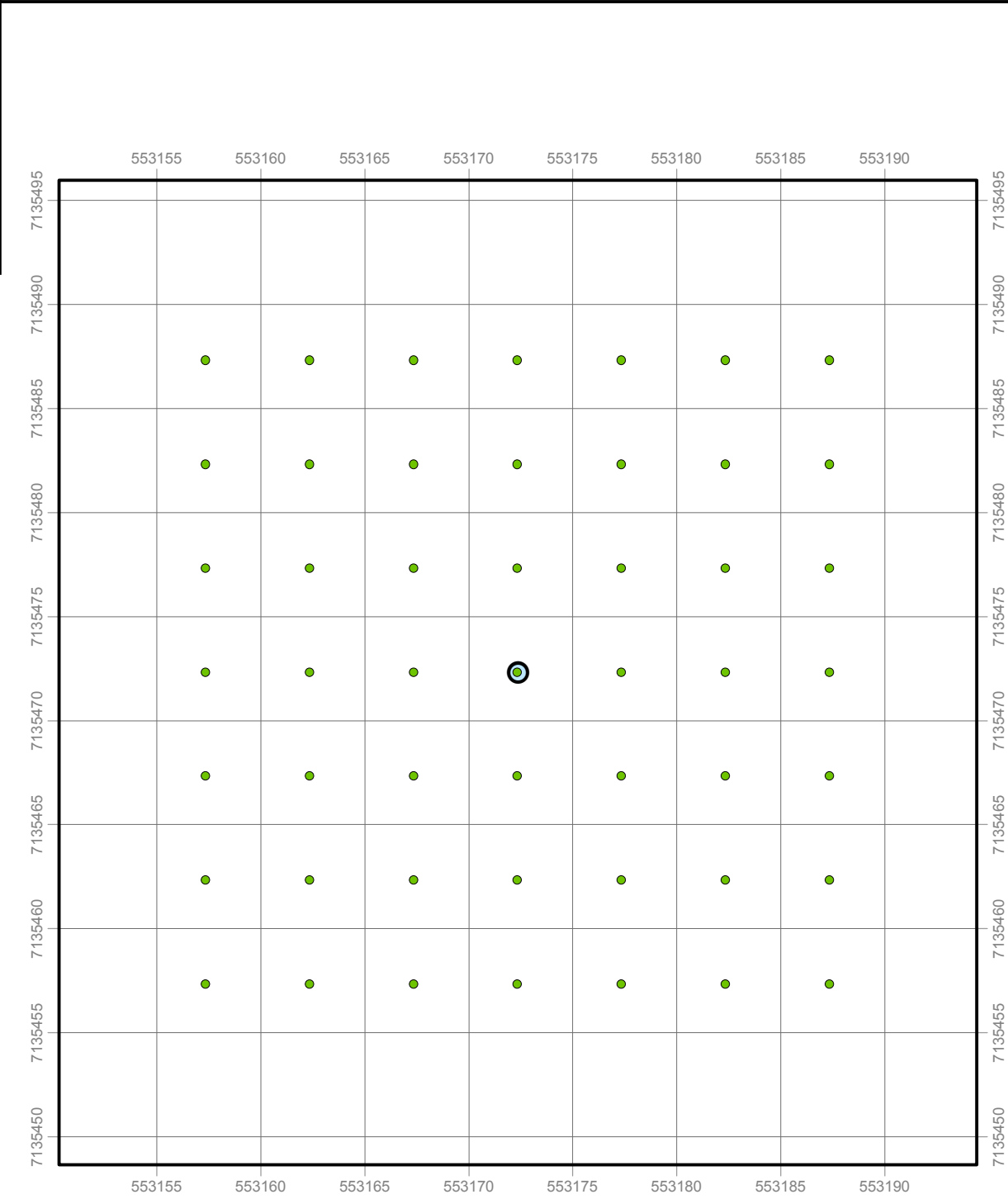
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

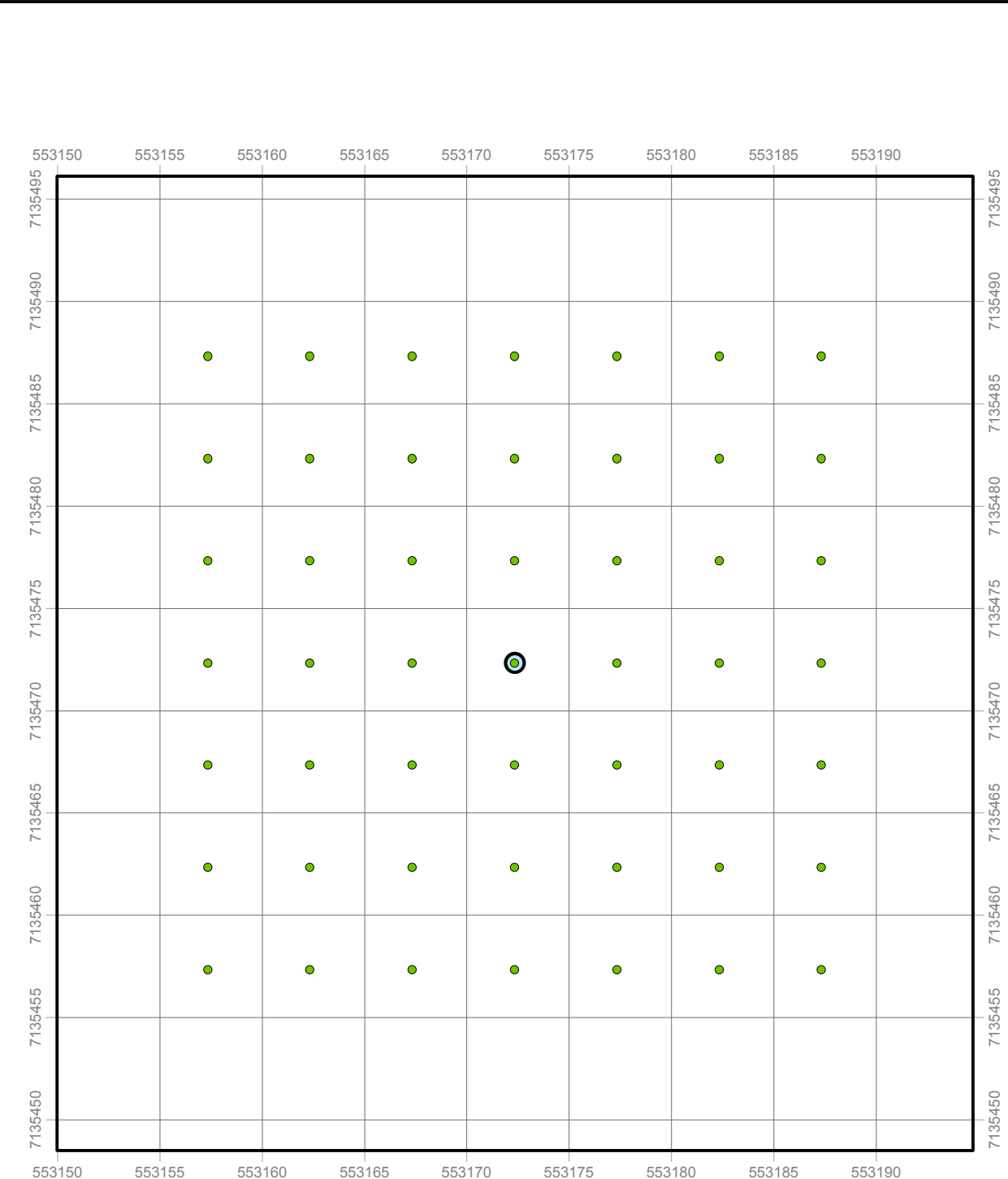


AND-15-03

Pre Gamma Survey

Point Count: 49

Min-Max: 0.0 - 0.25 μSv



AND-15-03

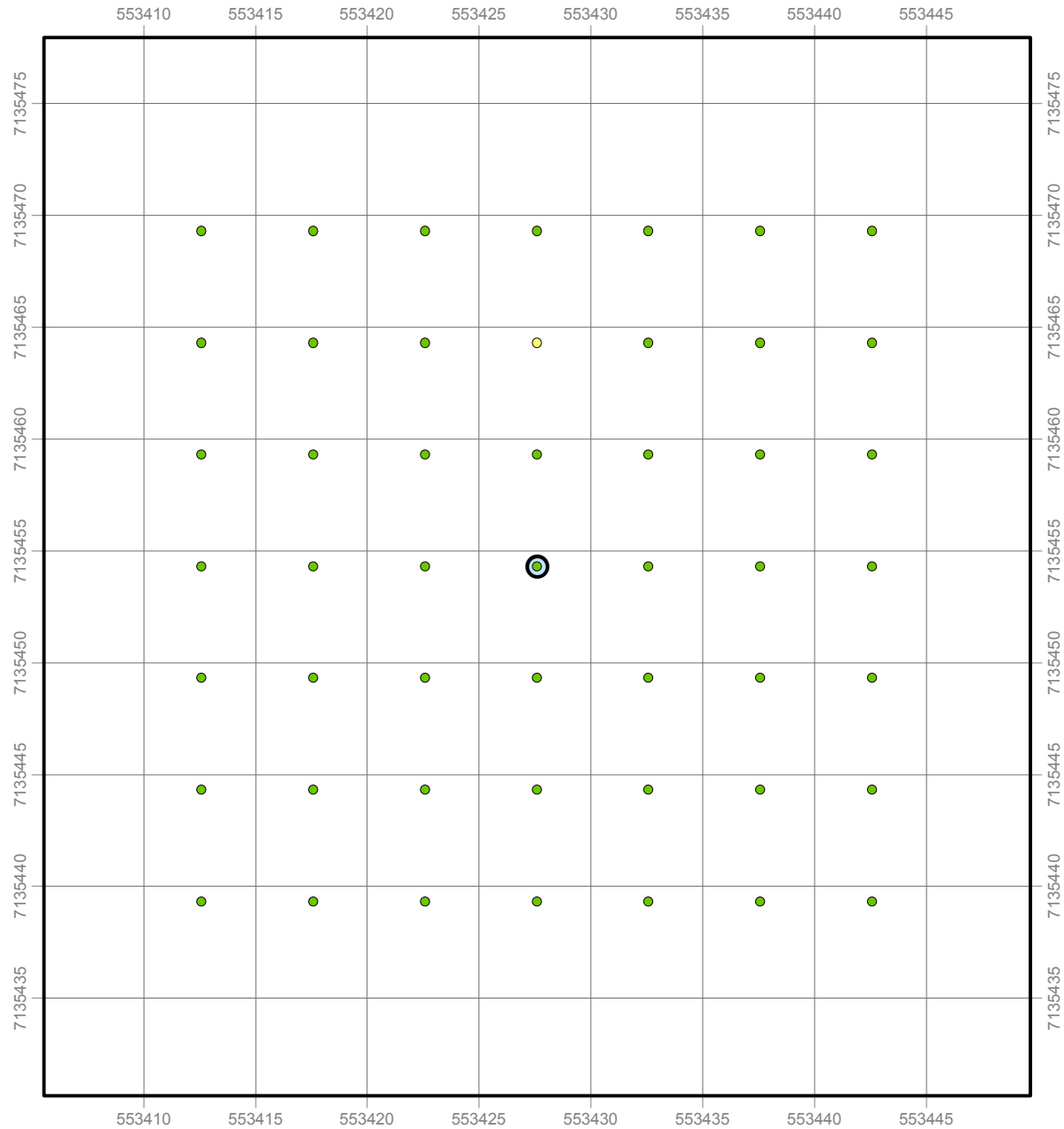
Post Gamma Survey

Point Count: 49

Min-Max: 0.03 - 0.29 μSv

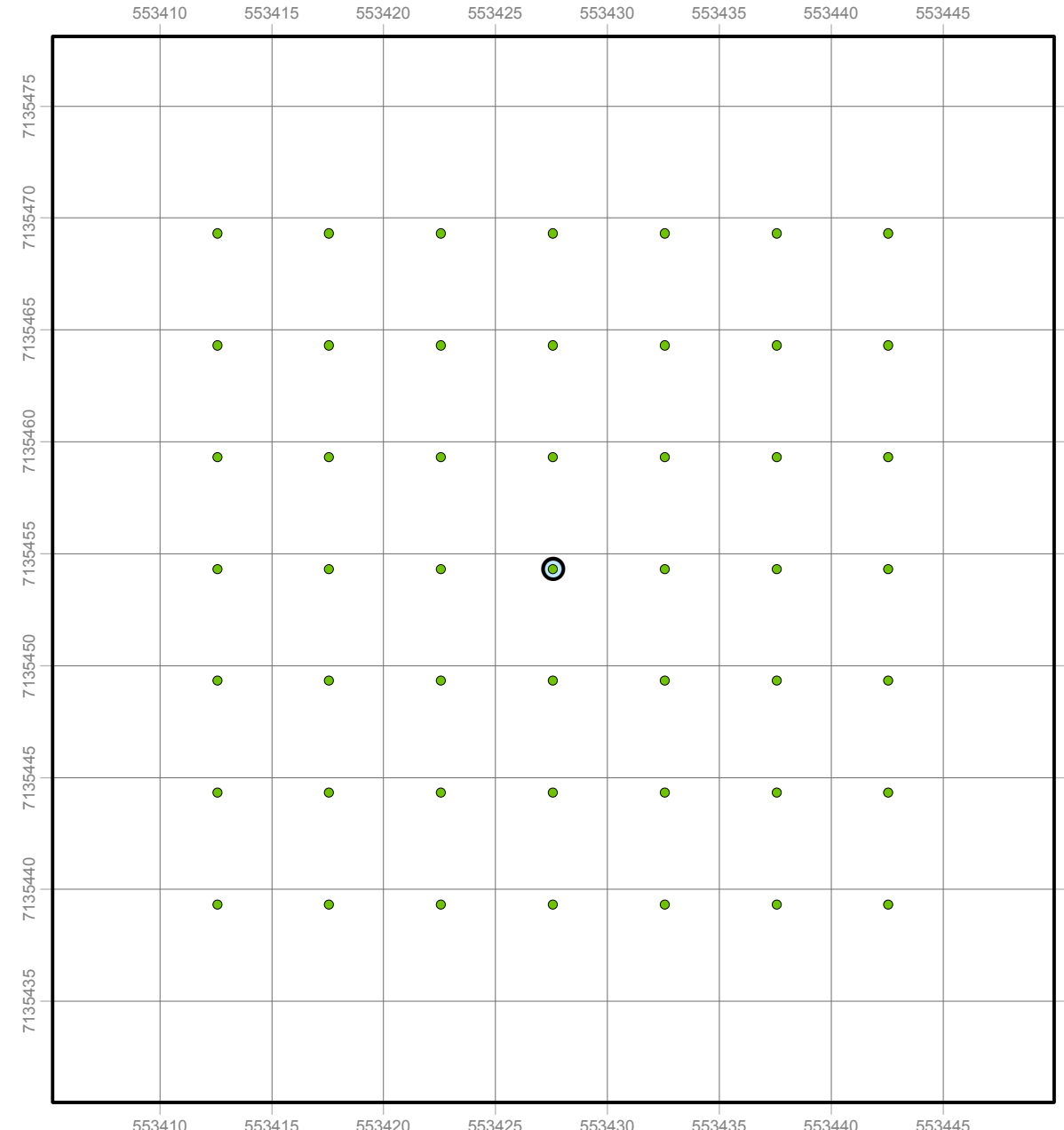
Legend

- Drill Hole
- 0.0 - 0.3 μSv
- 0.3 - 0.6 μSv
- 0.6 - 1.0 μSv
- 1.0 - 2.5 μSv
- > 2.5 μSv



AND-15-04
Pre Gamma Survey

Point Count: 49
Min-Max: 0.02 - 0.41 μSv



AND-15-04
Post Gamma Survey

Point Count: 49
Min-Max: 0.0 - 0.2 μSv



Legend

Drill Hole

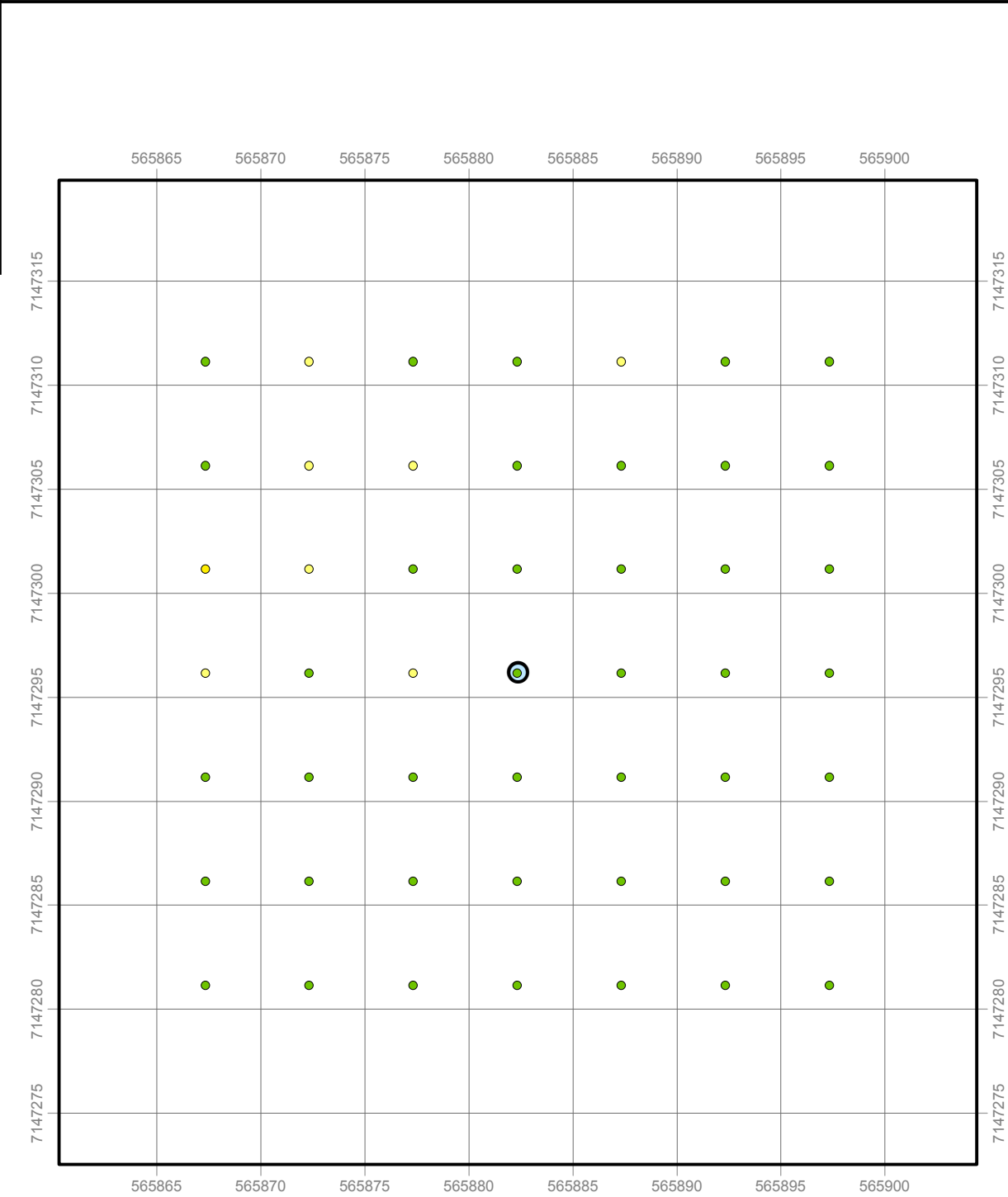
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

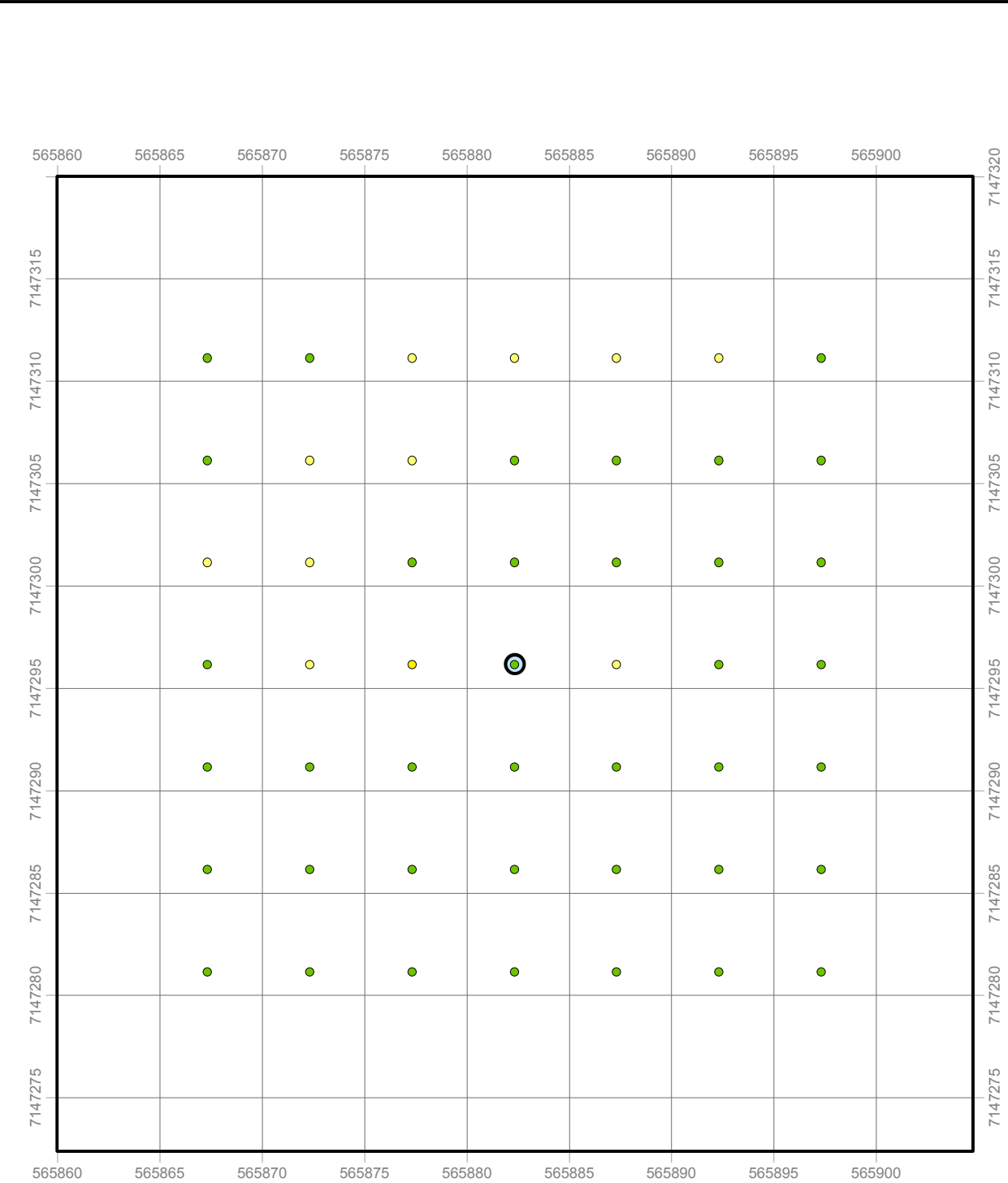


CZ-15-01

Pre Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.65 μSv



CZ-15-01

Post Gamma Survey

Point Count: 49

Min-Max: 0.0 - 0.7 μSv

Legend

Drill Hole

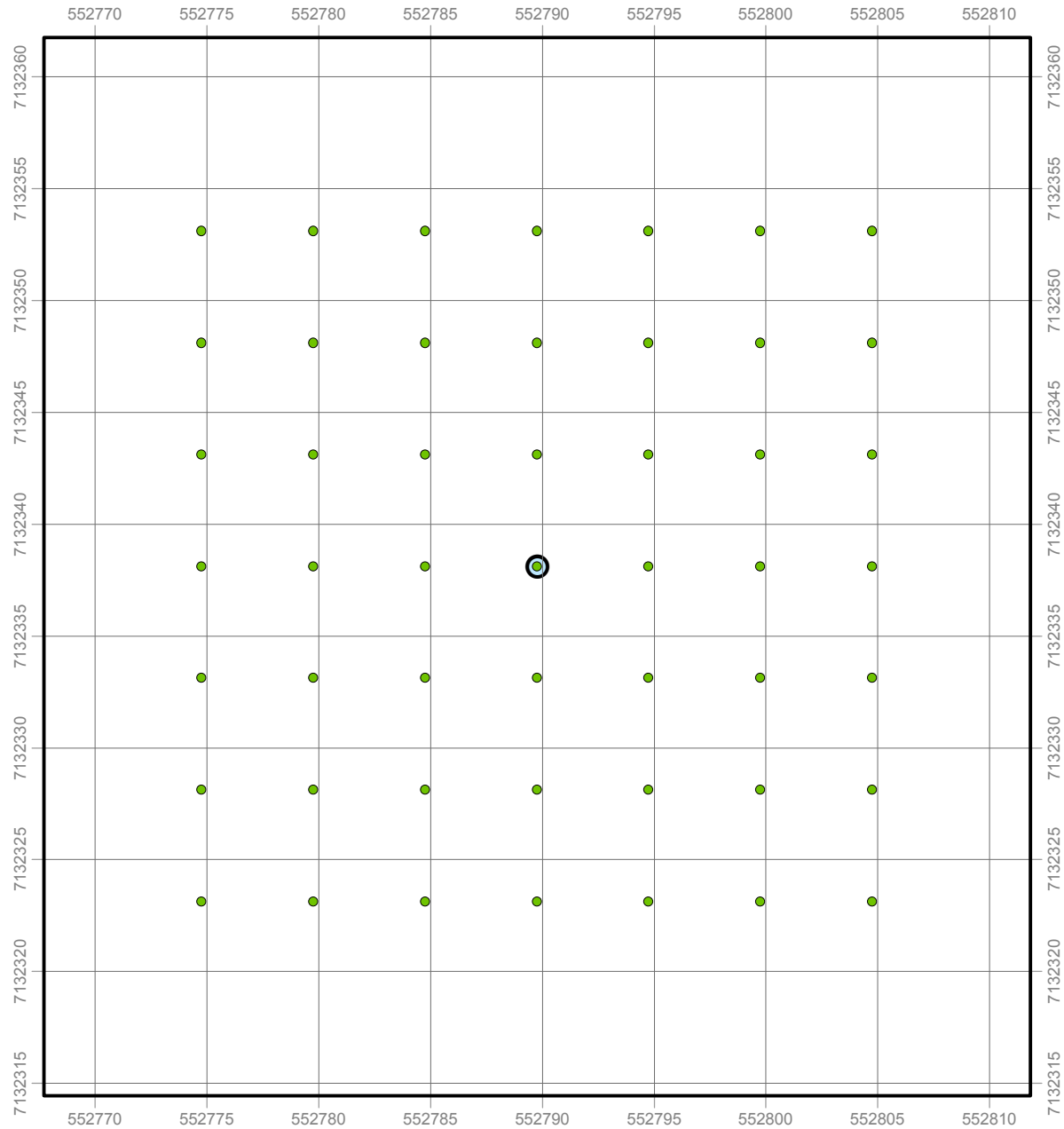
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

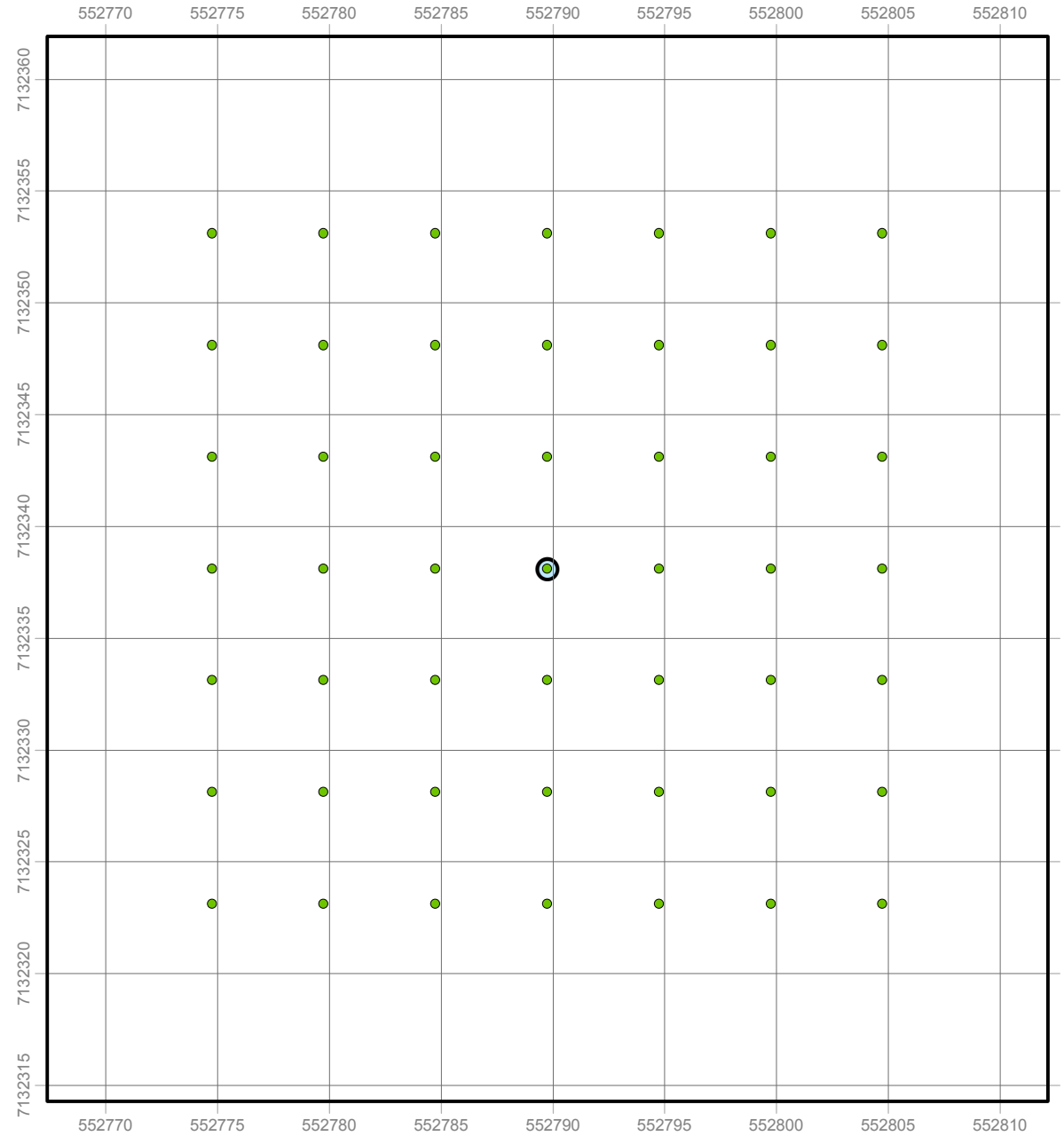
1.0 - 2.5 μSv

> 2.5 μSv



JE-03
Pre Gamma Survey

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



JE-03
Post Gamma Survey

Point Count: 49
Min-Max: 0.01 - 0.3 μSv



Legend

Drill Hole

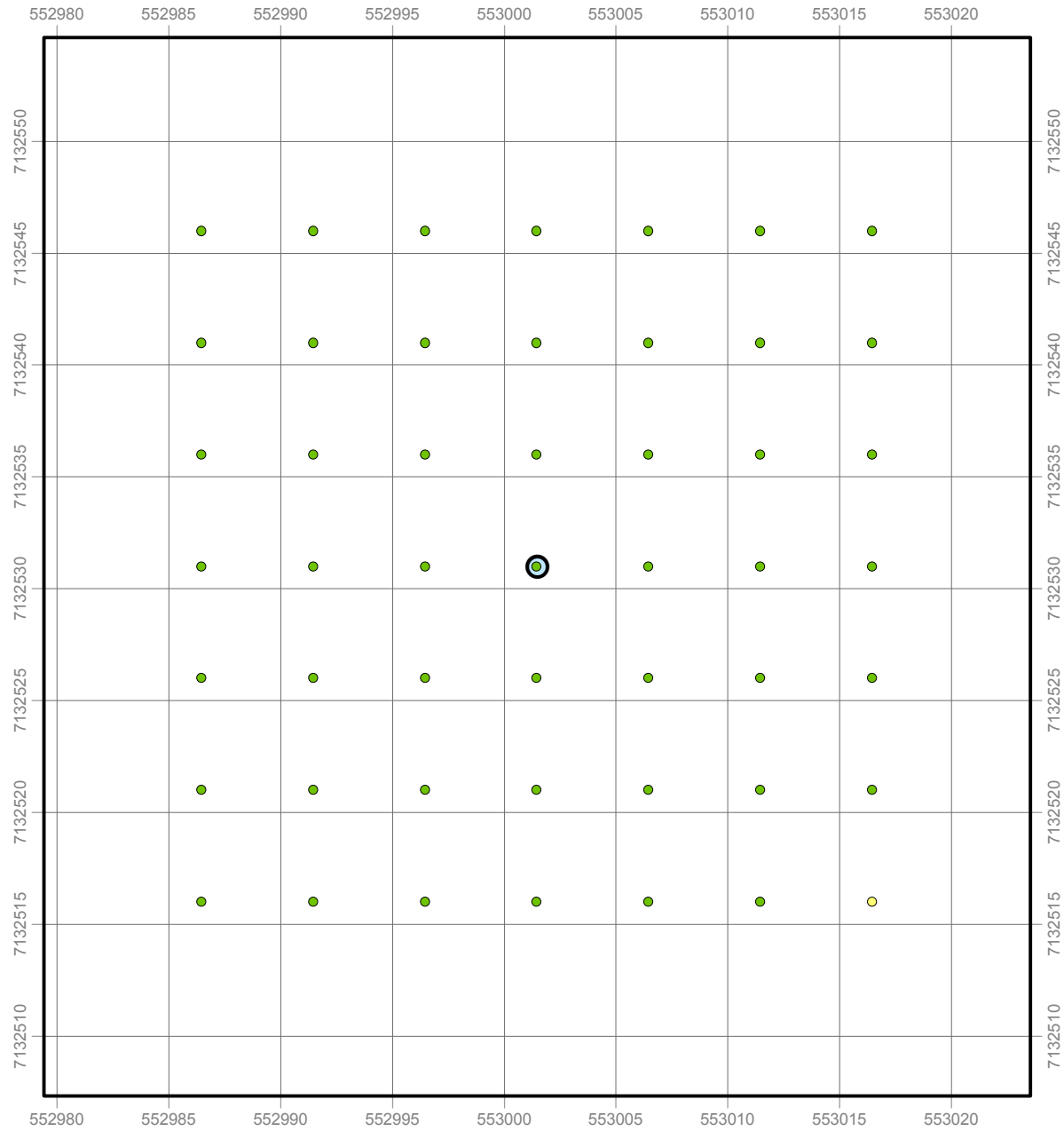
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

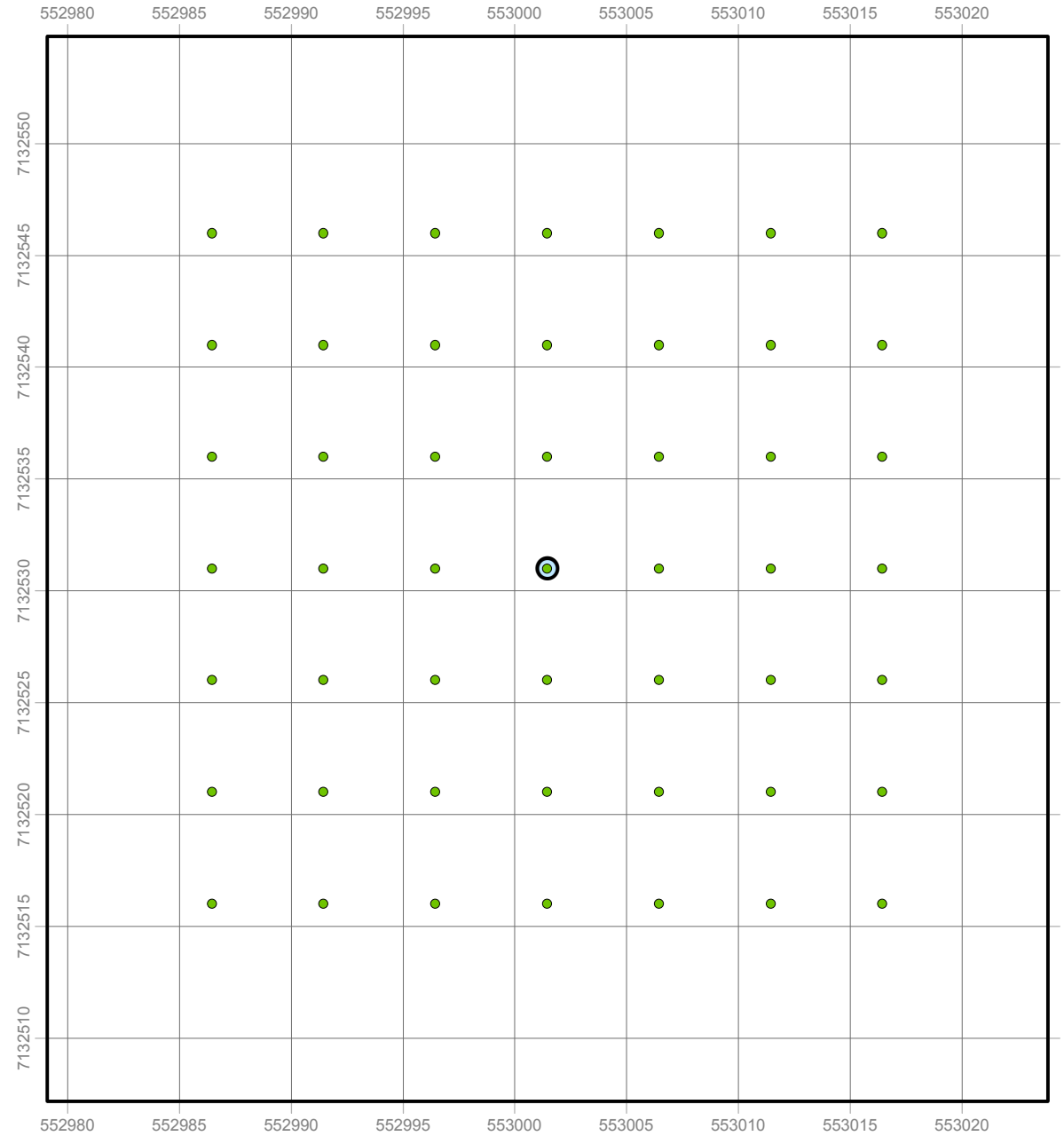
1.0 - 2.5 μSv

> 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

Legend

Drill Hole

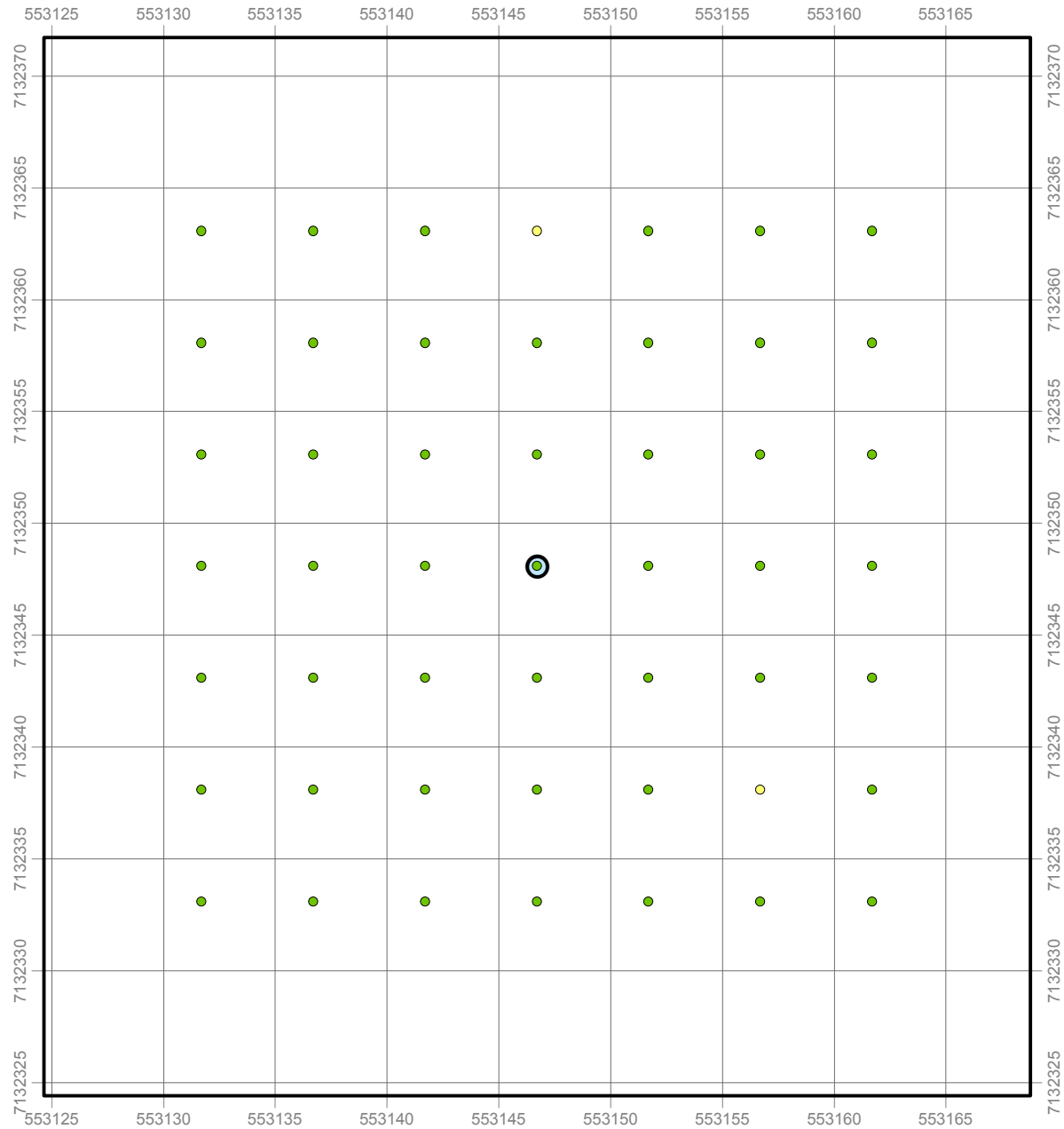
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

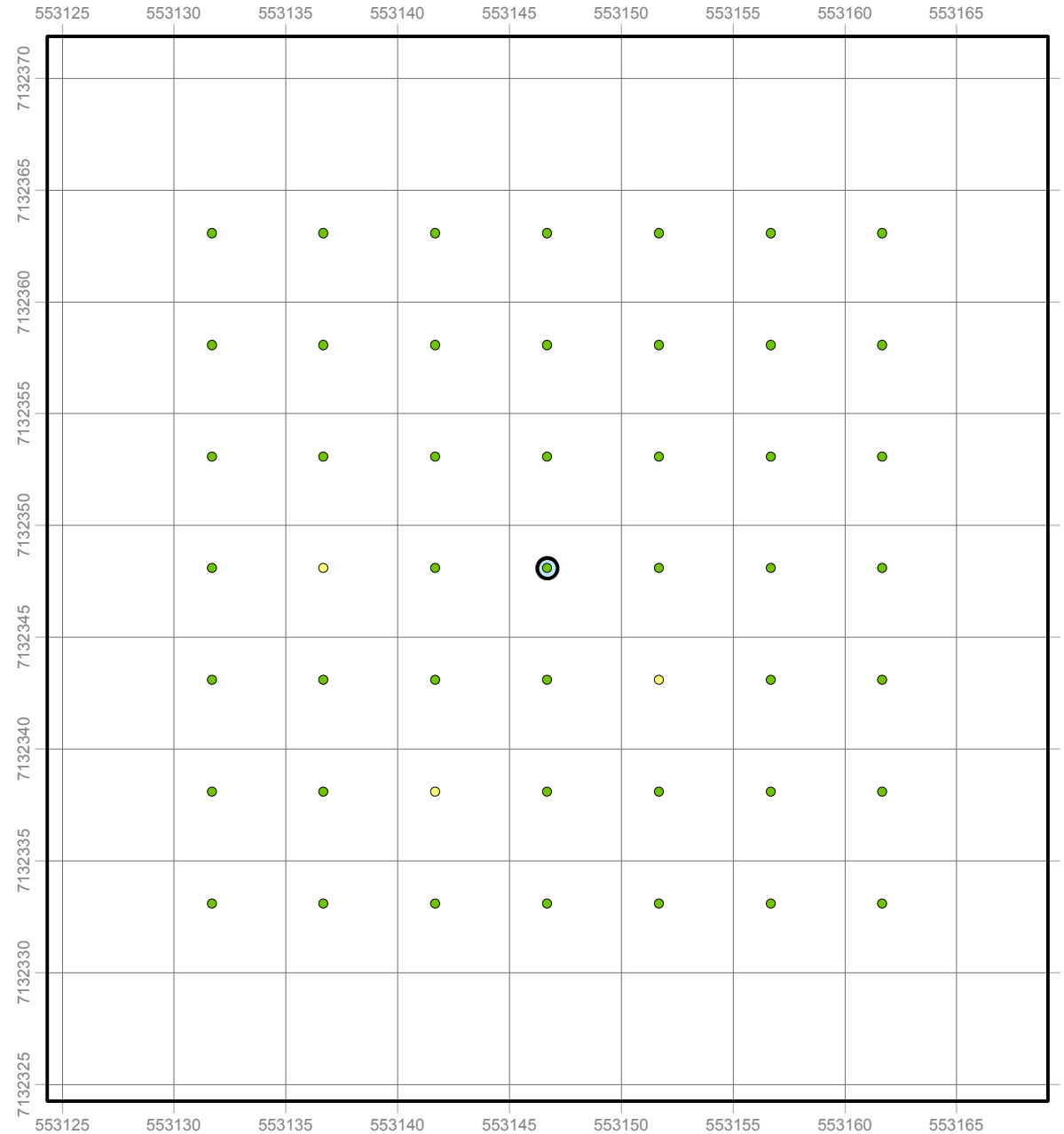


JE-05

Pre Gamma Survey

Point Count: 49

Min-Max: 0.06 - 0.42 μSv



JE-05

Post Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.33 μSv

Legend

Drill Hole

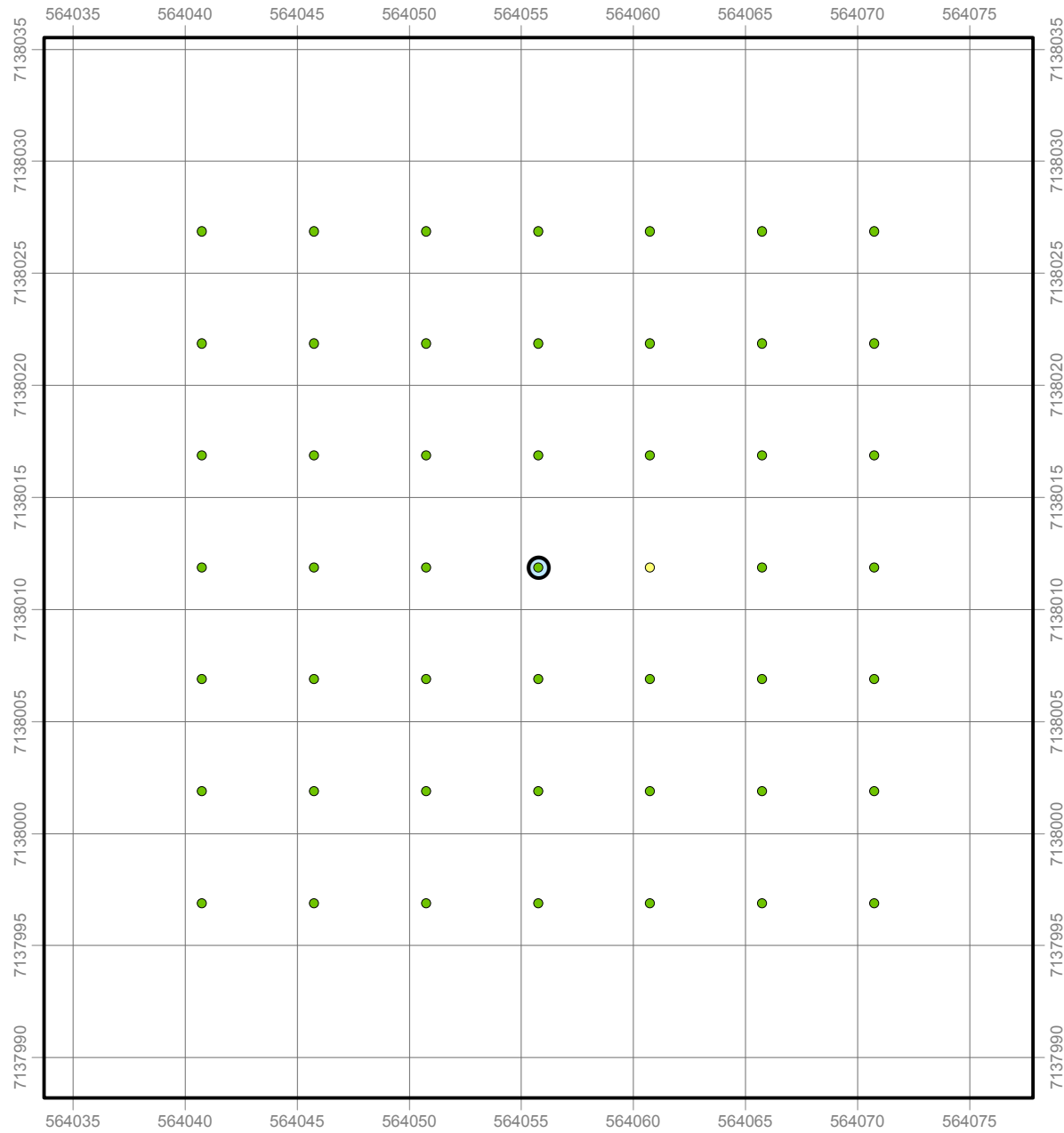
0.0 - 0.3 μSv

0.3 - 0.6 μSv

0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

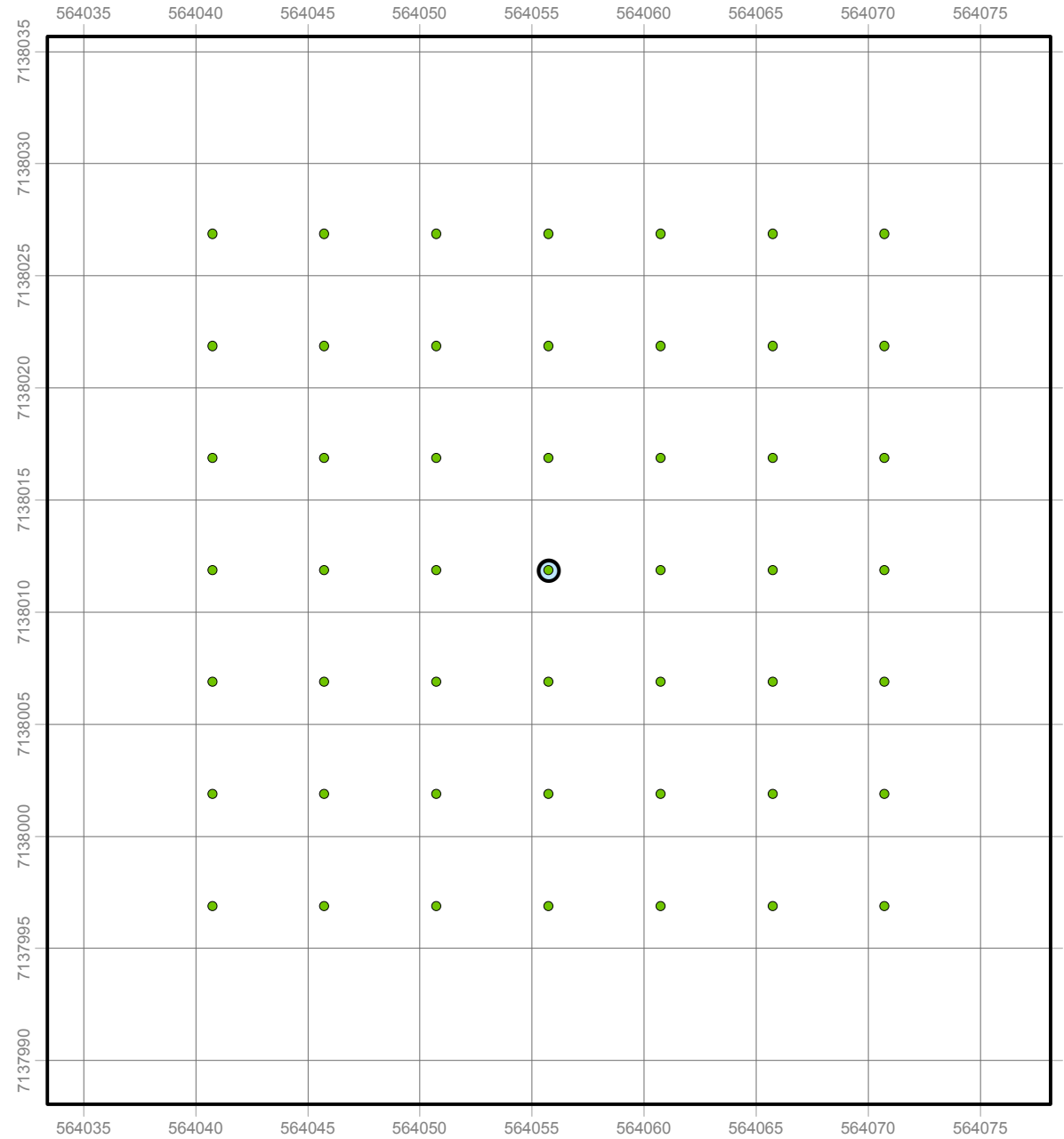


CARB-009

Pre Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.34 μSv



CARB-009

Post Gamma Survey

Point Count: 49

Min-Max: 0.01 - 0.22 μSv

Legend

Drill Hole

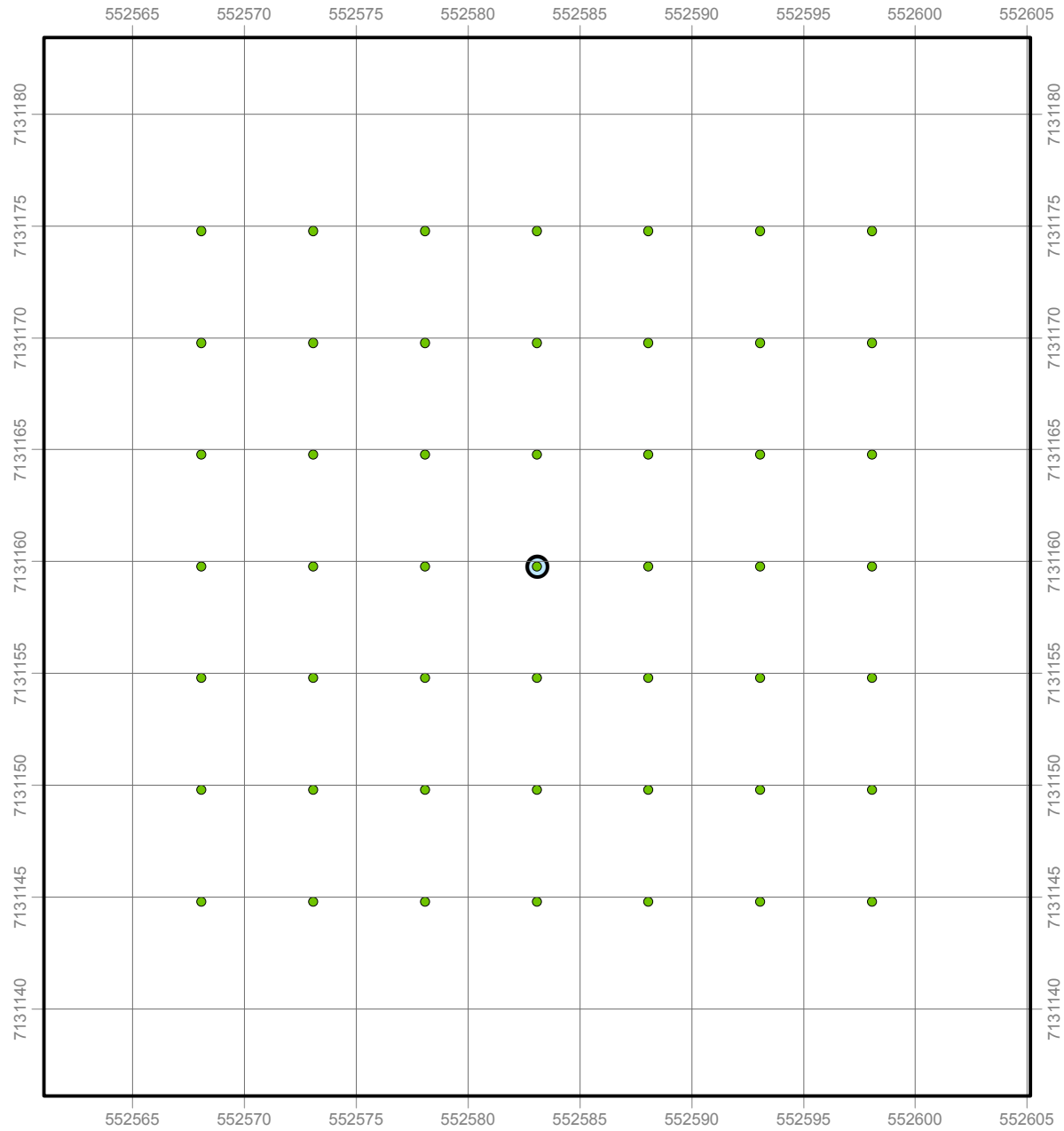
0.0 - 0.3 μSv

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0.6 - 1.0 μSv

1.0 - 2.5 μSv

> 2.5 μSv

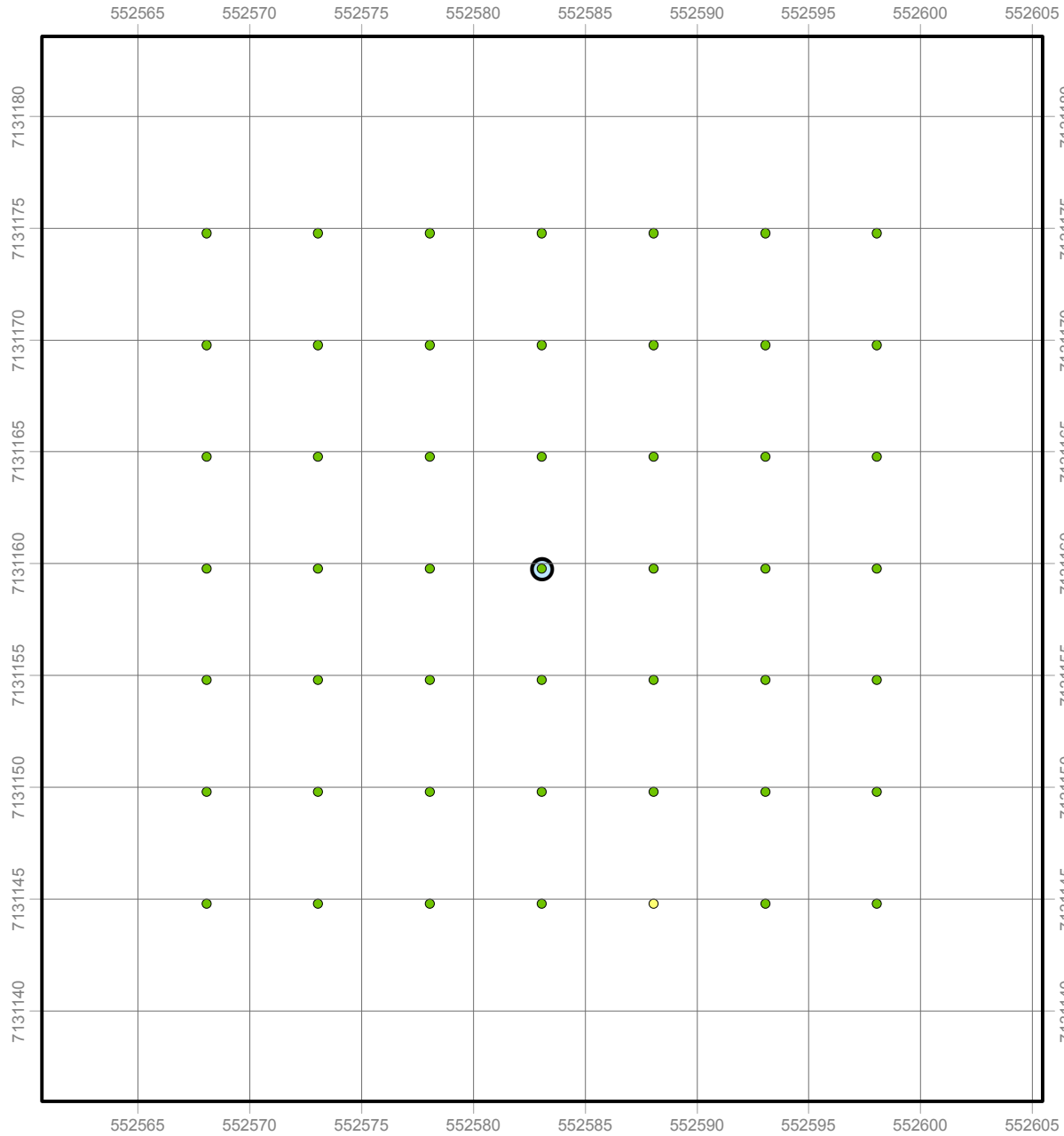


HOT90-01

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

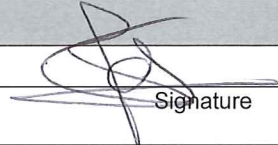
January 2016

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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 (CaCl_2) 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-aadnc.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	Imanzo@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/Manager	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	info@miningnorth.com	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		
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

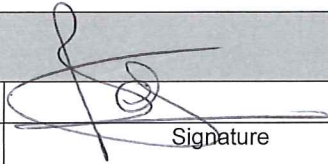
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Editor:		
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History of Revisions

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


January 2016

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3	0	August 2008	Update to reflect changes in field activities/capabilities and goals of continual improvement
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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.

4 References

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AREVA Resources Canada Inc.

Spill Contingency Plan

Exploration Department

Kiggavik Project

Version 7 Revision 4


PIGA Unrestricted

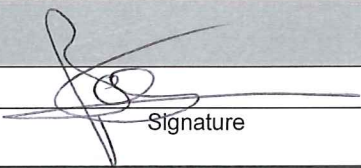
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Vice President, Exploration	Patrick Ledru	
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2	1	May 2008	Updated to reflect comments and conditions received by the Nunavut Water Board associated with the issuance of water licence no. 2BE-KIG0812
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 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

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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)	
McClean 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

Appendix II **Spill Report Form**

Available at:

<http://gov.nu.ca/environment/documents/spill-response>



NT-NU SPILL REPORT

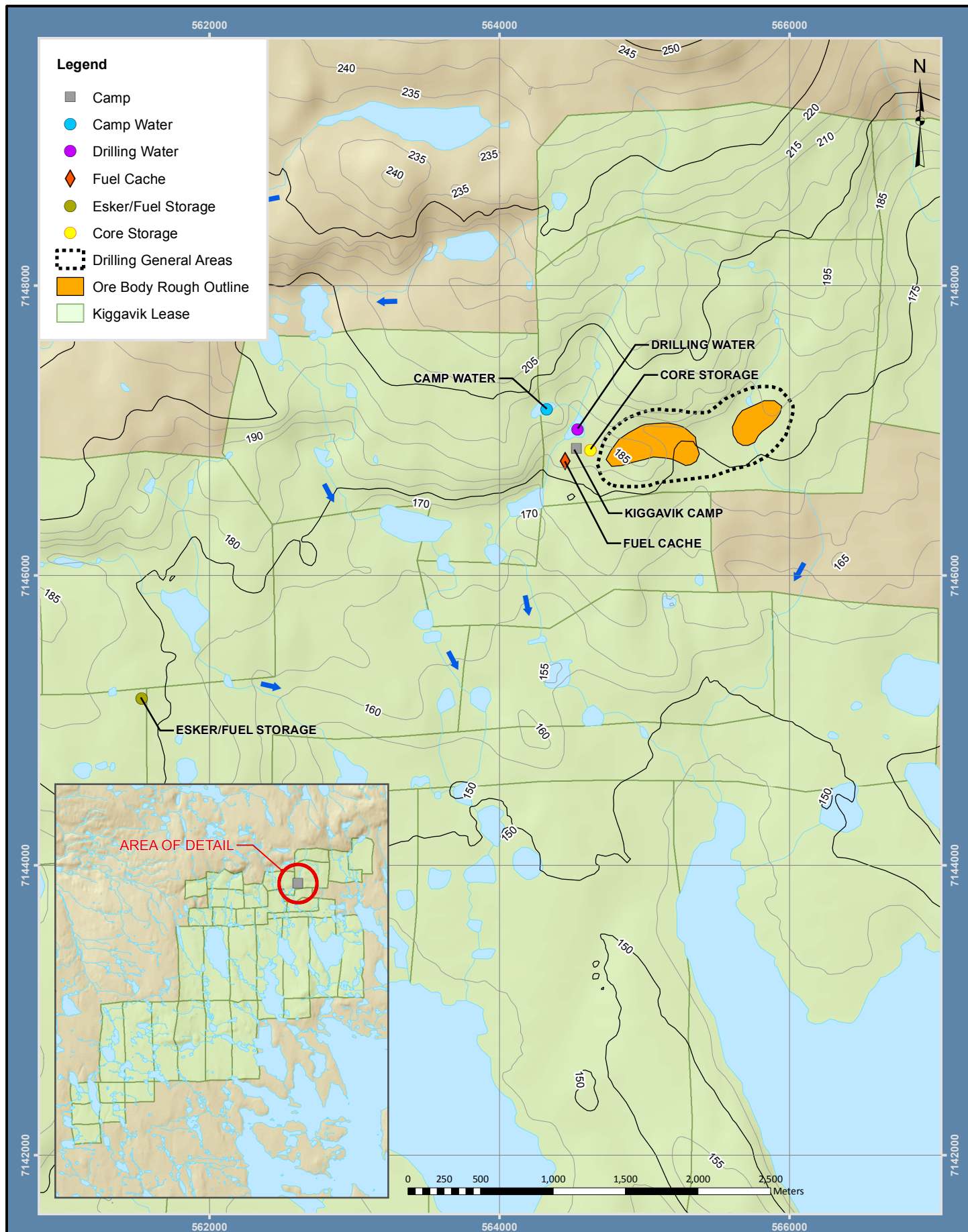
OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

PAGE 1 OF

Appendix III **Site Maps**



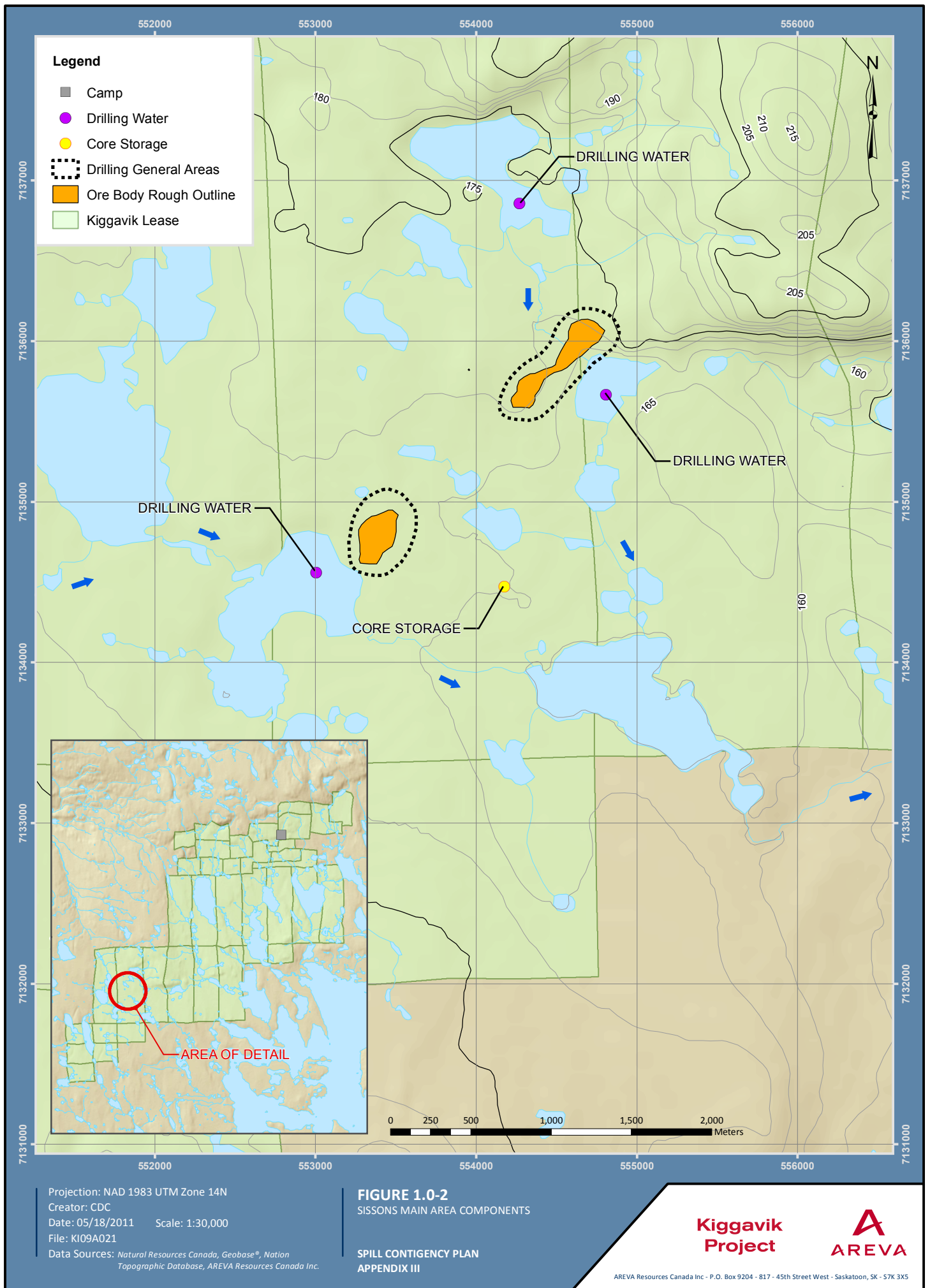
Projection: NAD 1983 UTM Zone 14N
 Creator: CDC
 Date: 05/18/2011 Scale: 1:35,000
 File: KI09A020
 Data Sources: Natural Resources Canada, Geobase®, Nation
 Topographic Database, AREVA Resources Canada Inc.

FIGURE 1.0-1
 KIGGAVIK MAIN AREA COMPONENTS

SPILL CONTINGENCY PLAN
APPENDIX III

**Kiggavik
 Project**







AREVA Resources Canada Inc.

Uranium Exploration Plan

Exploration Department

Kiggavik Project

Version 4 Revision 1

PIGA Unrestricted


January 2016

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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 opportunities for improvement
3	0	January 2009	Updated to reflect opportunities for improvement
3	1	May 2011	Updated to reflect personnel titles and grammatical changes.
3	2	May 2012	Updated to reflect personnel changes
3	3	May 2013	Updated to reflect personnel changes and grammatical errors
3	4	May 2014	Updated surface land administration
4	0	January 2015	Improved formatting and new template; updated site information and drilling operations
4	1	January 2016	Updated to reflect changes in operations and personnel.

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Acronyms and Abbreviations

Term	Definition
AANDC	Aboriginal Affairs and Northern Development Canada
AREVA	AREVA Resources Canada Inc.
CNSC	Canadian Nuclear Safety Commission
IATA	International Air Transport Association
IOL	Inuit Owned Land
KIA	Kivalliq Inuit Association
NWB	Nunavut Water Board
SHEQ	Safety Health Environment and Quality
TDG	Transportation of Dangerous Goods

1 Introduction

The AREVA Resources Canada Inc. (AREVA) Uranium Exploration Plan applies to the Kiggavik Project located approximately 80 km west of Baker Lake. The Uranium Exploration Plan is designed to meet the requirements of the Water Use Licence issued by the Nunavut Water Board (NWB), the Saskatchewan Environment Mineral Exploration Guidelines (Best Management Practices), and the Canadian Nuclear Safety Commission (CNSC) Regulations; however CNSC does not regulate exploration activities.

1.1 Revision to Plan

The Uranium Exploration 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 for the implementation of this plan with the assistance of the following personnel:

- Project Geologist
- 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

The Kiggavik site is located in the Kivalliq Region of Nunavut and supports the exploration of the Kiggavik Project which includes the Kiggavik mineral leases, and the St. Tropez claims which will be converted to lease in 2016.

Exploration of the Kiggavik Project is a joint venture between AREVA, Japan-Canada Uranium Company Limited and Daewoo International Corporation, with AREVA being the operator. The Kiggavik Project includes 37 Kiggavik mineral leases covering 45,639 acres. 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 3,794 acres of 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, wholly owned and operated by AREVA, is composed of 18 mineral claims covering 41,223 acres (officially 40,894 acres) which will soon be converted to mineral leases. The surface rights are administered by the KIA.

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

3 Site Operations

3.1 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 Nunavut Mine Health and Safety Act and Regulations, and the *ISO14001:2004 and OHSAS18001:2007* international standards. Although exploration activities are not regulated by the CNSC, the training programs are designed to meet the requirements of the *Uranium Mines and Mills Regulations*.

All Kiggavik personnel receive appropriate radiation protection training prior to beginning work. This includes instruction on the origins of ionizing radiation, types of radiation, health risks, principles of radiation safety and regulatory compliance. Training also includes the safe handling, management and disposition of radioactive materials such as radioactive core, drill muds and cuttings. 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. If contractors for the project have their own training program they must submit evidence of the training program.

Personnel supervising the shipment of radioactive materials must possess a valid Transportation of Dangerous Goods (TDG) certificate in accordance with Transport Canada *Transportation of Dangerous Goods Regulations* and the International Air Transport Association (IATA) *Dangerous Goods Regulations*.

Kiggavik personnel who handle fuel, lubricants and/or radioactive material require spill response training. If the contractors have their own training program they must submit evidence of the training program. Training for AREVA employees is provided in accordance with the Spill Contingency Plan. If the contractors do not have an acceptable training program in place, AREVA will supply the training material and/or provide the spill response training as required.

3.2 Drilling Operations

Drilling operations are conducted in accordance with land authorizations from the NWB, AANDC, and the KIA. As required by the current water use licence issued by the NWB, all drill sites are located at a minimum of 31 m beyond the ordinary high water mark of any nearby water bodies, unless an exemption to this requirement has been granted. During drilling activities, drill mud solids or cuttings in non-mineralized zones are deposited on the ground, in a natural low-lying depression. This natural depression must also be located at a minimum of 31 m beyond the ordinary high water mark of any nearby water bodies where direct flow into the water body is not possible. Refilling of bore-hole

depressions and restoration of the natural low-lying depression will be carried out as per the Abandonment and Restoration Plan.

When mineralized core is intersected, all 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 often not practical at Kiggavik. Any drill hole that encounters mineralization with uranium content greater than 1.0% over a length of > 1.0 m and with a metre-per-cent concentration of > 5.0 is sealed by grouting over the entire length of the mineralization zone and not less than 10 m above or below each mineralization zone. The casing must be cut as close to the ground level as possible upon completion. A radiological survey is conducted before and after drilling to verify that radiation levels are not greater than 1 microsievert per hour ($\mu\text{Sv/h}$) above background at one metre above ground. GPS locations of all drill holes are recorded and submitted with the annual report.

3.3 Core Logging and Storage

Permanent and long-term storage areas of radioactive material, including core and drill cuttings, are located at least 31 m from the main camp and at least 100 m from the high water mark of all water bodies. Logging of core is primarily conducted in core logging tents located a few hundred metres away from the camp facilities. Geotechnical logging of core may also be conducted at the drill sites. Permanent on-site core storage areas are appropriately labelled with radiation warning signs. Gamma radiation levels 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 $\mu\text{Sv/h}$. If long-term off-site storage is required, AREVA intends to transport the material to be stored at an operating uranium mining facility.

3.4 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 accordance with Canadian Nuclear Safety Commission (CNSC) *Nuclear Substances and Radiation Devices Regulations* and *EXP-752-02 Safe Handling and Use of Exploration Sources*.

3.5 Spills

All spills of radioactive material are to be appropriately reported and responded to in accordance with the Spill Contingency Plan that was submitted to and approved by regulators during land use applications. The uncontrolled or accidental release of any radioactive materials, including drill mud solids and cuttings, is considered a spill. 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. Material collected during the clean-up is stored in appropriate containers and stored in the on-site long-term radioactive storage area for future handling.

3.6 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 IATA *Dangerous Goods Regulations*. All personnel responsible for the shipment of radioactive materials must possess a valid TDG certificates and provide supervision of support personnel providing assistance during the preparation and shipment of radioactive material.

3.7 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 long-term core storage area for future handling, which may include transfer to an operating mine site. All drill sites are cleaned to ensure that the gamma dose rate at a height of 1 m is less than 1 $\mu\text{Sv/h}$ above ambient background. Materials and equipment leaving the drill site are monitored for contamination in accordance with procedure, *EXP-740, Routine Radiological Monitoring Schedule*. Materials or equipment that cannot be decontaminated to meet unrestricted release criteria are either stored in the long-term core storage area or shipped to a licensed facility such as the McClean Lake Operation in accordance with the CNSC *Packaging and Transport of Nuclear Substances Regulations* and the Transport Canada *Transportation of Dangerous Goods Regulations*.

4 References

AREVA Resources Canada Inc. 2015. Abandonment and Restoration Plan, Version 5. January 2015

AREVA Resources Canada Inc. 2015. Spill Contingency Plan, Version 7, Revision 3. January 2015

Canadian Nuclear Safety Commission. 2011. Packaging and Transport of Nuclear Substances Regulations. December 2011.

Canadian Nuclear Safety Commission. 2012. Uranium Mines and Mills Regulations. December 2012.

EXP-740, Routine Radiological Monitoring Schedule

EXP-752-02 Safe Handling and Use of Exploration Sources

Saskatchewan Mineral Exploration and Government Advisory Committee. 2012. Mineral Exploration Guidelines for Saskatchewan.

Transport Canada. Transportation of Dangerous Goods Regulations. July 2014.



AREVA Resources Canada Inc.

Waste Management Plan

Exploration Department

Kiggavik Project

Version 6 Revision 1


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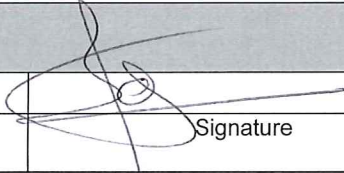
January 2016

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

Approver:		
Vice President, Exploration	Patrick Ledru	
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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	January 2009	Update to reflect changes in field activities/capabilities and goals of continual improvement
4	0	January 2010	Update to reflect changes in field activities/capabilities and goals of continual improvement
5	0	May 2011	Update to reflect changes in field activities/capabilities and goals of continual improvement
5	1	May 2012	Updated to reflect personnel changes
5	2	May 2013	Updated to reflect personnel changes
6	0	January 2015	Updated references, formatting, and minor edits
6	1	January 2016	Updated to reflect operational and personnel changes

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Acronyms and Abbreviations

Term	Definition
AREVA	AREVA Resources Canada Inc.
SHEQ	Safety Health Environment and Quality

1 Introduction

The AREVA Resources Canada Inc. (AREVA) Waste Management Plan applies to the Kiggavik Project (Project) located approximately 80 km west of Baker Lake, Nunavut. AREVA is committed to ensuring that all wastes generated by the Kiggavik Project are collected, stored, transported, and disposed of in a safe, efficient and compliant manner.

1.1 Purpose and Scope

The Waste Management Plan is fulfilled by using proven strategies and applying modern technologies to ensure materials are used efficiently and disposed of in an environmentally conscious manner. General strategies include the following:

- The implementation of a waste manifesting system to enable waste identification and tracking.
- The most environmentally suitable materials, equipment, and products are used where practical.
- Procurement procedures consider product substitution for materials that are hazardous to handle, generate hazardous wastes, or create an environmental liability.
- All site personnel attend an orientation, which addresses waste management and handling of hazardous goods, prior to being exposed to the worksite. The site orientation for short-term visitors includes a waste management component.
- Proper sorting, disposal, storage and handling of all waste streams.

1.2 Revision to Manual

The Kiggavik Waste Management 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.

1.3 Responsibilities

The District Geologist, Nunavut is responsible to ensure that this plan is implemented. Implementation may be completed by the following personnel or their designate:

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

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

2 Waste Reduction, Reuse, and Recycling

2.1 Waste Reduction

Efforts to, wherever practical, reduce waste at source, for example:

- refillable pump bottles instead of aerosol cans;
- reduction of paper consumption by promoting the use of electronic mail, voice messaging, electronic transmittals, etc.;
- reduction of disposable cups and containers by encouraging use/re-use of refillable mugs for beverages; and
- storage of bulk liquids in large containers and dispensing the liquids into smaller, refillable bottles and containers, instead of several smaller containers.

Means of reducing the volume of waste generated continue to be developed as the project progresses.

2.2 Waste Reuse

Waste is reused to the furthest practical extent. Examples of waste reuse include but are not limited to the following:

- Reuse of packaging from shipping of materials and equipment
- 45 gallon drums for waste materials
- Sea containers for backhauling of wastes or equipment

2.3 Waste Recycling

Waste is recycled where practical. Materials that may offer recycling opportunities in the future are investigated on an on-going basis during operations to reduce waste. For example, AREVA may store materials such as tires, fluorescent lamp ballasts, batteries, used oils, and other chemicals on-site for future shipment off-site for recycling.

3 Waste Sources

The most common sources and types of wastes that are generated are presented in Table 3.1.

Table 3.1 Sources of Waste Generation

Source of Waste	Types of Waste
Chemical handling and storage operations	waste petroleum products, used chemicals
Sewage	biological sludge
Equipment maintenance	used batteries, engine oil, oil filters, tires, scrap metals, <i>etc.</i>
Building maintenance	used transformers, fluorescent lighting ballasts/tubes, glycol, construction scraps (wood, piping <i>etc.</i>)
Domestic waste from: - camp and drill sites - offices - kitchen facilities	domestic garbage, food wastes, paper, cardboard
Inert waste from camp and drill sites	cement, sand, used industrial materials, metals, pipe, glass, insulation <i>etc.</i>
Biological waste from first aid facility	biological waste, blood, gauze pads <i>etc.</i>
Drilling	clean or contaminated (mineralized) drill cuttings

4 Identification, Treatment and Disposal Plan

Table 4.1 presents treatment strategies and disposal plans for wastes during the exploration program.

Table 4.1 Treatment Strategies and Disposal

Waste Type	Treatment Strategy	Disposal Plan
Petroleum based		
Used oil	Dispose or recycle off-site	Collect in bunged drums. Store in lined/bermed storage area. Ship off-site
Used hydraulic fluid	Dispose or recycle off-site	Collect in bunged drums. Store in lined/bermed area. Ship off-site
Oil filters	Recycle/recover	Collect in ring lidded drums. Store in lined/bermed storage area. Store for shipment off-site.
Contaminated soils	Excavate	Store for shipment off-site or landfarming (upon approval)
Waste batteries	Recycle off-site	Drain (if required) and neutralize acid. Store for shipment off-site
Aerosol cans	Reduce/recycle	Puncture, drain, and collect in ringed drums for shipment off-site.
Paint	Dispose off-site	Collect and store cans in drums for shipment off-site
Chemicals		
Glycol	Dispose or recycle off-site	Collect in bunged drums. Store for shipment off-site
Solvents	Reduce/dispose off-site	Use non-toxic solvents where possible. Store in drums for shipment off-site
Domestic wastes		
Food	Incinerate	Collect and store in designated containers. Incinerate daily.
Paper/cardboard	Reuse/incinerate	Reuse where possible or incinerate
Plastics	reuse/dispose off-site	Reuse where possible
General camp wastes	Incinerate	Sort to retrieve non-burnable. Incinerate.
Inert Bulk Wastes		
Buildings/bulk debris	Reuse off-site/dispose off-site	Store for future shipment off-site
Wood	Incinerate, dispose	Sort wood, incinerate non-treated wood, ship treated wood off-site to approved disposal facility
Incinerator ash	Dispose off-site	Collect in drums for shipment off-site
Scrap metal	Dispose off-site	Store for shipment off-site
Organic Wastes		

Waste Type	Treatment Strategy	Disposal Plan
Sewage sludge	Incinerate	Bag and incinerate solid waste from pacto toilets; liquid waste is directed with greywater
Biological wastes	Incinerate/dispose off-site	Store in special waste receptacles. Incinerate/ship off-site
Clean drill cuttings		Disposed in a low lying area in the receiving environment; Potentially used for reclaiming sink holes
Contaminated drilling cuttings		Collected at the drill site in totes and stored in the radioactive storage compound for future handling, or shipped to an existing mining operation if the current exploration project does not proceed to development

5 Waste Management

5.1 Sorting

Waste must be sorted at the source before it can be disposed or transported to specific designated areas to ensure proper disposal. Measures that are implemented for sorting include, but are not be limited to, the following:

- Containers are available for the collection of burnable, non-burnable, and recyclable wastes, such as scrap metal, timber, unsalvageable equipment, etc. The contents of the containers are sorted and stored for future handling, which consists of incineration, off-site disposal, or recycling.
- Stored wastes are kept in a neat and tidy fashion and are transported off-site during the winter haul season in accordance with the Winter Road Plan.
- The waste manifest tracking will be updated upon removal of waste items from site.

5.2 Waste Storage

5.2.1 Containers

Containers used for storage of waste are selected based on physical and regulatory requirements prevention of wildlife attraction (i.e., steel or heavy duty plastic containers with positive clamping lids) and transport requirements (helicopter, truck, forklift, etc.). All containers are properly labelled to identify only those wastes for which the containers are being used to collect.

5.2.2 Waste Storage-Areas

All waste(s) collected in drums that are susceptible to damage which may lead to a leak or spill are stored in lined/bermed areas (arctic berms) for future handling and removal from site. The lined/bermed areas (arctic berms) have been identified as the location in which used or generated hazardous materials are to be stored prior to off-site shipment.

5.2.3 Incinerator

An incinerator is used on a daily basis for the incineration of non-hazardous, combustible waste materials, which includes paper, food waste, sewage and non-treated wood. Incinerator ash is collected regularly (frequency depending on ash loading) in sealed, wildlife resistant containers and transported off-site for disposal. Refer to *EXP-775, Operation of the Kiggavik Waste Incinerator* for proper handling instructions and operation of the incinerator. Proper waste segregation and incinerator operation ensures maximum combustion.

5.3 Food Waste Handling

Food wastes are collected from the camp, drills and other facilities as required, and immediately placed in plastic bags. The bagged waste is then transported directly to the incinerator which is

located within 50 m of the kitchen. Typically, food wastes are incinerated daily to avoid potential wildlife attraction. Food wastes are not stored outside the incinerator area.

To prevent wildlife attraction, food, beverages and their containers are not disposed of outdoors. Designated snack and break areas for personnel are provided to prevent food and wastes from being generated uncontrollably around the site.

5.4 Non-Food Waste Handling

5.4.1 Sewage

When pinto-toilets are used, the sewage removed from the washrooms is collected in bags and immediately incinerated. Liquid sewage from the urinals is currently mixed with the camp grey water for discharge into a designated low-lying area, which is at minimum 30 m south of camp. The grey water from the kitchen and washroom facilities is diverted to the grey water collection sump area. The grey water sump consists of a barrel that was punctured with drainage holes and buried to allow drainage and filtration of the water.

5.4.2 Chemicals

Chemicals are collected in appropriate containers, and stored in a lined/bermed area for future shipment off site for disposal or recycling at an approved facility.

5.4.3 Waste Oil

Waste oil is collected in bunged drums and stored in the lined/bermed area for future shipment off-site for handling at an approved facility.

5.4.4 Domestic Wastes

Non-toxic, non-food solid wastes is sorted into recyclable, reusable, combustible, and non-combustible categories. Combustible items are burned in the incinerator, while non-combustible items are stored until they are shipped off-site for recycling. Aerosol cans are punctured and drained prior to being shipped off-site. Toxic materials are to be stored in sealed, steel or plastic drums in a lined/bermed area and shipped off-site for proper disposal.

5.4.5 Inert Bulk Wastes

Inert bulk wastes that cannot be readily recycled or reused, such as chemically treated wood, general debris, incinerator ash, tires, etc. are stored and appropriately labelled prior to shipment off-site to an approved facility.

5.4.6 Hazardous Wastes

Other hazardous, non-combustible waste and contaminated materials not identified above are temporarily stored in appropriate containers and shipped off-site for disposal or recycling.

During normal operations, hazardous materials are stored in other various locations associated with their intended use to minimize site transport and handling requirements. These materials and locations are as follows:

- oils and greases are stored in drums, pails, and bottles in the maintenance shop or drill laydown area
- batteries of all types are stored in a storage area;
- ethylene glycol is stored in drums in the lined/bermed area

5.4.7 Drill Cuttings

When drilling in non-mineralized zones, drill mud solids or cuttings are deposited in designated low-lying areas. When mineralized core, greater than 0.05% uranium, is intercepted, all drill mud and cuttings are disposed of down hole where possible or collected in appropriate containers and stored in the radioactive storage area. This is in accordance with *EXP-740-05, Management and Disposition of Radioactive Drill Cuttings* and the Abandonment and Restoration Plan.

6 References

AREVA Resources Canada Inc. 2015. *Abandonment and Restoration Plan*. January 2015

AREVA Resources Canada Inc. 2011. *Winter Road Plan*. May 2011.

Canadian Council of Ministers of the Environment (CCME). 2001. *Canada-Wide Standards for Dioxins and Furans Emissions from Waste Incinerators and Coastal Pulp and Paper Boilers*. 2001.

Environment Canada. 2010. *Technical Document for Batch Waste Incineration*. January 2010.

EXP-740-05, Management and Disposition of Radioactive Drill Cuttings

EXP-775, Operation of the Kiggavik Waste Incinerator

Government of Nunavut Department of Environment. 2010. *Environmental Guideline for the General Management of Hazardous Waste*. October 2010.

Government of Nunavut Department of Environment. Environmental 2012. *Guideline for the Burning and Incineration of Solid Waste*. January 2012.



AREVA Resources Canada Inc.

Wildlife Mitigation and Monitoring Plan

Exploration Department

Kiggavik Project

Version 5 Revision 5


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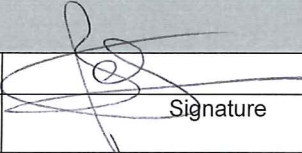
January 2016

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History of Revisions

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	January 2008	Updated to reflect changes in field activities/capabilities and areas of continual improvement
2	1	May 2008	Updated to reflect program changes initiated by new consulting biologist and to integrate comments received by Nunavut and NWT biologists
3	0	January 2009	Updated to reflect opportunities for improvement
4	0	January 2010	Updated to reflect opportunities for improvement
5	0	April 2011	Updated to reflect lessons learned throughout the 2010 field season. These changes include an appendix which outlines the appropriate responses to a variety of scenarios to ensure appropriate mitigative actions are carried out in a timely and effective manner.
5	1	May 2012	Updated to reflect change in personnel titles
5	2	May 2013	Updated to reflect changes in personnel
5	3	May 2014	Updated to include deterrence measures for safety intervention and wildlife monitor responsibilities
5	4	January 2015	Minor edits for improved clarity and updated to new template
5	5	January 2016	Minor edits.

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Acronyms and Abbreviations

Term	Definition
AANDC	Aboriginal Affairs and Northern Development Canada
AREVA	AREVA Resources Canada Inc.
BQCMB	Beverly and Qamanirjuaq Caribou Management Board
EC	Environment Canada
EIS	Environmental Impact Statement
GN	Government of Nunavut
GNWT	Government of Northwest Territories
GN-DoE	Government of Nunavut, Department of Environment
HTO	Hunters and Trappers Organization
KIA	Kivalliq Inuit Association
SHEQ	Safety Health Environment and Quality

1 Introduction

The Wildlife Mitigation and Monitoring Plan (Plan) described herein has been developed by AREVA Resources Canada Inc. (AREVA) for the Kiggavik Project (Project) located approximately 80 km west of Baker Lake, Nunavut. The Plan is implemented during the field season to monitor and reduce potential impacts on wildlife with particular emphasis on caribou. The Plan serves as a work instructional and internal best management practice and encompasses activities in Nunavut, including continued exploration and environmental studies for the environmental assessment process.

All AREVA personnel, contractors, subcontractors, helicopter contractors, and Wildlife Monitors have the responsibility to be familiar with and to follow this Plan. Implementation and enforcement is the responsibility of the Safety, Health, Environmental, and Quality (SHEQ) Supervisor or designate with support from the Wildlife Monitors. Kiggavik Project worksites and activities include the following:

- Camp Activities (including the fuel cache)
- Drilling Operations
- Airborne Geophysics
- Ground Geophysics and Exploration Activities
- Environmental Baseline Work and
- Environmental Monitoring

The Plan is reviewed and updated regularly, and was developed in consultation with a biologist knowledgeable in barren ground caribou. The Plan is reviewed to reflect lessons learned through AREVA's experience and the experience of other projects and to incorporate feedback and recommendations from regulators and community members.

The current Plan has evolved with lessons learned during the previous field seasons, community input, and regulatory commitments. AREVA is working closely with the Government of Nunavut Department of Environment (GN-DoE) to investigate options for collecting meaningful caribou population data using low invasive methodologies.

2 Monitoring Plan

2.1 Wildlife Monitoring

AREVA will employ an Independent Wildlife Monitor(s) to:

- Verify that this plan is carried out
- Independently report Kiggavik related wildlife and any concerns to external agencies
- Provide safety assistance regarding wildlife issues

The Wildlife Monitor must become familiar with their scope of work by discussing this plan with the SHEQ Supervisor or designate. The Wildlife Monitor will be responsible for observations surrounding the Kiggavik camp and must report wildlife sightings to the SHEQ Supervisor or designate. They may report to the local Conservation Officer and Hunters and Trappers Organization (HTO) at any time. Provided weather conditions are adequate, the camp observations should be conducted from the five height-of-land (HOL) locations surrounding camp. If collared caribou are identified as approaching the site activities, or caribou herds have been visually observed in the area, an aerial reconnaissance survey greater than 610 m (2,000 ft) may be conducted with the Wildlife Monitor to determine proximity to site activities. The Wildlife Monitor will be responsible for advising on the number and proximity of caribou to determine when to cease activity. Regular communication with the SHEQ Supervisor and Project Geologist is beneficial for adequate reporting and mitigation measures.

If requested, the Wildlife Monitor will be allowed to carry the firearm provided by AREVA during regular monitoring of the HOL locations and during wildlife deterrence for safety intervention. The firearm may be obtained following discussion with the Facility and Logistics Coordinator, Kiggavik and will be returned to the locked gun cabinet once work is complete. The AREVA General Standard Practice (GSP) Manual [Section 9.03 Firearms and Offensive Weapons](#) guides the storage and use of firearms.

2.2 Baseline Data to Support Environmental Assessment

Wildlife survey data collected to support development of the Environmental Impact Statement (EIS) may be used to support site monitoring and help inform appropriate mitigation actions as required. The environmental consultants communicate regularly with the SHEQ Supervisor or designate to ensure important wildlife observations are recorded and communicated to appropriate personnel at site.

2.3 Aerial Observations

Wildlife observations during daily transportation of field staff and contractors will be recorded to provide information about the presence of caribou and any other wildlife in the area. Refer to section 3.4 Flight Specific Mitigation for the required altitudes of the above mentioned flights.

2.4 Wildlife Logs

AREVA has provided Wildlife Sightings Forms for all site personnel and visitors to complete following the observation of any wildlife. Instructions regarding this form are provided during orientation. The Wildlife Monitor will communicate information obtained in the field to the SHEQ Supervisor or designate. All wildlife information will be transcribed to an electronic file which is included in the monthly wildlife reports.

2.5 Caribou Radio-Collaring Data

The study area will be monitored for approaching caribou with the use of satellite collar information provided by caribou biologists with the Government of Northwest Territories. In the future, the Government of Nunavut may provide collar data as well.

3 Mitigation and Protection Measures

Mitigation and protection measures are heavily based on compliance with permit/licence terms and conditions. Additional AREVA commitments were adopted from recommendations from the Government of Nunavut Department of Environment (GN-DoE), Environment Canada (EC), Beverly and Qamanirjuaq Caribou Management Board (BQCMB) and AREVA-led commitments. AREVA will implement the following mitigation and protection measures for caribou, and other wildlife that are seasonal or annual residents of the Project area.

3.1 General Protection Measures

Wildlife will have the “right-of-way” and will not be blocked or deterred from moving through the Project area. The camp layout and drilling area will be limited in size to reduce the Project footprint and the use of “good housekeeping” practices to reduce attractants limits the number of wildlife around work areas. Refer to the Noise Abatement Plan for measures taken to control noise.

Non-hazardous combustible garbage will be burned in an incinerator (see Waste Management Plan). Non-combustible waste and hazardous materials are stored in enclosed buildings and/or sea containers for future shipment to an approved facility. Wildlife safety will be discussed during orientation, and all predator interactions will be reported to the Baker Lake Conservation Officer. AREVA educates and enforces “no feeding or harassment of wildlife” and the appropriate response to animal encounters, specifically carnivores and muskoxen will be communicated. An AREVA representative will contact the Baker Lake Conservation Officer for appropriate protocols and actions if a need for deterrents or other wildlife management techniques are identified.

Hunting and trapping by AREVA employees and contractors is prohibited on the Kiggavik lease. AREVA employees and contractors must obtain a Sport Fishing Licence, and provide a copy to the SHEQ Supervisor or designate before commencing on a fishing trip leaving from site.

The use of firearms is strictly controlled. The Project Geologist or designate must approve any firearm coming on site. The only allowable use of firearms is for dangerous animal deterrence measures (e.g., firearms, bear bangers, bear spray, cracker shells and rubber bullets), and for safety kills to protect human life should a situation arise when other measures have failed. The Wildlife Monitor is permitted to carry a firearm. Refer to *GSP Section 9.03 Firearms and Offensive Weapons* regarding storage and use of firearms.

If there is a disturbance to caribou or if an incident occurs between a grizzly bear, wolverine, wolf, or fox and the field staff a Supervisor’s Investigation Report will be completed. An incident is defined as a disturbance to caribou, damage to camp facilities caused by wildlife, continued persistence of a carnivore(s) within the camp or work site, and/or interactions between humans and wildlife that lead to harm to either. In the case of a wildlife incident notify the Baker Lake Conservation Officer.

Materials, chemicals, and equipment will be removed from the drill sites and camp area at completion of the project as described in the Abandonment and Restoration Plan. The intent is to reclaim the area as close as possible to the natural state. Chemicals are stored in double-walled containers or in secondary containment. Diesel fuel, gasoline, and aviation fuel is contained within arctic berms or double-walled storage tanks (see Spill Contingency Plan). In the event of a spill, the Spill Contingency Plan will be implemented immediately. Used chemicals are stored for transportation off site for proper handling.

3.1.1 Safety Intervention

3.1.1.1 Field Personnel

In the event that there is potential for a human to wildlife conflict, safety intervention may be necessary. As recommended by the Conservation Officer, field personnel should use bear bangers as a deterrent first before requesting helicopter assistance or rubber bullets. The Wildlife Monitor is available for added deterrent support with firearms loaded with bear bangers and rubber bullets. Any such occurrence must be reported to the SHEQ Supervisor immediately who will then report to the local Conservation Officer.

3.1.1.2 Camp Personnel

Similar to the standard practice for field personnel, in the event there is potential for a human to wildlife conflict, the first priority for deterrence is the use of bear bangers. Where the helicopter is already in the air, the animal will likely be deterred without requiring the bear bangers. The camp also has two firearms available to the Wildlife Monitor. The 12 gauge bear bangers, rubber bullets, and lethal shot are available where safety is at risk. Any such occurrence must be reported to the SHEQ Supervisor immediately who will then report to the local Conservation Officer.

3.2 Raptor and Migratory Bird Protection Measures

To mitigate potential impacts to raptors and other migratory birds, AREVA will avoid disturbing known raptor nests from April 15 to September 1 by maintaining a 1.5 km buffer when in transit by aircraft and will avoid approaching known nests closely while on foot. Limited disturbance (e.g. raptor nest monitoring) within the aircraft buffer may occur infrequently prior to September to obtain necessary baseline data for the environmental assessment.

If a nest site is established on a man-made structure and eggs are present, the nest will be avoided as much as possible and monitored for nest success.

Prior to drilling in an area, a gamma survey is conducted. During this survey the area is surveyed for active bird nests during the breeding period of May 30 to July 31. All nests will be recorded and efforts to create appropriate buffers (dependent on species tolerance and protection level) around migratory birds and species at risk will be made. Nests will be monitored for hatch or termination.

3.3 Caribou Protection Measures

Caribou will have the “right-of-way”, and will not be blocked or deterred from moving through the Project area. Activities that may interfere with migration will cease during migration. The calving grounds for the Beverly and Qamanirjuaq herds are approximately 70 km and 200 km from the exploration areas, respectively. AREVA does not conduct any activity within the designated Caribou Protection Areas or within the larger known Caribou Calving Grounds. The distance between the Kiggavik camp and the nearest known caribou water crossings is 25 km. Figure 3.1 shows the caribou crossings and calving areas in relation to the Kiggavik Project Site. AREVA follows the DIAND Caribou Protection Measures (AANDC, 2010) as well as additional caribou protection and mitigation commitments. Refer to 3.4 Flight Specific Mitigation for altitudes over concentrations of caribou 50 or more within close proximity to one another.

No camp construction, caching of fuel, or blasting will occur within 10 km of a designated and/or recognized caribou crossing during periods of migration between May 15 and September 1. No diamond drilling activity will occur within 5 kilometres of any designated and/or recognized caribou crossing during periods of migration between May 15 and September 1. Operation of ground, air or water-based mobile equipment within 10 km of a caribou crossing is anticipated to happen infrequently and will only occur in the absence of caribou concentrations. Snowmobile and ATV use will be suspended if cows and calves are within 2 km of activities. Ground-based monitoring and/or aerial reconnaissance flights will be used to monitor caribou presence as required and appropriate prior to and during operations of mobile equipment (AANDC, 2010).

If a collared caribou is identified as approaching site activities, the SHEQ Supervisor or designate may determine what the collar represents by communicating with the Government of Nunavut (GN) or Government of Northwest Territories (GNWT), with environmental consultants, and exploration companies within the area. If required, verification may occur through an aerial reconnaissance survey with the Wildlife Monitor.

In the event that caribou cows calve outside the designated Caribou Protection Areas, AREVA will suspend operations within 10km¹ of any area occupied by cows and calves between May 15 and July 15 (AANDC, 2010). Water circulation in the drills will continue to ensure the rods do not freeze in the hole. Monitoring activities and visuals from the drill area will be used to identify when caribou are within 10 km of drilling activities. Through high altitude aerial reconnaissance or ground based monitoring, the Wildlife Monitor will determine when caribou cows and calves are outside the 10 km buffer and report the information to the SHEQ Supervisor or designate. Activities can resume when the caribou are outside the 10 km buffer following confirmation by the SHEQ Supervisor or designate. If a concentration of caribou remains within 10 km of drilling operations for more than two days, the SHEQ Supervisor or designate will contact the Conservation Officer in Baker Lake to determine the next appropriate course of action.

¹ The 10 km calving period buffer originated from comments by the BQCMB and GND OE (BQCMB, 2007, GN, 2007, GN 2008)

To avoid injuries to caribou and humans during June and July, drilling activities will be suspended if concentrations of caribou (50 or more) approach within 2 km² of drilling operations (NIRB, 2007a and GN-DoE, 2008). Water circulation within the drill will continue to keep the rods from freezing in the hole. Monitoring activities and visuals from the drill area will be used to identify when caribou are within 2 km of drilling activities. Through ground based monitoring, the Independent Wildlife Monitor will determine when caribou are outside the 2 km buffer, and report the information to the SHEQ Supervisor or designate. Activities can resume when caribou are outside the 2 km buffer following confirmation by the SHEQ Supervisor or designate. If a concentration of caribou remains within 2 km of drilling operations for more than 2 days the SHEQ Supervisor will contact the Conservation Officer in Baker Lake and the consulting biologist to determine the next appropriate course of action. AREVA will forward any direction from GN-DoE or KIA regarding caribou monitoring to NIRB (NIRB 2007).

² With respect to the recommendation for suspending activities when caribou are within 10 km of exploration activities (GN-DoE 2007, GN-DoE 2008), AREVA offers the following information and approach. Studies of woodland caribou have demonstrated avoidance of up to 1 km for well sites and 250 m for roads and seismic lines (Dyer et al. 2001). Data from the Ekati Diamond Mine suggests that the instantaneous negative response (alert, stop feeding) of barren-ground caribou to stressors (e.g., truck traffic) increases within 1 km of the source (BHPB 2004). Behaviour data also demonstrated that the amount of time spent feeding by females with calves was reduced when animals were within 5 km of Ekati mine footprint (BHPB 2004). The size and level of activity of the Kiggavik-Sissons project is much less than an operating diamond mine or road. Regardless, the BQCMB and GN-DoE comments have been considered and operations continue to abide by the more stringent 10 km buffer.

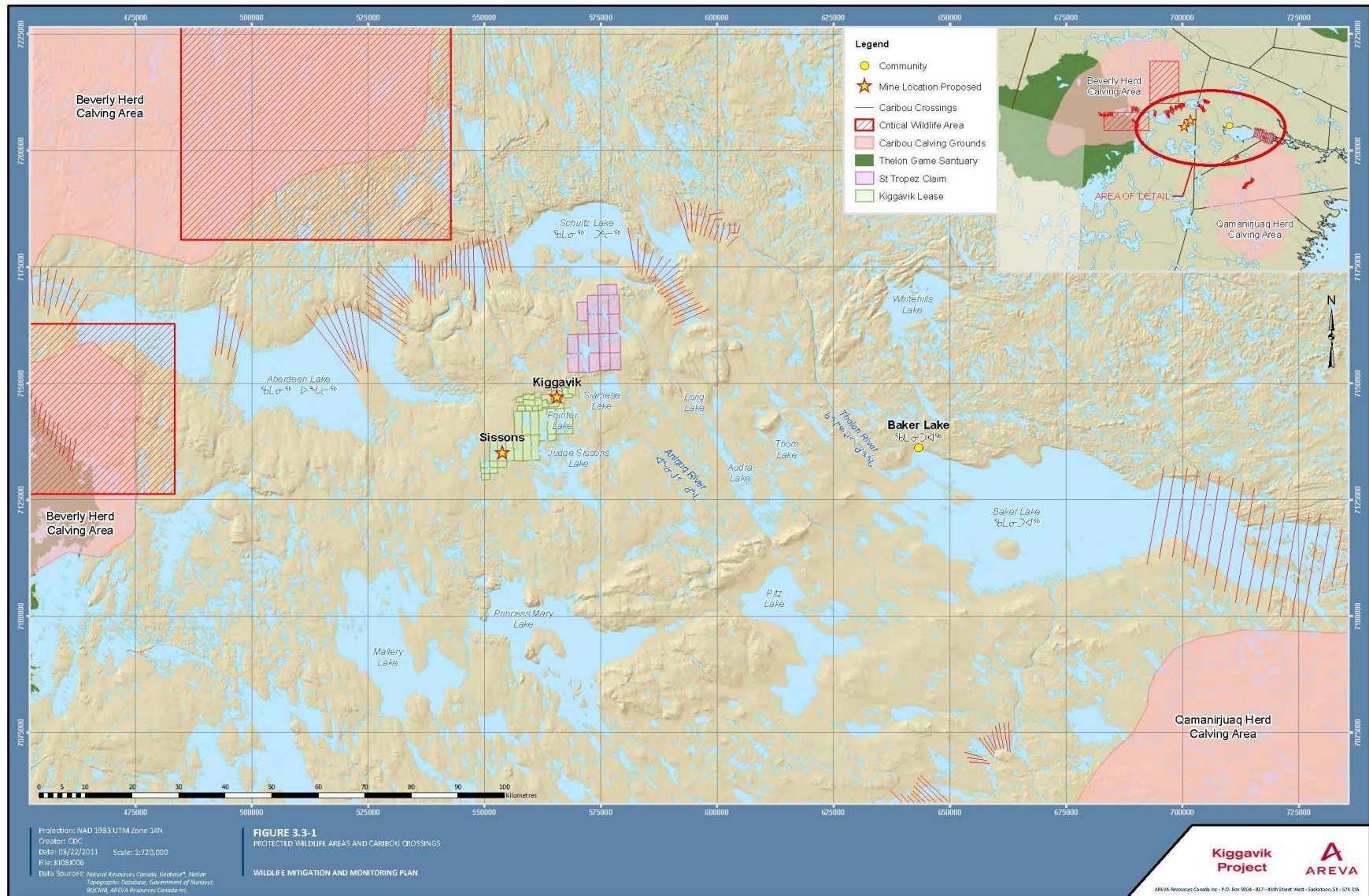


Figure 3.1 Beverly and Qamanirjuaq Calving Areas and Caribou Crossings in Relation to Kiggavik Project Site

3.4 Flight Specific Mitigation

AREVA will make efforts to avoid wildlife during flights and to avoid low-level flying to minimize impact of helicopter and airplane noise and presence. Although required flight altitudes are outlined below, some low-level flights are occasionally required for geological/environmental surveys, slinging operations, and during periods of poor weather. Geological or environmental surveys that will be flown below desired altitude must be pre-approved by the SHEQ Supervisor or designate. Unless otherwise approved by the SHEQ Supervisor or designate, personnel must adhere to the minimum flight altitudes listed below. If flying at lower altitudes is required, the SHEQ Supervisor must be notified and reasons documented. Any special requirements including the necessity for high level reconnaissance surveys will be determined by the SHEQ supervisor or designate.

Aircraft abide by strict altitude restrictions, and helicopter contractors must provide AREVA the capability of tracking all flight altitudes to ensure compliance with this Plan. Aircraft pilots are instructed not to fly over the Beverly calving grounds 70 km northwest of the Project area (as shown in Figure 3.1). For long-range transportation flights (>25 km), aircrafts are required to fly at a minimum of 610 m (2000 ft) above ground level. For shorter transportation flights (between 4-25 km), which are typically used for movement of staff and equipment between camp and work sites, the normal practice is to fly all aircraft at a minimum of 300 m (1000 ft) above ground level. Protection measures specific to low-level airborne surveys are given in the following section. Unless caribou are present, there are no altitude restrictions for flights less than 4 km. In the presence of 50 or more caribou, best practice is to avoid the caribou by a minimum distance of 610 m above or around the herd. Taking-off or landing of aircraft does not occur if 50 or more caribou are within 1 km of the landing area, except where safety is at risk (NIRB, 2007). From April 15 to September 1, AREVA will not fly within 1.5 km of nesting raptors when in air transit and will avoid disturbance in poor weather. A summary of altitude restrictions is provided in Table 3.1 below.

Table 3.1 Flying Altitudes and Related Activities

Activity	Flying Altitude (above ground) ³
Regular Long Distance Flights >25 km	> 610 m
Short Distance Flights between 4 and 25 km	> 300 m
Aerial Reconnaissance Surveys	> 300 m
Airborne Geophysical Surveys	≥ 120 m (as required by the survey protocol)
Flights in the vicinity of > 50 caribou	> 610 m (horizontal separation if vertical is not possible)

³ Normally the altitude above ground is estimated using the aircraft altimeter set to 29.92" of mercury and correcting for the ground elevation along the track. This causes uncertainties due to estimating the ground elevation and the difference between the barometric pressure at the time of the flight and standard pressure of 29.92".

3.5 Mitigation Specific to Geophysical Surveys

3.5.1 Survey Rationale

Aerial

Airborne geophysical techniques are used extensively in exploration to identify physical variations in the underlying geology which can be then used as a means of defining areas of interest. Different methods are employed such as Electromagnetics (EM), Gravity Gradiometry, Magnetism and Radiometrics which may be conducted in different years if required. Flying altitudes and line spacing's are the main factors that govern the resolution of the survey. To map the targets both a tight line spacing (~150 m) and a low altitude of (~50-200 m) following the topography is required.

Airborne geophysical surveys can gain access to remote areas quickly and reduce exploration time. In addition, where environmental issues may limit the amount of exploration possible with ground activities, airborne surveys offers a solution to these issues. If flying over concentrations of caribou is avoided, then this technique is a non-invasive passive technology and an environmentally friendly alternative that will help focus future ground-based activities while limiting or reducing impacts to the environment.

Ground Geophysical Surveys

Ground geophysical surveys are generally the second step in geophysical exploration. Mainly used to refine the areas of interest that result from the airborne surveys, they employ the same kind of techniques such as DC Resistivity, EM, Gravity, Magnetism, and Radiometrics. They are used to better understand the underlying geology with more detail and to help geologists to define their drill targets.

Ground geophysical surveys have a lower production rate compared to airborne surveys because they are generally realized by people on the ground but the accuracy is better. Techniques have almost no effects on the environment (walking on the ground) and instruments can be removed from the field if caribou are too close to the survey area.

3.5.2 Survey Specifications

Airborne Geophysical Survey Specifications

The chosen method is to mount survey instrumentation in a suitable aircraft. Instrumentation includes among others the data acquisition system (which records full tensor gravity gradiometry, triaxial magnetic gradiometry etc if any), digital video, and a complete digital terrain model from an inertially referenced laser (Lidar) altimeter system or a radar system. Specific requirements to complete a survey could be as follows:

- Nominal Flying Height: 120 - 200 m
- Flying Mode: Modified Drape
- Line Spacing: 150 m
- Tie Line Spacing: 750 m
- Ground Cover Restriction: Results are much more precise without snow cover
- Survey time: Dependant on weather conditions and the presence of caribou within the survey area)

Ground Geophysical Survey Specifications

The chosen method is to deploy in the field the adequate technique to realize, if any, a mapping of the apparent resistivity or gravity, to locate anomalous radioactivity, to define magnetic structures and to characterize targets in depth.

An example of requirements to complete a mapping survey includes the following:

- Line Spacing: 150 m
- Number of lines: 20
- Length of lines: 2000 m
- Surface covered: 6 km²
- Ground Cover Restriction: Results are much more precise without snow cover and frozen ground
- Survey time: Dependent on surface cover, contractor's crew size, quantity of equipment used, weather conditions and the presence of caribou within the survey areas

3.5.3 Protection Measures

There are caribou protection measures in place for airborne and ground geophysical surveys. The intent of these protection measures is to ensure surveys are only conducted when caribou disturbance can be minimized. The preferred window for conducting geophysical surveys is in June after the northern migration, and efforts will be made to avoid the migration and post calving periods from July 15 to July 31. The SHEQ Supervisor or designate is notified of the requested survey area and duration to confirm compliance with the Plan. A reconnaissance flight is flown at an altitude of 300 m over the initial line of the proposed area to determine the presence of caribou. If the ceiling is lower than the 300 m but at an altitude that permits safe flying, the reconnaissance flight will be flown at the maximum altitude possible.

Airborne Geophysical Surveys

- If a concentration of caribou (50 or more individuals in close proximity to one another) are within the survey area the aircraft will relocate to another part of the survey block and repeat the reconnaissance flight or the survey will be postponed until the caribou are at a distance of 2 km from the survey area.
- If caribou calves are present in the survey area between May 15 and July 15, the survey will be postponed until either the calves are gone or the survey can be conducted outside of this time period.

- If concentrations of caribou are not observed within the survey route, then the survey proceeds at the approved altitude
- A continuous watch is kept for caribou during the survey. If concentrations of caribou are observed in the survey area during the course of the work, the survey is aborted and another part of the block is selected.
- The contractor must notify the SHEQ Supervisor or designate of such caribou encounters and provide information pertaining to the location, time, and number of caribou.

Ground Geophysical Surveys

Ground geophysical surveys that exclude the use of wire abide by the protection measures outlined for regular operations (see section 3.3 Caribou Protection Measures). Where ground geophysical surveys include the use of wire, the following protection measures will be in place:

- Reconnaissance flights are flown daily during the survey to confirm the absence of caribou herds in proximity to the survey area
- If caribou herds (50 or more) or caribou cows with calves are absent (between May 15 and July 15) within 10 km of the study area, or are not expected to be within the study area during the survey, the survey can proceed. If caribou are within 10 km, the geophysical survey will be temporarily postponed until caribou are out of the area
- For concentrations of caribou the SHEQ Supervisor or designate and Wildlife Monitor will determine an adequate distance at which the geophysical wire is to be retrieved. The time required to retrieve wire and the speed in which the caribou are migrating will be considered. This distance will be determined prior to conducting each new survey
- If 50 or more caribou (in close proximity to one another) approach the survey area, within the minimum distance determined above, the geophysical wire would be retrieved to ensure they are protected

4 Reporting

All wildlife activities will be recorded and reported monthly during the field season. With the assistance of the independent Wildlife Monitor, reports will be submitted by the SHEQ Supervisor or designate on site to the Manager, Nunavut Affairs, the District Geologist, Nunavut, Baker Lake Hunters and Trappers Organization (HTO) the Baker Lake Conservation Officer, the GN Department of Environment (GN-DoE), Regional Biologist, Kivalliq Inuit Association (KIA) and Aboriginal Affairs and Northern Development Canada (AANDC). The monthly reports will be used to help construct a year-end overview to be included in the Kiggavik Project Annual Report.

5 References

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- NIRB, 2007b. Screening Decision on Amendment Request from AANDC - Additional Terms and Conditions for NIRB File No. 06AN085 (August 30, 2007)
- NIRB, 2009. Screening Decision on Extension Request from AANDC and KIA - Additional Terms and Conditions for NIRB File No. 06AN085 (January 9, 2009)

Appendix A Events and Responses

Event	Contractors	Wildlife Monitor	SHEQ Supervisor or Designate
General Mitigation			
A disturbance to caribou	<ul style="list-style-type: none"> Notify the SHEQ Supervisor Assist with the completion of the Supervisor's Investigation Report where necessary 	<ul style="list-style-type: none"> May be required to assist in emergency situations such as using firearm for safety kills or notifying camp when danger (wildlife) is out of the area Assist with the completion of the Supervisor's Investigation Report where necessary 	<ul style="list-style-type: none"> Complete a Supervisor's Investigation Report Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report
An incident occurs between grizzly bear, wolverine, wolf, fox and field staff	<ul style="list-style-type: none"> Notify the SHEQ Supervisor Assist with the completion of the Supervisor's Investigation Report where necessary 	<ul style="list-style-type: none"> May be required to assist in emergency situations such as using firearm for safety kills or notifying camp when danger (wildlife) is out of the area Assist with the completion of the Supervisor's Investigation Report where necessary 	<ul style="list-style-type: none"> Complete a Supervisor's Investigation Report Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Notify the Baker Lake Conservation Officer Note in monthly wildlife report
If a need for deterrents or other wildlife management techniques are identified	<ul style="list-style-type: none"> No action required 	<ul style="list-style-type: none"> No action required 	<ul style="list-style-type: none"> Contact Baker Lake Conservation Officer
Caribou Mitigation			
Collared Caribou are identified as approaching site activities	<ul style="list-style-type: none"> No action required 	<ul style="list-style-type: none"> Assist SHEQ Supervisor with identifying what the collar represents and aerial reconnaissance surveys where necessary 	<ul style="list-style-type: none"> Determine what the collar represents by contacting the GN and/or GNWT or exploration companies in the area Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report
If caribou with newborn calves approach drilling rig between May 15 and July 15	<ul style="list-style-type: none"> Notify the SHEQ Supervisor and Wildlife Monitor If caribou and calves are observed within 10 km of 	<ul style="list-style-type: none"> Station at a vantage point for observing proximity of herd and presence of calves Notify the SHEQ Supervisor of observations 	<ul style="list-style-type: none"> Advise Contractor to shut down drilling activity if Wildlife Monitor determines calves are present within 10 km Following verification from

Event	Contractors	Wildlife Monitor	SHEQ Supervisor or Designate
	drilling rig, shut down drilling activity (continue water circulation)	<ul style="list-style-type: none"> If drilling activity is suspended, continue monitoring and notify SHEQ Supervisor of caribou proximity to drill rig 	<p>Wildlife Monitor, advise Contractor to commence drilling when caribou are outside the 10 km range</p> <ul style="list-style-type: none"> If caribou remain within 10 km for >2 days, notify the Baker Lake Conservation Officer for further action Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report
> 50 caribou approach drilling rig during June or July	<ul style="list-style-type: none"> Notify the SHEQ Supervisor and Wildlife Monitor If >50 caribou are observed within 2 km of drilling rig, shut down drilling activity (continue water circulation) 	<ul style="list-style-type: none"> Station at a vantage point for observing proximity of herd and presence of calves. Notify the SHEQ Supervisor of observations If drilling activity is suspended, continue monitoring and notify SHEQ Supervisor of caribou proximity to drill rig 	<ul style="list-style-type: none"> Advise Contractor to shut down drilling activity if Wildlife Monitor determines >50 caribou are present within 2 km Following verification from Wildlife Monitor, advise Contractor to commence drilling when caribou are outside the 2 km range If >50 caribou remain within 2 km for >2 days, notify the Baker Lake Conservation Officer for further action Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report
Flight Mitigation			
>50 caribou are within 1 km of landing area	<ul style="list-style-type: none"> Pilot will not land or take off within 1 km of >50 caribou except for flight safety Flights must be 610 m above ground when flying over >50 caribou (horizontal separation of 610 m is acceptable if 610 m altitude is not possible) If possible, choose an alternate landing area > 1 km from the herd Notify the SHEQ Supervisor and Wildlife Monitor 	<ul style="list-style-type: none"> If landing area is within sight, monitor proximity of herd Notify the SHEQ Supervisor of observations 	<ul style="list-style-type: none"> Notify pilots when >50 caribou are within 1 km of their landing area as advised by the Wildlife Monitor Notify pilots when the caribou have moved outside the 1 km range of the landing area as advised by the Wildlife Monitor Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report

Event	Contractors	Wildlife Monitor	SHEQ Supervisor or Designate
Aerial Geophysical Surveys			
During flight, 50 or more caribou are within the aerial survey route	<ul style="list-style-type: none"> Notify the SHEQ Supervisor The aircraft will relocate to another part of the block and repeat the reconnaissance flight or will be postponed until the animals are a distance of 2 km from the survey area 	<ul style="list-style-type: none"> No Action Required 	<ul style="list-style-type: none"> Notify Project Geologist or designate, Wildlife Monitor and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report.
If calves are present between May 15 and July 15	<ul style="list-style-type: none"> Notify the SHEQ Supervisor The survey will be postponed until either the calves are gone or the survey can be conducted outside of this time period. 	<ul style="list-style-type: none"> No Action Required 	<ul style="list-style-type: none"> Notify Project Geologist or designate, Wildlife Monitor and Manager of Nunavut Affairs of mitigating actions
Ground Geophysical Surveys (include the use of wire)			
Caribou cows and calves are present within 10 kms between May 15 and July 15	<ul style="list-style-type: none"> Notify the SHEQ Supervisor and Wildlife Monitor Retrieve wire following verification from SHEQ Supervisor 	<ul style="list-style-type: none"> Station at a vantage point for observing proximity of herd and presence of calves Notify the SHEQ Supervisor of observations 	<ul style="list-style-type: none"> The SHEQ Supervisor in consultation with the Wildlife Monitor will notify the Contractor to retrieve the wire Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report
> 50 caribou are within close proximity of the ground survey area during June/July	<ul style="list-style-type: none"> Notify the SHEQ Supervisor and Wildlife Monitor Retrieve wire following verification from SHEQ Supervisor 	<ul style="list-style-type: none"> Station at a vantage point for observing proximity of herd and presence of calves Notify the SHEQ Supervisor of observations 	<ul style="list-style-type: none"> The SHEQ Supervisor in consultation with the Wildlife Monitor will notify the contractor to retrieve the wire Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions Note in monthly wildlife report

