Lynn Lake Gold Project: Fish Salvage Plan

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Document History

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Approvals

This document requires the following approvals:

Name	Company Title	Date	Signature

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Acronyms and Abbreviations

Alamos	Alamos Gold Inc.
CEAA, 2012	*Canadian Environmental Assessment Act, 2012*
CPUE	catch-per-unit-effort
DFO	Fisheries and Oceans Canada
EMMP	Environmental Management and Monitoring Program
EIS	Environmental Impact Statement
FSP	Fish Salvage Plan
g	grams
ha	hectare
km	kilometre
m	metre
mg/L	milligrams per litre
mm	millimetre
MECC	Manitoba Environment and Climate Change (formerly Manitoba Environment, Climate and Parks, and formerly Manitoba Conservation and Climate)
PPE	personal protective equipment
Project	Lynn Lake Gold Project
QA/QC	Quality Assurance/Quality Control
RGMP	Responsible Gold Mining Principle
°C	degrees Celsius
“	inch
%	percent

1.0 INTRODUCTION

Construction and operation of the Lynn Lake Gold Project (the Project) will require fish salvages in the open pits and existing water management infrastructure at the Gordon site and a natural, fish-bearing pond (East Pond) and tributary at the MacLellan site prior to their dewatering and in the existing diversion channel at the Gordon site to reduce the number of fish exposed to sound overpressures during blasting. The following presents the Fish Salvage Plan ('FSP' or 'the Plan'), which describes the methods that will be used in each of these waterbodies to reduce the "death of fish by means other than fishing", an activity prohibited by Section 34.4 of the *Fisheries Act*. The FSP is one component of the overall Environmental Management and Monitoring Program (EMMP) for the Project.

1.1 PURPOSE AND OBJECTIVES

The purpose of the FSP is to describe the measures to 1) isolate the habitats to prevent emigration of fish into the habitat prior to, during, and after the salvages; 2) safely remove and relocate as many fish as possible prior to dewatering or destruction of fish-bearing habitat; and 3) collect biological data from captured fish.

Alamos Gold Inc.'s (Alamos') overarching environmental objectives are to avoid adverse effects where technologically and economically feasible and to mitigate unavoidable adverse effects. Objectives are set to drive continuous improvement in environmental performance and are aligned with the overall strategic goals of the Project. Objectives are measurable (where and when possible), monitored, communicated, and updated as appropriate. In support of Alamos' underlying environmental objectives to work to limit or mitigate adverse environmental effects, meet, or surpass regulatory requirements, and strive to continually improve environmental practices and performance, Alamos has established the following performance objectives for the FSP:

1. Remove as many fish as possible from Wendy and East pits and the existing diversion channel at the Gordon site, transferring fish to Gordon Lake, Farley Lake, or Farley Creek, depending on fish species
2. Remove as many fish as possible from East Pond, the East Pond outlet KEE3-B2-A1, and the Keewatin River tributary KEE3-B1, transferring fish to suitable habitat nearby, depending on fish species
3. Collect biological data (i.e., length, weight) from captured fish and estimate the approximate number of fish in each waterbody salvaged.

1.2 RELATIONSHIP TO OTHER MANAGEMENT PLANS

The FSP is a stand-alone management plan that will be implemented during the construction phase at the Gordon site (i.e., prior to dewatering of Wendy and East pits and the existing diversion channel between Gordon and Farley lakes) and during the construction and operation phases at the MacLellan site (i.e., prior to development of the open pit). The FSP does not include any follow-up monitoring components or adaptive management actions. Instead, the FSP will be implemented where and when there is a need to remove fish from a fish-bearing watercourse or waterbody where construction or operation of the Project may pose a mortality risk to fish.

1.3 REGULATORY CONTEXT

The Project Environmental Impact Statement (EIS) was submitted to the former Canadian Environmental Assessment Agency (now the Impact Assessment Agency of Canada) pursuant to the *Canadian Environmental Assessment Act* (CEAA), *2012*, and to Manitoba Environment and Climate Change (MECC; formerly Manitoba Environment, Climate and Parks and formerly Manitoba Conservation and Climate) as an Environment Act Proposal pursuant to *The Environment Act* of Manitoba. The relevant federal and provincial regulatory requirements related to the FSP are outlined below.

1.3.1 Federal Regulatory Requirements

Section 34.4 of the *Fisheries Act* prohibits the "death of fish by means other than fishing." This FSP includes measures to reduce fish mortalities during dewatering of existing open pits, diversion channels, and natural waterbodies and watercourses during construction and operation of the Project. While no fish salvage can eliminate the death of all fish in a natural or man-made waterbody or watercourse, successful implementation of this FSP will constitute Alamos' due diligence to limit the "death of fish by means other than fishing" to the extent possible.

1.3.2 Provincial Regulatory Requirements

A Scientific Collection Permit, issued by MECC under the auspices of the Fishing License Regulation and Fishing License Fee Regulation of *The Fisheries Act* (Manitoba), will be required to conduct the fish salvages described in this FSP.

1.3.3 Corporate Policies

As a member of the World Gold Council, Alamos Gold Inc. (Alamos) is a proud supporter of the Responsible Gold Mining Principles (the RGMPs). The ten RGMPs provide a framework that sets expectations for consumers, investors, and the downstream gold supply chain as to what constitutes responsible gold mining, addressing key environmental, social and governance issues for the gold mining sector. They are designed to provide confidence to governments, investors, employees and contractors, communities, supply chain partners and civil society that gold has been produced responsibly. Following the release of the RGMPs in September 2019, Alamos has implemented and aligned to the framework, and obtained

external assurance to provide further confidence that the gold produced by Alamos is responsibly mined. In 2023, Alamos communicated its progress on implementing the RGMPs through Alamos' 2022 RGMP Progress Report which received independent audit/assurance from EEM EHS Management Inc. (Alamos 2023). The 2022 RGMP Progress Report reflects Alamos' third year reporting under the RGMP. Alamos will continue to implement the RGMPs through 2024 and beyond. The RGMPs are only applicable to operating mines. The Lynn Lake Gold Project will be incorporated as it transitions through construction into operation.

Working with its members, the World Gold Council has set out RGMPs to address key environmental, social and governance issues for the gold mining sector. One of the key principles is Water, Energy and Climate Change.

Alamos has a series of guiding sustainability standards, including:

- Environmental Monitoring
- Hazard Identification & Risk Management
- Incident Classification, Investigation & Reporting

These standards are described in Table 1-1.

Alamos' standards are regularly updated to reflect the latest developments. For the most current and up-to-date standards, please refer to the online version.

Table 1-1 Corporate Sustainability Standards

Corporate Standards	Requirement
Environmental Monitoring (CSS-ENV-10.1)	Sites shall develop and implement an environmental monitoring program. The site's environmental monitoring program will be documented as to list of points monitored, coordinates of points monitored, description of points (including the reason for monitoring (e.g., regulatory compliance, baseline, trend analysis, etc.), frequency of monitoring, anticipated duration of monitoring (e.g., the life of the mine), and parameters monitored. The monitoring program will be of sufficient scope to allow for the timely identification of potential environmental impacts prior to their migration offsite. Sites will regularly review their monitoring programs and update for and changes at the mine site as required. At a minimum, the program will meet all environmental regulatory requirements.
Environmental Monitoring (CSS-ENV-10.2)	Compliance monitoring data will be subject to Quality Assurance/Quality Control (QA/QC) verification. Sample results that do not meet QA/QC guidelines will be disregarded and sample collection repeated. Sites must use reliable and accredited labs.
Environmental Monitoring (CSS-ENV-10.3)	Monitoring data will be stored in an electronic database.
Environmental Monitoring (CSS-ENV-10.4)	When compliance monitoring results indicate exceedances of permit or regulatory requirements, or significant deviation from previous results, the results will be reconfirmed with the person or company that did the analysis, and a confirmatory monitoring or sample will be taken immediately if the result is reconfirmed. Sites will also follow any permit-specific or jurisdictional requirements.

Table 1-1 Corporate Sustainability Standards

Corporate Standards	Requirement
Environmental Monitoring (CSS-ENV-10.5)	Monitoring data will be reviewed at least quarterly by the responsible manager to identify trends that may indicate potential for future exceedances of permit conditions or applicable standards, and potential risk. The site General Manager will be formally notified of any exceedances and emerging compliance issues. Refer to CSS-GOV-08 Incident Reporting Standard for any moderate, major, or catastrophic incidents.
Environmental Monitoring (CSS-ENV-10.6)	Sites will assess the need for a monitoring program involving external stakeholders.
Hazard Identification & Risk Management (CSS-GOV-2.1)	All Alamos locations shall maintain systems to identify, prevent and/or manage sustainability risks that face its operations and those that its activities may pose to others. This includes but is not limited to hazards and risks related to the: • Health and Safety of our workforce and communities, • Environmental impacts of our activities (local and downstream), • Societal and community impacts, and • Security and protection of people and property.
Hazard Identification & Risk Management (CSS-GOV-2.2)	Site Managers are responsible for ensuring that appropriate resources, both internal and external, are available to identify, quantify, manage, and report sustainability hazards and risks. Assessments shall consider all site activities including: • Contractor works, • Regulatory requirements • Permit or licence requirements, • Alamos Sustainability Standards requirements, and • Other site-specific requirements.
Hazard Identification & Risk Management (CSS-GOV-2.3)	Sites shall maintain a risk registry of all site risks. The risk registry will be updated at least quarterly or when major changes/incidents occur. Clear responsibility and authority for implementing, managing, reporting, and coordinating updates to the risk registry shall be designated to a specific employee(s).
Hazard Identification & Risk Management (CSS-GOV-2.4)	All corporate, site and task-level risks shall be assessed against the Alamos Risk Matrix, including likelihood and consequence assessments.
Hazard Identification & Risk Management (CSS-GOV-2.5)	Sites shall apply the hierarchy of controls considering (in order of priority): 1. Elimination – remove the hazard 2. Substitution – replace the hazard 3. Engineering control – physically control or isolate the hazard (e.g., dikes, guarding, interlocks) 4. Administrative control – control response/avoidance of hazard (e.g., training, procedures, reducing employee exposure to hazards, signage) 5. PPE (personal protective equipment) or mitigation – protect people (PPE) or the environment (spill kits) from the hazard. This is the last line of defense. Extreme and high risks that exist after controls have been applied should go through a formal review with the Site Manager.

Table 1-1 Corporate Sustainability Standards

Corporate Standards	Requirement
Hazard Identification & Risk Management (CSS-GOV-2.6)	Sites shall ensure effective communication of risks and controls to the workforce based on the nature of the activity and related risk. The nature of communication may change based on the risk frequency and consequence. For example, communication may include induction training, refresher training, policies, procedures and/or signage.
Hazard Identification & Risk Management (CSS-GOV-2.7)	For each identified risk, management shall assess and manage the risk appropriately with consideration to the risk rating. In considering risk mitigation, management must evaluate the cost of controls versus the benefit derived and ensure that the resultant control framework is effective.
Hazard Identification & Risk Management (CSS-GOV-2.9)	The Alamos Executive and Internal Audit Director shall review and verify enterprise risks on a quarterly basis.
Incident Classification, Investigation & Reporting (CSS-GOV-8.3)	The Corporate Sustainability Team shall maintain an Incident Alert email group user list comprised of, at a minimum: • Alamos Executive and Management, • Country Managers, • General Managers; and • Project Managers.
Incident Classification, Investigation & Reporting (CSS-GOV-8.6)	The Corporate Sustainability Team shall provide a report on significant incidents on a quarterly basis to senior management and the Technical & Sustainability Committee of the Board.
Incident Classification, Investigation & Reporting (CSS-GOV-8.7)	Corporate Sustainability and Risk Management teams shall annually review and revise the Alamos Risk Assessment Consequence Table to ensure thresholds are consistent with the Alamos Enterprise Risk Management system.

1.3.4 Approval-Related Requirements

The conditions relating to fish salvage laid out in the federal Decision Statement issued under CEAA, 2012, provincial Environment Act Licence No. 3390 (Gordon), and provincial Environment Act Licence No. 3391 (MacLellan) are outlined in Table 1-2.

Table 1-2 Approval-Related Requirements

Licence	Condition	Corresponding FSP Section
CEAA, 2012	3.8 The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, measures to protect fish and fish habitat when undertaking activities in or near fish-bearing water bodies, in a manner that complies with any authorization issued under the Fisheries Act for the Designated Project. The Proponent shall implement these measures during all phases of the Designated Project. In doing so, the Proponent shall: 3.8.1 Salvage and relocate fish prior to conducting any Designated Project activity requiring the removal of fish habitat, including dewatering.	3.0
CEAA, 2012	3.9 The Proponent shall identify in consultation with Indigenous groups, prior to conducting the salvage and relocation of fish referred to in condition 3.8.1, opportunities for Indigenous groups to take part in, and determine their interest to take part in, the salvage and relocation of fish.	3.0
Environment Act Licence No. 3390 (Gordon)	19. The licensee shall, prior to operation of the development: a) prepare and submit to the director for approval, the following comprehensive environmental management plans: iii) Fish Salvage Plan; and b) implement the environmental management plans in accordance with the Director of the Environmental Approvals Branch's approval.	All
Environment Act Licence No. 3391 (MacLellan)	19. The licensee shall, prior to operation of the development: a) prepare and submit to the director for approval, the following comprehensive environmental management plans: iii) Fish Salvage Plan; and b) implement the environmental management plans in accordance with the Director of the Environmental Approvals Branch's approval.	All

2.0 ENVIRONMENTAL SETTING

The Project consists of two primary deposit sites located near Lynn Lake, Manitoba (Appendix A, Map A-1). Fish salvages will be conducted in Wendy Pit, East Pit, existing water management infrastructure, and the existing diversion channel at the Gordon site (Appendix A, Map A-2) and in East Pond, the East Pond outlet (KEE3-B2-A1), the headwater tributary KEE3-B2, and the Keewatin River tributary KEE3-B1. No federally or provincially listed fish species at risk are present at either site. A description of each waterbody is provided below.

2.1 GORDON SITE

2.1.1 Wendy and East Pits

Wendy and East pits are physically isolated from each other and from Gordon Lake and Farley Lake by an existing mine access road. Wendy Pit is 5.3 hectares (ha) in area with a maximum depth of 68 metres (m). East Pit is 5.6 ha in area with a maximum depth of 85 m. Both pits are conical in shape and have benches that are approximately 15 m wide and 10 m high.

Results of fish community surveys in 2015 and 2016 determined that brook stickleback (*Culaea inconstans*) and white sucker (*Catostomus commersoni*) are present in both pits (Stantec 2017). A fish salvage conducted in East Pit in 2021 prior to a pit lake aeration trial determined that northern pike (*Esox lucius*) are also present in East Pit. Most fish are expected to occur in the upper 10 m of the water column due to low dissolved oxygen concentrations (i.e., <3 milligrams per litre [mg/L]) below 10 m in both pits.

2.1.2 Existing Diversion Channel

The existing diversion channel between Gordon Lake and Farley Lake is situated north of Wendy and East pits, is approximately 1.1 kilometres (km) long, and is generally V-shaped with rip-rap banks (Appendix A, Map A-2). The channel has a gradient of <1% and there are at least four beaver dams in the channel that have increased the average wetted width of the upstream channel to approximately 8 m.

A baseline fish community survey was completed in the diversion channel between Gordon and Farley lakes in 2016 (Stantec 2017). Only brook sticklebacks were captured in the diversion channel. However, northern pike, white sucker, and yellow perch (*Perca flavescens*) are known to inhabit Farley Lake and may migrate upstream into the diversion channel during the open-water season.

2.1.3 Existing Water Management Infrastructure

A collection pond and ditch connecting the pond to Gordon Lake is located immediately north of the reclaimed waste rock dump, south of Wendy Pit. This existing water management infrastructure conveys accumulated seepage and surface run-off from the waste rock dump to Gordon Lake. As there is no physical barrier between the ditch and Gordon Lake, it is likely that the pond and ditch have been colonized by brook sticklebacks from Gordon Lake.

2.2 MACLELLAN SITE

2.2.1 East Pond

East Pond is 3.7 ha in area and located immediately east of the proposed open pit at the MacLellan site (Appendix A, Map A-3). It has an average depth of approximately 1.1 m and a maximum depth of approximately 1.6 m (Stantec 2017). Bottom substrates in East Pond are composed of silt and organics.

A baseline fish community survey was completed in East Pond in 2016 (Stantec 2017). Brook stickleback was the only fish species captured. East Pond is anoxic (i.e., dissolved oxygen concentrations <0.5 mg/L) in winter, which explains the absence of other fish species in the pond.

2.2.2 East Pond Outlet (KEE3-B2-A1)

East Pond is drained by an approximately 650-m long stream, tributary KEE3-B2-A1 (Appendix A, Map A-3), that varies in width from <1 m to 6 m due to a proliferation of beaver dams along its length. The outlet of East Pond is located at its northern end and the main channel is approximately 1 m wide and <0.5 m deep, with a gradient of approximately 0.1%. Beaver dams near the outlet have created numerous side channels and have increased water depths, creating a small wetland area.

A baseline fish community survey was completed in tributary KEE3-B2-A1 in 2015 and 2016 (Stantec 2017). Brook stickleback was the only fish species captured. KEE3-B2-A1 is unlikely to provide overwintering habitat for any fish species other than brook stickleback, due to low dissolved oxygen concentrations in winter.

2.2.3 Tributary KEE3-B2

Tributary KEE3-B2 is the headwater tributary of KEE3-B1. It drains from north to south through small (<0.3 m wide), shallow (<0.2 m deep) braided channels upstream of small beaver dams and through single channels downstream of beaver dams. Flow frequently goes sub-surface under peat hummocks. Pool depths are too shallow (<0.5 m deep) to provide overwintering habitat for any fish. Brook sticklebacks are the only fish species captured in the summer of 2020 during surveys to delineate the spatial extent of fish-bearing wetlands at the MacLellan site (Stantec 2020).

2.2.4 Tributary KEE3-B1

Water in KEE3-B2-A1 flows east, draining into the Keewatin River tributary KEE3-B1 (Appendix A, Map A-3). This tributary is approximately 1.8 km long with channel widths ranging between 1 m and 45 m depending on the location of beaver dams. The channel gradient is <0.5% and the mean depth is <1 m.

A baseline fish community survey was completed in tributary KEE3-B1 in 2015 and 2016 (Stantec 2017). Brook sticklebacks were the only fish species captured. However, northern pike may also use tributary KEE3-B1 during the open-water season, particularly the lower 1 km that has abundant instream vegetation. Tributary KEE3-B1 would be accessible to fish from the Keewatin River during high flows when water levels would allow the greatest opportunities for fish to pass around or through beaver dams.

3.0 FISH SALVAGE METHODS

The fish salvage methods described below are adapted from McEachern et al. (2003) and Tyson et al. (2011). Fish salvage activities will be conducted under the supervision of a Qualified Biologist and under the auspices of a Scientific Collection Permit obtained from MECC. The interest of Indigenous Nations to take part in the salvage and relocation of fish at the Gordon and MacLellan sites will be identified prior to construction.

3.1 GENERAL METHODS

3.1.1 Salvage Design and Fishing Methods

Fish salvages in Wendy and East pits at the Gordon site, and in East Pond at the MacLellan site will be undertaken in three phases:

1. A pilot phase to determine which capture method is most effective for habitat conditions and fish species known to occur in the waterbodies
2. A population estimate phase based on the most effective capture method based on the pilot phase
3. A fish removal phase based on measurable declines in catch-per-unit-effort (CPUE) over time

For the pilot phase, all possible gears will be deployed over a predetermined period to identify the most effective gear type(s). Fish capture methods employed during this pilot phase may include active methods such as boat electrofishing, backpack electrofishing, and beach seining, and passive methods such as small-mesh trap nets, gillnets, and minnow traps.

For each capture method, deployment and retrieval times or fishing effort (e.g., seconds of electrofishing, m^2 of habitat fished), as well as location and habitat conditions (e.g., depth, substrate type, presence/absence of aquatic vegetation), will be recorded. Photos will be taken of the habitat and the sampling method in use.

For the population estimate phase, only the most effective fish capture technique(s) will be used. Fish population sizes in each pit will be based on the rate of diminishing CPUE for these one or two techniques. Such an estimate assumes that: 1) fishing effort is significant enough to reduce the population and the reduction in CPUE is proportional to the reduction in the population present; 2) catchability of fish remains constant over time; 3) units of effort (i.e., different fishing gears) do not compete with each other for fish; 4) the entire population of fish is available for capture; and 5) there is no recruitment, natural mortality, or immigration or emigration during the fishing period. An accurate estimate also requires that gear type(s) and effort be held as constant as possible for each fishing period. CPUE will be calculated for each fishing effort used on each day as:

- Number of fish/100 seconds of electrofishing
- Number of fish per trap hour

- Number of fish per 100 m^2 per gillnet soak hour
- Number of fish per minnow trap hour (calculated as soak time times number of traps)
- Number of fish per m^2 of shoreline seined

For the fish removal phase, fish salvages will be deemed complete when one or more of the following conditions are met:

1. A declining CPUE has been demonstrated during multi-pass electrofishing or beach seining (minimum of three passes) resulting in a removal of a minimum of 75% of the estimated population
2. A declining CPUE has been demonstrated and no fish are captured for 48 hours of continuous trap netting and/or minnow trapping
3. A declining CPUE has been demonstrated and no fish are captured for 48 hours of continuous gillnetting

3.1.2 Fish Handling and Data Collection

During all three phases of the fish salvage, brook sticklebacks will be weighed in batches prior to release, with a subsample of each batch measured for length (millimeter; mm) and weight (grams; g) to provide an estimate of the total number and biomass of fish removed from each open pit and East Pond. The first 50 individuals of each large-bodied fish species (e.g., white sucker, northern pike) captured each day will be weighed and measured for fork or total length. Any additional large-bodied fish captured each day will be enumerated only to limit stress during handling. Any external parasites, injuries, or abnormalities will be noted.

All live fish will be held in aerated fish tubs or buckets prior to and during transfer to the nearest suitable release location(s). Any mortalities will be disposed of in accordance with the Scientific Collection Permit and reported to MECC.

3.2 GORDON SITE

3.2.1 Wendy and East Pits

3.2.1.1 Isolation Methods

Wendy and East pits are physically isolated from each other and from Gordon Lake and Farley Lake by an existing mine access road that runs around the perimeter of both pits (Appendix A, Map A-2). No further isolation methods are necessary for either pit prior to conducting the fish salvages.

3.2.1.2 Fish Salvage Methods

For the pilot phase, all possible gears will be deployed over a course of one to two days to determine the most effective gear type(s). Fish capture methods deployed during this pilot phase may include active methods such as boat electrofishing, backpack electrofishing, and beach seining along the pit shorelines and passive methods such as small-mesh trap nets, gillnets, and minnow traps away from the pit shorelines. Small-mesh trap nets and minnow traps were used effectively in Wendy and East pits during baseline surveys in 2016; catch rates were 32 fish per day for the trap net, between 2.3 fish per trap per day and 5.3 fish per trap per day for the minnow traps, and between 51 fish and 74 fish per day in the gillnets. Both gears were successful for capturing brook stickleback and juvenile white sucker in 2016. Boat electrofishing, gillnetting, and angling were effective in catching large-bodied fish in East Pit during the fish salvage conducted in 2021 prior to the pit water aeration and mixing trial; catch rates were 0.9 fish per hour for boat electrofishing, 2.4 fish per day for gillnetting, and 1 fish per rod hour of angling.

If used as part of the FSP, gillnets will be 90 m long by 1.83 m high and consist of six panels with mesh sizes of 1 ½”, 2”, 3”, 3 ¾”, 4 ¼”, and 5”. However, other gill net sizes with one or two selective mesh sizes may be used depending on those that achieve the highest initial catch rates. Floating and suspended gillnet gangs will be deployed perpendicular from the shoreline and in the middle of the pits. Gillnets will be set for no longer than four hours to limit mortalities; no overnight gillnetting will be conducted. Efforts will be made to move gillnet locations daily so that the entire pit areas are fished.

A boat electrofisher and/or a backpack electrofisher will be used within the littoral zones of Wendy and East pits. The location, total time sampled, and length and area of sampling with the electrofisher will be recorded during each pass. Trap nets and baited minnow traps will be checked daily. Trap nets and baited minnow traps will be moved to new locations when a noticeable reduction in catch at that location is observed (e.g., <25% of first catch).

3.2.2 Existing Diversion Channel

Capture and relocation of fish in the existing diversion channel is required prior to the commencement of blasting in the new open pit. This is because the diversion channel is within 20 m of the first bench of the open pit and, therefore, sound overpressures generated by the explosions in the blast holes will be high enough (>50 kPa) to pose a mortality risk to fish in the channel. This risk will be alleviated by Year 2 of mining when the explosions in the blast holes are deep enough and far enough away from the diversion channel to reduce overpressures below Fisheries and Oceans Canada’s (DFO) 50 kPa overpressure threshold (Cott and Hanna 2005). Fish will be allowed to recolonize the diversion channel once this mortality risk has passed; no fish habitat will be destroyed or dewatered in the diversion channel during construction, operation, or closure of the Gordon site.

3.2.2.1 Isolation Methods

The diversion channel will be isolated from Gordon Lake and Farley Lake by installing fine-mesh block nets across the inlet and outlet of the channel. The block nets will deep enough to extend from the channel bottom to the surface and will have lead lines and float lines to keep the nets vertically extended in the water column. The block nets will be reinforced with steel t-posts along their length and encased in rip rap to protect the nets from debris and ice. This system will prevent fish from immigrating into the channel while allowing water to continue to drain from Gordon Lake to Farley Lake.

3.2.2.2 Fish Salvage Methods

Once the channel is isolated, block nets will be installed 50 m to 100 m apart across the diversion channel to isolate the channel into smaller sections prior to the fish salvage. A combination of backpack electrofishing, trap netting, beach seining, and minnow trapping will be used for salvage. Most of the diversion channel is too deep to safely wade. Therefore, it is expected that the primary fish salvage methods will be trap nets and minnow traps set from a boat.

3.2.3 Existing Water Management Infrastructure

3.2.3.1 Isolation Methods

The seepage collection pond and ditch will be isolated from Gordon Lake by installing an AquaDam®, sheet piling with a v-notch or by installing a block net encased in rip-rap like those proposed in the diversion channel. The pond at the downstream end of the ditch will be re-purposed during mine operations as the collection pond for groundwater pumped from the interceptor wells installed between the open pit and Gordon Lake. Therefore, whichever structure is installed, it will need to allow water to drain to Gordon Lake.

3.2.3.2 Fish Salvage Methods

Once the ditch is isolated from Gordon Lake, a combination of backpack electrofishing, trap netting, beach seining, and minnow trapping will be used to salvage fish. Due to different water depths, backpack electrofishing and beach seining are expected to be the primary methods used in the ditch while trap nets and minnow traps are expected to be the primary methods used in the collection pond.

3.2.4 Release Locations

Brook sticklebacks captured in Wendy and East pits, the diversion channel, and in the existing water management infrastructure will be released to Gordon Lake or Farley Lake, whichever is closest (Appendix A, Map A-2). Large-bodied fish captured in Wendy and East pits and the diversion channel will be released to Farley Lake; dissolved oxygen concentrations in Gordon Lake are too low (i.e., <1 mg/L) in winter to support any fish species besides brook stickleback.

3.3 MACLELLAN SITE

3.3.1 East Pond

3.3.1.1 Isolation Methods

East Pond will be isolated from its outlet channel (KEE3-B2-A1) prior to conducting the fish salvage (Appendix A, Map A-3). This will prevent fish from immigrating into East Pond during and after the fish salvage. Although detailed designs are not complete, it is anticipated that East Pond will be isolated by installing a sheet-pile v-notch weir at its outlet. This weir will create a vertical drop that will prevent fish from moving upstream into the pond while allowing water to continue to flow out of East Pond into KEE3-B2-A1. Alternatively, the block net/rip-rap barrier described above will be used if there is insufficient gradient between East Pond and KEE3-B2-A1 to create a vertical drop.

Earth berms will be constructed on both sides of the barrier and will extend to the heights of land on both sides of the outlet. This berm will isolate East Pond from the numerous side channels in the marshy area near the outlet. Earth for this berm will be composed of overburden salvaged from the preparation of the open pit area or the camp and processing facility. Fill material will be tested and confirmed free of contaminants and potential acid rock drainage. The berm will be constructed by placing the material on both sides of the weir across the outlet channel from top of bank to top of bank with an excavator. Material will be compacted with the excavator bucket or treads. Erosion and sediment control measures appropriate to local site conditions will be installed downstream of the proposed berm prior to construction.

3.3.1.2 Fish Salvage Methods

For the pilot phase, all possible gears will be deployed over a course of three to five days. This may include active methods such as boat electrofishing, boat-assisted seining, and beach seining and backpack electrofishing where wading conditions allow. It may also include passive methods such as small-mesh (¼") trap nets and baited minnow traps. Baited minnow traps used in the summer of 2016 had a capture rate of 47.6 fish per trap per day (Stantec 2017). Gillnets will not be used because East Pond is too shallow for gillnets to be set and because they are not an effective method for capturing brook stickleback; a single gillnet gang set in East Pond in the summer of 2016 captured no fish.

If possible, small-mesh trap nets with wings will be set with the lead extending from the trap to the shore. Minnow traps (e.g., Gee-style) will be baited with dry cat food and set along the shoreline in clusters of 10. Trap nets and minnow traps will be checked daily to retrieve, and process captured fish. Trap nets and minnow traps will be moved when a noticeable reduction in catch at that location is observed (e.g., <25% of first catch).

For the population estimate phase, barrier nets will be spanned across the width of the pond to isolate different areas of the pond, facilitating more efficient fish capture and depletions. If boat or backpack electrofishing is found to be an effective technique, multiple passes will be conducted within the isolated areas over multiple days until there is a noticeable depletion in number of fish captured in successive days. Given the size of East Pond, it is anticipated that multiple passes will be required each day over the course

of several days through each isolated area. Similarly, trap-netting, minnow trapping, and beach seining would be conducted only within the isolated portions of East Pond until CPUE for that technique decreased sufficiently to estimate the number of fish in the area. The location and fishing effort of each pass will be recorded. All fish will be identified and counted per effort.

For the fish removal phase, all effective gear types will be used until a significant reduction in CPUE has been observed such that the curve representing the relationship between CPUE and cumulative effort approaches an asymptote.

3.3.2 East Pond Outlet (KEE3-B2-A1)

3.3.2.1 Isolation Methods

East Pond outlet (KEE3-B2-A1) will be isolated at the upstream end by the sheet-pile v-notch weir or block net/rip-rap barrier and earth berms installed at the outlet of East Pond (Appendix A, Map A-3). A second sheet-pile v-notch weir or block net/rip-rap barrier and earth berms will be installed across the channel at its downstream confluence with KEE3-B1 to prevent fish from moving upstream into KEE3-B2-A1 while allowing water to continue to flow out of East Pond.

3.3.2.2 Fish Salvage Methods

Once the channel is isolated, a combination of backpack electrofishing, beach seining, and minnow trapping will be used to capture fish. The fish salvage will be deemed complete when the relationship between CPUE and cumulative effort for the most effective gear type approaches an asymptote.

3.3.3 Tributary KEE3-B2

3.3.3.1 Isolation Methods

Tributary KEE3-B2 will be isolated from tributary KEE3-B2-A1 and KEE3-B1 using one of the same techniques described above. Whichever method is selected, the barrier will be installed where the channel is confined to a single channel as close to its confluence with KEE3-B2-A1 and KEE3-B1 as possible.

3.3.3.2 Fish Salvage Methods

Once the channel is isolated, a combination of backpack electrofishing, beach seining, and minnow trapping will be used to capture fish. The fish salvage will be deemed complete when the relationship between CPUE and cumulative effort for the most effective gear type approaches an asymptote.

3.3.4 Tributary KEE3-B1

3.3.4.1 Isolation Methods

Tributary KEE3-B1 will be isolated from the Keewatin River by a sheet-pile v-notch weir and earth berms where the stream is narrowest approximately 300 m upstream from its confluence with the Keewatin River (Appendix A, Map A-3).

3.3.4.2 Fish Salvage Methods

Once the channel is isolated, a combination of backpack electrofishing, beach seining, and minnow trapping will be used to capture fish. The fish salvage will be deemed complete when the relationship between CPUE and cumulative effort for the most effective gear type approaches an asymptote.

3.3.5 Release Locations

Brook sticklebacks captured in East Pond, East Pond outlet (KEE3-B2-A1), tributary KEE3-B2 and tributary KEE3-B1 will be released into Dot Lake while any large-bodied fish species will be released into the Keewatin River or Cockeram Lake (Appendix A, Map A-3).

4.0 FISH SALVAGE SCHEDULE

Fish salvages at the Gordon site will take place during the open water season during the first year of mine construction. All fish salvages will be concluded in the same open water season as they started. Therefore, salvages will begin no later than August so that there is sufficient time to complete the salvages before water temperatures fall below 5°C (no electrofishing will occur below this threshold to avoid fishing-induced mortalities as required by MECC's Scientific Collection permits) and the risk of ice formation increases.

Fish salvages at the MacLellan site will also take place during the open water season. However, because water levels in East Pond, the East Pond outlet, tributary KEE3-B2 and tributary KEE3-B1 are expected to decrease slowly (i.e., over months or years) in response to changes in the groundwater table caused by the open pit, it is expected that fish salvages in these waterbodies will be staggered to occur when water levels begin to decrease in East Pond, the East Pond outlet, and finally, in KEE3-B1. These decreasing water levels will be determined from pressure transducers installed in East Pond, East Pond outlet, and KEE3-B1 prior to mine construction. Currently, Alamos does not expect fish salvages to be necessary in any of these waterbodies until mining in the open pit at the MacLellan site has started.

5.0 DATA ANALYSIS

Total fish captured and average CPUE for each capture method during the pilot phase will be calculated to quantitatively assess which capture method is most effective and consistent for the basis of the population estimate phase. If electrofishing is found to be the most effective and consistent method, the population estimate will be based on a multi-pass removal of fish from within each isolated area with a target of 50% depletion per pass. The population estimate will then be calculated based on the Zippin method (Zippin 1956).

If trap nets or minnow traps are found to be the most effective and consistent method, the population estimate will be calculated using the Leslie or DeLury depletion methods (Everhart and Youngs 1981; Van Den Avyle 1993) by plotting CPUE against the cumulative number of fish captured (i.e., Leslie method) or cumulative effort (DeLury method) and fitting a linear regression line to the data; catchability will be the slope of the regression line and the population estimate will be where the regression line crosses the x-axis (i.e., Leslie method) or the natural log of the x-intercept divided by catchability (i.e. DeLury method). Regardless of method, the population estimate phase will be deemed complete when there is a statistically significant (i.e., $p < 0.1$) decline in the population for at least one of the methods (i.e., Zippin, Leslie, or DeLury).

Average length, weight, and condition of brook stickleback and white sucker captured in the pits, the diversion channel, East Pond, the East Pond outlet, and tributary KEE3-B1 will be calculated. Length-weight relationships and length-frequency distributions will be calculated for each species.

The fish salvage will be deemed complete when the relationship between CPUE and cumulative effort for the most effective gear type approaches an asymptote.

6.0 REPORTING

Alamos will prepare FSP monitoring reports summarizing fish salvage methods and results conducted during the previous open-water season when a fish salvage was conducted. These reports will be shared with interested Indigenous Nations, stakeholders, and relevant regulatory bodies. The reports will detail how monitoring complies with the approval-related requirements outlined in Section 1.3.4 and will include the population estimates of all fish species; observations of previously unidentified species at risk, species of conservation concern, and species of importance to Indigenous Nations; summaries of all field data collected (tables, graphs, and maps); and relevant photographs. To comply with approval-related requirements, reports will include a plain language executive summary in both official languages and will be submitted no later than March 31 following the reporting year to which the report applies.

7.0 REFERENCES

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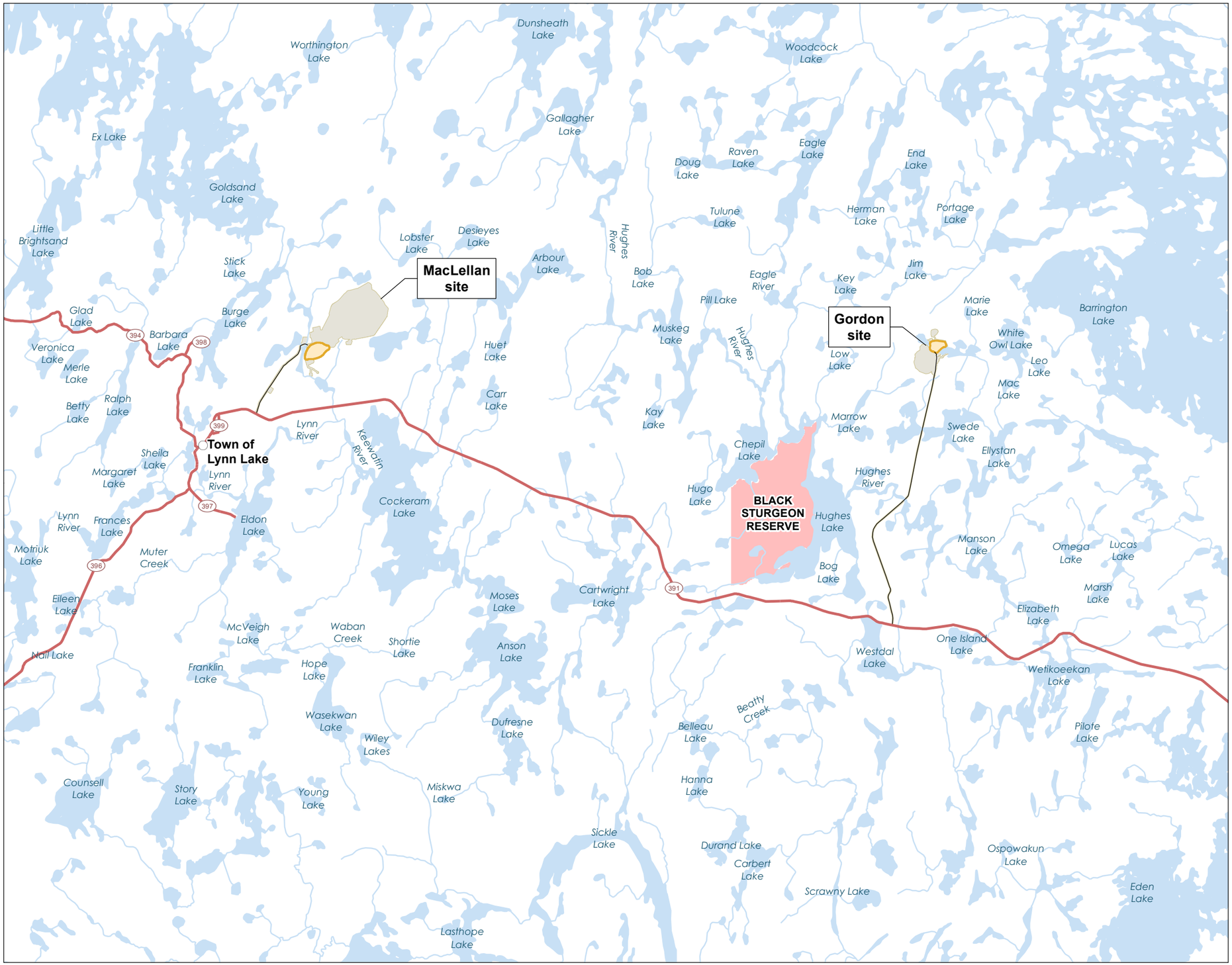
Appendix A Maps



Stantec

Project Infrastructure
- Proposed Open Pit
- Project Development Area

Landbase
- Existing Access Road
- Highway
- Watercourse
- Waterbody
- First Nation Reserve

N

0 2.5 5 Kilometres
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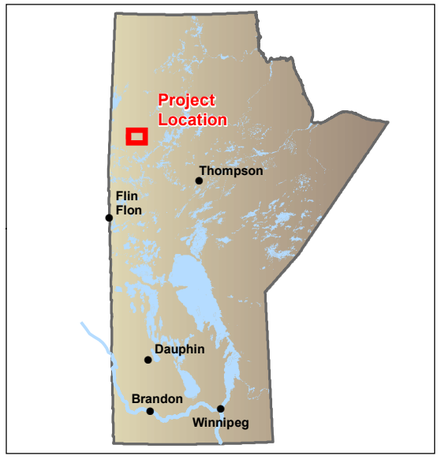
1:200,000

Notes
1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada



Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2023-11-08
Technical Review by AAmbrose on 2023-11-08

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473054

Map No.
A-1

Title
General Project Area

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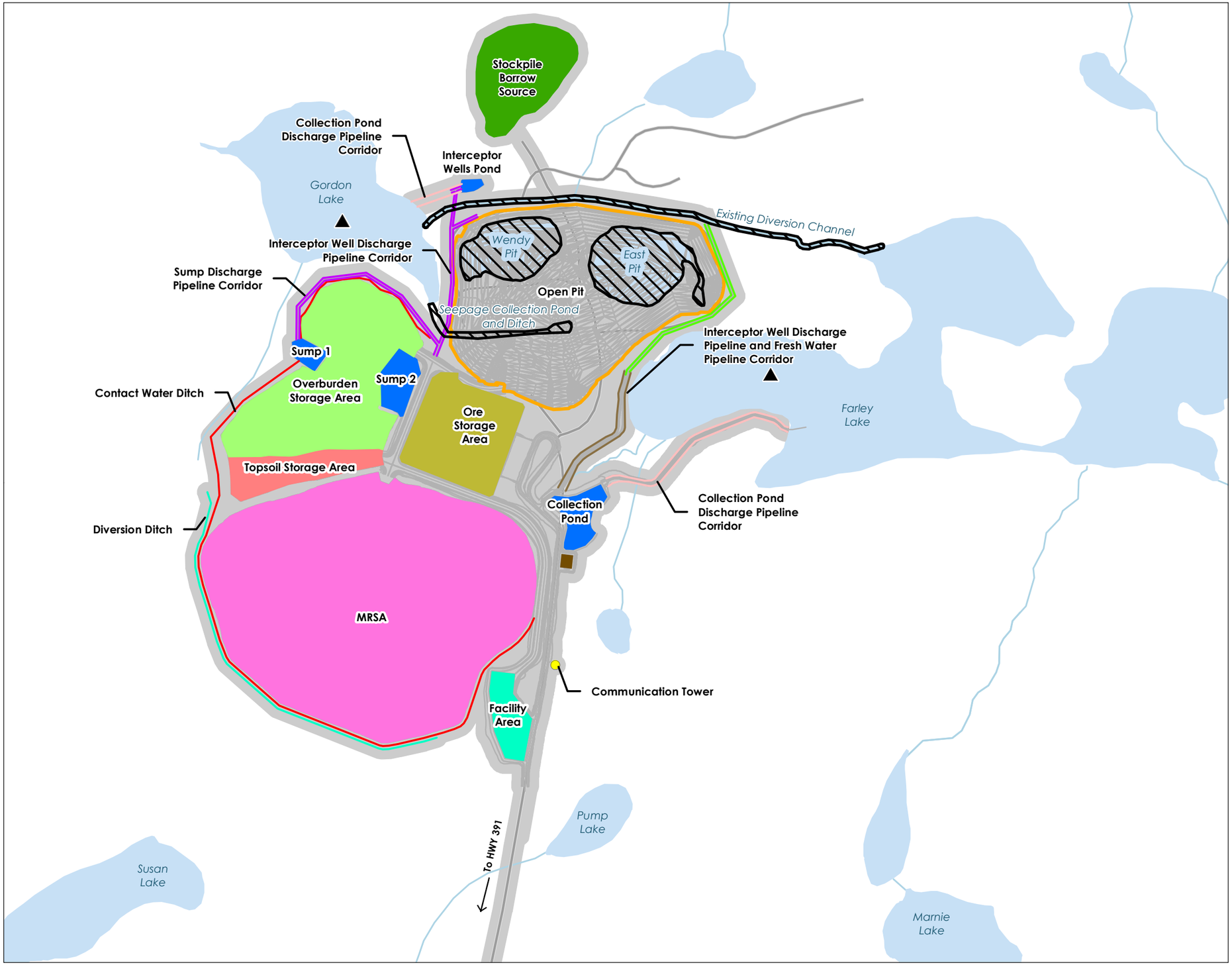

Stantec

Fish Salvage Sites

- Potential Fish Release Location
- Proposed Fish Salvage Site

Project Infrastructure

- Communication Tower
- Collection Pond Discharge Pipeline Corridor
- Contact Water Ditch
- Discharge Pipeline Corridor
- Diversion Ditch
- Interceptor Well Discharge / Fresh water corridor
- Interceptor Well Discharge Pipeline Corridor
- Collection Pond/Sumps
- Facility Area
- Gen Set Area
- MRSA
- Open Pit
- Ore Storage
- Overburden Storage
- Topsoil Storage Area
- Stockpile Borrow Source
- Project Development Area (PDA)

Landbase

- Existing Access Road
- Watercourse
- Waterbody

N

0 250 500 Metres

(At original document size of 11x17)
1:12,000

Notes
1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.
3. NOA Project Infrastructure features provided by Worley via Alamos.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2023-12-14
Technical Review by CMoszynski on 2023-12-14

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473054

Map No.
A-2

Title
Fish Salvage and Release Locations - Gordon site

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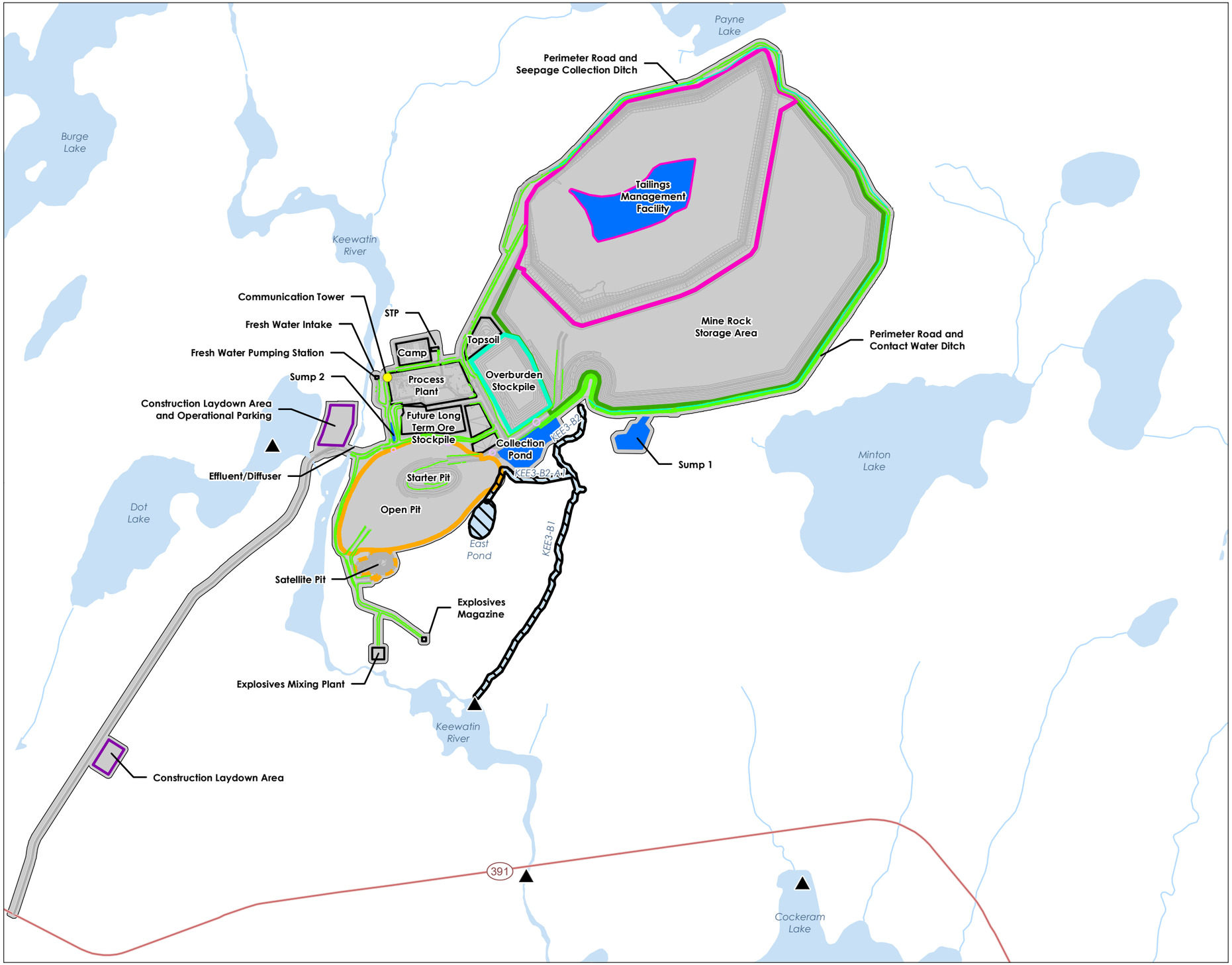

Stantec

Fish Salvage Sites
- Potential Fish Release Sites
- Proposed Fish Salvage Site

Project Infrastructure
- Communication Tower
- Culvert
- Ditching
- Corridor / Access Road
- MRSA
- Overburden Stockpile
- TMF
- Open Pit
- Satellite Pit
- Collection Pond/Sumps
- Other Infrastructure
- Construction Laydown Area
- Project Development Area (PDA)

Landbase
- Highway
- Existing Access Road
- Watercourse
- Waterbody

N

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1:30,000

Notes
1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.
3. Project Infrastructure features provided by QPit and Ausenco.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2023-12-14
Technical Review by CMoszynski on 2023-12-14

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473054

Map No.
A-3

Title
Fish Salvage and Release Locations - MacLellan site

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