THE CORPORATION OF THE CITY OF VERNON

MEMORANDUM

TO: Patti Bridal, Chief Administrative Officer **FILE:** 6130-06

PC: James Rice, Director, Operation Services **DATE:** June 6, 2023

FROM: Kendra Kryszak, Manager, Parks and Public Spaces

SUBJECT: GOOSE MANAGEMENT UPDATE

Council at its Regular meeting of July 19, 2021 adopted the following:

> AND FURTHER, that Council authorize changing the 2021 goose "Kill" program, approved at their Regular meeting held on February 8, 2021, with a budget of $40,000 funded by the Casino reserve, to a "Kill to Scare" program to be completed in 2021 at a cost of $15,000;
>
> AND FURTHER, that Council direct Administration to enhance beach cleaning for the remainder of 2021, with a budget of up to $15,000, funded from the remaining $40,000 (funding source Casino reserve);

Within the budget process of 2022 the continual beach cleaning was approved on an annual basis.

Since this approval, Administration have been actively attempting to recruit goose control management consultants and recognized experts in their fields to execute the "Kill to Scare" program. Unfortunately, these contractors were not interested, not willing to participate at the locations indicated, or unavailable for the duration of time that was needed for the City of Vernon program.

Administration issued a request for Expression of Interest May 9, 2023 as an invitation to prospective respondents for the tracking and removal of geese through a "Kill to Scare" program. (attachment 1)The City identified where the program was to take place in the high frequent geese areas, and outlined all qualifications needed to be able to articulate and have the ability to execute the program in a safe manner. The Expression of Interest was posted to BC Bid, City website, and the City procurement portal (Bonfire). There were 15 documents pulled, however no submissions were received by the closing date of June 1, 2023.

The City of Vernon is part of the Okanagan Valley Goose Management Program (OVGMP) that is a partnership between many Cities and Regional Districts in the valley. The egg addling program started early April and continued through to mid-May. Egg addling is an important population management method created to manage introduced populations of non-migratory Canada geese.

RECOMMENDATION:

THAT Council receive the memorandum titled "Goose Management Update" dated June 6, 2023, respectfully submitted by the Manger, Parks and Public Spaces, for information;

AND FURTHER, that Council direct Administration to abandon the "Kill to Scare" program for potential goose management as Administration has been unsuccessful in obtaining interested contractors and the Request for Expression of Interest was not successful.

ALTERNATIVE:

THAT Council receive the memorandum titled "Goose Management Update" dated June 6, 2023, respectfully submitted by the Manger, Parks and Public Spaces, for information;

"AND FURTHER, that Council direct Administration to pursue the Kill to Scare program in spring of 2024, as the Request for Expression of interest was unsuccessful in 2023."

Respectfully submitted:

Kendra Kryszak

Digitally signed by: Kendra Kryszak
DN: CN = Kendra Kryszak OU = COV Users, Yards
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Kendra Kryszak, Manager, Parks and Public Spaces

Attachment 1: Expression of Interest

Approved for the Agenda by the CAO ☑

Request for Expression of Interest

For

Geese Kill to Scare Program

Request for Expression of Interest No: 23-57-PAR

Issued: **Tuesday May 9, 2023**

Submission Deadline: **Thursday June 1, 2023 at 2:00 p.m. local time**

PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

1.1 Invitation to Respondents

This Request for Expression of Interest ("RFEOI") is an invitation by The Corporation of the City of Vernon (the "City") to prospective respondents for the **tracking and removal of geese through a "Kill to Scare" program** as described in Part 4 – RFEOI Particulars.

The City has identified that the program should be conducted in the high frequent geese areas within the City of Vernon Parks – Paddlewheel Park, Kin Beach, Lakeshore Park, Marshall Fields, Polson Park. Proponents should have all qualifications outlined in the document, be able to articulate and have the ability to execute in a safe manner at the specified parks, and provide education to the public if required.

1.2 RFEOI Contact

For the purposes of this procurement process, the "RFEOI Contact" will be:

Romona Marshall, Procurement Services
rmarshall@vernon.ca

Respondents and their representatives are not permitted to contact any employees, officers, agents, elected or appointed officials or other representatives of the City, other than the RFEOI Contact, concerning matters regarding this RFEOI. Failure to adhere to this rule may result in the disqualification of the respondent and the rejection of the respondent's response.

1.3 RFEOI Timetable

Issue Date of RFEOI	Tuesday, May 9th, 2023
Deadline for Questions	**Tuesday, May 23, 2023, 2:00pm PT**
Addenda Deadline	Thursday, May 25, 2023
Submission Deadline	**Thursday, June 1, 2023, 2:00:00pm PT**

The RFEOI timetable is tentative only and may be changed by the City at any time. All times are listed as local time.

1.4 Submission of Responses

1.4.1 Prepare your submission materials:

Requested Information

Name	Type	# Files	Requirement
Proposal	File Type: PDF (.pdf)	Multiple	Required

Name	Type	# Files	Requirement
Appendix A - Submission Form	File Type: PDF (.pdf)	Multiple	Required

Requested Documents:

Please note the type and number of files allowed. The maximum upload file size is 1000 MB.

Please do not embed any documents within your uploaded files, as they will not be accessible or evaluated.

1.4.2 Upload your submission at:

https://vernon.bonfirehub.ca/opportunities/66121

The Q&A period for this opportunity starts May 9, 2023. The Q&A period for this opportunity ends May 23, 2023 2:00 PM local time. You will not be able to send messages after this time.

Your submission must be uploaded, submitted, and finalized prior to the **Closing Time** of June **1, 2023 2:00 PM local time.** We strongly recommend that you give yourself sufficient time and **at least ONE (1) day** before Closing Time to begin the uploading process and to finalize your submission.

Important Notes:
Each item of Requested Information will only be visible after the Closing Time.
Uploading large documents may take significant time, depending on the size of the file(s) and your Internet connection speed.

You will receive an email confirmation receipt with a unique confirmation number once you finalize your submission.

Minimum system requirements: Internet Explorer 11, Microsoft Edge, Google Chrome, or Mozilla Firefox. Javascript must be enabled. Browser cookies must be enabled.

Need Help?
City of Vernon uses a Bonfire portal for accepting and evaluating proposals digitally. Please contact Bonfire at Support@GoBonfire.com for technical questions related to your submission. You can also visit their help forum at https://bonfirehub.zendesk.com/hc

1.5 Amendment of Responses

Respondents may amend their responses prior to the Submission Deadline by submitting the amendment in the same manner as the original response via the Procurement Portal (Bonfire).

1.6 Withdrawal of Responses

At any time throughout the RFEOI process, a respondent may withdraw a submitted response by deleting their submission from the Procurement Portal (Bonfire).

PART 2 – EVALUATION OF RESPONSES

The City will conduct the evaluation of responses based on information provided by the respondents. Respondents to submit the following:

2.1 Submission Form (Appendix A)

Each response must include a Submission Form **(Appendix A)** completed and signed by an authorized representative of the respondent.

2.2 Proposal Submission Requirements

The typed proposal should not exceed **15 single pages**, **minimum size font 11**. Copies of qualification documents should be included in the proposal and will not affect the 15-page count limit. Information requested is as follows.

Copy of Qualifications

- ❑ PAL – Possession &Acquisition license
- ❑ Current migratory bird hunting license (with a waterfowl stamp)
- ❑ Valid BC hunting license (for calendar year)
- ❑ Basic waterfowl identification
- ❑ Proof of ownership and experience operating a suitable firearm/shotgun (12 gauge)
- ❑ Permit to transport firearms
- ❑ Prior history of geese control references (2)
- ❑ Suitable motor vehicle to carry deceased wildlife/ firearm in a case with trigger lock/ ammunition securely locked in appropriate carrier

Non-mandatory Qualifications

- ❑ Conservation Outdoor Recreation Education Course

Respondent Information

- ❑ Provide a brief history of the company, its location proximate to Vernon and ability to be onsite
- ❑ Explain why Proponent is well suited to this particular project including ability to execute the required work
- ❑ Identify operational structure, including staffing or use of subcontractors.
- ❑ Previous relevant experience including noting any work previously performed for the City of Vernon or other municipalities

Proposal Content:

- ❑ Provide a workplan and methodology on how to execute the Kill to Scare safely at each park.
- ❑ Identify the general timeline/time of day for the kills to occur
- ❑ Describe the deceased disposal procedure
- ❑ Identify financial commitment / budget for program

Value Adds

- ❑ Any other suggestions for the project that would better the final outcome
- ❑ Any special requirements that the respondent would require
- ❑ Any other considerations to be taken into account

NOTE: Should the respondent be interested in any single or multiple aspect of the project, they are to specify this is their proposal.

2.3 Evaluation

The results of this RFEOI will be used to create a list of shortlist of proponents for subsequent invitation to a competitive procurement.

2.3.1 Shortlist Criteria

Received expressions of interest will be assessed against the following criteria:

- ❑ Qualifications received and Respondents suitability
- ❑ Ability to attend sites
- ❑ Proposed Workplan and Methodology
- ❑ Respondent's experience and qualifications to fulfill the obligations of providing the service.
- ❑ Any other value-added options or ideas.

PART 3 – TERMS AND CONDITIONS OF THE RFEOI PROCESS

3.1 No Contract A and No Claims

This procurement process is not intended to create and will not create a formal legally binding bidding process and will instead be governed by the law applicable to direct commercial negotiations. For greater certainty and without limitation:

(a) this RFEOI will not give rise to any Contract A–based tendering law duties or any other legal obligations arising out of any process contract or collateral contract; and

(b) neither the respondent nor the City will have the right to make any claims (in contract, tort, or otherwise) against the other with respect to the selection of respondents, a decision to reject a response or disqualify a respondent, or a decision of the respondent to withdraw its response.

3.2 Cancellation

The City may cancel or amend the RFEOI process without liability at any time.

3.3 No Obligation to proceed

The City is under no obligation to proceed to and to award a Purchase Order. The receipt by the City of any information (including any submissions, ideas, plans, drawings, models or other materials communicated or exhibited by any intended Proponent, or on its behalf) shall not impose any obligations on the City.

This RFEOI is not an agreement to purchase services. The City is not bound to enter into a relationship with any Proponent. Responses will be evaluated by Members of Council. The City will be under no obligation to receive further information, whether written or oral, from any Proponent.

3.4 Proponent Expenses

Proponents are solely responsible for their own expenses in preparing a response and for any subsequent negotiations with the City. The City will not be liable to any Proponent for any claims, whether for costs or damages incurred by the Proponent in preparing the response, loss of anticipated profit in connection with any final Contract or any other matter whatsoever.

3.5 Modification of Terms

The City reserves the right to modify the terms of this RFEOI at any time in its sole discretion.

3.6 Ownership of Responses

All documents, including Responses, submitted to the City become the property of the City. They will be received and held in confidence by the City and will be subject to the provisions of the Freedom of Information and Protection of Privacy Act.

3.7 Confidentiality of information

All Proponents and any other person who through this RFEOI process gains access to confidential financial information of the City of Vernon's are required to keep strictly **confidential all information which in any way reveals confidential business, financial** or investment details, programs, strategies or plans, learned through this RFEOI or subsequent RFP process. This requirement will continue with respect to such information over the course of any Contract for service which may arise out of this RFEOI process.

Information pertaining to the City obtained by the Proponent as a result of participation in this process is confidential and must not be disclosed without written authorization from the City.

3.8 Special Provision

Proponents who, either directly or indirectly through another corporation or entity, have been or are in litigation, or who have served notice with intent to proceed with court action against the City in connection with any contract for works or service, are ineligible proponents. Receipt of proposals from such proponents will be disqualified from the evaluation process.

3.9 Disclaimer

No Claim for Compensation - no party submitting information shall have any claim for any compensation of any kind whatsoever, as a result of participating in this RFEOI.

PART 4 – RFEOI PARTICULARS

4.1 The Deliverables

4.1.1 Background

The Okanagan Valley Goose Management Program was formed in 1995 to address ways to minimize the impact of geese within an urban environment. The City of Vernon has conducted Canada goose management since approximately 2000.

The City has participated as a member of the Okanagan Valley Goose Management Program since 2007 and in 2020 integrated their egg-addling, public education and Canada goose population monitoring program into the larger Valley wide field program to ensure standardized coverage, evaluation, and record-keeping. The City has also developed a Vernon specific strategic Goose Management Plan (Attachment 1) to guide decisions regarding population control of nesting Canada geese and to mitigate conflicts caused by geese in the City.

In 2021 the City of Vernon Council, approved a Kill to Scare program. This technique is the method used successfully by neighbouring communities. A Kill to Scare program is used to remove the social dominant goose from a flock. When the dominant goose is removed (through lethal means) the remainder of the flock tends to disperse and leave the area in smaller groups. A Kill to Scare program does require a permit issued from the Canadian Wildlife Services. Once the permit and the Management Plan are reviewed and approved, the Canadian Wildlife Service will provide the City of Vernon and contractor with the number of geese that can be removed from the area.

4.1.2 Objective

Through this RFEOI, it is the City of Vernon's intent to understand what we would be involved in a Kill to Scare Program and the expected financial commitment as well as to create a shortlist of proponents for a future invitation to a competitive procurement.

4.1.3 Scope

The City of Vernon has identified the following items to be included in scope and invite proponents to recommend additional options based on their experience in this field and knowledge of the Vernon area.

1. Create a Kill to Scare program for Canadian Geese at the following locations within the City of Vernon (Attachment 2 – Location Maps):
    - Paddlewheel Park (maps of sites)
    - Kin Beach
    - Lakeshore Park
    - Marshall Fields Park
    - Polson Park

2. Abide by the biosecurity guidance for Damage or Danger permit holders.
3. Work with the City of Vernon and RCMP to develop a procedure to inform RCMP prior to each potential discharge event.
4. Work with wildlife specialist from Vernon to gather relevant information on the various areas.
5. Conduct a weekly onsite review and monitoring of progress and identify frequency and recommended time commitment.
6. Provide a detailed workplan and methodology identifying how the proponent would execute the Kill to Scare Program safely including any required resources or sub-contractors.
7. Identify the financial commitment required to meet these objectives for budgeting purposes.
8. Other as recommended including financial commitment

4.2 Material Disclosures

The material disclosures that apply to this RFEOI, if any, are set out below.

- ❑ The City will acquire the permit issued from the Canadian Wildlife Services.

- ❑ Shortlisted Respondents will be required to provide the following documentation:
  - ❑ Police check
  - ❑ City of Vernon or other Inter-Community Business License
  - ❑ Valid WorkSafeBC coverage
  - ❑ Valid General Liability Insurance policy naming the City of Vernon as additional insured with a minimum of $5,000,000 liability coverage
  - ❑ Valid Vehicle Insurance with a minimum of $2,000,000 liability coverage for vehicle(s) that will be used in the execution of the scope of work

CITY OF Vernon

Vernon Essentials Site

Paddlewheel Park

96 0 48 96 Meters

1: 1,882

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CITY OF Vernon

Vernon Essentials Site

Kin Beach

60 0 30 60 Meters

1: 2,360

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CITY OF Vernon

Vernon Essentials Site

Lakeshore Park

30 0 15 30 Meters

1: 1,180

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CITY OF Vernon

Vernon Essentials Site

Marshall Fields

191 0 96 191 Meters

1: 3,763

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CITY OF Vernon

Vernon Essentials Site

Polson Park

120 0 60 120 Meters

1: 4,720

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Canada Goose Management Plan

CITY OF Vernon

Prepared for:

Kendra Kryszak
Manager, Parks and Public Spaces Maintenance
City Operations
1900 48 Ave
Vernon, BC, V1B 8Y7

Prepared by:
EBB Environmental Consulting Inc.

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Executive Summary

The City of Vernon has conducted Canada goose management since approximately 2000. They have participated as a member of the Okanagan Valley Goose Management Program since its inception (2007) and in 2020 integrated their egg-addling, public education and Canada goose population monitoring program into the larger Valley-wide field program to ensure standardized coverage, evaluation, and record-keeping. The City is also developing a Vernon-specific strategic management plan to guide decisions regarding population control of nesting Canada geese and to mitigate conflicts caused by geese at specific sites in the City. That has led to development of this document, ***Canada Goose Management Plan: City of Vernon,*** which describes an approach to management of temperate-nesting (i.e., non-migratory/resident) Canada geese in the City of Vernon.

1.0 Introduction

1.1 Document Intent

The intent of this document is to provide strategic guidance for management of Canada geese in the City of Vernon, particularly at nesting and moulting sites. Where Canada geese and management are discussed in this document, this refers to urban and rural nesting Canada geese. These geese are often referred to as resident, non-migratory, or temperate nesting geese. The information provided in this document is based on the best knowledge available at time of development. As part of the management process, recommendations in this document should be reviewed through an adaptive management process as new information becomes available.

1.2 Development of a Canada Goose Management Plan

1.2.1 Rationale

The City of Vernon (the City; Vernon) requested EBB Environmental Consulting assist with assessment and management planning for Canada geese, particularly geese that seasonally occupy key park sites. The City is concerned that the nesting and moulting population is increasing, and conflicts associated with health and safety (including airport safety), agriculture, environmental degradation, and recreational experience are also increasing. This planning will mesh with Vernon's commitment to value and work with natural systems as seen in other initiatives such as the *Climate Action Plan* (2020) and *Parks Master Plan (2015)*. As such, Vernon would like to develop a City-specific-strategic management plan to guide decision-making regarding population control of nesting geese and mitigating conflicts caused by geese that aligns with Vernon's overall community approach to planning for sustainable living.

1.2.2 Objective

The City requires a comprehensive Canada Goose Management Plan, that will provide guidance on managing the population of resident Canada geese and mitigating impacts from geese in the City. Plan objectives include:

- Develop a knowledge base regarding seasonal goose use of key sites in Vernon;
- Identify key breeding and moulting areas;
- Describe mitigation techniques that have been used in the past;
- Provide mitigation options to reduce damage to parks, recreational areas, urban and natural habitats;
- Reduce hazards to aviation at Vernon Regional Airport;
- Develop population modelling based on management options,
- Develop information to assist with messaging regarding goose management; and
- Act as a document that fulfills agency recommendations when applying for permit applications or seeking advice from regulators.

2.0 Canada Goose Management Area—City of Vernon

The City of Vernon is situated in the Okanagan Valley, BC between the northern tips of Okanagan and Kalamalka Lakes (Figure 1). Vernon is the second largest city in the Okanagan with an estimated population of 43 316 people, and an annual rate of increase of approximately 5% (City Population 2021). Vernon is situated 390m above sea level; dry in the summer, but experiences significant precipitation (663 mm annually), with rain or snow occurring each month of the year. The average temperature in Vernon is 7.7 °C. Agriculture is historically the leading economic driver, but construction, manufacturing, and increasingly tourism have become important contributors in recent decades (City of Vernon 2021a).

Vernon contains Vernon Regional Airport (YVE), which is primarily used by civilian aircraft; and does not have any scheduled commercial service. The airport is located adjacent to Marshall Fields, approximately between Kin Beach and Lakeshore Park (Figure 2).

3.0 Impacts of Canada Geese in Vernon

In Vernon, the resident Canada goose population is considered a public nuisance. Conflicts have been occurring since prior to the 1990's when Vernon began to addle Canada goose nests. Conflicts generally consisted of fecal mater and goose numbers at beaches and sports fields. The City does not have formal records of egg addling activities prior to 2007; however, addling has not alleviated conflicts with Canada geese. General impacts include:

- economic impacts to agricultural producers through crop loss from foraging, trampling and excess fecal matter;
- aggressive behaviour of territorial/nesting geese to park users;
- turf damage and fecal deposits on park and sports fields;
- fecal deposits in water contributing to increased coliform counts and swimming advisories;
- environmental degradation related to overgrazing of shoreline vegetation (e.g., loss of native vegetation and increased siltation) and fecal matter in water (e.g., increased pathogens and biological oxygen demand [BOD]);
- decreased biodiversity caused by aggressive territorial behaviour that prevents smaller, native waterfowl from nesting; and
- increased hazard to aviation.

4.0 Key Management Sites

The City has identified priority sites to target for management. These include Kin Beach, Paddlewheel Park, Marshall Fields, and Lakeshore Park (Figure 2). These are high-use park sites. Kin Beach, Paddlewheel, and Lakeshore parks are along the Vernon waterfront. These parks are heavily used by locals and tourists all year, but particularly in the summer. Each spring and summer Vernon regularly receives complaints regarding aggressive geese, goose numbers and goose feces at these parks. In

addition, swimming advisories due to water quality (e.g., coliform counts) have occurred at these beaches in summer months.

Marshall Fields is located 2 blocks from the waterfront. It is an important field complex for sports and recreation. Geese graze on the fields at all times of year, with peak complaints coinciding with the onset of sports seasons (e.g., fall soccer and spring baseball).

The current management goal is to alleviate pressure at these sites by reducing the number of geese using these sites. Section 11.2 provides an outline of the metrics to evaluate management success.

5.0 Long-term Management Goal

A key component to developing a management strategy is identifying what level of Canada geese can be tolerated in the City over the long-term. This can be expressed as an absolute population number, or more practically, as a level of effort (likely expressed in dollars) that is acceptable to successfully mitigate goose impacts. Once this level is established (using the above metrics), the goose population should be managed to stay below this threshold.

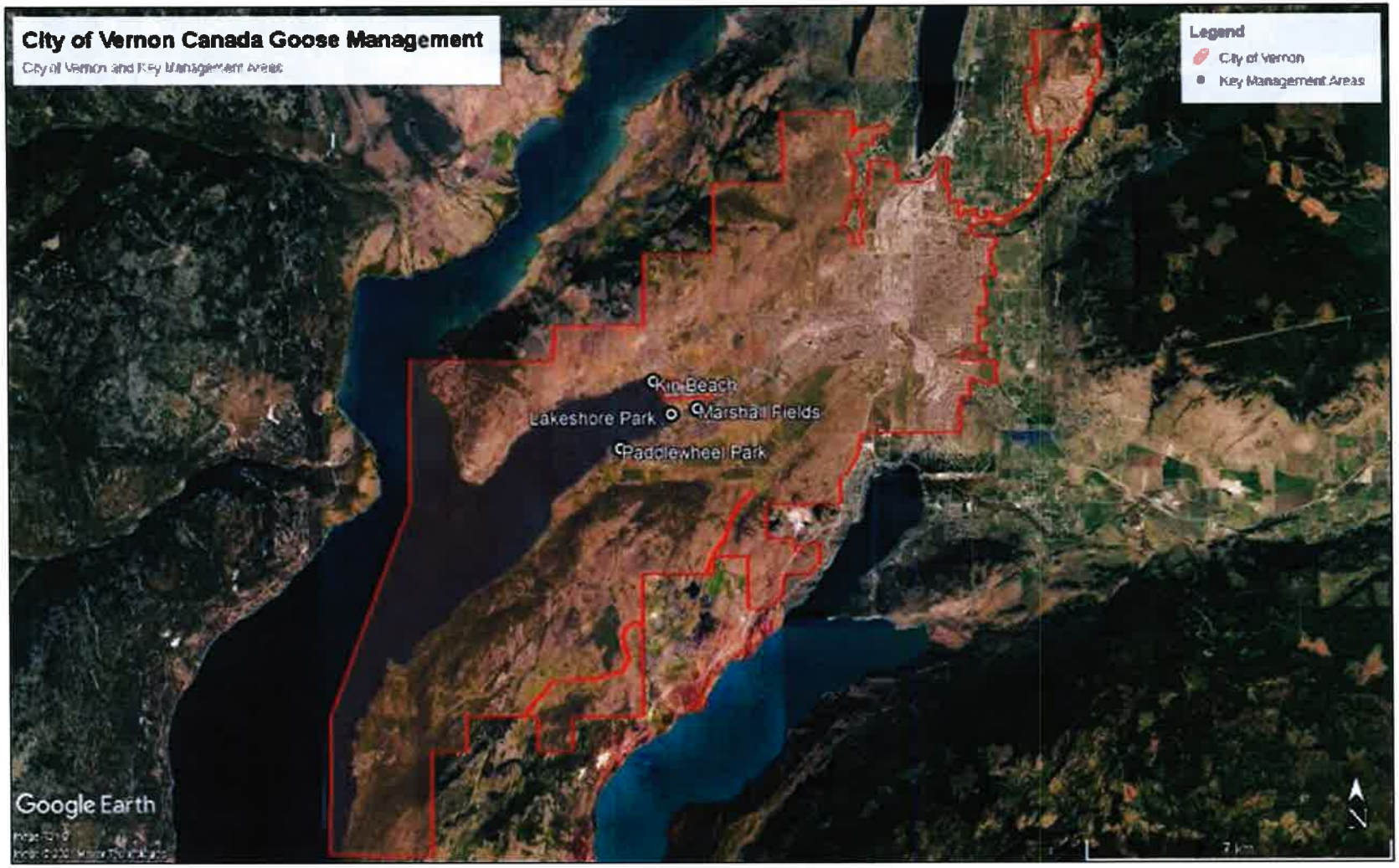

Figure 1. City of Vernon, identifying key management sites

Figure 2. Location of key management sites and Vernon Regional Airport (YVE)

6.0 Regulatory Context

Canada geese are regulated under the federal *Migratory Birds Convention Act* (1994) and pursuant regulations. Any interference with geese, their nests, or eggs must be done with authorization from the Canadian Wildlife Service (CWS) of Environment and Climate Change Canada (ECCC). In addition, Canada geese use lands governed by various jurisdictions including Federal, Provincial, Municipal, and private properties such as golf courses, schools, and agricultural lands. Goose management activities are subject to by-laws and authorizations dependent on location and invasiveness of management activities.

7.0 Canada Goose Population Status

The global population of Canada geese (*Branta canadensis*) and the smaller, closely related cackling geese (*Branta hutchinsii*) are comprised of 11 different subspecies (Banks et al. 2004). Subspecies have similar features, yet differences in physiology, behaviour and distribution are significant enough that unique management approaches must be considered for different groups.

Across Canada, many Canada and cackling goose subspecies (hereafter, collectively referred to as Canada geese or geese) do not have overlapping ranges and would not interact under natural conditions. However, this is not the case in southwestern British Columbia where management programs designed to boost Canada goose numbers caused the unintended creation of non-migratory resident populations with mixed-race hybrids.

Prior to the 1960's, Canada geese were considered migrants and summer visitants in British Columbia (Campbell et al. 1990). By the 1970's, however, goose numbers had increased through management programs aimed at providing sustainable hunting and viewing opportunities. Management programs focused on importing breeding stock and flightless young of large-bodied subspecies from outside British Columbia. Introduced geese came from as far as Minnesota and Ontario. Being outside of their native ranges, translocated geese did not learn traditional migratory patterns. In contrast, this mix of subspecies and their generations of offspring nested in their new habitats, and only conducted protracted migrations, if any. These geese are described by many terms including resident, non-migratory, urban and temperate nesting. Generations of offspring are hybrids of the different stocks that were transplanted decades ago. These mixed-race hybrids would not occur in natural systems, and many do not fit into standard taxonomic classification of geese.

At the time of relocations, the British Columbia landscape also changed. Urban and rural areas increased, and many areas were closed to hunting. Increased habitat with fewer population controls assisted Canada geese to become abundant in areas throughout the province. This landscape transformation continues to occur, particular in rapidly growing communities such as Vernon. Today, many populations of Canada geese are largely perceived as problem wildlife, due to their abundance, territorial behaviour during breeding season, crop damage, potential risks to human health and safety, fouling of grassy areas with droppings, fecal coliform contamination of public swimming areas, damage to lawns and green spaces, as well as other economic losses.

8.0 Goose Ecology

Geese prefer to graze on grass and are attracted to farmland and urban landscapes with manicured lawns (e.g., parks, schools and golf courses). Areas that have grass/water interfaces are ideal locations for geese as they can forage and then quickly escape predation threats by exiting to water. This is particularly important when geese have goslings and/or are moulting.

In southern British Columbia, Canada geese may begin nesting as early as March, but generally, egg-laying is initiated in April and can continue into late May. Canada geese usually build nests within sight of water; however, will find alternative sites if necessary (Elphick *et al.* 2001, Environment Canada 2003). Preferred nesting locations are islands, including the tops of beaver lodges and floating mats of vegetation. In urban locations, nest sites are more variable and may include planters, shed roofs, and moored boats. First-time breeders exhibit high natal fidelity and will attempt to nest in the same area they were fledged (Mowbray *et al.* 2002). Geese will return to old nest sites, or nearby locations year after year.

Nests are generally simple, constructed from weeds, twigs and other local vegetation. In urban environments, they may use other local materials (Figure 3). Females will use their bodies to make a depression in the vegetative mound and insulate it with down and feathers removed from her breast, resulting in a noticeable area of fewer feathers (brood patch).

Females are responsible for building nests and incubating eggs. During this time, the male will diligently "mate guard" ensuring other geese and predators do not disturb the female. Females typically lay 4-7 creamy white eggs (average is 5; total can be greater than 12) on consecutive days. They will lay replacement eggs if original eggs are preyed upon, or the nest is destroyed early in incubation, which is approximately 25-27 days (Mowbray *et al.* 2002, Environment Canada 2003).

Canada geese start nesting at age 2 or 3 years and can live greater than 20 years. Birds will pair for life but will find a new mate if one dies. Following nesting, geese go through a period of moult when they are flightless. They grow new flight feathers in preparation for fall migration. Geese are flightless for approximately 4-6 weeks in June and July (Figure 4). Prior to moult, they seek out areas of water for protection. Migratory geese migrate south in the fall after moult is completed and young birds are strong enough for the journey. Resident geese may conduct protracted migrations but stay close to their nesting areas.

Figure 3. Goose nest made with materials on vacant boat (Okanagan Lake, Vernon, 2020)

Figure 4. Goose in moult, growing new flight feathers

9.0 Survey Data

9.1 Aerial Survey Data

The OVGMP has conducted aerial surveys every 3-4 years (from 2007) to monitor population size and distribution in the Valley. Table 1 provides aerial survey data from the Greater Vernon Area, which for survey purposes, included the City of Vernon, the northern portion of Kalamalka Lake, the north arm of Okanagan Lake, Swan and Goose Lakes, and smaller wetlands and agricultural fields in between. These data are also provided as Figure 5. Each survey year, two surveys were conducted—one early in the summer (moult, June) and one later (early migration, August). Survey times occurred when jurisdictions, such as Vernon, were most concerned about geese in their parks. The June surveys were likely compromised of geese that locally nested. The August survey likely contained additional geese that nested north of Vernon and had started their southward migration.

Relevant information from survey data included:

- Number of geese in August survey was usually greater than June. [This was not the case in 2014; in 2018 there was only survey].
- In August, migratory geese had likely started to mix with resident geese. In general, migrants make temporary stopovers (days or weeks) on their southward journey to wintering grounds. Some migratory geese winter in the Okanagan Valley.
- Greater numbers of geese were present in City parks in June compared to August.
- Goose use of City parks was small relative to other areas (e.g., North Arm), particularly in August (Table 1, Figure 5).
- The average number of geese using lakeshore parks was 58, (ranging between 0 and 168, based on all survey dates).
- No specific trend in growth was determined from the data

Table 1. Aerial survey data for geese in the Greater Vernon Area

Year	Survey	Greater Vernon Area (all geese)	North Arm of Okanagan Lake	City Lakeshore Parks	Other	% Geese using North Arm	% Geese using City Parks
2007	Early	170	0	0	170	0.0	0.0
2007	Late	563	138	0	425	24.5	0.0
2011	Early	168	98	70	0	58.3	41.7
2011	Late	882	565	52	265	64.1	5.9
2014	Early	1009	714	168	127	70.8	16.7
2014	Late	711	318	29	364	44.7	4.1
2018*	Early	828	591	156	81	71.4	18.8
2019	Early	351	231	17	103	65.8	4.8
2019	Late	487	348	26	113	71.5	5.3

*in 2018 forest fires prevented the second survey

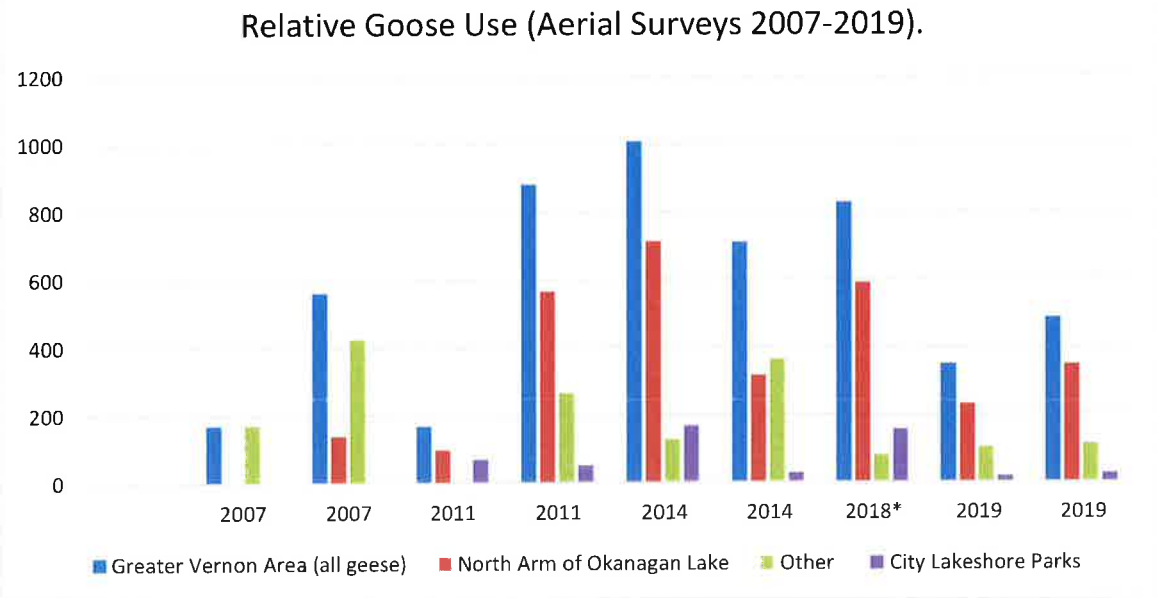

Figure 5. Aerial survey data. Each survey year has an early (shown first) and late survey except for 2018 that had one survey in June.

9.2 Nest Surveys and Egg Addling Program

In 2020 Vernon incorporated their nest survey and egg-addling program into the OVGMP. This included pairs surveys, GPS records of nest locations, and gosling surveys. Addling data from previous years, where available, were compiled to establish a baseline of nesting geese within the City (Table 2). Figure 6 shows locations where geese were observed in the 2020 nesting season and where nests were found. During the 2020 surveys, 467 geese were observed at 136 locations in the Greater Vernon Area. Some observed geese were not nesting, but were in flocks of immature and unpaired birds.

Table 2. City of Vernon Addling Data (2007-2020)

Year	Number of Nests	Number of Eggs Addled
2007	38	200
2008	65	318
2009	46	235
2010	36	177
2011	28	147
2012	30	132
2013	40	226
2014	32	159
2015	33	175
2016	37	201
2017	50	334
2018	43	223
2019	38	168
2020	72	304

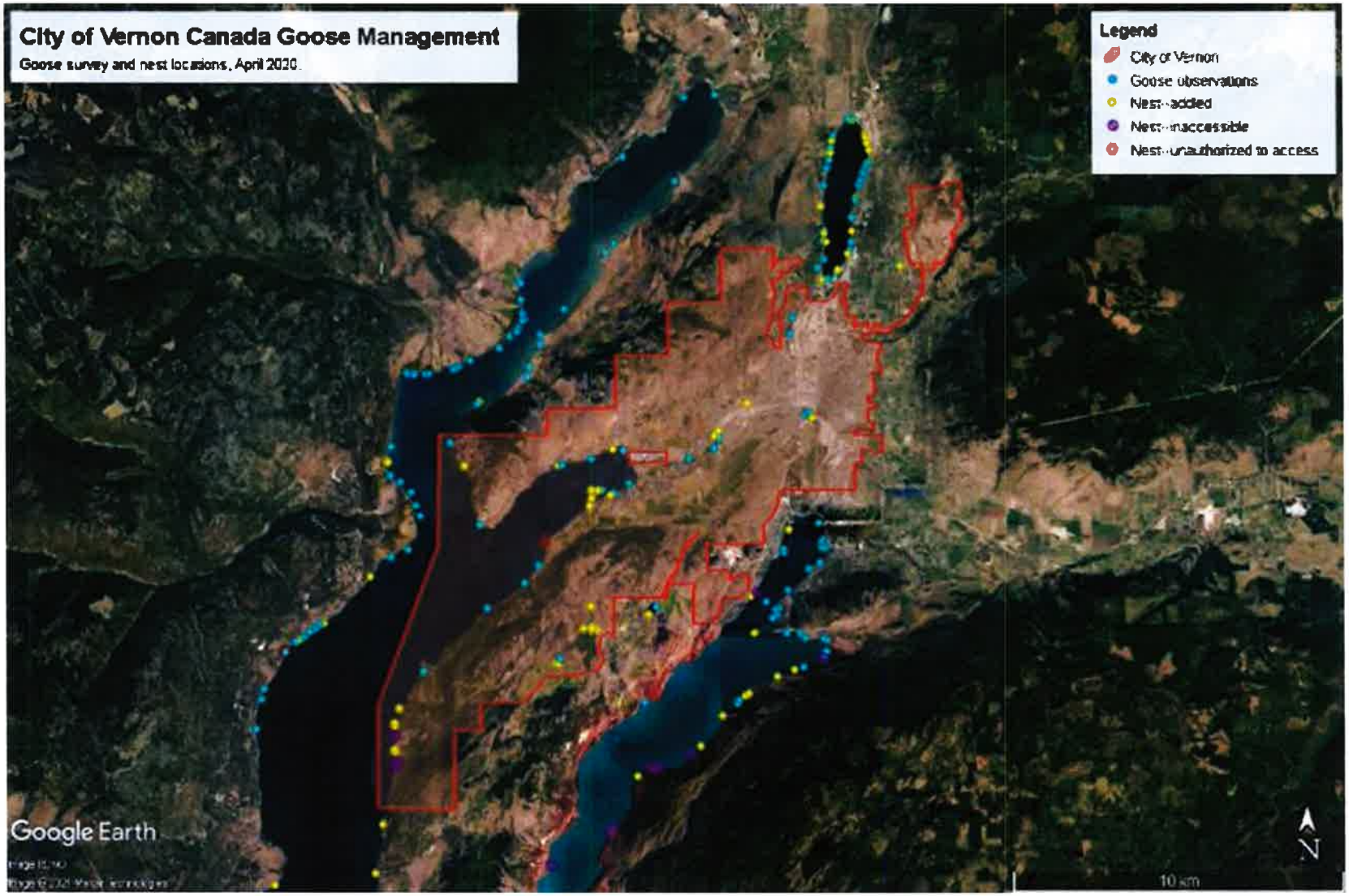

Figure 6. Goose and nest survey data (April 2020)

9.3 Gosling Surveys

Gosling data were available 2012-2020 (no data 2014, 2015). Data were from different sources and likely had different sampling methods; however, all counts were conducted in early summer prior to or during moult. Table 3 lists the count data which provides a general overview of the Vernon goose population using the shoreline beaches in early summer.

Table 3. City of Vernon Gosling Data (2007-2020)

Year	Adults	Juvenile	Total	% of Population
2012	49	4	53	7.5
2013	105	5	110	4.5
2014	na	na	na	na
2015	na	na	na	na
2016	110	20	130	15.4
2017	100	17	117	14.5
2018	88	14	102	13.7
2019	95	50	145	34.5
2020	41	2	43	5.1
Gosling Average				**13.6**

9.4 Population Modelling

Compiled data were used to model theoretical potential nesting and population growth in response to different management scenarios until 2041. To describe the resiliency of an urban nesting goose population, Figure 7 outlines population growth under different hypothetical management scenarios:

1. If no egg addling or population control occurs (status quo/no management; recruitment conservatively set at 25%),
2. If egg addling is carried out annually,
3. If addling and 100 birds are removed annually,
4. If addling and 200 birds are removed in each of the two first years.

Assumptions:

- Using aerial and gosling survey data, the average number of geese using the Greater Vernon Area in June was 505, and the average percentage of goslings in the population was 13.6%; these were used as the starting point for population models.
- Immigration and emigration of geese is equivalent
- Mortality is initially 5% but gradually increases as natural attrition increases and the population disproportionately ages from addling efforts
- models include geese in the Greater Vernon Area as it is probable that any habitat made available in Vernon through population control would be filled by birds using the Greater Vernon Area

Taking mortality into account, a population with 13.6% goslings will exhibit annual growth. As such, addling alone will not cause a rapid or significant decline in geese for many years. If left completely unmanaged, the gosling estimate would likely be greater than 50% of the total population at the end of each nesting season.

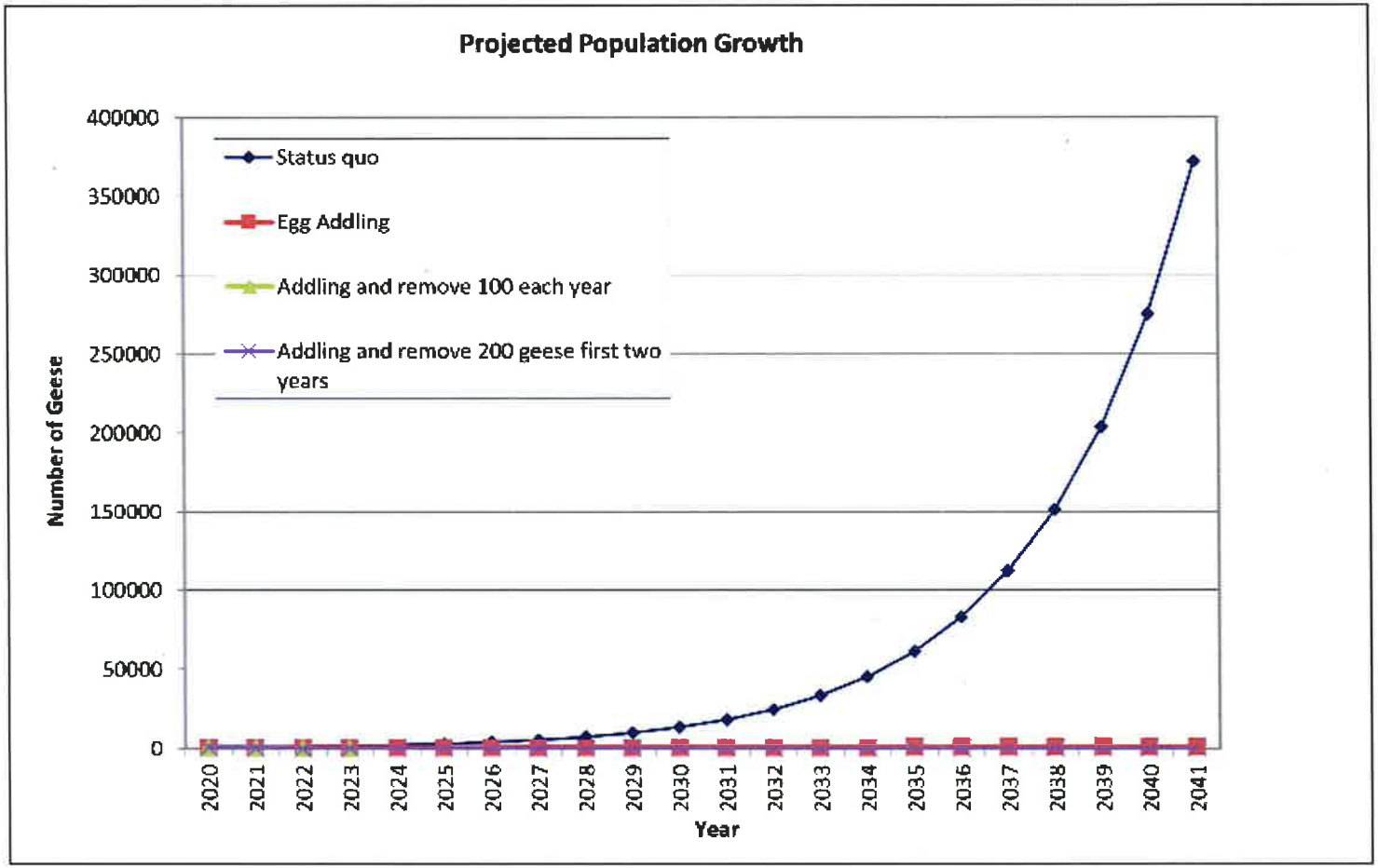

Figure 7. Projected Population Growth under Differing Management Scenarios—the status quo/no management scenario is conservatively based on 25% young entering the population each year.

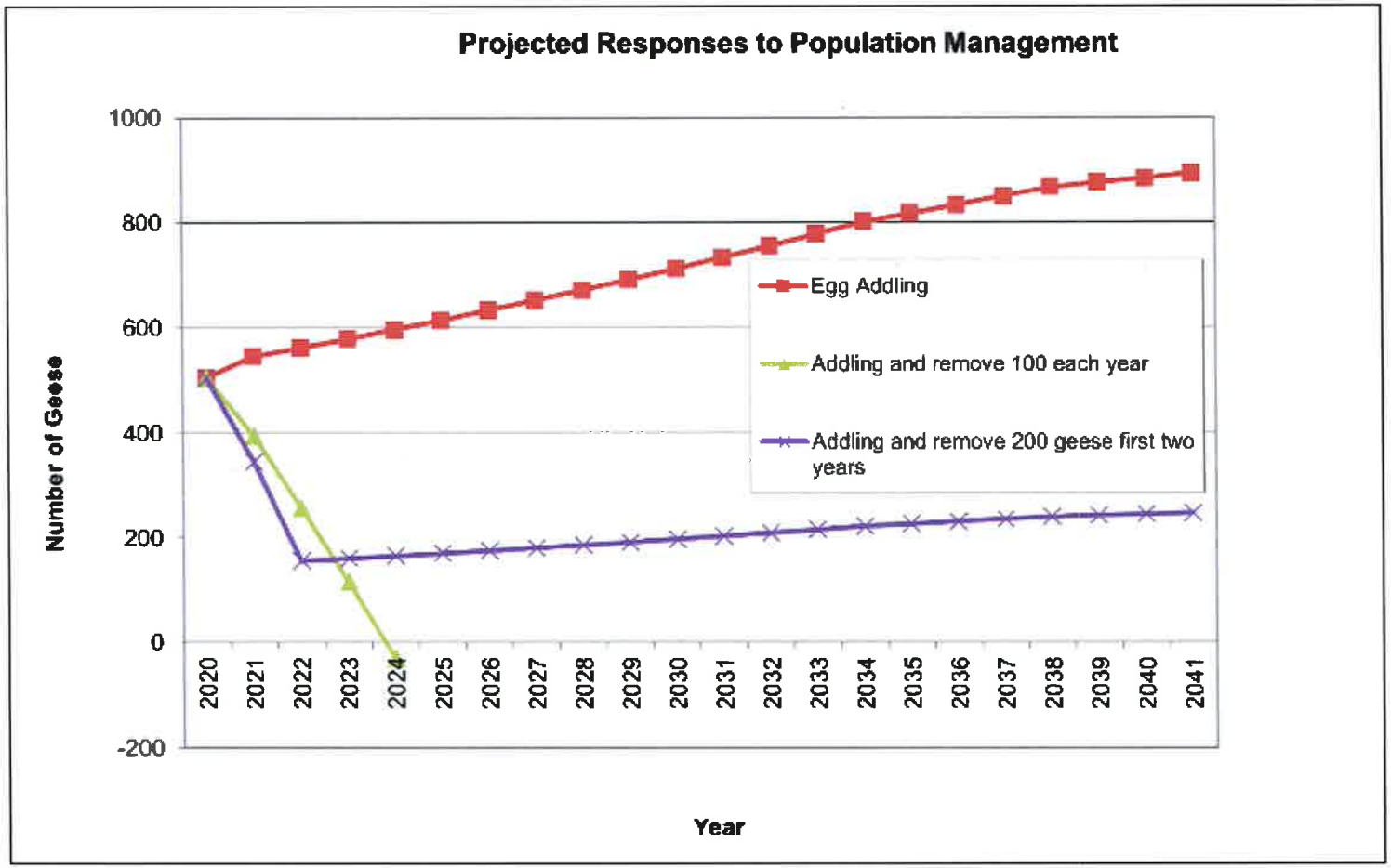

Figure 8. Projected population growth under differing management scenarios (status quo/no management option removed to allow other outcomes to be compared).

10.0 Management

Population management is a long-term issue. The section below lists allowable mitigation techniques, followed by current management in Vernon.

10.1 Mitigation Techniques

No single management tool will provide a solution for reducing Canada goose conflict. A management program must utilize a range of techniques that are seasonally timed to humanely and effectively control the goose population and its impacts. In general, to manage geese and reduce conflicts, Vernon must be aware of mitigation techniques allowable under the *Migratory Birds Regulations*. The ***Handbook, Canada and Cackling Geese: Management in Southern Canada*** outlines techniques allowable in Canada. A summary of techniques allowable for Vernon is outlined in the following sections. Many of these techniques require authorizations from Canadian Wildlife Service of Environment and Climate Change Canada or other regulators.

10.1.1 Federal Damage or Danger Permits

Options to control population growth require federal permits called Damage or Danger permits. Damage or Danger permits are typically issued once all other deterrents and habitat alteration measures have failed. Activities conducted under a Damage or Danger permit include:

- Scaring with firearm or aircraft
- Kill to scare
- Kill
- Relocation of Migratory Birds
- Collection, destruction and disposal of eggs
- Removal and destruction of nests.

Permit applications and instructions are available at: https://www.canada.ca/en/environment-climate-change/services/migratory-bird-permits/application-forms/apply-damage-danger-regulations.html.

Permits are submitted to:

Permits Officer, Canadian Wildlife Service
Environment and Climate Change Canada / Government of Canada
ec.scfpacpermitscwspacpermits.ec@canada.ca / Tel. : 250-327-4101

10.1.2 Hazing/Scaring

Hazing can be an effective means of temporarily scaring geese away from a conflict area and can be useful in preventing geese from establishing in an area prior to nesting or moulting. The key to hazing is to prevent a routine to which geese become habituated and hazing no longer works. An unintended

consequence of hazing geese can be the shift of geese from one location to another, thus diffusing and spreading the problem, instead of alleviating the problem.

Permit requirement: Hazing with a firearm, falcon or aircraft requires a federal Damage or Danger permit.

10.1.3 Habitat Modification

Geese prefer to graze on lawns/grasses with open sightlines and access to water. Therefore, reducing grassy areas, planting hedgerows and shrubs, and breaking up access to water may reduce goose presence in specific areas. Other basic habitat modifications can reduce nesting at specific sites. For example, to reduce likelihood of geese nesting near buildings, eliminate any "bowl-like" features such as tires, planters, piles of leaves and debris, or coiled hoses. Permanent or temporary fencing installed prior to nesting can restrict movement of geese with young or in moult. Trialling different habitat modification techniques is a feasible way of identifying long term practices that would benefit Vernon.

Permit Requirement: May require a notification under the provincial Water Sustainability Act if working within a riparian area.

10.1.4 Temporary Relocation

Temporary relocation is possible when geese are in moult (after nesting) and can be collected, transported and temporarily relocated away from a site. This is an excellent opportunity to band geese with leg-bands/markers so that information on the distribution of geese can be obtained. The limiting factor to relocation is finding a site that will accept geese and where regulators will allow geese. Relocation guidelines are provided in ***Best Practices for Capturing, Transporting, and Caring for Relocated Canada Geese*** (Environment Canada 2011).

Permit Requirement: 1) federal Scientific permit to Capture and Band Migratory Birds 2) federal Damage or Danger permit for Relocation of Migratory Birds.

10.1.5 Population Control

Egg Addling

Addling is a technique that humanely renders an egg embryo non-viable. Egg addling is a relatively simple and humane tool for controlling reproductive output of Canada geese. To be effective, crews must be trained to systematically access nesting areas and addle eggs in such a way that geese will not attempt to re-nest. Crews must be thorough, ensuring all nests in a targeted area are included. Egg addling should occur in April and early May and must be conducted with federal authorization. Field methodology should be consistent with the Handbook, ***Canada and Cackling Geese: Management in Southern Canada*** (Environment Canada 2010). Egg-addling is a long-term management option. Very few new geese enter the population, but population decrease from natural attrition of adults may take 15 years or more.

Permit Requirement: federal Damage or Danger permit for Collection, destruction and disposal of eggs

On occasion, removal or destruction of nests may be necessary, particularly if health and safety hazards exist related to the nest.

Permit requirement: federal Damage or Danger permit for Removal and destruction of nests

Killing of Geese

Two types authorized activities exist for the killing of geese:

1) Kill-to-support-scaring: issued when the intent of the mitigation technique is not to reduce the goose population, but to protect lands through changing goose behaviour. Generally, the conditions of these permits allow two geese per day (maximum) to be killed (generally, with a shotgun). The carcasses are left on site to act as deterrents for other geese. In doing so, geese learn consequences of occupying areas where scaring techniques are used.

Permit Requirements: federal Damage or Danger Permit for kill to scare.

2) Kill-to-remove permit: issued only if the land manager can demonstrate all other management practices have not been successful. The applicant is required to provide a management plan for the properties. The goal of this permit is to allow reduction in the number of geese on the land being damaged by geese. The method of killing is identified in the agency authorization and will be subject to review by an animal care/ethics committee. Guidelines are provided in the CWS handbook ***Best Practices for Killing Birds and Disposing of Carcasses: Canada Goose Management*** (Environment Canada 2011) and the updated amendment ***Guidelines for the Euthanasia and Humane Killing of Migratory Birds in Canada, Under Damage or Danger or Avicultural Permits*** (Environment and Climate Change Canada 2020). The province has also developed a standard operating procedure: ***Canada Goose euthanasia for depopulation*** (FLNRO 2014).

Permit Requirements: 1) federal Damage or Danger Permit for Kill 2) provincial General Wildlife Permit including the Animal Care Application.

10.1.6 Population Monitoring

On-going monitoring allows assessment of population response in terms of growth, abundance and distribution on the landscape. Population monitoring should occur at key times: 1) spring pairs/nest surveys 2) post-nesting gosling surveys, and 3) moult distribution surveys. Population monitoring may be a requirement of some authorizations.

Summer moulting season is an optimal time to mark geese with leg bands. Leg bands allow individuals or cohorts of geese to be identified at remote distances and are a strong tool for population monitoring. Band data contributes to scientifically founded answers to specific population demographic questions. Additional authorizations are required from the National Bird Banding Office to mark birds (e.g., a Scientific Permit to Capture and Band Migratory Birds).

10.1.7 Communications

All management efforts should have accompanying public education/communications components to provide clarity to staff and ensure standardized messaging.

11.0 Implementation

11.1 Current Management

Habitat Modification

Where feasible Vernon has experimented with creating barriers along beaches. The most successful habitat modification was established in the new Lakeshore Park (installed in 2019). Large logs were placed between the sand and grass areas which provided a 1 metre high barrier and aesthetic seating for park users. It also prevented easy access for geese between the beach area and the park shoreline. Vernon planted shrubs and trees along the foreshore in two sections (one ~5m long and the other 25m long) to create more barriers to geese. As more park space along Lakeshore Road is constructed, habitat modification techniques will be implemented.

Kin Beach is a 220m long beach on the north east of Okanagan Lake. The City has not completed habitat modification other than removing cottonwood trees and placing succession planting of new trees in the area. The planning department will be completing a master plan of this beach and habitat modifications will be a priority high on the list to complete. The City recently undertook a pilot program to select this park as an on-leash dog area. To the west of this beach, the city will be installing an off leash dog area (in 2022) that will have some habitat modifications (fences) and dog activity will hopefully deter geese at this site.

In 2020, the city installed large logs similar to Lakeshore at Paddlewheel Park. These were installed between the beach volleyball courts and the park shoreline. The logs were approximately 3m in length and 1m in height. They cover approximately 45m of water front. The additional 120 m of waterfront will be reviewed and modificated when planning completes the master plan of this park.

Hazing

The City of Vernon hired a dog-handler to haze geese at key sites from April through September. The hazing began in approximately 2000 at Kin Beach, Paddlewheel Park and Marshall Fields Parks. From 2000 to 2016 hazing occurred between 6am-8am daily. In 2017 Lakeshore Park was constructed and added to the hazing schedule; in addition, the hazing duration increased to 4 hours daily (6am-10am). Hazing has limited effectiveness because all the parks are in close proximity (e.g., 400m to 1,400m distance between parks). Geese generally relocate to another park after being hazed from a different park location. Supplemental scaring tactics included handheld directional laser lights, or bangers/screamers (i.e., firecrackers or similar).

Clean-up

The City of Vernon harrows beaches daily and completes bi-weekly deep rake cleaning. Hazing contractors started to collect geese feces approximately 10 years ago when the City began to have

more calls regarding feces. Originally, contractors collected feces with a shovel and bucket. . After a few years, the City realized this technique was inadequate for park lawn areas and for the last two years has been using a sweeper on the grass areas.

Population Control

Vernon conducted an independent egg-addling program prior to merging its field program into the OVGMP (2020). Limitations to their original approach included a "call-back" system that relied on a property-owner identifying a nest and calling for the nest to be removed, and consistent record keeping. Vernon is hoping that increasing the budget and merging its efforts with OVGMP will achieve increased results each year.

In 2013 Vernon conducted a pilot project to temporarily relocate geese away from shoreline beaches during moult. This was part of a larger leg-banding and monitoring project that was partially funded by the Western Canada Turfgrass Association.

In early 2020 the City of Vernon Council voted to increase the addling program by $15,000 and merge with the OVGMP. At this time, they declined to conduct a kill program.

In early 2021 the City of Vernon Council voted to conduct a kill program (pilot project) with the goal of reducing the number of geese that use key park sites (e.g., Kin Beach). Based on survey data, the estimated **maximum** number of birds removed by the program could be **150**. Council also asked City staff to examine the possibility of providing regular hunting opportunities within City limits.

In July 2021, Vernon updated its approach to population control. The original kill program did not move forward, so Vernon opted to 1) apply for a Damage or Danger kill to scare permit for use at key sites (Kin, Lakeshore, Paddlewheel and Marshall Fields Parks) where habitat and current scare tactics have not been adequate to reduce goose impacts and 2) allow and encourage hunting at McKay reservoir, within City limits.

11.2 Evaluation

Implementation of any techniques identified in this document should be evaluated and a record of each technique maintained. Tracking data determines effectiveness of mitigation techniques as well as contributing to evaluating overall success of the management program. Evaluation must consider implementation costs and program effectiveness. Evaluation should weigh feedback from staff, ease of logistics/implementation, costs, response from the public, levels of goose damage and impacts to the goose population.

The metrics to measure reduced pressure/conflict and management process include:

- Number of complaints
- Amount of direct mitigation conducted (scaring and goose feces clean up)
- Monitoring goose numbers
- Level of resources (e.g., budget; staff time; contractor time).

These metrics are obtained by our contractor, and front reception staff and reviewed by the Manager, Parks and Public Spaces Maintenance (City Operations) for tracking and reporting. The tracking has been in process since 2020.

11.3 Administration and Reporting

Each year, permits will be required for goose management activities. Regulatory agencies that grant authorizations for goose management activities will require documentation on activity results. Data collected during management activities must be compiled prior to evaluation. Reporting should be provided to any partners, so they are clearly aware of the process and results that each year of management has accomplished. These results are essential to prove outcomes of specific strategies.

11.4 Communications

A critical part of goose management is an effective communications plan. Management of geese may be received by public at an emotional level rather than one that regards concerns for environment or health and safety. Many people are not aware of the origins of the Okanagan Valley goose population and perceive these birds to be native. Consequently, the public have no way of realizing the adverse impacts geese have on the environment and people.

Vernon is delivering consistent messaging regarding goose management that fosters a culture that supports a well-planned, humane strategy. Working with the OVGMP ensures messaging is consistent along the valley. A specific communications plan was developed for the Okanagan Valley Goose Management Program for the annual egg-addling program and is reviewed prior to the addling season each year. This includes media releases, a website (www.okanagangooseplan.com), contact information, signage at key sites in Vernon and throughout the Valley (Figure 9) and is updated to ensure it reflects ongoing management activities. In addition, Vernon has signage that prohibits feeding of wildlife (bylaw #5809/5057).

12.0 Budget

Goose management requires substantial resources each year. The following outlines recent expenses for Vernon:

- Hazing budget (2014-2020) ranged from $22,000.00 to $35,000.00.
- Addling budget was approximately $3000.00/year prior to 2020, but increased to $15,000.00 in 2020 to increase effort and include increased monitoring and record keeping.
- Vernon provided approximately $8,000.00 to the leg-banding and temporary relocation projects (2012-2013).
- Vernon has a budget of $15,000.00 set aside for proposed kill-to-scare program for 2021
- An additional $15,000 was set aside in July 2020 to clean the sod and beach areas of geese droppings.

Figure 9. Goose management sign placed at key park sites in Vernon and throughout the Valley.

13.0 General Actions

On-going actions to support

- Provide communications to staff prior to management activities so that staff do not interfere or have concerns with management actions;
- Reduce attractants by ensuring staff and public are not feeding geese (through education and law enforcement), and garbage or other attractants are cleaned up;
- Continue with population control through annual egg addling, including careful record keeping;
- Encourage private citizens to provide permission and access to nests on private property;
- Identify new sites to implement pilot projects to test habitat modification. Potential options could include
    - installing retractable "beach barriers" to discourage geese from using beaches and shorelines during moult (See Appendix A) on smaller lake accesses in (planned for 2022)
    - installing temporary or permanent barriers (fences, logs, hedging that geese cannot walk through) around park perimeters and at water interfaces; (concurrent with large tree removal/management within the City of Vernon)
    - experimenting with mowing regimes to see if geese do not use areas where grass has not been cut; (planned for 2022).
- Implement careful monitoring and record keeping at hazing sites to determine which methods work (and for how long), how many geese were moved from the site etc.
- Continue to engage with northern jurisdictions-- working at a larger scale is a better means of managing a resident population of geese;
- Examine feasibility of additional population control projects including hunting opportunities within regular hunting seasons and increased use of federal use Danger or Damage permits for control options.

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Appendix A
Examples of Mitigation in other Jurisdictions

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Example 1: Temporary barrier at Como Lake, Coquitlam BC

Green snowfence is placed each year prior to moult to prevent geese from accessing the shoreline.

Example 2: Semi-permanent Barrier at Alta Lake, Whistler BC

Retractable nets have been installed at Alta Lake, Whistler BC. Parks staff roll up the nets in the morning and extend nets in the evening to prevent geese from accessing the shoreline. The black barrier (foreground) blocks the small space between the post and the wharf. The posts remain throughout the year, but the nets are seasonally removed.

Example 3: Permanent shoreline habitat modification, Penticton BC

Penticton underwent a waterfront revitalization project in 2015. The City incorporated features that assist in preventing geese from accessing shoreline parks from the water.

Before: Geese have unobstructed access between Okanagan Lake and park shoreline (June 2012; source Penticton Parks)

After: Plantings and fencing provide barriers that help prevent geese from accessing the shore. In addition, design and improved walkways are inviting to park users, including dog walkers, whose presence discourages geese from accessing the area. Since this photo (November 2015), the plantings have grown providing a stronger barrier.

Example 4: Scare Windmill, Naramata BC

This is one of several scare windmills that have been placed along Naramata's waterfront parks. They have been successful as part of the scare program, which also allows off-leash dog use of parks outside of peak hours., and scaring of geese in the early morning hours during beach clean-up.

Example 5: Communications

Creative signage prevents "sign blindness" where users no longer see or respect signs. Consistent messaging and noting consequences increases message effectiveness.

Appendix B
Examples of Geese in Vernon

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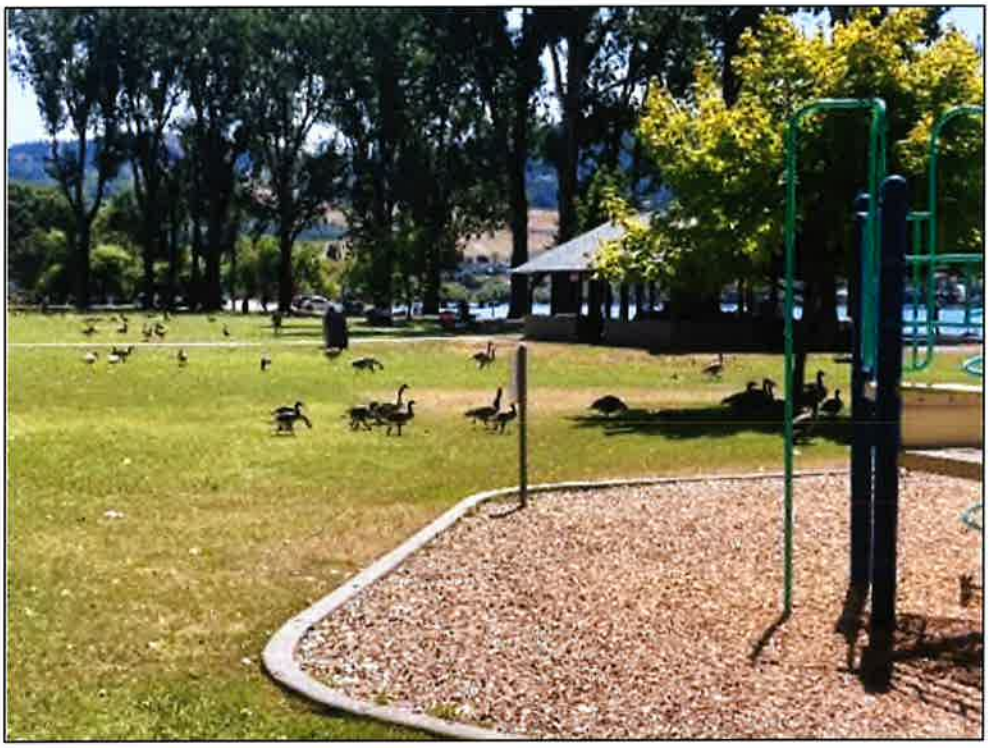
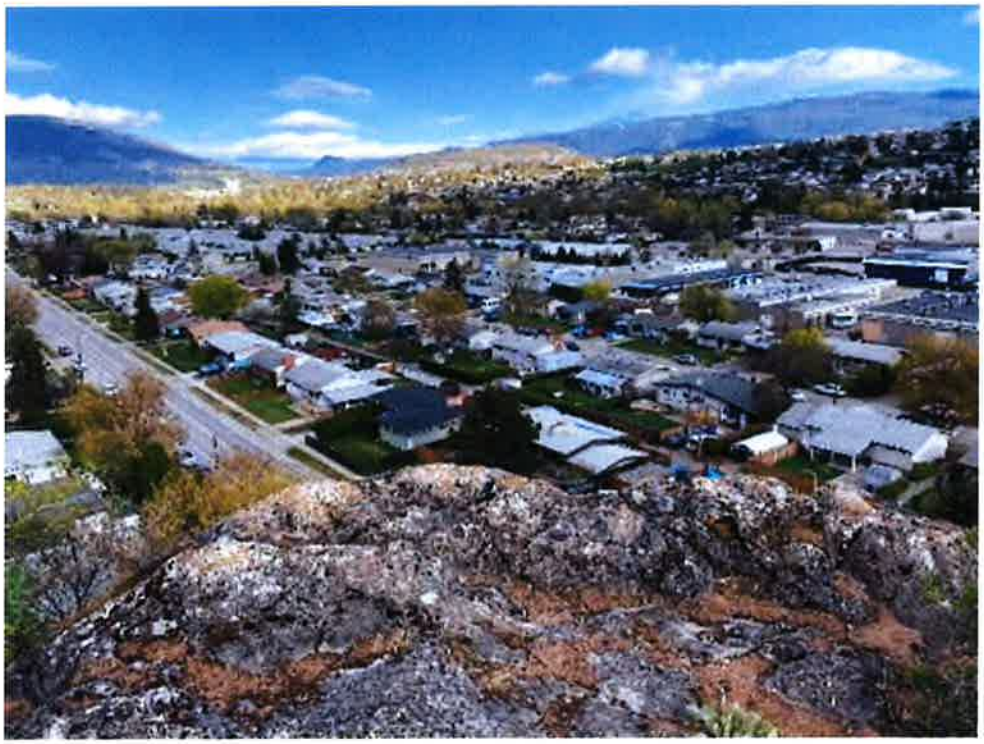


Kin Beach Park, July 17, 12:53

Polson Park, April 27, 15:35

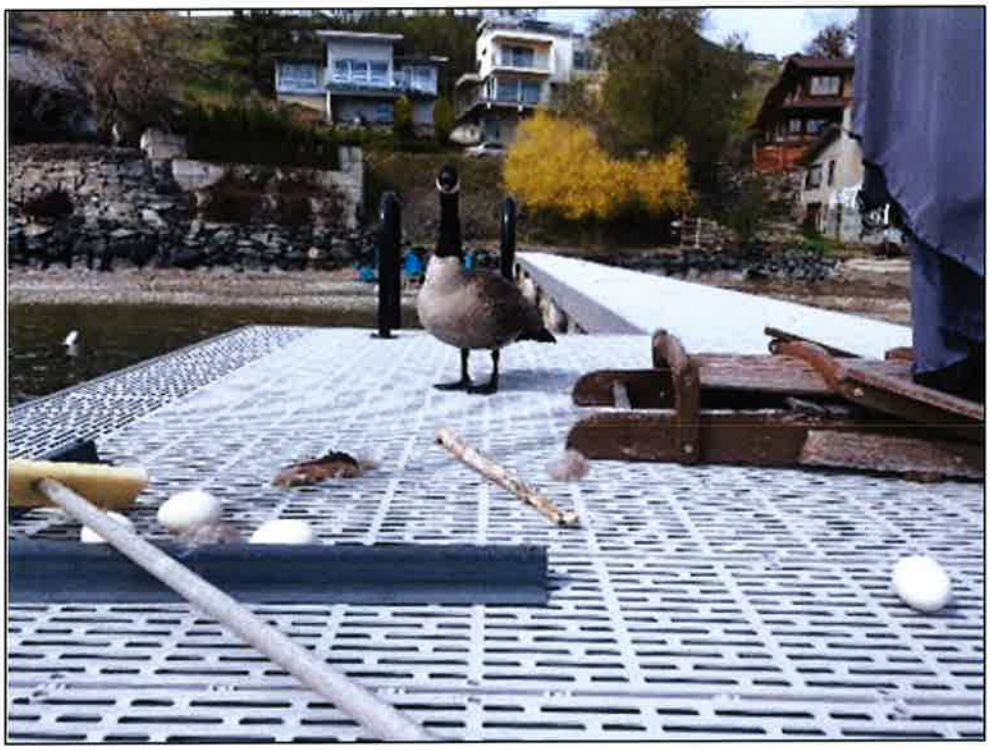
Polson Park Nest (April 27)



Nest at Cross Rocks (near 27th Ave and 43rd Street)

Nest along Okanagan Lakeshore (near Ellison Provincial Park)

Example of Boat Nest, Okanagan Lake (near Paddlewheel Park)



Nesting attempt along private dock (southwest of Kin Beach Park)

Nest along private dock (adjacent to above)