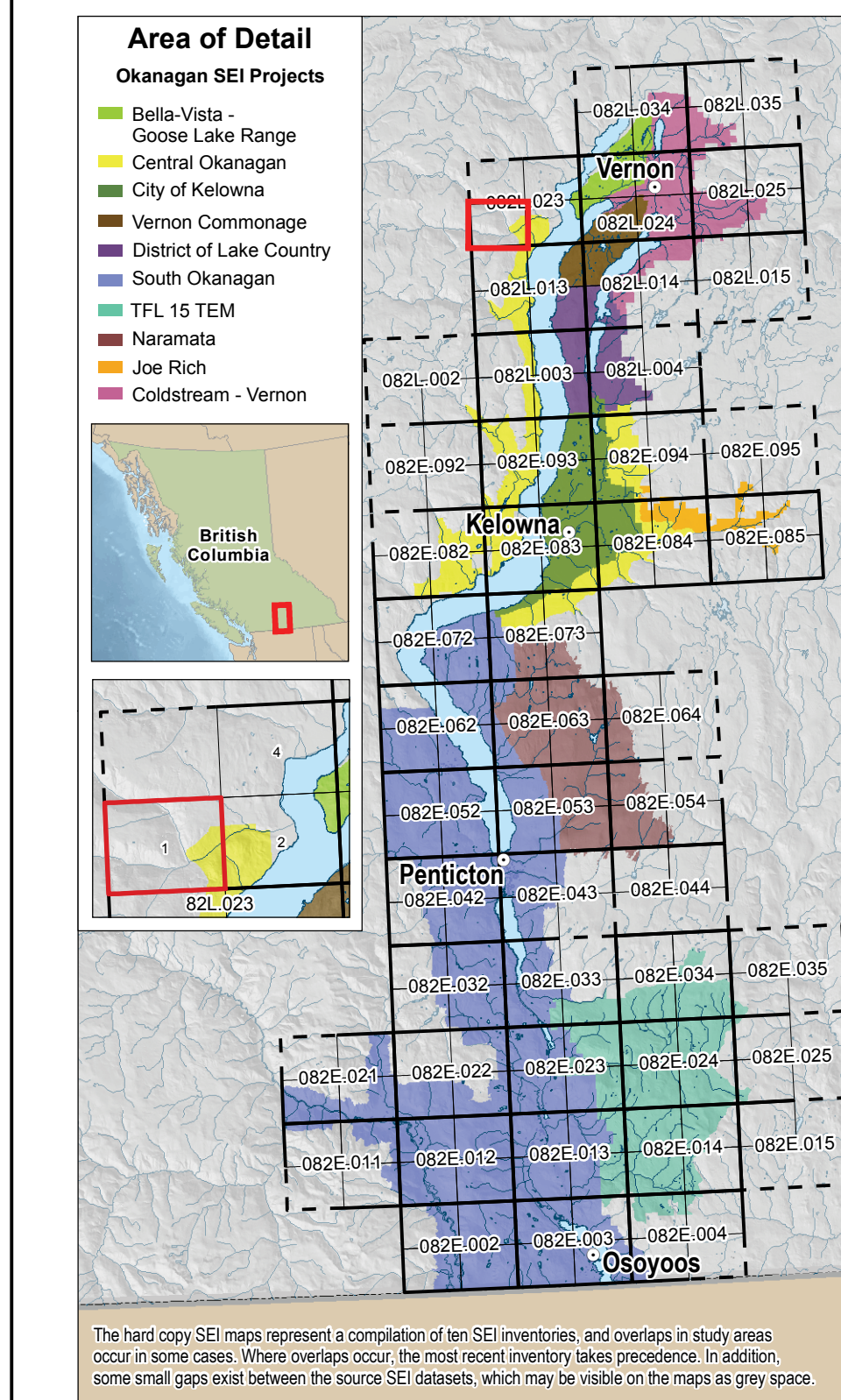


82L.023.1



Map Symbols

- Polygon Boundary
- Study Area Boundary
- Rivers
- Highways
- Municipal Boundaries
- Roads
- Areas Outside the Okanagan Study Area

Sensitive Ecosystems (SE) Label

- Polygon Number
- % of polygon (as decided)
- SE Class
- SE Subclass

The example label above indicates the SE attributes reported for polygon 13788. 82% of the polygon is 1023-1 Coniferous Woodland. 20% of the polygon is 07-01 Old Forest coniferous. NS are modified (non-sensitive) landscapes. Please refer to the legend for more information about these areas. Note that one SE can be correlated to a SE class and subclass. Polygon labels on the map do not indicate the SE class.

Ecosystem Components

- The base color represents the first ecosystem component.
- Coloured dots overlaid upon the base colour indicate a second ecosystem component.
- Two colours of dots indicate a second and third ecosystem.

Note: The actual placement of the dots has no significance; they are randomly placed within each polygon.

The SEI data are based on 1:10,000 scale air photos but are displayed here at 1:10,000 scale. To avoid of errors, especially in areas with many small polygons, the map is intended as a planning tool, and are not a replacement for detailed on-site assessments. That is, as needed, better land use decisions are made.

* Written notes are based on a 30 x 48 inch paper size.

UTM Projection Zone 10 NAD83
100m Contour Interval
February 15, 2010

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WHAT IS A SENSITIVE ECOSYSTEM?

For the purpose of this study, an ecosystem is considered to be a portion of the landscape with relatively uniform dominant vegetation that are ecologically sensitive and/or at risk in the landscape.

Sensitive Ecosystems are ecosystems that are ecologically sensitive and/or at risk in the landscape.

The Okanagan Valley region covers one of the most rapidly growing population centres of British Columbia, and development pressure is escalating. The area is under intense pressure due to urban and rural human settlement as well as extensive agricultural conversion, and has experienced significant changes to ecosystem structure and function through the spread of invasive alien species and fire exclusion. Very high ecological values, combined with the development pressure on the landscape, underscore the need for careful, conservation-based land use decision making throughout the Okanagan Valley.

Regional and municipal governments of the Okanagan Valley and conservation organizations, assisted by Environment Canada's Canadian Wildlife Service and the B.C. Ministry of Environment, have completed regional and local Sensitive Ecosystems Inventory mapping projects as a means to identify the remaining sensitive ecosystems in the Okanagan Valley. The SEI is intended to provide a tool that uses scientific information and mapping to encourage local governments, landowners, developers, and other citizens to become involved in protecting, conserving, and restoring sensitive ecosystems. Conservation of these ecosystems is increasingly important as rapid population growth in the Okanagan continues to cause fragmentation, degradation, and loss of sensitive ecosystems.

An ecosystem, for the purpose of this inventory, is a portion of the landscape with relatively uniform vegetation and soils. Sensitive ecosystems are those that are ecologically fragile and/or at risk. Criteria for ecological sensitivity include the presence of shallow soils, susceptibility to soil erosion, vulnerability to hydrological changes, sensitivity to the introduction and spread of invasive plants, and sensitivity to recreational activity and other human disturbances. Within the province, at-risk status for species and ecological communities is determined by the B.C. Conservation Data Centre (CDC), a member program of the international NatureServe network. The CDC list of Ecological Communities can help to determine if a particular ecosystem is representative of an at-risk ecological community.

The Okanagan Valley project is comprised of a number of individual SEI projects: Bella Vista - Goose Lake Range; Central Okanagan City of Kelowna; Vernon Community; District of Lake Country; Joe Rich, TFL 15, Nanaimo; Coldstream - Vernon; and the South Okanagan. For more information about these projects and the methods used, please refer to the References section on this map.

The purpose of the SEI Okanagan Valley project is to combine all of the various SEI projects that have been completed in the Okanagan Valley from Vernon to Osoyoos, and to consider and present them as a whole in mapped form to aid use planning and to encourage landscape-level conservation planning at multiple scales, including regional and basin-wide. The project deliverables include 150 SEI maps at a 1:10,000 scale on a Terrain Raster Information Management (TRIM) base, and a series of reports. The individual project reports detail the methods used, study results, descriptions of the ecosystems, and conservation tools for management (see References section).

Sensitive Ecosystems Inventory Methods
Sensitive Ecosystems Inventory was developed as a conservation tool. It is flexible and can be completed in a short time with limited funding when necessary, or expanded to incorporate more information for advanced conservation planning and sustainable development.

Most Okanagan SEI projects were developed by first undertaking Terrestrial Ecosystem Mapping (TEM), except in the Nanaimo project area where the SEI polygons were mapped from air photos using a bottom-up approach. TEM provided the foundation for the B.C. thematic mapping, and the TEM units were analyzed for at-risk status and ecological sensitivity. Sensitive ecosystems were grouped using the Ecosystem-based Resource Mapping (EBRM) tool. The tool allows SEI classes and subclasses to be assigned to each TEM unit. If the mapped TEM unit is included within an at-risk ecological community as defined and listed by the CDC, or if it is ecologically sensitive, the unit was assigned to one of the applicable ecosystem classes and subclasses. In cases where a given ecosystem falls into more than one class, it is always assigned to the more sensitive class.

The Okanagan Valley is a region of unparalleled ecological and biological diversity within British Columbia and the rest of Canada. It is home to many at-risk species and ecological communities, including some ecosystems unique to Canada. Broadleaf woodlands, antelope-brush steppe, sagebrush steppe, wetlands and old forest ecosystems, once well-represented in the Okanagan Valley, have become rare. Historical ecosystem mapping (1800s to present) shows losses of greater than 90% of some ecosystem types in the Okanagan Valley.

Healthy, functioning natural ecosystems play an important role in adapting to and mitigating the impacts of climate change. Climate change adaptations such as reducing stressors, improving ecosystem condition, and landscape connectivity contribute to ecosystem resilience and adaptive capacity in the future. The ecosystems mapped in this project are ecologically significant because of their rarity and fragility and also for the important ecosystem services they provide, such as climate regulation, water filtration, productive soil, carbon sequestration, nutrient cycling, pollination, wildlife habitat and more. Sensitive ecosystems must be considered in the context of the overall landscape, which includes other factors that also contribute to ecosystem services in these areas.

The services and benefits SEI provide and the wildlife species they support are critically important to the quality of life in the Okanagan. With so few at-risk and fragile ecosystems remaining, it is essential that each site be carefully considered and all land use options be fully evaluated prior to initiating any changes in these areas.

The SEI information is intended to alert local and regional decision-makers to the presence of sensitive and other important ecosystems and ecological features. The SEI mapping does not replace the need for on-site assessments in areas where land use changes are proposed. The accuracy of polygon boundaries is limited by the scale (1:10,000 for all projects except the City of Kelowna which was based on 1:10,000 digital aerial photography) and date of the aerial photographs on which the sites are delineated (i.e., changes may have taken place since the photos were taken). It is recommended that digital data not be enlarged significantly beyond the scale of the photos, as this may result in unacceptable distortion and faulty registration with other datasets. The ability to use specific distances (e.g., invasive plants) is limited when interpreting air photos, and field sampling is needed to supplement the interpretation. It can also be difficult to delineate small sensitive ecosystems. In many cases these ecosystems are considered as a small component of a larger polygon that is dominated by another ecosystem. It is important to remember that a polygon may contain a complex, or mosaic, of ecosystems, and sensitive ecosystems may only occupy a portion of that polygon.

The large variety of ecosystems in the Okanagan Valley provide for diverse habitat needs of many wildlife and plant species, including a remarkable number of at-risk species and ecological communities. Sensitive ecosystems are restricted, rare, and some occur nowhere else in B.C. or Canada. A high proportion of these species considered at-risk, either provincially or federally, rely on the habitat values found only in the at-risk and sensitive ecosystems of the valley.

Within the province, species are assessed by the B.C. Conservation Data Centre. Species at risk are identified on the B.C. Red and Blue lists. Red-listed species are endangered, endangered, or threatened. Blue-listed species are of special concern due to low or declining populations and are sensitive to human activities or natural events. Nationally at-risk species are reviewed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Endangered, Threatened, or of Special Concern. Endangered species face imminent extinction or extirpation. Threatened species may become endangered if limiting factors are not reversed. Species of Special Concern are particularly sensitive to human activities or natural events. Endangered or

Inventory Results

Many of the sites identified by the SEI are at high risk of conversion to other land uses or further degradation. Within the study area, 47.5% was mapped as Sensitive Ecosystems (SEI) and 7.2% fell into the Other Important Ecosystems category (see Legend). The inventory results indicated that wetlands, broadleaf woodlands, antelope-brush steppe, sagebrush steppe and old forest ecosystems were extremely rare - covering less than 5% of the study area. Although areas of grasslands, coniferous woodlands, and mature forests remain, many have been altered significantly and therefore few high quality sites remain. The study found many SEI that have been degraded by fragmentation, human use, livestock grazing, and alien species.

The services and benefits SEI provide and the wildlife species they support are critically important to the quality of life in the Okanagan. With so few at-risk and fragile ecosystems remaining, it is essential that each site be carefully considered and all land use options be fully evaluated prior to initiating any changes in these areas.

Data Limitations

The SEI information is intended to alert local and regional decision-makers to the presence of sensitive and other important ecosystems and ecological features. The SEI mapping does not replace the need for on-site assessments in areas where land use changes are proposed. The accuracy of polygon boundaries is limited by the scale (1:10,000 for all projects except the City of Kelowna which was based on 1:10,000 digital aerial photography) and date of the aerial photographs on which the sites are delineated (i.e., changes may have taken place since the photos were taken). It is recommended that digital data not be enlarged significantly beyond the scale of the photos, as this may result in unacceptable distortion and faulty registration with other datasets. The ability to use specific distances (e.g., invasive plants) is limited when interpreting air photos, and field sampling is needed to supplement the interpretation. It can also be difficult to delineate small sensitive ecosystems. In many cases these ecosystems are considered as a small component of a larger polygon that is dominated by another ecosystem. It is important to remember that a polygon may contain a complex, or mosaic, of ecosystems, and sensitive ecosystems may only occupy a portion of that polygon.

References

Information and access to full reports and map products for the Okanagan Valley SEI projects are available at: <http://www.ern.gov.bc.ca/ceocool/Type%20in%20Okanagan%20Valley%20SEI%20projects.htm>

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