Department of National Defence

Environmental Assessment Registration

Newfoundland and Labrador Environment and Climate Change

Project: Remediation of the Former Burgeo Rifle Range, Burgeo, Newfoundland and Labrador

Contents

National Defence Défense nationale

NAME OF UNDERTAKING

Remediation of the Former Burgeo Rifle Range

PROPONENT

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THE UNDERTAKING

Name of the Undertaking

Remediation of the Former Burgeo Rifle Range

Purpose/Rationale/Need for the Undertaking

The Department of National Defence (DND) is responsible for a former small arms rifle range near the town of Burgeo (Figure 1, Annex A). There are two properties that were leased from the Government of Newfoundland and Labrador (NL) for use by the 5th Canadian Ranger Patrol Group (5CRPG) in 2008 ("Location 1" and "Location 2" shown on Figure 2, Annex A). Use of the properties was discontinued by 5CRPG in approximately 2010. DND was contacted by NL when it became apparent that part of this leased land (Location 1) encroached on the provincially protected watershed that forms part of the town of Burgeo's municipal water supply (Long Pond). It is DND's intent to decommission the range and obtain closure from the province, if required.

Initial assessment work was completed at Location 1 in 2020 (Golder, 2021), along with additional assessment at Location 1 and initial assessment at Location 2 in 2021 (Golder, 2022). Further assessment at Location 1 was conducted in 2022 (WSP, 2023a). General findings indicated soil, groundwater, sediment, and/or surface water impacts for various metals and/or polycyclic aromatic hydrocarbons compared to applicable guidelines. Supplementary delineation of leachable lead concentrations in soil near the firing backstop area at Location 1 was completed in July 2023 (WSP, 2023b) to refine the volume of hazardous versus non-hazardous soil and disposal requirements.

DESCRIPTION OF THE UNDERTAKING

The overall objective of the project is to address contamination and remove debris to support DND receiving regulatory closure from NL. A Remedial and Risk Management Strategy (WSP, 2023b) has been developed, based on the assessments noted in the preceding paragraph, to outline the approach for remediation and risk management.

The two properties (Figure 2, Annex A) are Crown land that were leased to DND by NL in 2008 for use as a small arms rifle range by 5CRPG. Location 1 is located on the east side of Highway 480. A second location (Location 2), near Location 1 but across the road and to the northwest,

was also used as a firing range by 5CRPG. The actual firing range where the primary remediation area is located (site) is immediately south of the property boundary of the lease lands (see "Additional Proposed Leased Lands/Firing Area" on Figure 2, Annex A) at the end of a gravel entrance road off highway 480, adjacent to Location 1.

Project components include:
At the site

- Soil excavation and off-site disposal: Impacted soil will be excavated using heavy machinery, where accessible, or smaller equipment on steep and difficult to access areas and loaded into trucks for transport and disposal at engineered landfills licensed to accept the contaminated soil present at the site. It is not expected that backfill will be required, as impacts are only expected to be found in shallow soil. Should it be determined that backfill is required, all imported material used within the remediation limits must comply with the applicable criteria for background site conditions. In the areas that are currently covered with shallow soil, the backfilled area will be covered with not less than a 15 cm thickness of topsoil and seeded with a mix of native grass and sedge species, as appropriate for the site characteristics and local climate. Clearing of alders around the backstop is required to remove impacted material. The total area of alders is approximately 850 m^2, corresponding to an approximate volume of 5 m^3 shredded. Grubbing is not expected. The delineated areas of soil prescribed for remediation are shown on Figure 3, Annex A; the western area of impacted soil is approximately 850 m^2, and the eastern area of impacted soil is approximately 990 m^2. The total volume of impacted soil to be excavated from the two soil remediation areas is approximately 680 m^3.
- Sediment dredging and off-site disposal: Two ponds (ponds 1 and 2; Figure 3, Annex A; photos, Annex B) containing impacted sediment are proposed to be excavated using heavy machinery, where accessible, or hydraulic dredging using hydraulic vacuuming. The method used to remove the sediment from ponds 1 and 2 will be determined by the contractor and approved by DND. The sediment would then be loaded into trucks for transport and disposal at engineered landfills licensed to accept the impacted material. The depth of the impacted sediment extends to approximately 0.6 meters below the bottom of the ponds. The approximate total area of the impacted ponds is 300 m^2. As such, sediment quantities have been estimated to be 180 m^3. Any water from impacted sediment during sediment dewatering will be considered impacted water and treated on-site (see next bullet).
- On-site treatment of impacted surface water: Contaminated surface water from ponds 1 and 2 will be pumped and treated on-site. It is expected that water treatment will require the passage of water through bag/mechanical filters and a secondary filter media, but the method used to remediate the surface water from ponds 1 and 2 and subsequent discharge of the treated water will be determined by the contractor and approved by DND. The ponds have an approximate maximum depth of 2 m; however, this has not been confirmed because of difficulty of measuring the pond bottoms due to the presence of suspended sediment. An average depth of water of 1.5 m has been estimated. As such, water quantities have been estimated to be approximately 450 m^3 assuming no contribution from groundwater or precipitation. Removal of surface water may be conducted simultaneously with the removal of sediment (hydraulic dredging) or prior to sediment removal. Treated water may be discharged to an adjacent water body (e.g., pond 3; Figure 3, Annex A) and must meet the Newfoundland and Labrador Guidelines for Drinking Water Quality and Health Canada Guidelines for Canadian Drinking Water Quality prior to discharge. After the remediation of ponds 1 and 2 is complete, they will be left to naturally refill.

At the site and Location 2

- Removal of surficial debris: Debris at the site amounts to approximately 5 m^3 of debris,

including, but not limited to, general refuse found at the firing backstop consisting of household waste, wooden stakes, cardboard and plastic targets, rusted material used as a target, spent shotgun shells, spent rifle cartridges, and spent ammunition. Debris at Location 2 amounts to approximately 13 m^3 of debris, including, but not limited to, wooden stakes and gun stands, cardboard, plastic and wooden (plywood) targets, spent shotgun shells, spent rifle cartridges, and spent ammunition. Remediation will include manual removal of the debris. Debris will be disposed of as waste to a licenced waste disposal site.

Geographical Location

The project will take place at the former Burgeo Rifle Range on Highway 480, approximately 7 km northwest of the town of Burgeo, NL (Figure 1, Annex A). General coordinates for the range are 47.648260, -57.642254.

The proposed project is to remediate delineated contamination at the former Burgeo Rifle Range; therefore, alternative locations are not an option.

Physical Features

Infrastructure

The site does not have any built infrastructure other than a gravel access road off Highway 480 (Figure 4 ["Disturbed Area"], Annex A). Materials on-site are related to firing activities, such as wooden stakes, stands, and targets (debris to be removed). The project does not include construction of any physical features (e.g., buildings, roads).

Area to be Affected

Total area of soil remediation: approximately 1,840 m^2.
Total area of alders required to be cleared around the backstop to access the eastern soil remediation area: approximately 850 m^2.
Total area of sediment and surface water remediation (i.e., total area of ponds 1 and 2): 300 m^2

Topography (WSP, 2023a)

The topography of Location 1 is undulating hills with rocky outcrops and low-lying pond/wetland areas. In Location 2, a large rocky outcrop is found to the west of the firing point that acts as a natural backstop for rifle fire.

Surface Water and Wetlands (WSP, 2023a)

A habitat assessment was completed at and around the site (WSP, 2023a) (see "Ecological Study Area" on Figure 4, Annex A).
The study area contained several surface water features, including small to medium-sized lakes, ponds, and wetland pools. There were also a few streams, both intermittent and permanent, that hydrologically connect some of the lakes and ponds. Some of the smaller lakes and ponds appeared to be hydrologically isolated, particularly the smaller ponds that were associated with wetlands. Based on topography, surface water is generally inferred to flow from north to south across the study area. Wetlands were common throughout the study area, although due to the rocky soil and plant species present, the boundary between wetland and upland was hard to determine. Wetlands were dominated by bogs and fens, with the bog areas being hydrologically isolated and the fens being associated with the permanent and intermittent streams and other waterbodies. Additional shallow-water marshy areas occur in the shallow portions of some of the lakes. The bogs and fens were somewhat similar in their plant communities, with a variety of wetland species present, such as sphagnum moss (*Sphagnum*

spp.), Labrador tea (*Rhododendron groenlandicum*), small cranberry (*Vaccinium oxycoccos*), sundews (*Drosera* spp.), pitcher plant (*Sarracenia purpurea*), bog aster (*Oclemena nemoralis*), and bog buckbean (*Menyanthes trifoliata*).

Soils and Geology (WSP, 2023a)

Based on area mapping, the surficial geology in the vicinity of the site is expected to consist predominantly of exposed bedrock with little or no soil or vegetation cover and with rare patches of till and other surficial soil. The bedrock geology in the vicinity of the site consists of weakly foliated to massive, coarse grained, variably K-feldspar porphyritic, biotite granite, and adamellite (Gander Zone, Burgeo Granite). Based on observations made during the various field programs completed for the project, the surficial geology at Location 1 and Location 2 typically consisted of dark brown silt to sand, with significant covering of silty peat and bog. Based on field investigation locations advanced with a jackhammer, soil depth varied highly from none (bedrock outcrops) to 2.4 metres below ground surface.

Terrestrial Animals and Habitat/Vegetation (WSP, 2023a)

A habitat assessment was completed at and around the site (WSP, 2023a) (see "Ecological Study Area" on Figure 4, Annex A).

Wildlife activity and evidence at the study area during the field survey was relatively low, with the exception of a few species. This was likely partly due to the timing of the survey (i.e., outside the breeding window for birds), but also potentially due to the habitat present. A few species of birds were observed: moderate numbers of savannah sparrow (*Passerculus sandwichensis*), a small flock of Canada geese (*Branta canadensis*), and scattered individuals of American black duck (*Anas rub*ripes) , American robin (*Turdus migratorius*), American crow (C*orvus brachyrhynchos)*, common yellowthroat (*Geothlypis trichas*), hermit thrush *Catharus guttatus*), and yellow-rumped warbler (*Setophaga coronata*). Very little evidence of mammals was present. However, a few tracks and trails of what appeared to be moose (*Alces alces*) and/or boreal woodland caribou (*Rangifer tarandus caribou*) did occur sporadically. A single meadow vole (*Microtus pennsylvanicus*) was observed, but it is likely that this species only occurs in small numbers due to minimal available habitat (i.e., grassy areas). Herptile activity was limited to several green frogs (*Lithobates clamitans*) seen throughout many of the waterbodies and other surface water features. Terrestrial invertebrates seen included several mourning cloak (*Nymphalis antiopa*) and American lady (*Vanessa virginiensis*) butterflies, a few unidentified dragonflies, and numbers of ants.

Overall, the study area had plant communities typical of coastal barrens, including a mosaic of bedrock barrens, low and tall shrub thickets, as well as small patches of meadow and stunted treed areas. The terrain was complex, with bedrock areas of higher elevations, sometimes with steep slopes, as well as some valleys, lowland areas, and gentle slopes. Substrate ranged from bare or almost bare bedrock to boulders and cobbles, shallow silt and sand, and organic peat ranging from shallow to deep. Rocky and open areas contained lichens, liverworts, mosses, and a variety of low shrubs, forbs, and graminoids, such as black crowberry (*Empetrum nigrum*), creeping juniper (*Juniperus horizontalis*), Canada burnet (*Sanguisorba canadensis*), bunchberry (*Cornus canadensis*), sedges (*Carex* spp.), and oat grasses (*Danthonia* spp.). In some areas, such as along valleys and other areas with deeper soils, taller woody vegetation dominated, including shrubs and trees, such as green alder (*Alnus alnobetula*), American mountain ash (*Sorbus americana*), mountain holly (*Ilex mucronata*), serviceberry (*Amelanchier* sp.), white birch (*Betula papyrifera*), black spruce (*Picea glauca*), and balsam fir (*Abies balsamea*). No true forests occurred, although moderately larger trees were found scattered and in patches, particularly along north facing slopes. The majority of the study area contained

native, naturally occurring plant communities. The only indication of anthropogenically influenced plant communities were very small patches in and around the disturbed areas, immediately adjacent to the site access road. The disturbed areas included very small patches of vegetation that is typical of cultural meadows, such as Timothy grass (*Phleum pratensis*), quack grass (*Elymus repens*), and dandelion (*Taraxacum officinale*). The source of the disturbed plant communities was likely from vehicular traffic and other minimal anthropogenic use (e.g., foot traffic, littering, bonfires). Although a detailed survey of potentially edible plants was not completed as part of the assessment, some edible plants were noted. For example, blueberries (*Vaccinium angustifolium*), small cranberry (*Vaccninium oxycoccus*), and, to a lesser extent, cloudberry (*Rubus chamaemorus*) were widespread and abundant, including at the firing range where the primary remediation area is located, which has the highest concentrations of contaminants associated with previous range activities. All the plants and plant communities were well established and showing vigour. The only portions of the properties that showed any anthropogenic effects were in the immediate area of the access road at the site. In this area, some plants were knocked over and stunted due to physical disturbance (e.g., vehicular traffic and campfires). None of the plants showed any signs of effects from contamination (e.g., chlorosis, necrosis), and there were no abnormal signs of delayed growth or unusual dieback.

Aquatic Animals and Habitat (WSP, 2023a; WSP, 2023c)

A habitat assessment was completed at and around the site (WSP, 2023a) (see "Ecological Study Area" on Figure 4, Annex A).

In the larger waterbodies, depths ranged from 0.2 m to over 5 m and substrate was a mixture of bedrock, boulders, cobbles, sand, and silt, with some areas of shallow organics. Within some of the larger waterbodies were shallow bays where aquatic vegetation persists, including emergent, submergent, and floating plants, such as spadderdock (*Nuphar variegata*), pipewort (*Eriocaulon aquaticum*), floating heart (*Nymphoides* sp.), and common bladderwort (*Utricularia vulgaris*). There were also algae present throughout most waterbodies and streams. Green frogs were also in and adjacent to several waterbodies throughout the study area. Many of these waterbodies were fish habitat, confirmed by actual observations of fish, or inferred due to hydrological connections with other waterbodies. However, surface water connections could not be confirmed for all of these waterbodies. Small-bodied fish, including small salmonids, were observed in several of these features, although no large schools of fish were observed. Aquatic species observed included small unidentified salmonids in the larger lakes and streams, including one brook trout (*Salvelinus fontinalis*), and a few individual three-spined stickleback (*Gasterosteus aculeatus*). In addition, aquatic invertebrates, such as caddisfly larva (Trichoptera), dragonfly nymphs (Odonata), stonefly nymphs (Plecoptera), whirligig beetles (Gyrinidae), and a single leach (Hirudinea), were observed. The streams included larger, more permanent streams with a series of riffles, runs, and pools, where fish occur or were assumed to occur. Smaller, intermittent streams also occur, sometimes flowing through the wetland features. The source of some of these smaller streams is unknown, but they appeared to be primarily fed through rain and snow melt, and no springs or seeps were identified. Some aquatic invertebrates (e.g., caddisfly larva) were observed in the permanent streams, as well as small-bodied fish, including salmonids. The smaller isolated wetland pools ranged from 0.1 m to over 2 m deep. These pools were unlikely to support fish; however, green frogs were observed using them as habitat. While several of the surface water features in the study area were confirmed or potential fish habitat, Ponds 1 and 2, where sediment and surface water remediation is planned, were not fish habitat. These two ponds were small and isolated from other surface water features. See photos of ponds 1 and 2 in Annex B. Pond 3 is a moderately sized lake near the southern edge of the site. It ranges in depth from 0.1 m along the shoreline to > 2 m further out in the main basin. The substrate is a mixture of bedrock, cobbles, and coarse sand, with some

organics observed. There is at least one shallow bay at the eastern edge of the basin, where aquatic vegetation is relatively abundant. A few individual small-bodied fish were observed, along with caddisfly larva and whirligig beetles. This waterbody has at least one permanent stream that flows into it, which appears connected with other waterbodies. A small flock of Canada geese (*Branta canadensis*), as well as a few individual green frogs, were observed loafing in the pond during the survey.

Species at Risk

In March 2022, a desktop species at risk (SAR) assessment was completed that identified four SAR as having a moderate to high likelihood of occurrence at the site (Golder, 2022). Although taxa-specific surveys within the appropriate timing windows were not completed for these SAR, with the exception of boreal felt lichen, habitat information was collected during the field survey, and the SAR assessment was updated based on this. Refer to the table below for the updated SAR assessment (WSP, 2023a). It includes all the SAR originally assessed as having a moderate to high likelihood of occurrence, as well as the updated likelihood, if any. No actual SAR were observed during the field survey.

The one SAR that had its likelihood of occurrence re-assessed was boreal felt lichen. Given that this species is conspicuous and present all year round, it was searched for and not found. Potential suitable habitat for other SAR species was confirmed to be present during the field survey.

Common Name	**Scientific Name**	**COSEWIC**	**SARA**	**ESA**	**Updated likelihood of occurrence in the study area after habitat surveys**
Boreal felt lichen	*Erioderma pedicellatum*	Special Concern	Special Concern	Vulnerable	Low – this species was searched for during the field survey and not observed.
Short-eared owl	*Asio flammeus*	Threatened	Special Concern	Vulnerable	Moderate – the open areas that make up the majority of the study area provide suitable foraging and nesting habitat for this species.
American eel	*Anguilla rostrata*	Threatened	No status	Vulnerable	Moderate – larger waterbodies, connected by streams in the study area, may be suitable habitat for this species.
Banded killifish	*Fundulus diaphanus*	Special Concern	Special Concern	Vulnerable	Moderate – several of the waterbodies in the study area are suitable habitat for this species.

COSEWIC = Committee on the Status of Endangered Wildlife in Canada
SARA = *Species at Risk Act* (Schedule 1)
ESA = Newfoundland and Labrador *Endangered Species Act*

Protected Areas
The provincially protected watershed that forms part of the town of Burgeo's municipal water supply (Long Pond) is located east and south of the site. See Figure 2, Annex A.

Use of the Site (WSP, 2023c)
Historical information about previous site activities has been limited to anecdotal correspondence between 5CRPG and the Real Property Operations Unit – Atlantic Detachment Gander at 9 Wing Gander and community members from the town of Burgeo. It has been indicated that the site was used by community members as an informal firing range even prior to the 2000s, when it was leased by DND. Also, as of March 2023, the site was still being used by local hunters and community members from Burgeo as a target practice area even though 'No Trespassing' and 'Range Closed' signs have been installed in this area.

Human Receptors
The future use of the site is Crown land. Contractor staff and recreational users/trespassers at the site may be receptors of potential adverse environmental effects of the project.

Remediation
There is no construction associated with this project. Currently, remediation activities are expected to occur in spring/summer 2024 and take 2-3 weeks. Vegetation clearing during the regional nesting period for migratory birds will be avoided. The breeding season for most birds within the project area is generally mid-April to mid-August (Nesting periods - Canada.ca).

Potential sources of pollutants during the remediation activities include:
- The atmosphere could be negatively affected by exhaust from vehicles and equipment.
- Dust containing contaminants of concern could be generated during the movement/transport of soil and dredged materials.
- Deleterious substances from storage and use of hazardous products and accidental spills or leaks could potentially enter the environment.
- Sediment and silt could potentially enter nearby surface waterbodies/wetlands via site runoff if activities are completed during excessively wet periods or without adequate erosion and sediment controls.

Mitigation measures have been identified to minimize or eliminate these potential effects on the environment.

The following mitigation measures are included in the DND Environmental Effects Determination (EED)

Atmosphere
- An Air Pollution Control Plan will be developed and provided by the contractor as part of the contractor's Environmental Protection Plan (EPP).
- Vehicles and equipment will be maintained in good repair and in accordance with local authorities' emission requirements.
- Operation and idling will be minimized as much as possible. Vehicles/machinery will run only while in use, except where extreme temperatures (i.e., heat or cold) prohibit shutting the vehicle off.
- The contractor will be made aware of all known contaminants of concern in the soil and sediment.
- During transportation of soil and dredged material (sediment), the tail/end gates of trucks will

be bolted, and loads will be secured and covered to prevent release/dispersion of material/dust.
- Fires or burning of waste material/rubbish are not permitted.

Surface Water and Wetlands

- Comply with the *Fisheries Act* and all other applicable legislation and regulations. DFO will be notified at least 10 days before starting the project, and a copy of the letter from DFO will be kept on site while the work is in progress.
- Contractor will develop a Spill Control Plan as part of the EPP.
- Stop work in the event of a spill/leak of a deleterious substance. Spills/leaks of any size and quantity will be contained, cleaned up, and reported immediately to the DND project manager (PM) and/or site representative. The DND PM will report spills to the Wing Environment Officer who will contact the appropriate regulatory authorities, as required.
- Workers will be trained in spill prevention and response procedures, including spill prevention techniques, spill response measures, spill source and receptor recognition, and spill reporting protocol.
- An adequate spill kit with appropriate and sufficient materials for surface water/wetland and land spills will be stored in an accessible location on-site.
- All fuel delivery drivers to have proof of spill response training.
- Appropriately dispose of soil and dredge materials contaminated with deleterious substances.
- A Contaminant Prevention Plan will be developed and provided by the contractor as part of the EPP to identify potentially hazardous substances to be used on the job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailed provisions for compliance with regulations for storage and handling of those materials.
- Equipment storage, maintenance, and refueling is to be on level terrain, on a prepared impermeable surface, and at least 30 m away from sensitive ecological receptors, including surface water bodies/wetlands.
- Equipment will be mechanically sound to avoid leaks of oil, gas, and/or hydraulic fluids. Any faulty equipment/machinery will be repaired immediately or removed from site.
- The contractor will develop an Erosion and Sediment Control Plan as part of their EPP to avoid the introduction of sediment into any waterbody/wetland during all phases of work:
    - Install effective erosion and sediment control measures prior to beginning work;
    - Regularly inspect and maintain the erosion and sediment control measures and structures during all phases of the project;
    - Regularly monitor any waterbodies/wetlands (e.g., Pond 3) for signs of sedimentation during all phases of the project and take corrective action;
    - Biodegradable sediment control materials will be used whenever possible;
    - Keep the erosion and sediment control measures in place until all disturbed ground has been permanently stabilized;
    - Remove all exposed, non-biodegradable sediment control materials once the site is stabilized;
    - Schedule work to avoid wet, windy, and rainy periods that may result in increased erosion and sedimentation.
- Exposed soil must be stabilized as soon as possible.
- All equipment used in or near water/wetlands (i.e., for surface water and sediment remediation) will be clean, free of fines, concrete, or any other deleterious substance.
- As part of their EPP, the contractor will submit a Dredge Material Management Plan. The plan will include, but not be limited to, proposed dredging equipment and methods; dredged material collection and transfer methods; and processing/treatment/disposal facilities.

- The site representative will carry out regular monitoring to ensure soil, surface water, dredge materials, and debris are being dealt with in accordance with applicable regulations and legislation.
- Weather conditions are to be assessed daily to determine the risk of extreme weather in the project area. Avoid work during periods when Environment and Climate Change Canada (ECCC) has issued rainfall or wind warnings for the work area.
- The contractor will be required to have a Water Quality Monitoring Plan as part of their EPP to address treatment of contaminated surface water and dewatering water.
- Remove all sediment control materials once the site has been stabilized.
- Passive dewatering (e.g., release of dredge material effluent) to the environment is not permitted.
- Where stockpiling/containment of soil and dredge material is proposed at the project site, the Wing Environment Officer will be made aware of the design details, proposed location(s), and anticipated duration of on-site storage. The temporary storage area will have an impermeable surface and appropriate means to manage and contain run-off such that soil, sediment , and impacted water does not leave the site. Stockpiled material must be secured and kept covered until material is ready for transport to the disposal facility.
- Environmental controls will be established to prevent and respond to drips, spills, and leakage of material during loading from any laydown area. Decontamination procedures will be established to clean contaminated material from tires, buckets, and associated contact surfaces following loading or transfer processes to mitigate the risk of cross contamination on-site, and to prevent uncontrolled releases of material during handling and transport.
- Water generated during dewatering activities will be collected and treated, along with any storm water collected from active work areas that comes in contact with contaminated materials. The water treatment system must be tested prior to start-up and throughout the project to verify treated water meets project discharge criteria and associated regulatory standards. The discharge criteria and sampling and analysis methods will meet applicable guidelines and regulatory requirements.
- Transportation of soil and dredge material to a contractor processing facility must comply with applicable federal, provincial, and municipal regulations.
- Contractor soil and dredge material processing facilities used for the purpose of the work must be operated in compliance with applicable federal, provincial, and municipal regulations.
- As part of the EPP, the contractor will prepare a Non-hazardous and Hazardous Solid Waste Disposal Plan. All waste streams must be disposed of at a licensed disposal facility. Provide waste manifests to the DND PM and/or site representative. Provide sufficient documentation to enable tracking of all material from the project site to the processing, treatment, and/or disposal facility as applicable. Copies of scale tickets and receiving facility weigh bills will be obtained and documented.

Soils and Geology

- Soil excavation and imported fill, if required, must comply with DND Contaminated Sites Instruction (CSI.004.001) – Soil Management.
- Work activities will take place in the project footprint only.
- Wherever possible, one access/egress route to each remediation area will be established to minimize soil disturbance. To avoid disturbing the unimpacted soil areas, the contractor will use cribbing and mats as a temporary access measure.
- Upon completion, disturbed areas will be reinstated (i.e., topsoil and native seed).
- Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.

- Transport from the site to land-based disposal facilities will occur along public roads and highways. Designated haul routes will be predetermined. Emergency response procedures will be established to address any accident or uncontrolled release of material during transport. Regulatory requirements, such as seasonal road weight restrictions, will be adhered to. Transport manifests will be prepared and documented for all material being transported off-site.
- Refer to surface water and wetlands for additional applicable mitigation measures.

Terrestrial Animals and Habitat/Vegetation

- Drivers moving in and around the project site will drive slowly and be watchful for wildlife.
- Contractor personnel are required to keep the construction site clean and free of garbage and other debris that may attract wildlife.
- Vegetation clearing will not take place during the regional bird nesting period (generally mid-April to mid-August; Government of Canada, 2023c).
- Removal of vegetation will occur only where necessary within the project footprint.
- Vegetated buffer zones, where possible, will remain around waterbodies/wetlands.
- Upon project completion, disturbed areas will be restored (i.e., topsoil and seed/plantings). A variety of species of plants native to the general project area will be used in revegetation efforts. Should seed mixes for herbaceous native species for the area not be available, it will be ensured that plants used in revegetation efforts are not known to be invasive.
- Clean and inspect construction equipment prior to transport from elsewhere to ensure that no vegetative matter is attached to the machinery. This will be addressed in the contractor's EPP.
- Refer to the surface water and wetlands and the soils and geology for additional applicable mitigation measures.

Aquatic Animals and Habitat

- All equipment used in water will be cleaned, drained, and dried on land before and after use for the purposes of preventing the introduction or spread of aquatic invasive/non-indigenous species.
- Ensure all machinery that arrives on site is maintained in a clean condition.
- Restrict shoreline disturbance to the immediate work area. Stabilize any shoreline area disturbed by project activities.
- Refer to the surface water and wetlands and the soils and geology for additional applicable mitigation measures.

SAR and Migratory Birds

- Comply with the *Species at Risk Act, Fisheries Act*, Migratory Birds Regulations, and all other applicable legislation and regulations.
- If observed, stop work and do not disturb any SAR, birds, nests, or eggs. Notify the DND PM and/or site representative immediately.
- Refer to the surface water and wetlands, soils and geology, terrestrial animals and habitat/vegetation, and aquatic animals and habitat for additional applicable mitigation measures.

Operation

The project will not have an operation period. After the remediation is complete and DND has received regulatory closure from NL, the Crown land will be managed by NL.

Occupations

There is no construction or operation associated with this project. Defence Construction Canada, on behalf of DND, will hire a certified contractor to complete the required remediation activities. The contractor will be responsible for providing the necessary personnel, equipment, and materials required and will determine the length of time required to complete the remediation activities. Currently, remediation activities are expected to occur in spring/summer 2024 and take 2-3 weeks. Vegetation clearing during the regional nesting period for migratory birds will be avoided. The breeding season for most birds within the project area is generally mid-April to mid-August (Nesting periods - Canada.ca). All construction work will be overseen by a suitably qualified consultant or equivalent (i.e., engineer). After the project is complete and DND has received regulatory closure from NL, the properties/site will be managed by NL. The following list outlines occupations that may be employed during the remediation project:

- 73400 - Heavy equipment operators
- 73300 - Transport truck drivers
- 21109 - Other professional occupations in physical sciences
- 72021 - Contractors and supervisors, heavy equipment operator crews

This list represents only an approximation of the number and type of occupations that may be required for the proposed project. Actual occupations created as a result of the proposed project will ultimately be determined by the successful contractor, which was not yet awarded at the time of this report submission.

Project-related Documents

Project-related documents already generated by or for the proponent:

Golder. 2021. Steps 1 to 4 of the Federal Approach to Contaminated Sites at the Former Burgeo Range, NL.

Golder. 2022. Additional Assessment - Steps 5 to 7 of the Federal Approach to Contaminated Sites Former Burgeo Rifle Range, Burgeo, NL. Submitted to: Defence Construction Canada (DCC).

WSP. 2023a. Additional Assessment - Steps 5 to 7 of the Federal Approach to Contaminated Sites Former Burgeo Rifle Range, Burgeo, NL. Submitted to: Defence Construction Canada (DCC).

WSP. 2023b. Remedial and Risk Management Strategy Former Burgeo Rifle Range, Burgeo, NL. Submitted to: Defence Construction Canada.

WSP. 2023c. Human Health and Ecological Risk Assessment Former Burgeo Rifle Range, Burgeo, NL. Submitted to: Defence Construction Canada.

APPROVAL OF THE UNDERTAKING

A notification letter was submitted to ECCC on July 18, 2023. DND received a response from ECCC (ECCC file No. 23-NL-030) on August 14, 2023 offering comments and recommendations to assist with the completion of the DND EED.

A request for review form was completed and submitted to Fisheries and Oceans Canada (DFO) on July 26, 2023. DND received a response from DFO (DFO file No. 23-HNFL-00473) on August 28, 2023 stating, *Provided that you incorporate these measures* [recommended mitigation measures] *into your plans, the Program is of the view that your proposal is not likely to result in the contravention of the above mentioned prohibitions and requirements* [from the

Fisheries Act, *Species at Risk Act*, and *Aquatic Invasive Species Regulations*]

SCHEDULE

Currently, remediation activities are expected to occur in spring/summer 2024 and take 2-3 weeks. Vegetation clearing during the regional nesting period for migratory birds will be avoided. The breeding season for most birds within the project area is generally mid-April to mid-August (Nesting periods - Canada.ca). The project schedule is subject to funding and contractor availability.

CAPITAL COST AND FUNDING

The project will be entirely funded by DND.

WHALEN, LORI 866

Digitally signed by WHALEN, LORI 866
Date: 2023.12.04 11:03:18 -03'30'

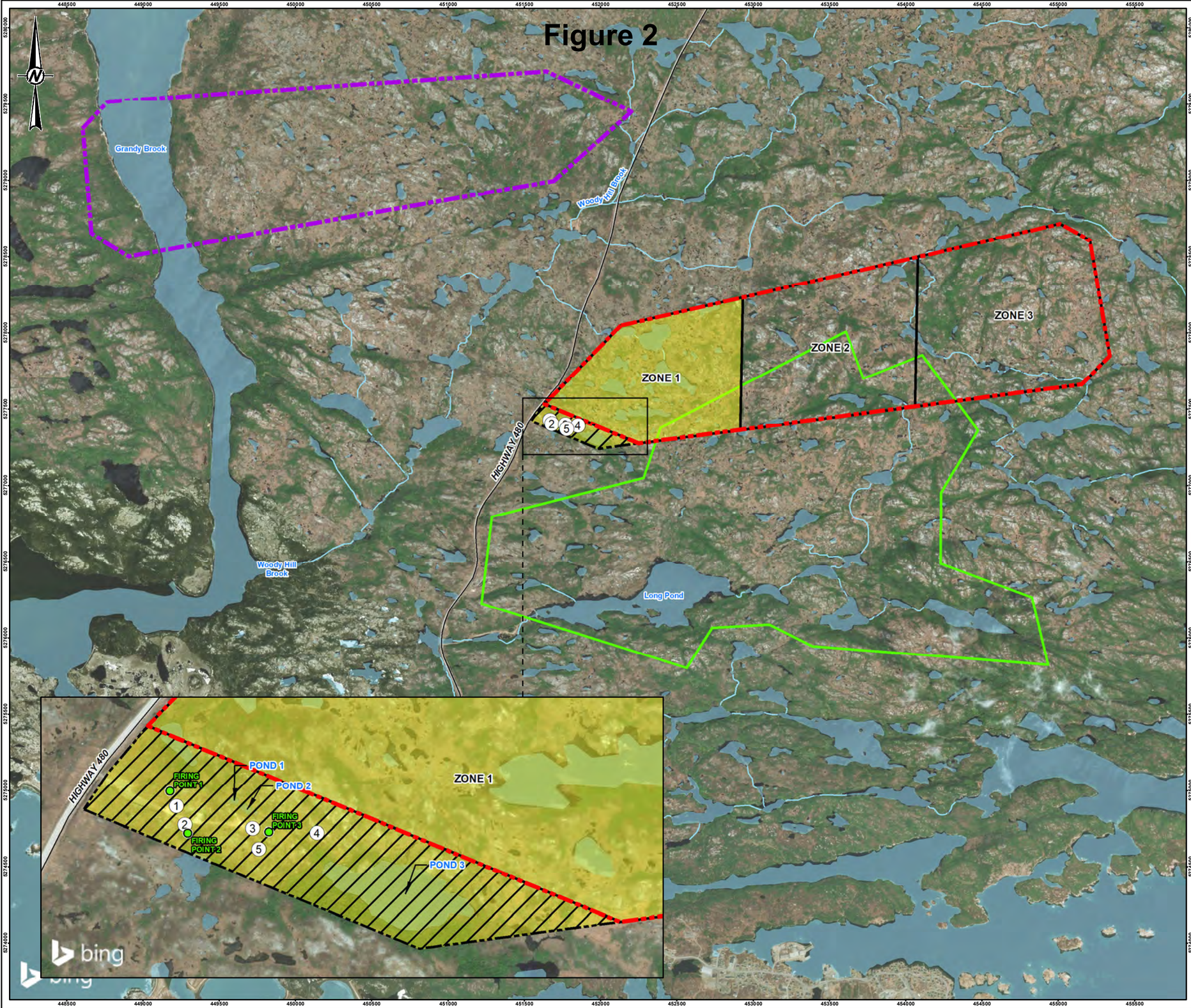
Date

Signature of Proponent

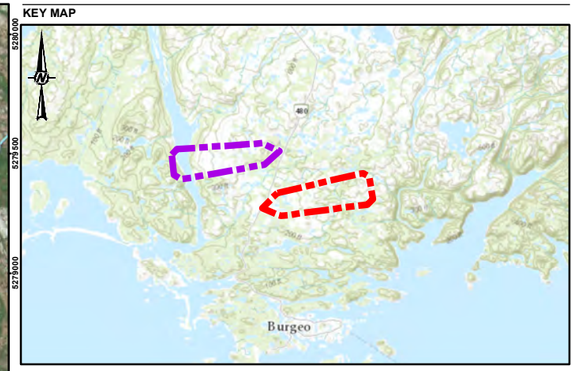
ANNEX A – FIGURES

Figure 1

Figure 2



KEY MAP



SCALE 1:200,000

LEGEND

1. APPROXIMATE RANGERS TARGET PRACTICE SHOOTING LOCATION
2. APPROXIMATE LOCATION OF LOCAL RESIDENTS' CLAY TARGET SHOOTING AREA
3. APPROXIMATE LOCATION OF BACKSTOP (BULLET CATCH)
4. APPROXIMATE FORMER LOCATION OF WOODEN TARGETS USED BY LOCAL RESIDENTS
5. APPROXIMATE LOCATION WHERE LOCAL RESIDENTS SETUP TO SHOOT ACROSS WATERBODY

- ROADWAY
- WATERCOURSE
- WATERBODY
- PROTECTED PUBLIC WATER SUPPLY
- ADDITIONAL PROPOSED LEASED LANDS/FIRING AREA
- ZONE BOUNDARY
- RISK ASSESSMENT AREA
- LOCATION 1
- LOCATION 2

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. BASE DATA - CANVEC PROVIDED BY HER MAJESTY THE QUEEN IN RIGHT OF CANADA, DEPARTMENT OF NATURAL RESOURCES
2. KEY MAP: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
© 2023 MICROSOFT CORPORATION © 2023 MAXAR ©CNES (2023) DISTRIBUTION AIRBUS DS
3. BING IMAGERY SUPPLIED BY ESRI AND MICROSOFT © 2020 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS.
4. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 21, VERTICAL DATUM: CGVD28

0 275 550 1,100

1:25,000 METRES

CLIENT
DEFENCE CONSTRUCTION CANADA (DCC)

PROJECT
BURGEO FIRING RANGE
9 WING GANDER, NL

TITLE
SITE PLAN

CONSULTANT

wsp

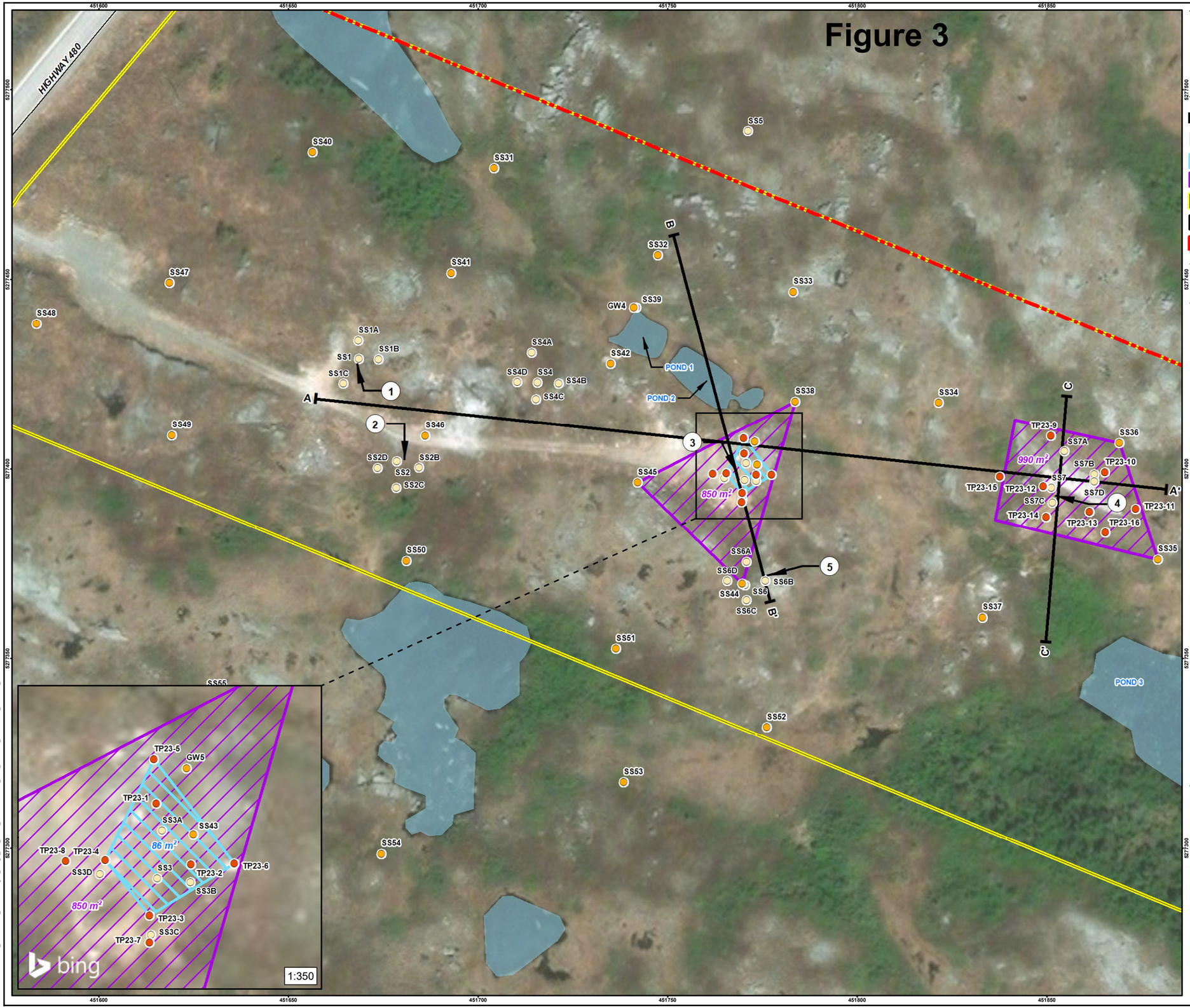
YYYY-MM-DD	2023-03-03
DESIGNED	----
PREPARED	JEM
REVIEWED	JD
APPROVED	SM

PROJECT NO.	CONTROL	REV.	FIGURE
22532464	0004	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

Path: S:\Clients\Defence_Construction_Canada\Burgeo_Range_Site_NL\99_PRO\22532464_DCC_Enviro\40_PROD\004_Remedial_Assessment\22532464-0004-HS-0001.mxd

Figure 3



LEGEND

- APPROXIMATE SOIL SAMPLE LOCATION (2023)
- APPROXIMATE SOIL SAMPLE LOCATION (2022)
- APPROXIMATE SOIL SAMPLE LOCATION (2020/21)
- ROADWAY
- CROSS-SECTION LOCATION
- WATERBODY
- DELINEATED AREA OF HAZARDOUS WASTE
- DELINEATED AREA OF NON-HAZARDOUS WASTE
- PROPOSED ADDITIONAL LEASE AREA
- ZONE BOUNDARY
- SITE

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. APPROXIMATE 2023 SOIL SAMPLE LOCATION NAMES ABBREVIATED (I.E., EXCLUDING "BF-" PREFIX)

REFERENCE(S)

1. BASE DATA - CANVEC PROVIDED BY HER MAJESTY THE QUEEN IN RIGHT OF CANADA, DEPARTMENT OF NATURAL RESOURCES
2. BING IMAGERY SUPPLIED BY ESRI AND MICROSOFT © 2020 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS.
3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 21, VERTICAL DATUM: CGVD28

0 15 30 60

1:1,000 METRES

CLIENT
DEFENCE CONSTRUCTION CANADA (DCC)

PROJECT
BURGEO FIRING RANGE
9 WING GANDER, NL

TITLE
LOCATION 1 - ZONE 1 - FIRING AREA - DELINEATION OF CONTAMINATED SOIL

CONSULTANT

wsp

YYYY-MM-DD	2023-07-26
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	JD
APPROVED	SM

PROJECT NO.	CONTROL	REV.	FIGURE
22532464	0004	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
0 25mm

Path: S:\Clients\Defence_Construction_Canada\Burgeo_Range_Site_NL\99_PROJ\22532464_DCC_Envir\40_PROD\0004_Remedial_Assessment\22532464-0004-HS-0002.mxd

Figure 4

LEGEND

- ROADWAY
- WATERCOURSE
- WATERBODY
- DISTURBED AREA
- PROPOSED ADDITIONAL LEASE AREA
- ZONE BOUNDARY
- ECOLOGICAL STUDY AREA
- SITE

0 100 200 400

1:5,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. BASE DATA - CANVEC PROVIDED BY HIS MAJESTY THE KING IN RIGHT OF CANADA, DEPARTMENT OF NATURAL RESOURCES
2. BING IMAGERY SUPPLIED BY ESRI AND MICROSOFT © 2020 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS.
3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 21, VERTICAL DATUM: CGVD28

CLIENT

DEFENCE CONSTRUCTION CANADA (DCC)

PROJECT

BURGEO FIRING RANGE
9 WING GANDER, NL

TITLE

HABITAT ASSESSMENT

CONSULTANT

wsp

YYYY-MM-DD	2023-02-24
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
22532464	0003	A	12

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

ANNEX B – PHOTOS

View of Pond 1 and Pond 2, facing northwest.

View of Pond 2, facing north-northeast.

View of pond 1 (right) and partial pond 2 (left), facing west.

View of pond 1 (background) and partial pond 2 (foreground), facing northwest.

View of partial pond 2, facing southwest.