Appendix A

SPECIES LIST

Appendix A. Species List: Plants and animals confirmed present on East Bella Vista Development site

Plants

Arrow-leaved balsamroot	*Balsamorhiza sagittata*
Big sagebrush	*Artemisia tridentata*
Bluebunch wheatgrass	*Agropyrum spicatum*
Brittle prickly pear	*Opuntia fragilis*
Chokecherry	*Prunus virginiana*
Common snowberry	*Symphoricarpus albus*
Desert parsley	*Lomatium ssp.*
Douglas maple	*Acer glabrum*
Great bulrush	*Scirpus lacustris*
Hawthorn	*Crataegus douglasii*
Idaho fescue	*Festuca idahoensis*
Kentucky bluegrass	*Poa pratensis*
Longhorn plectritis	*Plectritis macrocera*
Mountain ash	*Sorbus scopulina*
Parsnip-flowered buckwheat	*Eriogonum heracleoides*
Ponderosa pine	*Pinus ponderosa*
Prairie rose	*Rosa woodsii*
Red-ossier dogwood	*Colnus stolinefera*
Reindeer moss	*Cladonia Rangiferina*
Rusty steppe moss	*Tortula ruralis*
Saskatoon	*Amelanchier alnifolia*
Silverleaf phacelia	*Phacelia hastata*
Tall Oregon grape	*Mahonia aquifolium*
Tarragon	*Artemisia dracunculus*
Trembling aspen	*Populus tremuloides*
Weeping willow	*Salix ssp.*
Wild rose	*Rosa sp.*

Animals

American crow	*Corvus brachyrynchos*
Black-billed magpie	*Pica pica*
California quail	*Callipepla californica*
Common raven	*Corvus corax*
Coyote	*Canis latrans*
Dark-eyed junco	*Junco hyemalis*
Downy woodpecker	*Picoides pubescens*
House finch	*Carpodacus mexicanus*
Northern flicker	*Colaptes auratus*
Pine siskin	*Carduelis pinus*
Ring-necked pheasant	*Phasianus colchicus*
Long-eared owl	*Asio otus*
Mule deer	*Odocoileus hemionus*
Northern pocket gopher	*Thomomys talpoides*
Yellow-bellied marmot	*Marmota flaviventris*

Appendix B

MWLAP Correspondence

BRITISH COLUMBIA

File No.:58000-32-11
(1999SIP0309)

August 31, 2001

City of Vernon
3400 30th Street
Vernon, BC
V1T 5E6

Attention: D.M Rintoul

RE: Neighbourhood Plan for Lot A, Plan 35064, Sec.4,Tp.8,ODYD (4400 35th Ave.) Turtle Mtn.

The Ministry of Water Land and Air Protection has reviewed the subject Neighbourhood Plan. The plan does recognize that the site may support rare plant and wildlife species as well as several unique features that are likely important to wildlife and that the Turtle Mountain area provides a large corridor connecting the Goose Lake and the Bella Vista Range. However, it does not appear to address how impacts to these species might be minimized and how the connectivity over the landscape for these species might be addressed. The stated goal of the plan is to preserve environmentally sensitive areas and unique natural features. Specifically the original plan states that 30% of the plan area (the revised plan states-20%) is to be retained in its natural state. While this seems as though enough area is preserved, on closer scrutiny it appears that 39% of the area is undevelopable with slopes over 30% and this area coincides with the areas preserved in their natural state. Protecting these steep areas is not necessarily conducive to protecting important habitats and maintaining a diversity species.

Also of concern is planning development for this area appears to have been done in isolation of the Bella Vista and Goose Lake areas. As noted in the report the Turtle Mountain area provides a corridor connecting these areas. These areas are comprised of some of the largest areas of undeveloped grasslands within the North Okanagan. Without defining locations of special habitats and species capabilities for these other areas in conjunction with Turtle Mountain development it may preclude options to balance development with the maintenance of grassland species and connectivity over the landscape.

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Specific comments pertaining to the report text are as follows.

- Tassie Creek which is located on the eastern side of the neighbourhood plan outside the area slated for this rezoning is stated in the revised documents to comply with the new Streamside Protection Regulations. It is assumed from this comment that the buffer areas have been increased but no widths have been stated within the report.

- The small vernal pond may provide a potential site for spadefoot toad and other amphibian species on years where there is sufficient rainfall for the pond to remain wetted through a portion of the summer. The viability of maintaining these species depends upon maintaining the integrity of these breeding areas as well as enough area around these features to minimize impacts to adjacent habitats and dispersal routes. The small buffer noted within the revisions is not likely to meet this need. In addition, the uniqueness of this feature on a very dry site and its proximity to a small vegetated gully and the adjacent rock slopes together form a highly diverse habitat feature. Development in this area resulting in fragmentation is likely to have a negative impact on the diversity of species using this habitat. This area should be left intact as fragmenting it with single family homes will reduce the complexity of this habitat by removing the features that make it unique

- p.18 *states " Much of the habitat to support this possible wildlife exists in the areas of the site that are proposed to remain undeveloped. The proposed natural space areas and trails provide habitat and corridors that may be needed by the varied wildlife species".* With only the steep area preserved and narrow trails (15 m corridors) as connectivity corridors it is unlikely that the requirements of wildlife species will be met.

- The development policies make no mention of sediment control. The Golder Associates report makes mention of the site containing fine sediments clay and sand which can all become a problem during runoff periods during the developmental stage. Prior to the start of clearing and earth moving a sediment and erosion plan should be designed to deal with these concerns over the various phases of the development.

- The storm systems for both the original plan and the revised plan make use of detention ponds to maintain pre development flows. Recognizing that much of the site contains shallow soils making infiltration more difficult we would encourage that consideration be made to use of these systems wherever possible. This mentioned within page 41 of the original report but it is not detailed within the revisions. The maintenance of pre development flow patterns is particularly important to maintaining vegetation within the gullies in very dry habitats. The use of detention ponds a sole method of maintaining pre development flows can deal with the flow

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concerns but may have an impact habitat features on the site. It can provide a habitat sink to amphibians in particular. Amphibians are highly sensitive to water quality changes. The wet detention ponds concentrate many contaminants and can be highly attractive to amphibians in dry terrain where breeding areas are scarce. Where wet ponds are needed, but are combined with infiltration systems and other methods that address water quality concerns, many of the contaminants can be removed.

- Page 42 of the original report discusses some of the issues around the development of road systems. Road systems can have a major impact on the mortality of snakes, amphibians and small mammals. Where roads bisect important habitats or cross dispersal and migration corridors (i.e. to and from hibernicula sites), these roads can have a major impact on species survival. Consideration needs to be given to these concerns with the development of a final design in order to reduce road impacts.

In summary we have some major concerns with the planning of this site in isolation of the adjacent grasslands areas. We would be pleased to meet and discuss these concerns at your convenience.

Yours truly,

Susan Latimer, RP Bio.
Senior Habitat Officer
Vernon

cc: Craig Beeson, MELP, Kamloops
Kees Ruurs, GVPRD
Conen Enterprises Ltd. c/o R.D. Lewis & Assoc., 718A Notre Dame Dr.,Kamloops, BC, V2C-5N8

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Aug 29, 2001.

North Okanagan Naturalists' Club
P.O. Box 473, Vernon, B.C., V1T 6M4

Re: Turtle Mountain Uplands application for Neighbourhood Plan and Rezoning

Dear Mr. Rintoul:

Thank you for the opportunity to respond to the Conen Enterprises application to proceed with a neighbourhood plan for the Turtle Mountain Upland. I apologize for my tardy response but, unfortunately, the person responsible for clearing our P.O. Box was on vacation when the envelope was delivered and I received it only recently.

The Turtle Mountain Uplands project is likely only the first of several that will in due course be proposed for the Bella Vista/Goose Lake Range. As such, we feel it demands special consideration, as it will set a precedent for any subsequent developments. As we pointed out earlier, this area is an intact representative of an endangered grassland ecosystem and we suggested that the whole area be considered in the first instance as a single block and that a sizeable portion of the best grassland be identified for preservation. If the whole area is developed piecemeal over time with small, non-sustainable portions of grassland retained within each development, dismemberment of the whole will be the result and the area will cease to be a viable representative of this fast-disappearing ecotype. We should like to see some consideration given to these points before the Turtle Mountain project is approved.

With respect to the present proposal, the areas designated Natural Area/Open space are fragile and likely to be degraded by human activities. The steep slope immediately northwest of the pond is very unstable and will not withstand being walked on. In particular, it will be destroyed if children from the nearby residences use it as a playground. In that same area and in the other large open area designated as 'Open Space' in Fig. 4.1, bed rock is near the surface or actually exposed and the fragile flora (including all-important mosses and lichens) would likely not withstand pedestrian use. Excessive wear of these areas due to foot traffic would not just degrade plants but would also have undesirable consequences for the vertebrate and invertebrate animals dependent on them.

We feel that the area designated as open space around the pond is too small and, thus, vulnerable to disturbance of the habitat of amphibians, reptiles and birds. As well, being surrounded by residential properties, its use as a watering hole for large animals would be prevented. Furthermore, surrounding strata residences being close to the pond, water usage with conventional landscaping could have undesirable side effects. Some water used on gardens and lawns would inevitably find its way into the pond and would likely change the nature of the pond and surrounding flora.

We feel that no attempts should be made to "enhance" the pond area by extra watering or the planting of exotic plant species. The same consideration applies to the Natural/Open Areas. Xeriscape landscaping would be the most appropriate method for the whole development.

Attempts to produce conventional landscaping around houses and in communal strata areas would require the use of imported top soil and lots of water as soil cover would be thin and water holding capacity low. Excess water percolating into the soil could make its way downslope and this could undermine the stability of the steeper terrain as well as alter the nature of the flora in open areas.

The best of the native grassland (big sage and bluebunch wheat grass) is located in the areas designated for strata development and would likely be destroyed entirely. The main part is close to the northern boundary. It might be possible to pre-empt a portion of this terrain to provide an animal corridor connecting the northernmost of the two large natural areas to the open area along Tassie Creek and thence northwest.

We note that part of the property, especially the disturbed areas, is badly infested with weeds, particularly knapweed and toad flax. In the interest of preventing their further spread into the grasslands to the west and north, we would like to know what the developers plan to do to eliminate these weeds.

Yours Sincerely

Peter Bailey

Peter Bailey, Chairman, Conservation Committee,
North Okanagan Naturalists' Club.

BRITISH COLUMBIA

File No.:58000-32-11
(1999SIP0309)

February 7, 2002

City of Vernon
3400 30th Street
Vernon, BC
V1T 5E6

Attention: D.M. Rintoul

RE: Turtle Mtn. Uplands Neighbourhood Plan & Turtle Mountain Development Zoning Application (including Summit Environmental 6/12/01 Assessment.

These comments are made reference to the revised plan, which includes some revisions resulting from the Ministry of Water Land and Air Protection August 31, 2001 letter and a report by Summit Environmental. This assessment and report was apparently undertaken to address potential impacts to the proposed development and to address the potential concerns raised in an earlier letter from this Ministry. The assessment was undertaken November 7 and 10, 2001 and was not the optimal timing for observing species occurrence as most species. In addition, as noted in the report, the few species cited as present in the CDC for species occurrence does not necessarily preclude the presence of other red and blue listed species, as inventory and records for this area are lacking. However, the report is suitable for addressing the concerns of our earlier letter.

Ministry comments in this letter will be confined to discussion of the findings of this report and their application to the development. Page 8 of the Summit report makes reference to a low probability of amphibians moving far from the small seasonal wetland. Most species of amphibians remain within 1000 meters of wetlands, dryland species such as the spadefoot toads have been known to travel almost twice that distance. The suggestion is made by Summit that a 30 meter connection to the P2 area would be beneficial. While it allows for a connection to other habitats, this still results in fragmentation of the several types of habitats (vernal pond, shrub thicket, grassland and steep slope) all within a close proximity. The Ministry recommends that these habitat features be retained intact and interconnected as a functioning unit. The value of each of these habitats in isolation is less than retaining them interconnected. The risks to the functionality of these habitats could be reduced by ending the road south of the pond and leaving these habitats intact or revising the design to reduce modification, fragmentation and isolation of the individual habitats.

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The addition of culverts to facilitate small mammal travel is a good addition. The type and width of culvert structure should be further developed as the subdivision proceeds so that the design is suitable to address the access needs of the wildlife species expected to use them. Some designs also require the use of barriers or low fencing systems to guide them to a tunnel entrance. Depending upon the location, it is expected that snakes and possibly amphibians may also use the culverts.

The reference to the pond and no introduction of surface runoff needs to be considered in conjunction with the other comments regarding the fragmentation of habitats and maintaining existing flows to the area. Diverting historic flows away from the pond will likely impact the water balance and reduction in water flow to the pond.

The sediment control plan should be applicable to the entire site as all drainage eventually reaches a fish bearing creek system via either overland or through discharge of stormwater.

The Summit report makes reference to earlier ministry comments regarding contaminants. It suggests that contaminants are not likely an issue due to the fact that it is low-density housing and contaminants would be those associated with residential housing. While contaminates in industrial areas may be more of a concern, studies have found that conditions toxic to frog metamorphosis in some residential stormwater ponds. Nitrate levels associated with fertilizers have also been shown to cause death and abnormalities in amphibians. Nitrate and phosphorous levels in urban runoff can be as high as those in agricultural areas. Sodium chloride associated with winter and spring runoff of stormwater has been associated with frog egg mortality. Herbicides and pesticides are also contaminants in urban runoff and they have been associated with both lethal and sublethal impacts to amphibians. One study found it in 25 to 90% of all runoff samples contained common commercial weed-killers used by homeowners. In dry areas where water sources are often scarce the concern is that species will be attracted to detention areas. The pollutant concentrations in stormwater runoff from arid watersheds tend to be higher than that of humid watersheds. To reduce the risk of contaminants to these ponds some of the best management practices that can be used include but are not limited to;

- Prevent access to the storm system by encouraging retention at the source through the use of hydraulic disconnects and infiltration methods.
- Use of extended detention basins with a sediment forebay
- Education of homeowners on the impacts of fertilizers and herbicides/pesticides
- Minimize use of impervious surfaces and disturbance of the natural landscape
- Consideration should be given to potential impacts and reducing the risk to the receiving environment during design of the stormwater system and site development.

The Ministry generally agrees with the findings of the Summit report. The resubmitted plan takes into consideration some of the concerns identified by both the previous Ministry letter and those identified by Summit Environmental report. The plan makes several references to

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minimizing site disturbance and impact. However, with the detail given the impact of the development could vary widely depending upon the final design and application of BMP's to reduce impacts to wildlife, habitats and runoff water quality and quantity.

Some specific comments pertaining to the plan are:

- There is reference to a 15 meter wildlife corridor in 4.5.2. It is not clear whether this 15 meters is to also contain a hiking trail. Fifteen meters is very narrow to provide much of a connectivity link and provision for a trail within this link would increase disturbance levels and likely limit wildlife use. There is also reference to enhancement of the seasonal pond. The enhancement method is not identified so it is unknown whether this will have a positive or negative impact to wildlife habitats.

- In the section 4.5.3 it is mentioned that materials from slope cuts will side-cast except in highly visible areas only. This does not take into consideration risks to sensitive habitats and wildlife.

- The proposed road into the pond area also impacts one of the significant thickets. This was discussed earlier in the letter.

- The road plan at the NW of the site may have impacts on the connectivity to the significant vegetation patch at the north boundary of the site. Plans for this site and any connection to the property to the north should take this into consideration. In this regard plans for the development of the rezoning area connectivity concerns beyond the zoning application and Neighbourhood Plan area should also be considered.

If you have any questions please contact the undersigned.

Yours truly,

Susan Latimer, RP Bio.
Ecosystem Officer
Environmental Stewardship Division
Vernon

cc: Craig Beeson, WLAP, Kamloops
Summit Environmental, Vernon
Ed. Stranks, City of Vernon
Conen Enterprises Ltd. c/o RD Lewis & Assoc., 718A Notre Dam Dr., Kamloops V2C 5N8

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