

Nakamun Oasis

Area Structure Plan

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20 May 2019

Ver. 2.1

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EXECUTIVE SUMMARY

This Area Structure Plan proposes to develop 108± acres of land into an environmentally friendly Campground and RV park on Nakamun Lake. 40 campsites, each on an area of 0.25 to 1.0 acres, will provide every campsite with privacy and maintain the natural ambiance for the benefit of guests, visitors, and local residents. Approximately 90 % of the land will remain in its natural state.

This Plan, the supporting documentation and technical studies, and the cited government documents show that this Development is compatible with local and regional interests. Public consultation was held on 10 March 2018, and this resulted in valuable feedback that has been proactively addressed in this ASP.

This Development is in the best interests of Lac Ste Anne County.

This Development will draw people to Lac Ste Anne County and will showcase the beautiful Alberta countryside. People will be able to stay and explore Nakamun Lake and the surrounding area. For people visiting resident friends and relatives of Nakamun Lake, this Development provides a nearby location where they can stay.

This Development will create jobs, support local businesses, and diversify Alberta's economy.

This Development will provide campground guests and Nakamun Lake residents with amenities to maximize their enjoyment of the Nakamun Lake area.

NAKAMUN OASIS — Area Structure Plan

1. INTRODUCTION

The increasing regional population and promotion of Alberta as a tourist destination is putting a strain on the existing recreational centers, to the point that Tourism Alberta is offering their services to entrepreneurs interested in developing recreational centers in Alberta.

Lac Ste Anne County is regional to Edmonton, and is well suited to capitalize on the growing regional population by providing residential and recreational opportunities to people living in and visiting the Edmonton area. Figure 1.1 presents the location of the Development in relation to Edmonton.

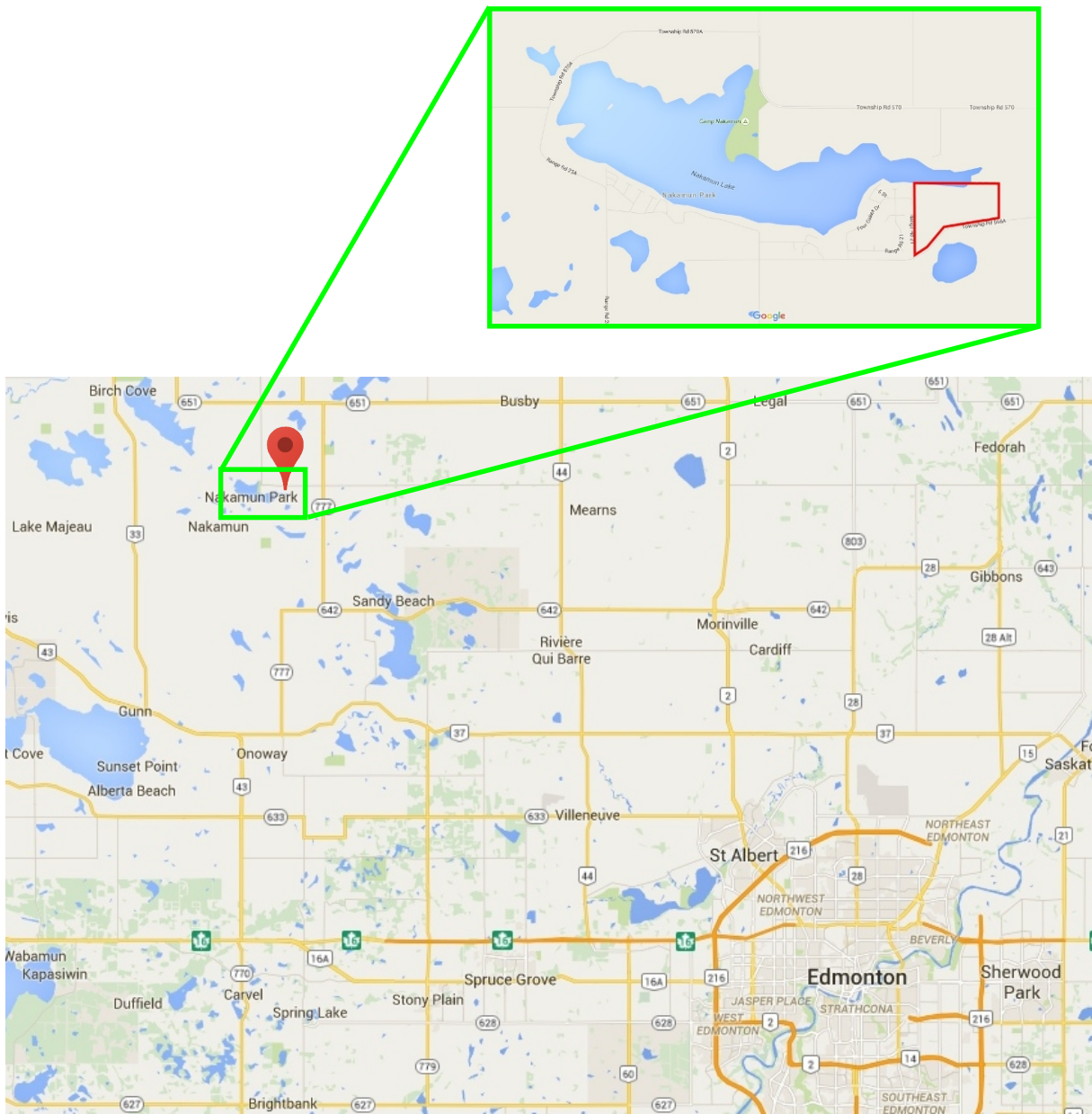


Figure 1.1 Location of the Development in the Edmonton regional area.

1.1 Background

Statistics Canada reports that Edmonton grew 13.6 % in population between 2011 and 2016, corresponding to a 2.7 % annual growth rate. Table 2.3.1 of the MDP indicates that Parks and Recreation lands in the County grew by 1.55 % annually from 2004 to 2012. Simply, more recreational land in the County will benefit the growing population and the County.

In 2009, Alberta Tourism, Parks, and Recreation commissioned a study that assesses the state of the supply and demand sides of the RV industry in Alberta, projects the future needs, and identifies best practices in campground operations.

On the demand side, their study found that camping is increasing in popularity. Even with the 2008 economic downturn, RV camping maintained its popularity, and forecasts suggest participation in RV camping will continue to increase given the affordability of camping and the existing investment in recreational vehicle ownership. Some see RV'ing as a low-cost leisure and/or vacation activity.

On the supply side, the study found that supply has not kept pace with demand. Campsites developed decades ago have deteriorated and do not provide the services for the new RV's and amenities for the campers. “[Campers] are looking for well maintained campgrounds that offer privacy and sites large enough for their RV camper.”

A 2015 infographic by the Canadian Camping and RV Council (Appendix A) compares the camping industry in Canada and Alberta. That information consistent with the 2009 Alberta Tourism study, and shows that Alberta continues to lag behind the rest of Canada with regards to services and amenities.

A 2017 KOA camping report (Appendix B) highlighted that research promoting the positive health benefits of time outdoors is resulting in families taking up camping as a healthy activity. The study found that campers perceive the benefits of camping to include stress reduction, improved emotional well-being, greater overall health, increased physical activity, and more quality time with family. The study found that children and teenagers are enthusiastic about camping for many of the same reasons given above. Additionally and humorously, some youth are happy to unplug from social media and others are eager to share the camping experience virtually with their friends on social media. The report predicts that RV usage will increase with the retiring baby boomer generation and improving economy. Furthermore, as gen-X'er reach middle age and look for better work-life balance, RV'ing will be an option for many to get out of the city and still have many amenities.

These studies helped inform the development of the *Nakamun Oasis* campground, with large private sites and the services and amenities expected by campers.

Critical observations are that:

- camping is a major Alberta past-time, and will be for the foreseeable future
- there are non enough camping spaces in Alberta

1.2 Area Structure Plan Purpose

This Area Structure Plan (ASP) has been prepared in accordance with the Lac Ste Anne County (County) Municipal Development Plan Bylaw 23-2014 (MDP) and s. 633 of the Municipal Government Act (MGA). This document presents the intent and rationale for a new campground and RV park (Development) adjoining Nakamun Lake. This ASP provides a framework for the construction and operation of the Development and supports the development permit applications.

The objective of this ASP is to show that the Development

- is compatible and complementary with the existing development on Nakamun Lake
- maintains the beauty and ambiance of the natural environment
- protects wildlife habitats and wetlands to allow for wildlife habitation and viewing
- maintains wetlands to benefit the overall health of Nakamun Lake
- creates trails to limit environmental impact, and links to existing park areas and trails
- contributes to the economic health of the County

1.3 Description of Development Area and Location

Subject Lands

As shown in Figure 1.2, the Development is located on the southeastern shore of Nakamun Lake, specifically the portion of SW36-56-2-W5M north of Township Road 565A.

The Development area encompasses approximately 43.7 ha (108 ac).



Figure 1.2 The location of the Development on Nakamun Lake.

Around 275 cabins and residences exist on the south shore, all to the west of the Development area. Lac Ste Anne County and Barrhead County border Nakamun Lake, and the Summer Village of Nakamun Park is 1.6 km (1.0 mi) to the west of the Development area.

As detailed in the Biophysical report and Figure 1.3, the Development area is predominately treed. The site is rolling, sloping northwest towards Nakamun Lake, which abuts the north edge of the property. People on off-road vehicles have, without the approval of the landowner, cut several vj690 through the Development area. The dominant of these trails are highlighted in Figure 1.3, and some are blocked by the trees.

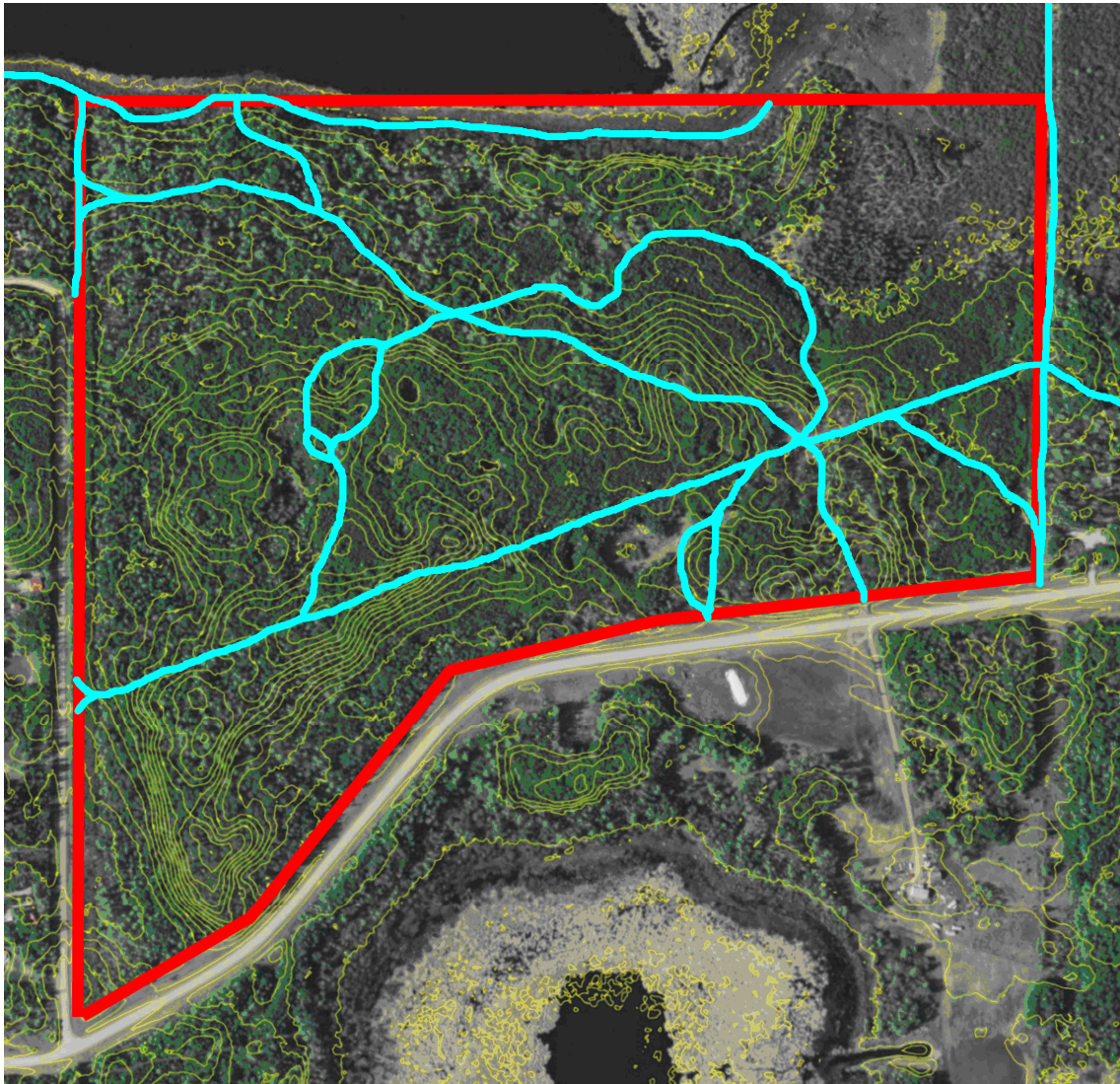


Figure 1.3 The Development area is identified in red, and the major trails in blue. The contour interval is 1.00 m.

The shoreline trail is of serious concern, as the shoreline is an environmentally sensitive area. Off-roaders enjoy the perpetually wet area and cut deep tracks in the mud. This Development would ban off-road vehicles on the property, control the shoreline development and use, and establish trails to guide pedestrian travel and limit environmental impact.

2. POLICY FRAMEWORK AND CONFORMANCE

2.1 Lac Ste Anne County Municipal Development Plan

The Lac Ste Anne County MDP was adopted in 2015. It establishes a framework for land use decision making within the County, and embodies the overall aims, ambitions, and philosophy that the County holds in relation to its development and growth for the next 20 years [MDP 1.1, 1.4]. Recreation is a core feature of the County, and is of increasing importance [MDP s. 2.1] with the increasing regional population in Edmonton and its satellite communities.

The County Vision projects that the County will be:

- *a liveable community that offers a wide range of urban and rural residential options, recreational amenities and community facilities for improved quality of life*
- *an environmental leader, with focus on preserving the unique character of water management areas around existing lakes and water bodies within the County.*

MDP 4.1

Section 9.3.2 of the MDP states that the County shall strive to attain a diversified economy, including tourism and recreational amenities. The County is also a partner with WILD Alberta and GROWTH Alberta, organizations that promotes outdoor activities in Alberta.

This Development does exactly this: creates a recreational environment that brings guests into contact with nature. This Development maintains the natural ambiance with large treed sites, no change to the topography, protection of wetlands, and visitor rules to minimally disturb nature. The on-site amenities are available to all and the Development will become a community hub for Nakamun Lake residents.

To maintain the natural ambiance of the Development area and Nakamun Lake region, the campground and RV park will have the following operating guidelines

- guests will be encouraged to use low-impact watercraft
- guests will be encouraged to remain on the trails
- off-road vehicles will be prohibited
- there will be designated areas for play and off-leashing pets

To support this ASP, the developer has commissioned the following independent reports

- Biophysical Environmental assessment of the Development area
- Geotechnical assessment of the Development area
- Traffic Impact assessment
- Stormwater management plan
- RSM calculation
- Noise study

Additionally, to gain insights into the concerns of Nakamun Lake residents, the developer has held a public forum and met with the SV Nakamun Park council. These events have resulted in valuable feedback that has informed this ASP and been proactively addressed in this ASP.

Sections 5.3.13 and 5.3.14 of the MDP identify conditions for the provision of new recreational services and amenities in the Agricultural Heartland. This ASP complies with these conditions in that

- the Development area is within an area identified as a Potential Recreation Area by the Map 3 of the MDP (copied as figure 2.1)
- the Development area is proximal to the residential area on Nakamun Lake, and will exchange services with this community

Future Development Concept

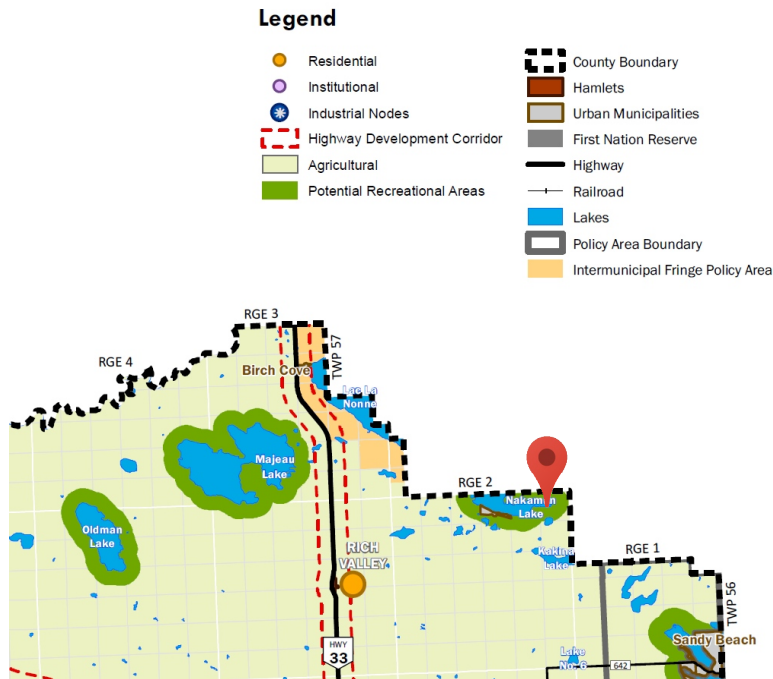


Figure 2.1 Section of Map 3 of the Lac Ste Anne MDP identifying the Development area as a “Potential Recreational Area”.

The land was redistricted to ‘Commercial Recreation’ (CREC) in 2018 to support the development of a campground. This ASP proposes the development of a campground and RV park that focuses on maintaining the natural habitat and the wetlands. This Development would benefit the County of Lac Ste Anne, Nakamun Lake residents, and the plethora of people looking for a back-to-nature camping opportunities.

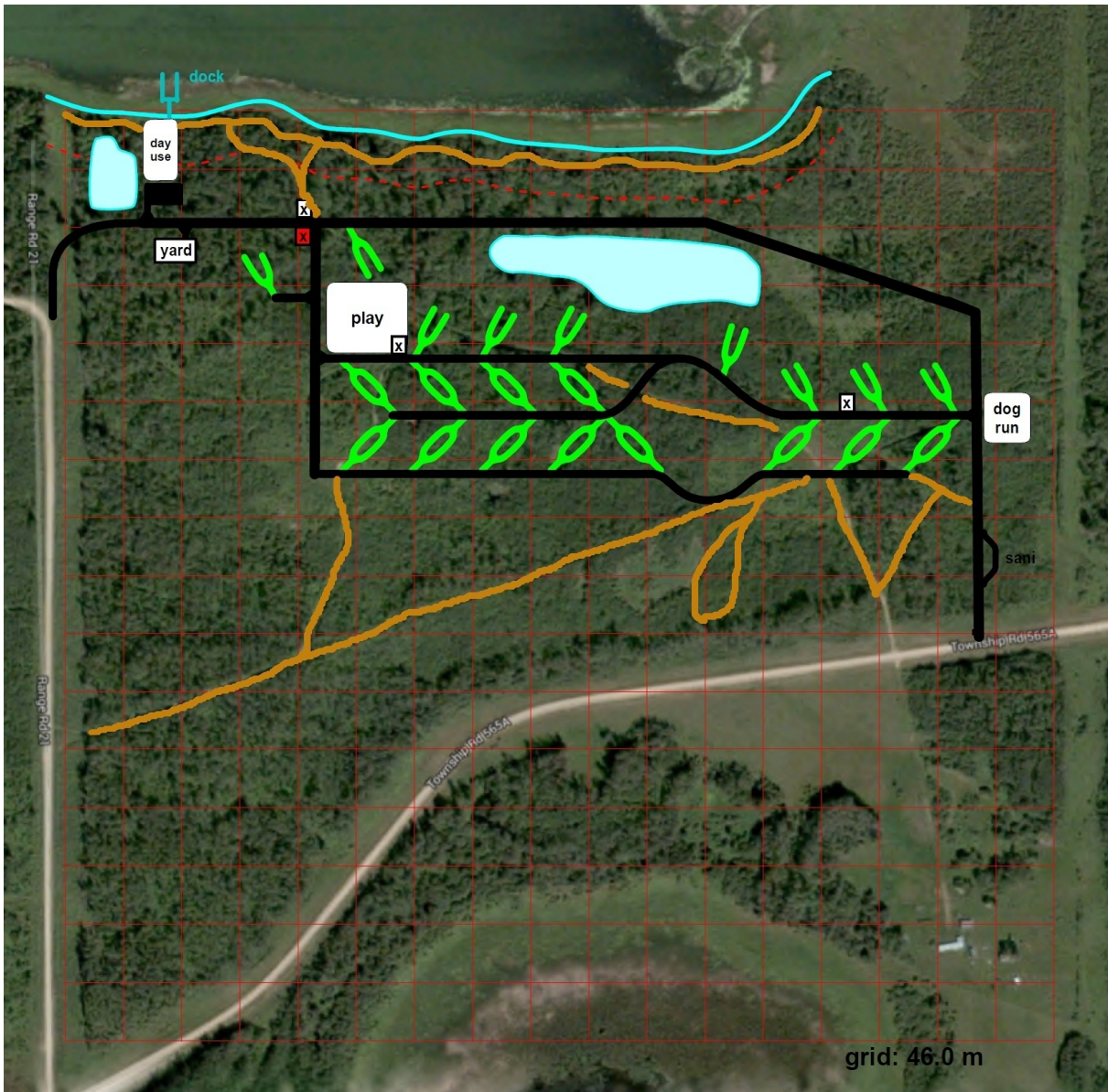


Figure 2.2 Proposed layout of the Development. A primary goal is to maintain much of the natural, treed environment, protect wildlife habitats, and provide natural wind and sound barriers.

Legend:

red grid: 46 m (150')	the blue line: ordinary high water mark (OHWM)
brown: existing trails	dashed red line: 40 m setback
X outhouse	X washroom/laundry building

Figure 2.2 illustrates the proposed layout of the Development. The layout is designed to maintain as much of the natural, treed environment as possible, protect wildlife habitats, and provide natural wind and sound barriers. The Development places each site on between 0.25 and 1.0 acres and maintains the trees to create a natural sound barrier. (See page 37 for more information on the site design.) Many of the existing trails will be retained and properly surfaced, and new trails will be cut to guide guests through the natural areas.

The Nakamun Estates residential area is to the west, with residences at least 20 m to the west of Range Road 21. The closest campsites in the Development are a minimum of 150 m to the east of Range Road 21. The result is a minimum of 180 m between the campsites and residences. Of this distance, at least 150 m is naturally treed. A Noise Study (section 3.7) shows that campground noise will be below background noise. Additionally, the Development will have rules on noise and quiet hours to benefit the guests.

Rural development

The Development is clustered close to the existing development on the south side of Nakamun Lake and conforms to the Future Development Concept (Map 3 of the MDP). The Development is also consistent with the recreational history of the lake and of its surrounding lands.

The Development will have amenities, employment opportunities, and business opportunities that will benefit the region.

- *Amenities*
 - park-like environment
 - playground areas and equipment
 - lake access
 - walking trails
 - fenced off-leash dog run
 - picnic/day-use areas
 - community waterfront fire pit
 - vending machines and/or concession
 - internet access
 - sani-station, water supply
- *Employment opportunities (during operation)*
 - customer service
 - food delivery
 - cleaning
 - security
 - maintenance
- *Business opportunities*
 - café and concession operation
 - local activities (horseback riding, market organization, etc.)
 - firewood supply
 - water delivery
 - garbage removal
 - waste removal
- *Employment opportunities (during construction)*
 - road system
 - electrical, gas, and water systems
 - buildings

- fencing

2.2 Lac Ste Anne County Land Use Bylaw

The Lac Ste Anne County Land Use Bylaw (LUB) was adopted in 2014. This ASP supports a Principle Use designation of Major Campground.

General Development Regulations

Section 10 of the LUB addresses General Development Regulations. The philosophy of the Development is to maintain as much of the natural environment as possible. The developer is in agreement with the best practices identified therein.

Consistent with section 10.2.19, the Development preserves wetlands and the natural flow of water on the Development lands. Our development practices, operating regulations, and the stormwater ponds will protect the wetlands.

Sections 10.2.21 to 10.2.28 address the development setbacks from water bodies, and details how the Riparian Setback Matrix Model (RSMM) is applied. Section 3.6 of this ASP presents an RSMM calculation for the Development land.

Specific Land Use Bylaw Regulations

Section 11 of the LUB addresses Specific Use Regulations.

Section 11.6 pertains to parks and recreational areas. We will work with the Development Authority to abide by these regulations for the day-use areas (11.6.1 to 11.6.7), semi-serviced campgrounds (11.6.19 to 11.6.30), and amenities (s. 11.6.34 to 11.6.42).

Parking Regulations

Section 12 pertains to parking, and these regulations will be followed. Each site will have sufficient parking for each guest. An additional parking lot will adjoin the day-use area, and will be capable of holding approximately 35 vehicles.

2.3 Summer Village of Nakamun Park Municipal Development Plan and Land Use Bylaw

The Summer Village of Nakamun Park (SV) MDP and LUB do not specifically apply to the Development area. However, the proximity of the Development and the SV means that amenities could be shared. For example, several sections of the SV MDP emphasize the recreation focus of the SV, and further identifies amenities desired by the SV to enhance the experience of Nakamun Lake residents. The Development has some of these amenities, and they will be open to Nakamun Lake residents.

Sections 39 and 40 of the SV LUB restrict the use and parking of recreational vehicles (termed “holiday trailer” in the LUB) within the SV. There are no nearby places for family and visitors of

Nakamun Lake residents to stay. This indicates demand for an area at Nakamun Lake where legal camping is permitted. This Development provides owners and their visiting guests with a nearby location to reside while they visit and enjoy the Nakamun Lake area.

The Development supports and abides by the principles of environmental stewardship identified in section 4.2 of the SV MDP.

Section 4.3 of the SV MDP identifies the need for park and playground equipment and facilities as the population of the Summer Village increases. It further recognizes the need for future parks, recreational facilities, and walking paths in areas that provide lake access. The Development will have a park-like environment with recreational facilities, picnic areas, playground areas, playground equipment, walking paths, and lake access.

Section 4.6.2.1 states that the SV encourages the retention of as much of the wooded area as possible in developments adjacent to the SV. While the Development is not adjacent to the SV, a primary goal of the Development is to retain as much of the natural forest as possible. Approximately 90 % of the forested area will remain — much higher than most other forms of development.

2.4 Lac la Nonne State of the Watershed report

The 2006 State of the Watershed report* (SOWR; Appendix C) provides information on three lakes, one being Nakamun Lake. Table 2 from the SOWR is reproduced as figure 2.3, and provides physical data on Nakamun Lake.

Parameter	Lac La Nonne ¹	Nakamun Lake ²	Majeau Lake
Drainage Basin Area	129.91 km ²	48.58 km ²	102.64 km ²
Lake Area	12.28 km ²	3.54 km ²	12.14 km ²
Drainage Basin/Lake Area	10.5	13.7	8.45
Volume	95,956 dam ³	15,800 dam ³	N/A
Maximum depth	20 m	8 m	1.2m
Mean annual inflow	14, 241 dam ³	1,320 dam ³	N/A
Mean annual outflow	6,399 dam ³	N/A	N/A
Residence time	6.5 years	21 years	N/A

¹ Data from Alberta Environment (1980).

² Data from Mitchell and Prepas (1990).

Figure 2.3 Physical data on the lakes reported on in the Lac la Nonne State of the Watershed report.

* Prepared by Aquality Environmental Consulting for the Lac la Nonne Watershed Stewardship Society and Partners.

Table 4 from the SOWR is reproduced as figure 2.4, and shows that Nakamun Lake is in significantly better health than Lac la Nonne and Majeau Lake.

Mean Parameter ¹	Lac La Nonne	Nakamun Lake	Majeau Lake
Total Phosphorus (µg/L)	260 (hyper) ²	77 (eutrophic)	540 (hyper)
TDP (µg/L)	N/A	24	396
Total Nitrogen (µg/L)	2339	1780	3875
Nitrate + Nitrite (µg/L)	107	14	76
Period of Record	May 78 – Oct 79	May 83 – Oct 03	Mar – Jun 81
# of Observations	48	91	125

¹Data from Alberta Environment (2006).

²Hyper = hypereutrophic (see Figure 11 for Alberta Lake trophic status definitions).

Figure 2.4 Information on the lakes reported on in the Lac la Nonne State of the Watershed report.

Section 4.2.3 of the SOWR lists activities identified by residents that negatively impact watershed health, in order of importance and impact. This list is reproduced below:

1. low water levels
2. application of agricultural fertilizers and/or other chemicals
3. livestock grazing and/or manure management practices
4. cottage septic/wastewater systems
5. application of lawn fertilizers and/or other chemicals
6. upstream on-farm/private/municipal drainage
7. annual agricultural cropping practices
8. water allocations or withdrawals
9. lakeshore cottage/beach development
10. clearing of riparian and/or shoreline areas
11. removal of lakeshore and aquatic vegetation
12. local oil and gas activity
13. erosion/sedimentation/runoff
14. recreational activities
15. other activities

Under the previous agricultural zoning, cropping and grazing would have a greater impact on the watershed — #2, #3, #7, #8, #10, #13 — than recreation (#14). Use of the land for recreation is by far the most environmentally friendly option.

The report concludes in section 11 that “overall, the watershed health is good”.

3. SITE CONTEXT AND DEVELOPMENT CONSIDERATIONS

3.1 Current land description

Ownership

The Development area and land to the south is owned by the developer. The Land Title is attached as Appendix D. To the north is Nakamun Lake. To the east and south is agricultural land. To the west is Range Road 21 and beyond that the multiparcel subdivisions of Four Oakes and Nakamun Lake Estates. Nine residential parcels are adjacent to the west side of Range Road 21. There are approximately 23 acres of public reserve land in those subdivisions, some of which fronts onto Nakamun Lake.

3.2 Biophysical assessment

A Biophysical Assessment (BA) of the Development area was completed by MCA Environmental in January 2018. The complete BA is included as Appendix E. The BA included field reconnaissance, review of scientific literature, desktop analysis, and is considered a comprehensive site-specific investigation. The topography, geology, hydrology, vegetation, and wildlife were characterized, and the connectivity and sustainability of the ecosystem assessed in the context of the proposed development.

Vegetation

Section 5.7 of the BA identifies eight unique areas (A – H) in the Development area. These areas are presented in Figure 3.1.



- | | |
|--|---|
| <i>Area A:</i> young Poplar | <i>Area F:</i> Aspen and Poplar |
| <i>Area B:</i> mature Aspen and Poplar | <i>Area G:</i> disturbed gravel deposit |
| <i>Area C:</i> wooded Willow swamp | <i>Area H:</i> sedges |
| <i>Area D:</i> Aspen and Poplar | <i>Area I:</i> waterfront |
| <i>Area E:</i> Black Spruce fen | |

Figure 3.1 Map 15 from the Biophysical Assessment, showing the type and distribution of vegetation and ground cover.

Figure 1.3 shows that there is a 2 m to 5 m rise in elevation within a few meters of the shoreline. This is also evidenced in Figure 3.1 with the narrow shoreline area I, while areas B and F are mature forests. This results in a significantly narrow riparian area that is limited to area I.

The Development is proposed for areas B and D, which are Aspen and Poplar forested areas.

Area B. Section 6.2.1 of the BA states that, for area B, “if further clearing and fragmentation is pursued in this area, it should be undertaken in a manner that limits excess tree removal outside of necessary lot envelopes and seeks to preserve older trees and existing vegetation.”

- *Nakamun Oasis* is a low-density campground with a back-to-nature focus. In area B, only around 5 % will be developed into roads, sites, buildings, stormwater ponds, play areas, etc.
- The location of the NW stormwater pond cannot be changed, so adjoining the pond with the parking lot, and day-use area will limit fragmentation.
- Clearing for the play area, day-use area, and dog run will leave stands of trees to provide shade. The stands will contain mature trees.
- Large tracts of area B will be left in their natural state.

Area D. Section 5.7.2.4 of the BA states that area D “will probably remain sustainable even after some further encroachment or stress.”

Given this, it is evident that the proposed development in these areas is consistent with the BA.

Wetlands

Section 5.8 of the BA lists areas C, E, and H as wetlands. This ASP does not propose any additional development in these areas.

Wildlife and biodiversity

Section 5.9 of the BA lists a plethora of wildlife, both birds and ground animals, that likely live in or transit the Development area. This ASP endeavors to retain the natural beauty and wildlife habitats and retain tracts of land in its natural state. A trail system will be developed to guide visitors through the natural areas. The exact location of the trails has not been finalized, but will incorporate some of the existing trails (shown in figure 2.2), and will follow the terrain to limit the environmental impact.

Section 5.10 of the BA presents the biodiversity of the Development area. Notably, s. 5.10.1 states “the total number of species with each eco unit examined appeared abundant.” No species at risk were observed and a search of the Alberta Conservation Information Management System (ACIMS) found that no endangered or listed species were known to be in the Development area.

Section 5.11 of the BA lists actions that might threaten the biodiversity. Reduction of habitat and fragmentation of forest stands could result in a biodiversity decline. Clearing and fragmentation is minimal compared with, for example, residential lots or agricultural clearing. Approximately 90 % of the land will remain in its natural state.

The existing residential development already prevents wildlife migration along the south shore of Nakamun Lake. This ASP provides wildlife with barrier-free access to Nakamun Lake and along Township Road 565A to Range Road 21. To co-exist with wildlife, Development roads and trails will minimally impede wildlife, and may facilitate wildlife movement within the Development.

Section 5.12 of the BA states, “The ecosystem on site shows suitable richness and diversity that it should be sustainable and able to withstand development for recreational purposes.”

Gravel extraction

A deposit of gravel (Deposit) exists on the southeast corner of the ASP lands, and is identified as area G in figure 3.1. At this time, there are gravel piles and some steep embankments. This area will be remediated as part of the Development, and the existing material used to complete the development.

Because this area is already open, it will be used as a staging area for campground construction. Thus, the remediation, in accordance with section 3.5.9 of the LUB, will be done in two phases.

Remediation Phase 1 (weeks 2 – 4)

- the Deposit area will be levelled and returned to its normal stormwater flow pathway
- the embankments will be toppled and used to create a 5:1 gradient embankment

Campground construction

- the Deposit area will serve as a staging area for people, equipment, and supplies
- the Deposit area will be used to store the overburden and excess material
- any already-extracted material will be used to complete the roads of the Development

Remediation Phase 2 (weeks 22 – 23)

- excess fill will be used to restore features to the Deposit area
- excess topsoil will be spread in the Deposit area
- a small berm will remain towards TWP Rd 565A to create a sound, sight, and wind break

Recommendations

Section 6 of the BA provides recommendations to integrate the development of a campground and RV park into the natural environment. The recommendations are summarized below, and this ASP integrates these recommendations into the development design to make the Development environmentally friendly.

- maintaining the natural contours and stormwater drainage flows
- moderate stormwater drainage to limit erosion and allow for sedimentation
- protecting the wetland areas E and H (note 1)
- conserving as much of the natural forest as possible to enhance habitat and ecological areas
- preserving natural habitats and maintaining biodiversity
- limit the amount of development in areas B and F
- locate roads to limit loss of mature trees, limit construction, and create generally level roads
- locating sites in areas that require minimal levelling
- retaining area A as a buffer between the Development and Range Road 21
- reclaiming the area of the gravel deposit

- implementing campground policies that limit environmental degradation (see below)
- implementing practices that limit contamination of stormwater and Nakamun Lake
- supplying drinking water; tanking wastewater
- using existing resources (topsoil, gravel) in the construction
- taking appropriate control measures for invasive plant and animal species
- designing low-impact trails to limit environmental degradation
- preparing educational material to inform visitors of the natural environment

Note 1: Figure 3.2 shows the existing (black) and proposed (grey) roads. A road currently exists in area E, and no further development will take place in this area. The new roads balance environmental impact and level roads.

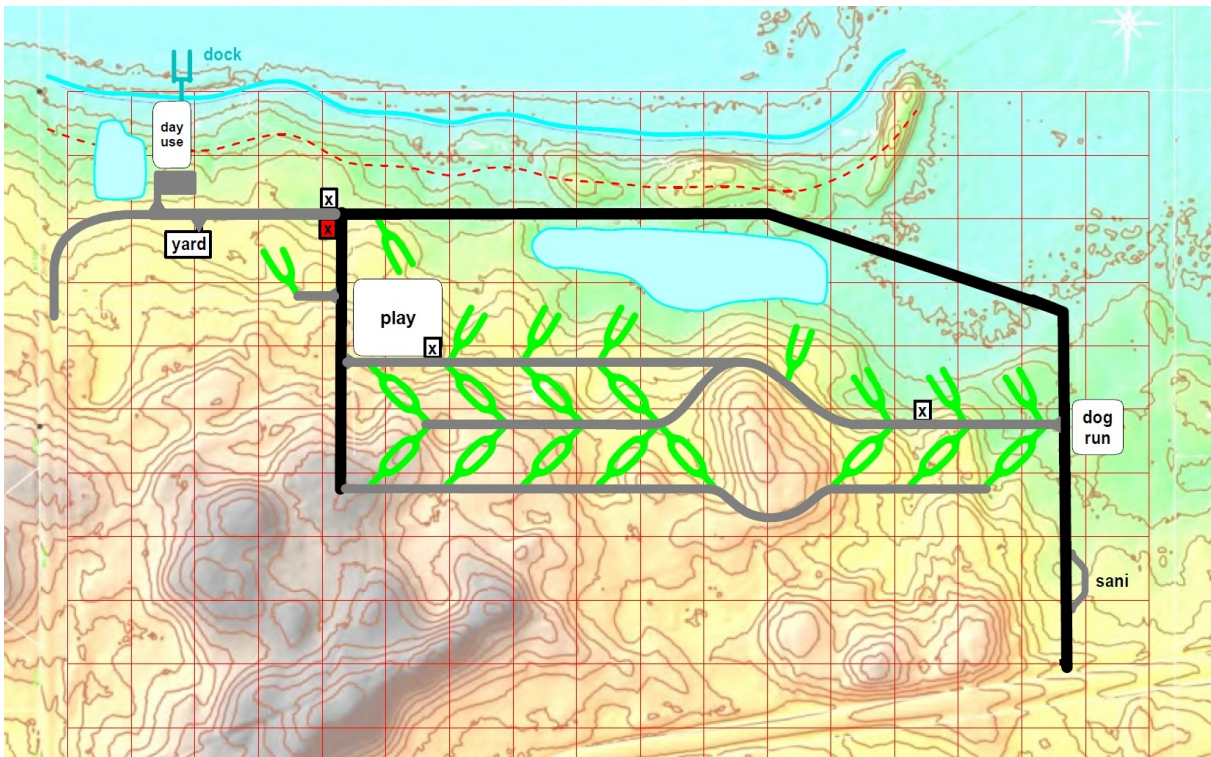


Figure 3.2 Existing and proposed road structure.

Limiting environmental degradation

Numerous considerations in this ASP strive to maintain much of the natural, treed environment, protect wildlife habitats, and provide natural wind and sound barriers. All of this with the goal of developing a campground that provides guests with privacy and maintains the natural ambiance for the benefit of guests, visitors, and residents.

Development phase

- limit cutting of trees, with a focus to retain mature trees
- walking trails to limit environmental impact
- large tracts of land to remain in their natural state
- consolidate all waterfront development to one area, and closest to existing development
- avoided development in wetland areas
- approximately 90 % of the Development land remains in its natural state

Operation phase

- ban on cutting of trees
- ban on generators
- ban on off-road vehicles
- designated off-leash area
- walking trails to limit environmental impact, and link to existing park areas and trails
- guests encouraged to stay on trails
- guests encouraged to use low-impact watercraft

All guests will sign a use agreement that lists permitted and prohibited activities. Breach of the agreement would result in sanction, from a warning to eviction. Any person can be asked to leave at any time under the Alberta Trespass to Premises Act.

3.3 Geotechnical assessment

A Geotechnical assessment (GA) of the Development area was completed by DGE Engineering on 12 January 2018. The complete GA is included as Appendix F. The GA included field surveys, field drilling, desktop and laboratory analysis, and is considered a comprehensive site-specific investigation. Surface and subsurface soil composition and conditions were explicitly determined, plus the level of the groundwater.

Fourteen test holes were drilled, ranging in depth from 0.08 m to 8.84 m. Four test holes were approximately 8 m deep, and used to monitor groundwater level. The general stratigraphy encountered was surface topsoil, underlain by clay till, underlain by sand or high-plastic clay, and then transitioning back to clay till to the depth of drilling. Two test holes had surface gravel that prevented penetration of the drill. A gravel deposit exists in the southeast corner of the ASP lands, and was not investigated.

The groundwater level in two boreholes was found to be approximately 2.0 m above the level in Nakamun Lake after 17 days of settling.

The report found no reasons that would interfere with the development of roads, campsites, cabins, and the ancillary buildings described in this ASP.

The report provided recommendations for the construction of buildings and roads, including site preparation, foundations, grade beams and pile caps, grade supported floor slabs, the type of cement, and subgrade and grade development. These recommendations will be followed in the construction of the Development.

3.4 Stormwater management plan

A Stormwater management plan (SWMP) of the Development area was completed by Bob Quazi of River Engineering Consulting on 14 June 2018. The complete SWMP is included as Appendix G.

The SWMP determined the stormwater management requirements for a 1:100 year, 24 hour rainfall. Four drainage basins were identified, and are shown in figure 3.3. Of the four basins,

- basin 1 will drain to a central pond constructed as part of the Development and in accordance with the Lac Ste Anne MDP
- basin 2 drains to a wetland area on the northeast portion of the Development property. The wetland serves to manage the stormwater, so no further stormwater management is required.
- basin 3 will drain to a pond in the northwest portion of the Development constructed as part of the Development and in accordance with the Lac Ste Anne MDP
- basin 4 drains to the ditches along RR 21 and TWP RD 565A. These ditches serve to manage the stormwater, so no further stormwater management is required.

The stormwater retention ponds for basin’s 1 and 3 will be wet (as recommended in section 9.6.21 of the County MDP), allow for the settlement of suspended sediment, and control the release of water into Nakamun Lake. These ponds will have a upper crest at minimum 683.0 m (1.0 m above the lake level of 682.0 m), and outflow orifices of 100 mm and 75 mm, respectively.

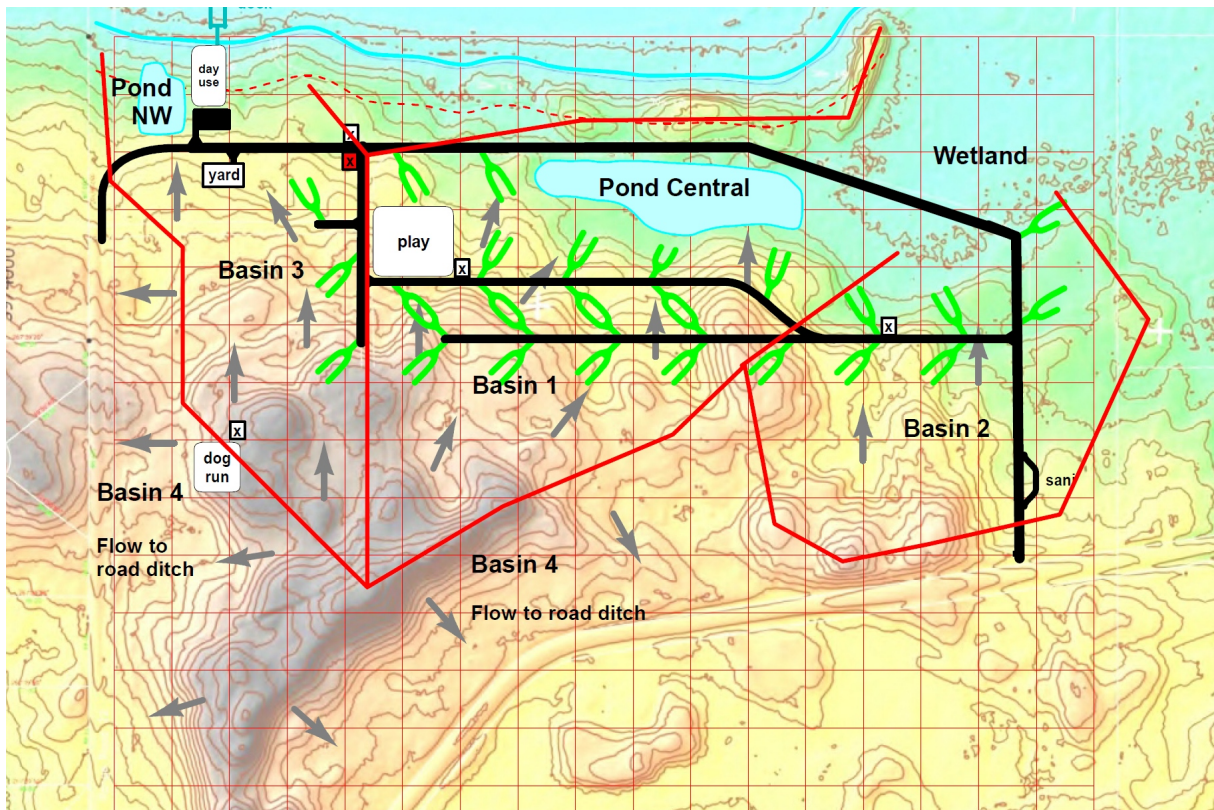


Figure 3.3 Figure 4 from the Stormwater management plan, identifying the drainage basins and stormwater management ponds on the property.

3.5 Transportation impact assessment

A Traffic impact assessment (TIA) for the roads leading to/from the Development area was completed by D&A Paulichuk Consulting, Ltd. on 21 May 2018. The complete TIA is included as Appendix H.

The TIA uses the Institute of Transportation Engineers Trip Generation Manual (9th Edition) to estimate the number of trips to and from (1) the existing residences and (2) the Development. The Trip Generation Manual contains data on trips from campgrounds and RV parks, and this was used in the calculations. Local field counts for an entire weekend validated the original TIA and reaffirmed that the roads are capable of handling the increased RV traffic.

The TIA calculates the traffic volume, analyzes the traffic flow patterns, and assesses what road upgrades are necessary to handle the increased traffic volume. To validate the data, the TIA compared the predicted number of trips with the actual trips from a 2017 Alberta Transportation study of traffic on the south side of Nakamun Lake. The agreement was within 10 % of the actual number of trips, confirming the Trip Generation Manual is accurate.

Figure 3.4 presents the predicted daily vehicle rates for the current residences and the Development operating at half and full capacity, which are the expected mid-week and weekend capacities, respectfully.

Location	Sites	Daily vehicle traffic*	Notes
Current residences	275	660	primarily mon – fri
Nakamun Oasis			
• weekday (50 % occupancy)	20	48	primarily mon – thu
• percent increase		7%	
• weekend (100 % occupancy)	40	96	primarily fri – sun
• percent increase		15%	

* Calculated using the Institute of Transportation Engineers Trip Generation Manual, 9th Edition.

Figure 3.4 Predicted daily vehicle rates.

Figure 3.4 shows that there will be up to 15 % increase in traffic. However, that traffic will avoid the residences on Nakamun Lake. The TIA predicts that 75 % of the traffic will travel west on TWP 565 and down either RR 21, and 25 % will travel east on TWP 565.

While figure 3.4 presents daily values,

- the peak traffic periods for the current residences are monday to friday morning and afternoon, as people leaving/return from work/school.
- the peak traffic periods for the Development will be friday afternoon as people come to the campground, and sunday afternoon as people leave the campground.

Thus, the only overlap in peak travel periods is friday evening.

The TIA found that the roads leading to the Development are operating at around 4.2 % their design capacity. That is, the Collector roads are designed for volumes of up to 450 vehicles per hour, but the actual daily volumes are around 450 vehicles per day. Accounting for the seasonal nature of the traffic:

- summer volume is projected to be 660 vehicles per day, or 6.1 % utilization
- fall/winter/spring volume is projected to be 300 vehicles per day, or 2.8 % utilization

The figure shows the seasonal nature of the *Nakamun Oasis* campground. The added traffic from *Nakamun Oasis* would increase the road utilization to 7.0 % of design capacity during the summer months (June to September), and negligibly increase utilization at other times.

The TIA found that the increased traffic did not warrant road upgrades for turning lanes, sight lines, intersection illumination, or traffic signals.

The TIA does recommend

- the removal of a tree blocking the sightline at the corner of RR 21 and TWP 565
- traffic stop control at the north end of RR 21, which will be an emergency exit for the Development

The developer will abide by these recommendations.

Section 6.1 of the TIA concludes, “Overall, the proposed *Nakamun Oasis* RV Park development does not impact the existing transportation infrastructure in the area surrounding Nakamun Lake.”

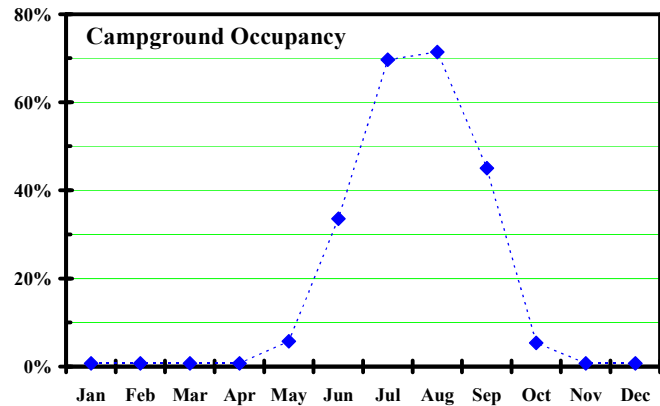
Further investigation, with local field counts for an entire weekend, validated the original TIA and reaffirmed that the roads are capable of handling the increased RV traffic.

The updated TIA noted that RV’s, while large, have lower mass than farm equipment and commercial vehicles. They are much like a bus. That is, their affect on the road is low. Analysis found that regular maintenance of the existing roads is by far the most cost effective strategy. Road upgrades are not required for the foreseeable future.

Road utilization

During the camping season (May to October), the main entrance will be on TWP RD 565, and signage will direct guests to use this access. Appropriate signage will identify the RR 21 access as “No Exit / No Entrance” and indicate that this access is emergency exit only. An electric gate will prevent ingress and egress. Staff may use the RR 21 access.

During the off-season, the only accessible area will be the day-use area. A gate will prevent access from TWP RD 565, and internal gates will prevent access to the campsites. Appropriate signage will indicate that RR 21 is the main entrance. Traffic during the off-season is expected to be limited to the caretaker and local residents using the facilities.



3.6 RSMM calculation

The developer recognizes the importance of determining and preserving the riparian area. The shoreline topography is presented in Figure 3.5, and shows a 2 m to 5 m rise in elevation within a few meters of the shoreline. The Biophysical Assessment shows that this results in a narrow riparian area. To the northeast, the land is low, creating a wetland. The extent of the wetland is also visible in Figure 3.5.

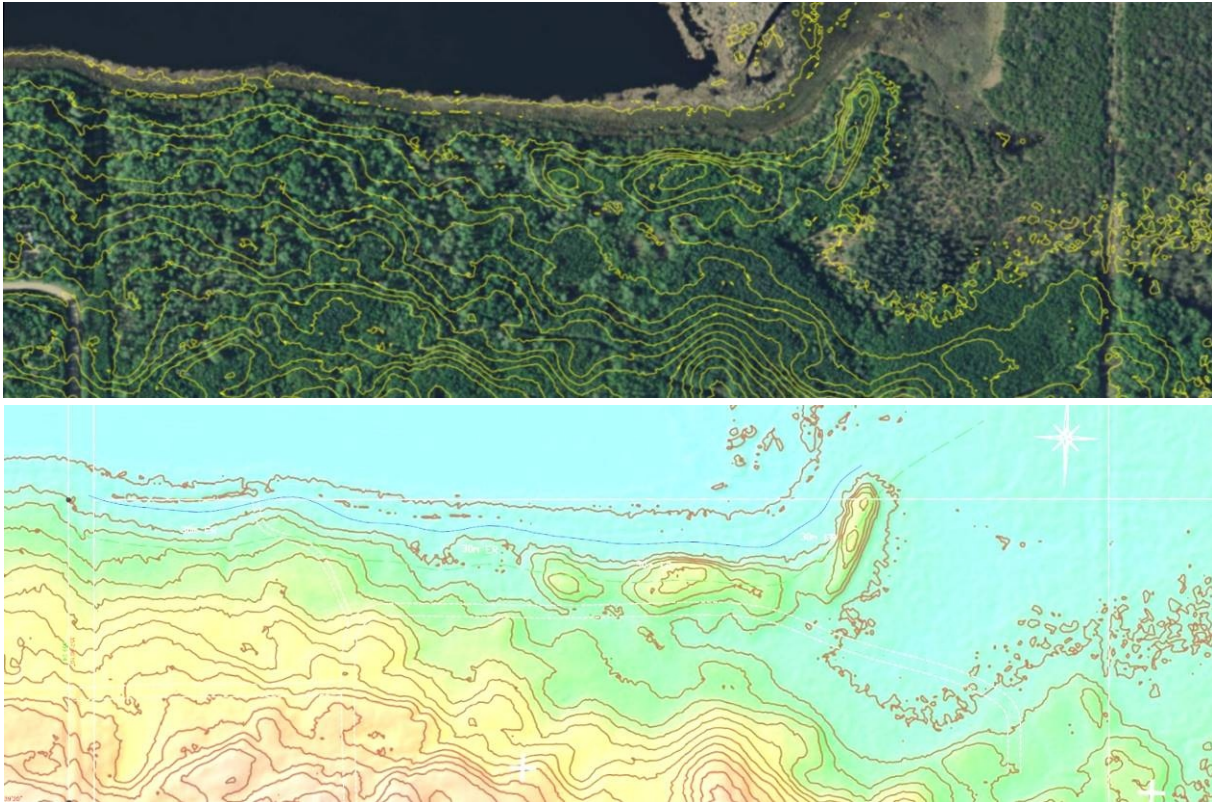


Figure 3.5 Topographical maps of the shoreline with Nakamun Lake. The top image shows the foliage. The bottom image also includes the ordinary high water mark (OHWM; dashed blue line).

Map 15 of the MDP gives the area a preliminary setback of 60 m, but section 10.2.25 of the LUB recognized that environmental conditions could vary significantly within property lines, and that determination of conditions on the ground within a property is required to establish appropriate setbacks.

The Riparian Setback Matrix Model (RSMM) was developed by *Aquality* Environmental Consulting, Ltd., and determines the development setback from the water. The MDP states that the RSMM is designed to protect the natural environment and protect the aquatic environment from pollution, with pollution including agricultural run-off, animal waste, and erosion. The RSMM takes into account vegetation, slope, groundwater, soil texture, and land use.

In fall 2018, Lac Ste Anne County commissioned *Aquality* to prepare an RSMM on Nakamun Lake (Appendix I). *Aquality* calculated a 40 m setback.

Limited development in the setback area is allowed by section 9.10.12 of the MDP and sections 15.1.34 and 15.1.35 of the LUB.

Development will be limited to

- a 20 m wide day-use area with picnic tables
- the day-use area will retain stands of trees, (mature trees preferred), to provide natural shade
- a floating dock
- 2 m wide walking trails with a permeable surface (gravel or wood chip)
 - existing paths would be converted to formal walking trails
- the NE stormwater pond as identified in section 3.4

3.7 Noise study

Concerns regarding noise have come from residents to the west of the *Nakamun Oasis* development, on RR 21. A Noise study was completed on 25 September 2018 by Donald Olenek, an acoustical engineer, and is attached as Appendix J. This noise study was conducted based on the assumption that there would be 160 RV sites.

Reviewing the acreages that border on RR 21, most acreages have a substantial tree buffer between their home and RR 21. One home is visible through the trees, and another home has no tree buffer. As the forest on the *Nakamun Oasis* property is uniform along RR 21, a single location was selected as a ‘worst case’ test location. Figures 3.6 and 3.7 shows the location of the acreages, the uniform forest on *Nakamun Oasis*, the test location, and the level of defoliation.

Key details and conclusions from this study are listed below:

- sound is attenuated by 40 dBA from the test location to the road (≈ 46 m)
- there is an additional ≈ 25 m from the road to the outside wall of the nearest residence and ≈ 32 m to their door; this additional distance causes the attenuation to be 44 dBA
- the study was done in the fall, when about $\frac{1}{2}$ of the leaves had fallen; with full foliage, the attenuation will be greater
- the study was done with negligible wind; increased wind would increase the rustling of leaves and increase the background noise

Pertaining to the operation of *Nakamun Oasis*:

- the peak operating period is in summer, where foliage is at a maximum
- ATV used by guests is prohibited at all times
- generators are prohibited unless there is a power outage
- the only noise sources are music and talking
- there is a campground noise restriction from 2300 to 0800 daily

Numerous sources say that 80 dBA corresponds to a vacuum or loud stereo. At this level, conversation is impossible. With 44 dBA attenuation, the noise level at the residence would be 36 dBA, well below the background noise level of 43.7 dBA.

In summary, the study found that loud noise on a campsite would drop below the background level by the time the sound propagates to Range Road 21.

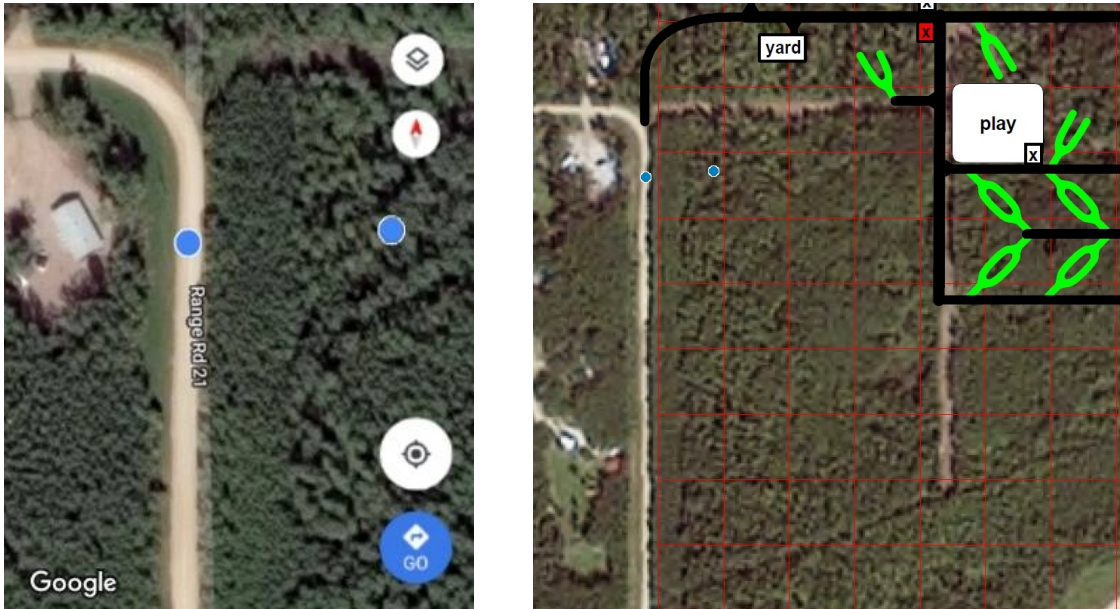


Figure 3.6 The location of the acreages, the uniform forest on Nakamun Oasis, the location of the sound test.



Figure 3.7 Images taken from the middle of the road (top) in the direction of the sound source, and (bottom) towards the residence. The level of defoliation is estimated at 50 %.

3.8 Additional site considerations

FireSmart

While an important feature of this Development is the immersion of guests into the beauty of nature, numerous FireSmart and common-sense principles will be considered and integrated to protect structures and environment, including

- fire resistant building materials
- landscaping that provides a fuel-free space around buildings
- contained fire pits in campsites
- landscaping that provides a fuel-free space around campsite fire pit
- posting regional fire-hazard ratings
- enforcing regional fire bans in the Development, when in effect
- fixed fire-suppression equipment on and in buildings
- portable fire-suppression equipment on site

Nakamun Lake boating

This ASP does not include plans to build, nor is there any future intention to build, a boat launch. We do encourage and recommend guests partake in boating using low-impact watercraft. Low-impact watercraft are herein defined as canoes, kayaks, paddleboards, and vessels with electric motors or motors less than 20 hp.

A floating dock will be constructed so that guests can board and disembark vessels, and tie up vessels while they are staying at the Development. Residents may use the dock when using the Development amenities.

3.9 Stakeholder feedback

Stakeholders contacted as part of this development

- Lac la Nonne Enhancement and Protection Association (LEPA)
- Broader community through a mailout and public forum
- Summer Village of Nakamun Lake
- County of Barrhead

Lac la Nonne Enhancement and Protection Association

LEPA was informed of the Development. Information was requested about upcoming LEPA meetings, and permission was requested to attend and present the proposal.

LEPA did not respond.

Public forum feedback

A public forum was held on 10 March 2018 in the Stettin-Nakamun Hall, approximately 5 km south of the ASP lands. This forum was held for a previous and larger development, with 160 campsites. The current ASP, submitted to the County for approval, is for 40 campsites.

Notice of the forum was mailed to residents within 3 km of the ASP lands, posted on the Summer Village websites, and advertised in the Onoway Voice and Lac Ste Anne Bulletin. The forum notice also allowed recipients respond via email. The Developer was available to discuss the details of this proposal, get feedback to improve the development, and answer questions of residents and interested persons. This allowed the Developer to address these concerns in this application, so that it best addressed the needs of the Edmonton region, Lac Ste Anne County, and Nakamun Lake residents.

The posters presented details on the layout, amenities, benefits to the community, secondary business opportunities — the information in this ASP — and pre-emptively addressed some likely resident concerns. Appendix K presents photos from the public forum.

Attendees were asked to sign in and were given a comment sheet with which to provide written feedback. 78 people attended the afternoon session, 6 people attended the evening session, 11 comment sheets were returned, and 9 emails were received and responded to. (Appendix L)

During the discussion and reviewing the comments, several topics of concern became apparent:

- too much development
- increased lake usage
- increased traffic
- increased off-road vehicles
- increased crime
- increased noise
- decreased water quality
- environmental damage
- decreased property values

These topics are discussed below.

Too much development. The concern is that Nakamun Lake is already overdeveloped.

The issue of what constitutes too much development in an area is complicated and subjective.

Based on shoreline development, a Google Maps distance calculator estimates that approximately 31 % of the Nakamun Lake shoreline has been developed into subdivisions and acreages. The remaining 69 % is park, agriculture, or undeveloped. Nakamun Lake has the least developed shoreline of the major lakes in the County. Even after *Nakamun Oasis* is developed, the shoreline development will be 36 % — still the lowest of the major lakes.

The points below present the shoreline development of nearby major lakes and the campgrounds on those lakes. It is assumed that 4 people reside in every lot.

The ‘acres / lot’ is the average lot size, independent of campground green space.

The calculated ‘people / acre’ is the population density for the entire campground, including green space.

- Lake Isle shoreline is about 38 % developed
 - Sunset Shores RV Resort has 55 lots in 13 acres (0.12 acres / lot; 16.7 people / acre)
 - Camp He Ho Ha is on this lake
- Lac Ste Anne shoreline is about 48 % developed
 - Alberta Beach RV Park has 93 lots in 8.5 acres (0.08 acres / lot; 43.8 people / acre)
 - Kacikewin RV Campground has 86 lots in 9.5 acres (0.10 acres / lot; 36.2 people / acre)
 - Lakeview Campground has 255 lots in 65 acres (0.10 acres / lot; 15.7 people / acre)
- Lac la Nonne shoreline is about 49 % developed
 - Sunny Shores RV Park has 300 lots in 22 acres (0.06 acres / lot; 54.5 people / acre)
 - Willowbend Resort has 175 lots in 26 acres (0.06 acres / lot; 26.9 people / acre)
 - Killdeer Beach Resort has 140 lots in 10 acres (0.07 acres / lot; 56 people / acre)
 - Camp Encounter is on this lake
- The Morinville RV Park has 36 lots in 2.2 acres (0.06 acres / lot; 65.4 people / acre)
- The Nakamun Store RV Park has 26 lots in 1.8 acres (0.07 acres / lot; 57.8 people / acre)

- Nakamun Lake shoreline is about 31 % developed
 - Camp Nakamun is on this lake
 - SV Nakamun Park has 192 residences in 75 acres (10.4 people / acre)
 - ***Nakamun Oasis* has 42 lots in 108 acres (1.6 people / acre)**

The above data shows that *Nakamun Oasis* campground offers a truly unique back-to-nature camping experience.

Firstly, the above campgrounds have campsites that range from 0.06 to 0.12 acres. *Nakamun Oasis* campsites are between 0.25 and 1.0 acres — between 2 and 17 times bigger than traditional campgrounds.

Secondly, the *Nakamun Oasis* population density of 1.6 people / acre, which is between 10 and 40 times less than other campgrounds. Compared with the SV Nakamun Park, Nakamun Oasis has 6.5 times lower population density.

Nakamun Lake is the only major lake in Lac Ste Anne County without a campground. * *Nakamun Oasis* would be the first campground on Nakamun Lake. Calculating the amount of lake area per campsite, Nakamun Lake provides campers with more lake area than Lac la Nonne.

- Lac la Nonne 4.9 water acres / campsite
- Nakamun Lake 21.6 water acres / campsite

Increased lake usage. The concern was that more people at the lake would mean more lake usage.

Observing RVs driving on the roads, most RVs are not transporting any watercraft whatsoever. For the ones that are, they predominately have low-impact watercraft.

A 2014 article in the *Journal of Tourism Insights*[†] surveyed 100 000 RV owners. The author found that

1 %	< 35 years
7 %	35 – 50 years
36 %	50 – 64 years
56 %	> 64 years

With 99 % of RV owners being 35 or older, and 92 % being 50 or older, these are not the demographics of people using high-speed watercraft. If they use the lake at all, they are more likely to use low-impact watercraft.

Several residents complained verbally that they observe up to 12 boats on the lake during peak times. One person commented in writing that they observed 26 boats in use. This draws into question the number of boats on the lake and the maximum boat density for Nakamun Lake.

While several maximum boat density calculations have been proposed, Holly Bosley reviewed and summarized the literature on this topic.[‡] Their calculation methodology for the Four Township Recreational Carrying Capacity are used herein because it is the most recent, most comprehensively reported on by Bosley, accounts for boating activity (high-impact vs low-impact watercraft), and is median of the other studies in terms of the space allocated to boats.

To estimate the number of boats on the lake at peak use, the authors estimate that 10 % of the resident boats are on the lake and 50 % of the boat launch parking is filled. A resident has indicated that he observed 103 boats along the shore. The developer has increased that amount to 120 boats to account for boats currently out, boats in boat houses, and boats removed from the lake by their owners. 20 is an upper-estimate on the parking capacity of the Nakamun Lake boat launches.

$$\underbrace{0.10 \cdot 120 \text{ boats}}_{\text{fraction of resident boats}} + \underbrace{0.5 \cdot 20 \text{ trailers}}_{\text{boat launch capacity}} = \boxed{22 \text{ boats}}_{\text{peak number of boats}}$$

* Camp Nakamun has 12 RV sites, but is not a campground.

† Fjelstul, Jill (2014) “RV Association Members’ Profile: A Demographic Segmentation and Lifestyle Exploration,” *Journal of Tourism Insights*: Vol. 5: Iss. 1, Article 1. An error was identified in the published article; the numbers reported herein are corrected after consultation with Dr. Fjelstul.

‡ Bosley Holly E (2005) Techniques for estimating boating carrying capacity: A literature review. Internal report. [Available online and from Roy Jensen.]

Applying Bosley’s calculation of 10 % to *Nakamun Oasis*, and assuming that every guests has a boat, will add a maximum of 4 boats to Nakamun Lake.

$$\underbrace{0.10 \cdot 40 \text{ boats}}_{\text{fraction of resident boats}} = \underbrace{4 \text{ boats}}_{\text{peak number of boats}}$$

The total is 26 boats.

To estimate the safe carrying capacity, physical data on Nakamun Lake was taken from figure 2.5 and from the University of Alberta, Alberta Lakes database.*

The usable boating area of the lake is the surface area less the area within 60 m of the shore.

$$\underbrace{3.54 \text{ km}^2}_{\text{total lake area}} - \underbrace{12.5 \text{ km}}_{\text{lake perimeter}} \cdot \underbrace{0.060 \text{ km}}_{\text{buffer width}} = \underbrace{2.79 \text{ km}^2}_{\text{usable boating area}}$$

$$2.79 \text{ km}^2 \cdot \frac{247.1 \text{ acre}}{\text{km}^2} = \underbrace{689 \text{ acre}}_{\text{usable boating area}}$$

Bosley recognized that high-speed watercraft required more lake area than low-speed watercraft. Her formula for the maximum number of boats is

$$\text{maximum number of boats} = \frac{\text{useable boating area}}{10 + 5 \cdot (\text{fraction of high-speed watercraft})}$$

Looking at the extremes, when there are no high-speed watercraft, $f = 0.0$

$$\text{maximum number of boats} = \frac{689 \text{ acre}}{[10 + 5 \cdot (0.0)] \frac{\text{acre}}{\text{boat}}} = \boxed{69 \text{ boats}}$$

And when there are all high-speed watercraft, $f = 1.0$

$$\text{maximum number of boats} = \frac{689 \text{ acre}}{[10 + 5 \cdot (1.0)] \frac{\text{acre}}{\text{boat}}} = \boxed{46 \text{ boats}}$$

In summary, an independent assessment estimates the maximum safe number of boats on Nakamun Lake to be between 46 and 69 boats, depending on the fraction of high-speed watercraft on the lake. Compared to the maximum of 26 boats calculated earlier for residents and *Nakamun Oasis* guests, Nakamun Lake will still only be between 38 and 56 % of capacity.

Additionally, the *Nakamun Oasis* promotional material will state that there is no boat launch. Guests will be encouraged to use low-impact watercraft to enjoy the natural beauty of Nakamun Lake, and that they must be able to hand-launch these from the dock or shore.

If the Nakamun Lake community is able to get a boating speed limit set for Nakamun Lake, the developer will work to enforce this with all *Nakamun Oasis* and guests.

* University of Alberta, Earth and Atmospheric Sciences and Biological Sciences. Alberta Lakes database. Available from <http://albertalakes.ualberta.ca/?page=lake®ion=1&lake=39>

Increased traffic. The concern is that the roads are not designed to handle RVs and that they will increase the amount of noise and dust.

The figure at right is a portion of Map 8 of the Lac Ste Anne Municipal Development Plan, and shows the existing and future roadway network in the County. On the map, an “arterial” road exists one mile from the *Nakamun Oasis* development, and both TWP 565 and RR 21 are “rural” roads. Both road classes are designed to handle all sizes of vehicle.

Guests can access *Nakamun Oasis* by traveling east from RR 22 or west from RR 20. Guests arriving via RR 22 will bypass most of the cottage residential areas. Guests arriving via RR 20 will bypass all of the cottage residential areas.

Section 3.5 summarizes the Transportation impact assessment (TIA), which is attached as appendix H. In brief, a 2017 Alberta Transportation traffic count and trip generation calculations show that the road system on the south shore of Nakamun Lake currently carries 4.2 % of its design capacity. A physical assessment of the road structure finds that the roads are capable of supporting recreational vehicles, which are light like busses, not heavy like farm equipment.

At full capacity, the Development will add upwards of 15 % more traffic on TWP 565, which would put the road system at 7.0 % of its design capacity. Simply, the roads are designed and capable of handling RVs and the added traffic will not overload the road system.

Increased off-road vehicles. The concern is that there would be an increase in off-road vehicle use.

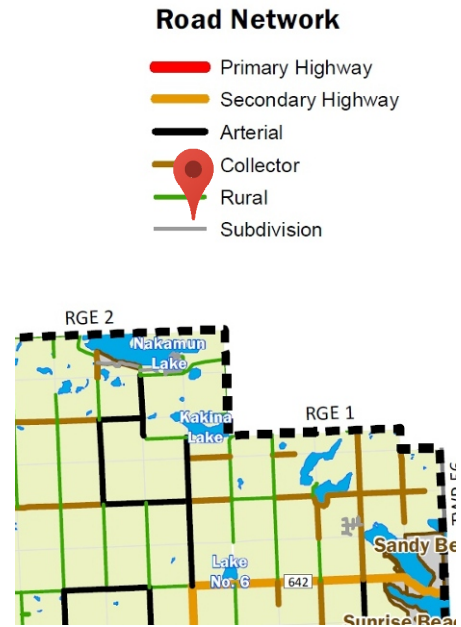
There is currently a problem with off-road vehicles on the property. Local riders have created a myriad of trails through the property (see figure 1.3). Worse and more concerning, riders are indiscriminately riding along the shore, destroying this important and delicate habitat.

Off-road vehicle use will be prohibited on *Nakamun Oasis*, except for staff servicing the area.

A further concern was that the developer would not be able to stop guests from bringing off-road vehicles. The *Nakamun Oasis* promotional material will state that off-road vehicles are not permitted on the property. The rental agreement that all guests sign will state that having off-road vehicles on the *Nakamun Oasis* property will be grounds for termination of the rental agreement.

The follow-up was that guests would just park their off-road vehicles on the County roads. Any resident is able to call the County, who will ticket and remove off-road vehicles parked on County roads.

There is a popular off-road facility 14 km away on RR 12, south of Hwy 651. Guests staying in *Nakamun Oasis* and using that facility will be required to leave their off-road vehicles at the facility. Alternatively, a person in the Nakamun Lake area could start an off-road facility.



Increased crime. The concern is that the guests will engage in criminal activity.

Referring to the demographic profile of RV owners above, this demographic is not the same as those likely to engage in vandalism and theft.

Crime is currently a problem in rural Alberta. The developer has personally been the victim of vandalism and theft. Since there are not any campgrounds in the area, the criminals must be local or close enough to make a day trip to the area. The developer is worried that the criminals already active in the area will target the *Nakamun Oasis* buildings and visitor RVs. To address this, the developer will have cameras monitoring the buildings and grounds. While the criminals might not be caught in the act, it is likely that their entrance, departure, and movement on the property will be recorded. This may facilitate criminal charges, civil litigation, and public shaming of the criminals, leading to an overall *decrease* in area crime.

Nakamun Oasis staff will be trained to identify suspicious behavior.

If the community is willing, the developer will work with them to create a Community Crime Watch program, and can train the community members in situational awareness, tactical communication, and self-defense.

Increased noise. Residents to the west raised concerns about noise emanating from the campground.

Nakamun Oasis is on the extreme east end of Nakamun Lake; it is surrounded by Nakamun Lake to the north, and agriculture to the east and south. The Development has been designed in a manner to limit noise propagation. The campsites are surrounded by trees and arranged so that there is no linear path for sound waves to propagate.

All guests will sign a use agreement that lists permitted and prohibited activities, including

- ATV use is prohibited at all times
- generators are prohibited unless there is a power outage
- a campground noise restriction from 2300 to 0800 daily

Breach of the agreement would result in sanction, from a warning to eviction.

A Noise study was commissioned to estimate the sound intensity reaching the west residences. This study is summarized in section 3.7.

- the background noise on a quiet day (no wind; no activity) was 44 dBA
- the measured attenuation to the road was 40 dBA

Given that residences are further away than the road and there will be more foliage in summer. the attenuation to the residences will be greater than 40 dBA.

Numerous sources state that a vacuum or loud stereo is around 80 dBA. At this level, conversation is impossible. With a 40 dB attenuation, the resulting noise level ($80 \text{ dB} - 40 \text{ dB} = 40 \text{ dB}$) is below the background noise level of 44 dB.

Campground noise will have a negligible, if any, affect the existing residents.

Decreased water quality of Nakamun Lake. The concern is that the development and increased population will decrease the water quality of Nakamun Lake.

The development of *Nakamun Oasis* will minimally disturb the natural environment, only removing trees necessary to construct the roads, sites, and buildings. Approximately 90 % of the area will remain in its natural state.

The development will be designed so that runoff into the lake will be managed as per the SWMP. Potable water will be trucked in, stored in cisterns, and supplied to guests at a filling site. Wastewater will be collected in tanks and trucked out for appropriate processing. The net result is no wells and no contamination of Nakamun Lake. (This design meets the requirements of s. 4.2 of the SV Nakamun Park MDP.)

All of these components — retaining the natural environment, cisterned water supply, holding tanks for wastewater, stormwater management — contribute to an increase in the quality of water. Indeed, this Development will strive for zero nutrient flow into Nakamun Lake. Any agricultural uses for this land will have runoff and nutrient flow into Nakamun Lake.

Nakamun Lake is subject to blue-green algae blooms. A study by the University of Alberta* found that adding iron, as FeCl_3 , resulted in the reduction of blue-green algae by ‘fixing’ and depositing inorganic sulfur and phosphorus as Fe_3S_2 and FeP . High phosphorus is required for the production of blue-green algae. The developer would be willing to work with the County and SV Nakamun Park to conduct larger-scale tests of this to determine the effect on water quality.

Environmental damage. The concern is that the guests will damage the environment.

People are and have been trespassing on the Development land for decades. “No trespassing” signs are typically torn down within a few weeks of being posted. The property is criss-crossed with trails, made by people on off-road vehicles (see figure 1.3). People are also riding off-road vehicles along the shore, destroying this delicate and critical habitat. Mature trees are being cut by residents, presumably for firewood. Simply, uncontrolled environmental damage is occurring.

The *Nakamun Oasis* development would ban off-road vehicles, establish a trail system for guests and residents to enjoy nature while minimizing environmental degradation, and would establish a permanent presence in the area to mitigate trespassing and wanton environmental destruction. This will allow for greater appropriate usage, less trespassing, and less environmental damage.

* Orihel, Diane Michelle (2013) “The Role of Iron in Suppressing Internal Phosphorus Loading and Toxic Cyanobacterial Blooms in Freshwater Lakes” *Ph.D. dissertation*.

Decreased property values. The concern is that the presence of a campground will decrease residential property values.

It is documented in the literature that *industrial development decrease property values* near the development, but that *service development increases property values*.*

Nakamun Oasis is a service development, providing the amenities listed on page 10. Additionally, *Nakamun Oasis* will provide employment and business opportunities.

The effect of service development on property values was summarized by Wiley: “within a few years ... home prices inside the radius even surpass those in the surrounding area.”

Summer Village of Nakamun Park

The SV Nakamun Park was informed of the Development. Information was requested about upcoming SV Council meetings, and permission granted to attend and present at the 21 March council meeting.

The aforementioned “Public forum feedback” on pages 27 – 34 was provided to the SV Council prior to the meeting and formed part of the discussion. The information in section 2.3 on the synergies between the SV MDP and the Development was also presented, emphasizing that the Development and SV have a shared vision for development around Nakamun Lake and that the Development will provide amenities desired by the SV.

Their feedback was used to inform the design of this Development.

County of Barrhead

In 2018, the County consulted with Barrhead County regarding the original ASP, with 160 sites. Barrhead County responded, indicating they did not have any concerns with the Development.

* www.MaxPropertiesLLC.com/how-does-commercial-development-impact-your-property-value/
Wiley, J. (2015) *The Impact of Commercial Development on Surrounding Residential Property Values*

3.10 Heritage, historical and cultural search

Since the Development area is in the northwest corner of 56-2-5, a search of the Heritage Resources Management Information System (HeRMIS) was conducted for four townships surrounding the Development area.

56-2-5 (township of Development area and to the southwest)

56-1-5 (township to the southeast)

57-2-5 (township to the northwest)

57-1-5 (township to the northeast)

The results, attached as Appendix M show no known historical places on the Development area. The results do show several historical places in the vicinity of the Development area, and these may draw guests to Development.

A Historic Resources Application and Impact Assessment was conducted, and the layout in Figure 2.2 acceptable.

4. PROPOSED DEVELOPMENT

The layout of the Development is presented in figure 4.1.

90 % of the land is retained in its natural state.

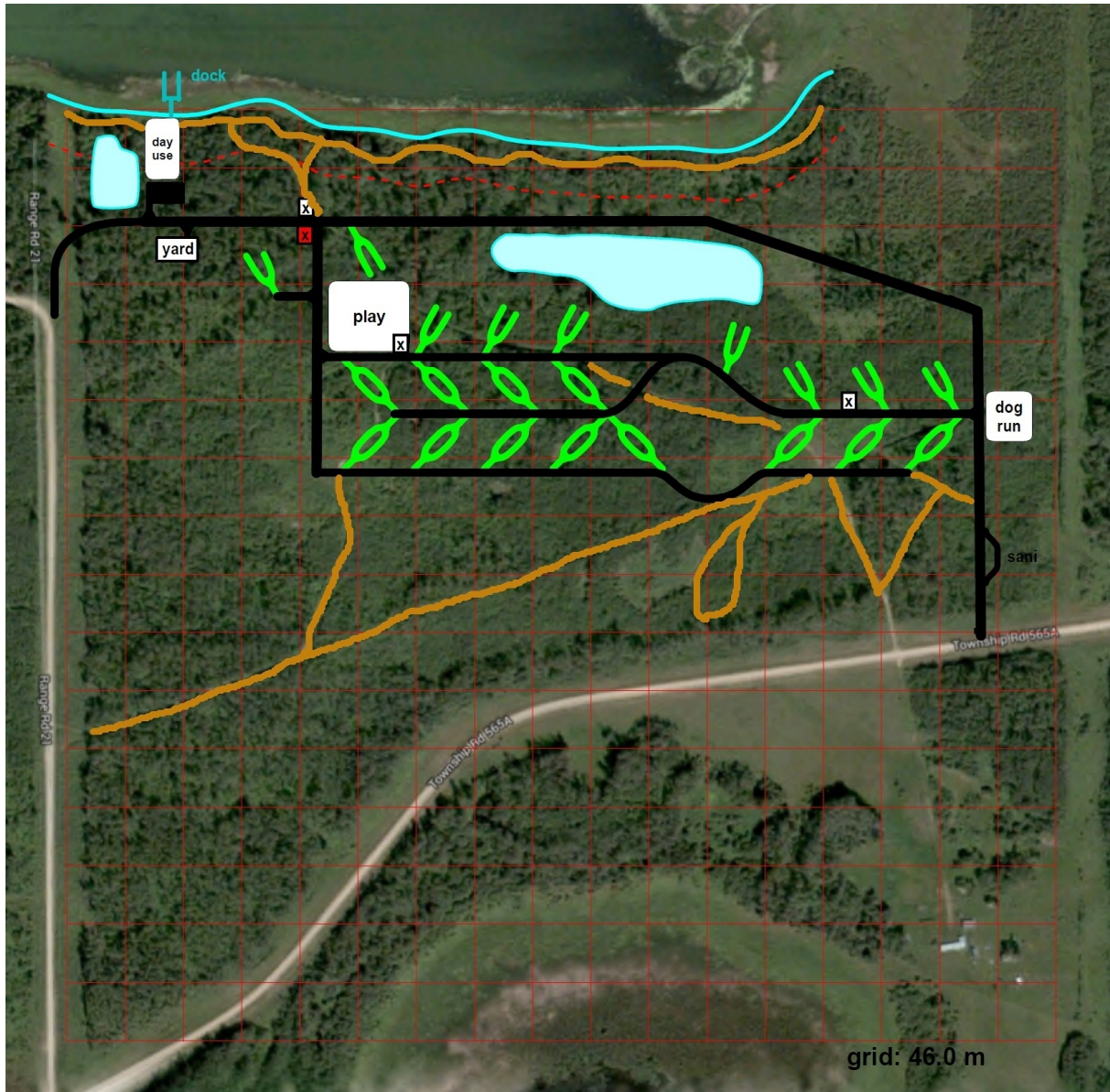


Figure 4.1 Proposed layout of the Development. A primary goal is to maintain much of the natural, treed environment, protect wildlife habitats, and provide natural wind and sound barriers.

- | | | |
|---------|--|---|
| Legend: | red grid: 46 m (150') | the blue line: ordinary high water mark (OHWM) |
| | brown: existing trails | dashed red line: 40 m setback |
| | X outhouse | X washroom/laundry building |

Unique site design

Two campsites are created using a Y or loop configuration, as illustrated in figure 4.2.

Allowing two campsites to share a single entrance/exit reduces roadway area, reduces infrastructure requirements, and increases the privacy for guests. Guests are not able to see the roadway from their site, and persons on the road are not able to see into the sites. It is also possible for two families to camp together, with privacy for each family.

This design also improves the noise buffer and provides a windbreak.

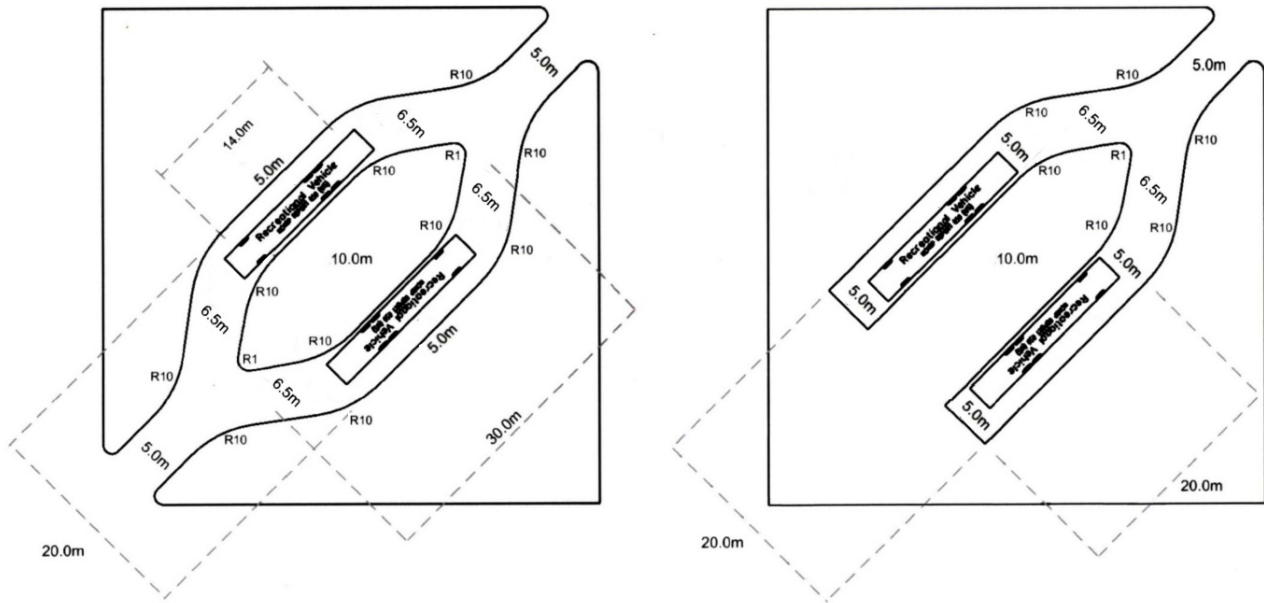


Figure 4.2 The site design hides the road from guests in the site and prevents visitors on the road from seeing into the site.

4.1 Development phasing

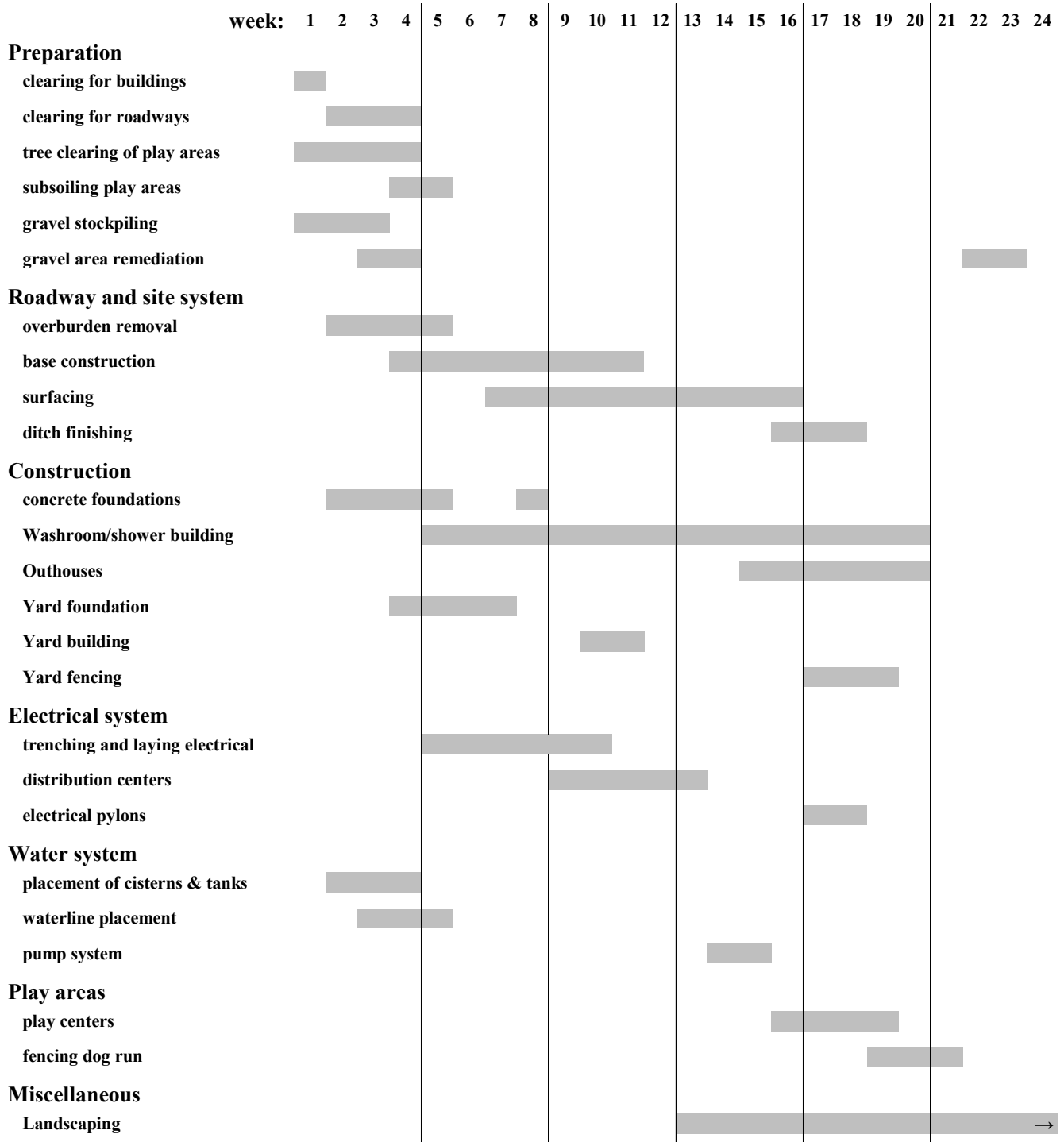
The goal is to construct the Development in one phase, beginning in 2019, to allow for opening in spring 2020.

- road system
- 40 campsites
- 2 staff campsites
- washroom/shower facilities
- outhouses (2)
- yard and yard building
- lighting system
- play areas
- fenced dog run
- dock
- stormwater management pond
- sani-station
- water supply
- refuse containers
- remediation of the gravel deposit area

The staff campsites will have the same services as guest campsites.

4.2 Development timeline

Once Development Permits are issued, development will endeavor to follow the following schedule.



4.3 Development features

This section identifies features of the Development. Links to the Lac Ste Anne MDP and LUB are listed, plus details how the Development complies with the MDP and LUB.

Operation

[LUB 15.1.35] The projected campground occupancy is presented in figure 4.3.

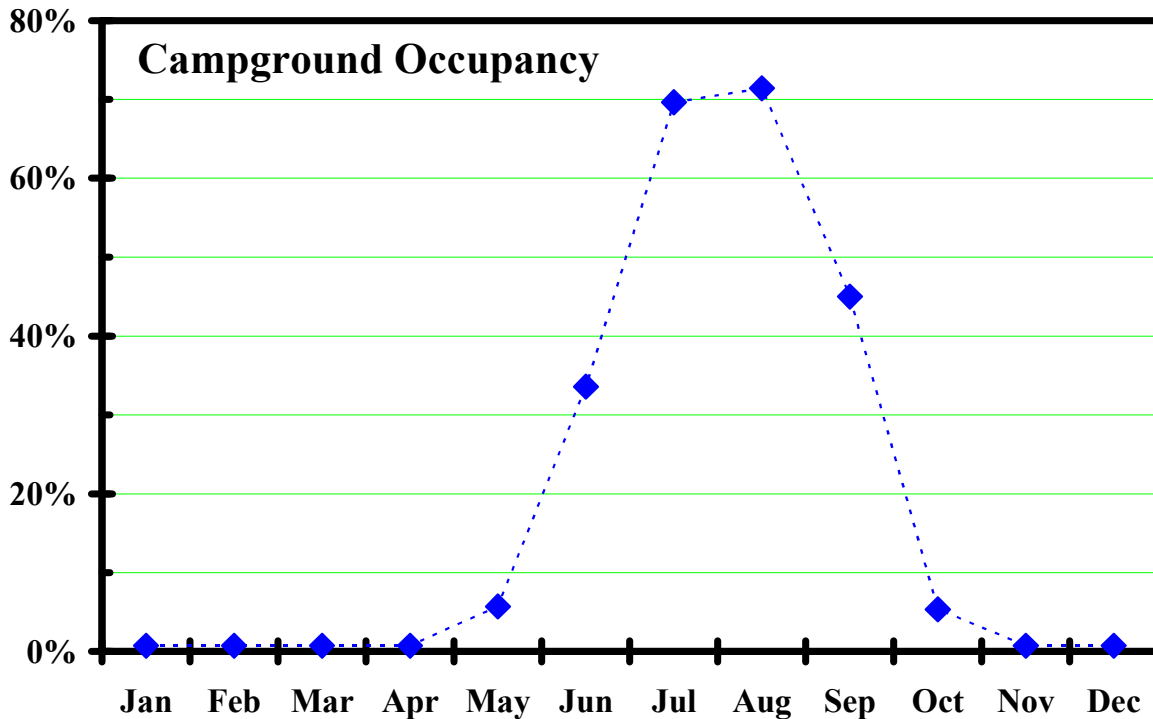


Figure 4.3 Estimated campground occupancy, calculated assuming half-capacity during the week and full-capacity on weekends.

Nakamun Oasis will operate seasonally, with full operation from 01 May to 31 October annually, and limited operation from 01 November to 30 April (off-season).

FULL OPERATION: all campsites and the amenities in the **Rural development** section (page 10) will be available to *Nakamun Oasis* guests and the public.

LIMITED OPERATION: camping closed. Day-use area available. The access from RR 21 to the day-use parking area will be cleared for off-season operations.

Water

[MDP 9.6.6] This ASP proposes to supply potable water through a cistern that is filled with processed city water and secondarily processed prior to supplying to communal facilities. This water will come from authorized Edmonton water outlets. No water will be drawn from wells or Nakamun Lake.

[MDP 9.6.8] In the event of emergency (fire protection), water may be drawn from Nakamun Lake and/or the stormwater ponds to protect life and property on the Development land.

The demographic data on page 29 indicates that 56 % of RV travellers are 64 or over — of retirement age. The BC Lodging and Campgrounds Association use the value of three people per RV. For surety, we assume 4 people per RV. We further assume that water utilization is 50 L per person per day. With these assumptions, we calculate that approximately 8 m³ of water will be used daily in full operation.

One cistern of appropriate size will supply a pumping station in the yard building and be pumped to an RV filling site and the Washroom/shower building.

Wastewater

[MDP 9.6.8] This ASP proposes to hold all gray and black water (wastewater), and utilize local companies to remove and transport the water at regional facilities. Because of the proximity to Nakamun Lake and the potential risk of contamination, there will be no on-site processing of the wastewater. This method is identified as the desired method in sections 11.6.15, 11.6.19, and 11.6.40 of the LUB.

Wastewater tanks of appropriate size will exist at the sani-dump, Washroom/shower building, under each outhouse, and at some campsites.

Waste

[MDP 9.6.18] This ASP proposes to collect all recycling and waste material in appropriate containers and transport said material to appropriate recycling and waste-management centers for processing.

Day-use area

[LUB 11.6.1 to 11.6.7] We will work with the Development Authority to abide by these regulations for the day-use areas.

Semi-serviced campsites

[LUB 11.6.19 to 11.6.30] We will work with the Development Authority to abide by these regulations for the semi-serviced campsites.

Amenities

[LUB 11.6.34 to 11.6.42] We will work with the Development Authority to abide by these regulations for the Development amenities.

Stormwater

[MDP 9.6.21] The Stormwater management plan is summarized in section 3.4, and the complete plan is in Appendix G. This plan dictates the requirements to bring the Development into compliance with these regulations.

Specifically, figure 3.3 illustrates the run-off basins and required stormwater management ponds. This ASP will use culverts as necessary to maintain stormwater flow similar to the predevelopment flow patterns and to direct the stormwater into the wet stormwater retention ponds. These ponds are constructed along the natural flow path, and will contain the stormwater, allow for sediment deposition, and control the discharge into Nakamun Lake.

Topsoil conservation

[MDP 9.7] This ASP strives to keep the majority of the Development area in its natural state. Where topsoil is removed as part of the development of roads and sites, that topsoil will be stockpiled and used to supplement growing areas: ditches, play areas, and around the stormwater ponds. This action is also consistent with the recommendations of the Biophysical Assessment.

Recreational areas

Sections 9.10.11 to 9.10.16 of the MDP specifically addresses possible development activities associated with recreational areas.

[MDP 9.10.11] Off-highway vehicles will be prohibited in the Development area, except for staff servicing the area. Trails that have been “cut” by off-highway vehicles previously and illegally operating in the Development area will be remediated and/or turned into walking trails.

[MDP 9.10.13] Trails will be surfaced with gravel and/or wood chip.

[MDP 9.10.14] Sand will not be deposited on the lakeshore.

[MDP 9.10.15] All gray/black wastewater will be stored in holding tanks and pumped out regularly.

[MDP 9.10.16] There will not be any septic or leaching of wastewater.

Reserves

[MDP 9.11] As the Development lands are not being subdivided, there is no requirement for specific reserves to be set aside. However, this ASP emphasizes practices that retain the natural ambiance and allow guests to commune with nature. This ASP explicitly avoids additional development in the identified wetland and riparian areas.

Development setbacks

[MDP 9.11.23 – 9.11.26] The RSMM-calculated setback will be followed.

Limited park development in the setback area — a stormwater management pond, day-use area, and trails — will be done as per section 3.6.

This Development will provide amenities desired by the residents in the SV Nakamun Park MDP, which recognizes the need for future parks, recreational facilities, and walking paths in areas that provide lake access.

Gravel deposit remediation

[LUB 3.5.9] An open excavation exists on the southeast side of the property. This area will be reclaimed in accordance with this section. Because this area is already cleared of trees, it will be used as a staging area for campground construction. Thus, the remediation will be done in two phases.

Remediation Phase 1 (weeks 2 – 4)

- the Deposit area will be levelled and returned to its normal stormwater flow pathway
- the embankments will be topped and used to create a 5:1 gradient embankment

Campground construction

- the Deposit area will serve as a staging area for people, equipment, and supplies
- the Deposit area will be used to store the overburden and excess material
- any already-extracted material will be used to complete the roads of the Development

Remediation Phase 2 (weeks 22 – 23)

- excess fill will be used to restore features to the Deposit area
- excess topsoil will be spread in the Deposit area
- a small berm will remain towards TWP Rd 565A to create a sound, sight, and wind break

5. SUMMARY

This Area Structure Plan proposes to build a 40 site campground and RV park on 108 acres of land adjoining Nakamun Lake. This Development provides a unique camping experience to guests by providing an acre of treed land per site and maintaining the natural forest ambiance. The low site density and enhanced privacy are rare in the camping/RV world. Amenities include a park-like environment, waterfront day-use areas, playground area and equipment, dog run, walking paths, and lake access. These amenities will be available to campground guests and local residents.

This ASP and Development

- transform an unused parcel of land into a campground
- maintain the beauty and ambiance of the natural environment
- protects wildlife habitats and wetlands to allow for wildlife habitation and viewing
- protects areas of natural growth, protects water bodies, maintains the natural water flow, manages stormwater, and limits development near Nakamun Lake.
- is compatible and complementary with the existing development on Nakamun Lake
- create trails to limit environmental impact, and links to existing park areas and trails
- is consistent with the MGA and SV Nakamun Park MDP
- follows all required environmental and public health guidelines and regulations
- adds to the locally available amenities
- builds and strengthens the community
- provides employment and business opportunities
- draws visitors and contributes to the economic health of the County

The Development rules and regulations accomplish these with rules on noise, pets, off-road vehicles, boating, and conduct.

This Development proposal is consistent with and supported by the

- Summer Village of Nakamun Park Municipal Development Plan
- Lac Ste Anne County Municipal Development Plan
- Lac Ste Anne County Land Use Bylaw
- Alberta Environment and Parks

This unique *Nakamun Oasis* Development will draw people to Lac Ste Anne county, will showcase the beautiful Alberta countryside, and will increase business for many companies in Lac Ste Anne county. Many people will benefit from this Development.

This Development meets the needs of the Edmonton region and the residents of Nakamun Lake.