

Summary of Yukon Geological Survey 2014-15 Activities

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INTRODUCTION

The Yukon Geological Survey's field-based projects and desktop geoscience studies support the Department of Energy, Mines and Resources' mandate for stewardship of Yukon's energy and mineral resources and contribute to the sustainability of Yukon's communities. YGS provides information to the public in the form of maps, technical reports, raw data and educational material, all available online at no cost.

This report provides an overview of the survey's 2014-15 activities and highlights some of the results of those activities. More detailed papers on some of the projects discussed here are included in this year's Yukon Exploration and Geology publication; results of other projects will be released separately.

YUKON GEOLOGICAL SURVEY PROGRAM OVERSIGHT AND FUNDING

The Yukon Geological Survey (YGS) develops its annual work plans each winter in consultation with a number of external partners, including two external advisory committees (the Minerals Technical Liaison Committee and the Yukon Oil and Gas Advisory Committee), the Geological Survey of Canada and several university-based research partners. In addition to external advice, Energy, Mines and Resources' corporate priorities and the information needs of other Yukon government departments are factored into annual planning and priority setting.

As part of a longer-term planning cycle, YGS holds multi-party workshops every five years. Last February (2014) the survey held its fifth such workshop involving staff, research partners, industry clients and other government departments. Valuable input was collected on gaps in Yukon's geoscience knowledge base, ideas for new projects were discussed, and emerging issues with potential implications for YGS were identified. The recommendations and priorities discussed at the workshop will be presented elsewhere (Relf, in prep.).

YGS OPERATING BUDGET

Yukon Geological Survey's core geoscience operating budget for fiscal year 2014-15 is \$1 265 000, with an additional \$1 400 000 allocated for the Yukon Mineral Exploration Program. Coupled with a \$950 000 contribution from the Canadian Northern Economic Development Agency (see below), the total 2014-15 budget for YGS, excluding salaries, is \$3 615 000.

The Yukon Mineral Exploration Program (YMEP), administered by YGS, provides a portion of the risk capital for exploration projects in Yukon on a competitive, merit basis. The base level of YMEP funding is \$770 000 per year, but it fluctuates annually based on market conditions. For fiscal years 2014-15 and 2015-16, Yukon government increased funding to \$1 400 000 in recognition of the

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difficulty many prospectors and small companies are having raising capital in the current economic climate. Highlights of this year's YMEP-funded activities are presented elsewhere in this volume (Torgerson, 2015).

STRATEGIC INVESTMENTS IN NORTHERN ECONOMIC DEVELOPMENT (SINED) FUNDING

In March 2014, the Canadian Northern Economic Development Agency renewed its Strategic Investments in Northern Economic Development (SINED) Program for two fiscal years (April 2014 to March 2016). Under the renewed program, \$1.9M has been committed to YGS for geoscience projects in Yukon (\$950K/year).

SINED Program funding is intended to support economic development in the north. YGS will use this year's SINED funds to deliver a number of projects that will help better understand Yukon's mineral potential, thereby stimulating new exploration and reducing risk. Other projects in this year's SINED work plan involve identifying geologic hazards in order to mitigate risks to infrastructure and communities.

As in previous years, YGS is tracking the impact of its SINED-funded activities to ensure the funds are invested wisely. Readers are encouraged to contact the author if they have comments on the projects being undertaken, or ideas for additional projects.

GEO-MAPPING FOR ENERGY AND MINERALS

In 2013, NRCan's Geo-mapping for Energy and Minerals (GEM) program was renewed for seven years (2013-2020), and this past summer, field work began on a GEM-2 project in southwestern Yukon/northern British Columbia (the GEM-2 Cordilleran Project). Three activities were initiated in Yukon: one involves the delineation of distinct crustal blocks and understanding the role played by their associated bounding faults in mineralization in the region (Ryan *et al.*, 2014). Another aims to develop an updated tectono-stratigraphic framework for the Cache Creek terrane and determine its potential for syn and epigenetic mineralization (Zagorevsky *et al.*, 2014a). A third activity under the GEM-2 Cordilleran project is focused on characterizing Late Triassic-Early Jurassic volcanic and intrusive rocks. The study was initiated in 2014 in northwestern BC (Zagorevsky *et al.*, 2014b) and contributed data and funding to YGS' study of Jurassic plutons in Yukon (described below).

Discussions between GSC and YGS on further collaborative work under GEM-2 are underway.

YUKON GEOLOGICAL SURVEY ORGANIZATIONAL OVERVIEW

Yukon Geological Survey consists of four operational units (Fig. 1): Bedrock Geology (managed by Don Murphy), Mineral Services (until recently, managed by Lee Pigage), Surficial Geology (managed by Jeff Bond) and Technical Services (managed by Karen MacFarlane). These units are coordinated and supported by an Operations & Finance manager (Suzanne Roy) and the survey Director (Carolyn Relf).

STAFF CHANGES

This past June, Lee Pigage retired from YGS, leaving a significant gap in the Mineral Services unit. A competition to back-fill the position was held over the summer, but the position remains open. YGS is continuing to search for a new manager, and in the meantime Lara Lewis is acting manager.

The Surficial Geology unit is fully staffed this year, and employed an additional geologist (Sydney Van Loon) over the summer and fall to assist with collecting and compiling production information from placer operations. Bedrock Geology is now also fully staffed after welcoming Rosie Cobbett back from maternity leave in late December.

Finally, Technical Services lost Aubrey Sicotte in March when he accepted a management position within Energy, Mines and Resources' Lands Branch. Aubrey led the development of YGS' Enterprise database and associated web applications. His position has been back-filled by Brett Elliot, who will join the unit in early January.

The author would like to acknowledge Lee's contributions and leadership and wish him the best in his retirement. Sydney is thanked for her contributions to the placer sector; congratulations are offered to Aubrey on his new challenge. Additionally, a warm welcome is extended to Brett; we look forward to working with him.

OVERVIEW OF 2014 FIELD STUDIES

BEDROCK MAPPING PROJECTS

Bear Creek project

One of the highlights of the 2014 field season was a mapping project in the Mount Decoeli area (Figs. 2 and 3) that involved nearly all YGS staff. The project, conceived by Steve Israel, was designed to resolve

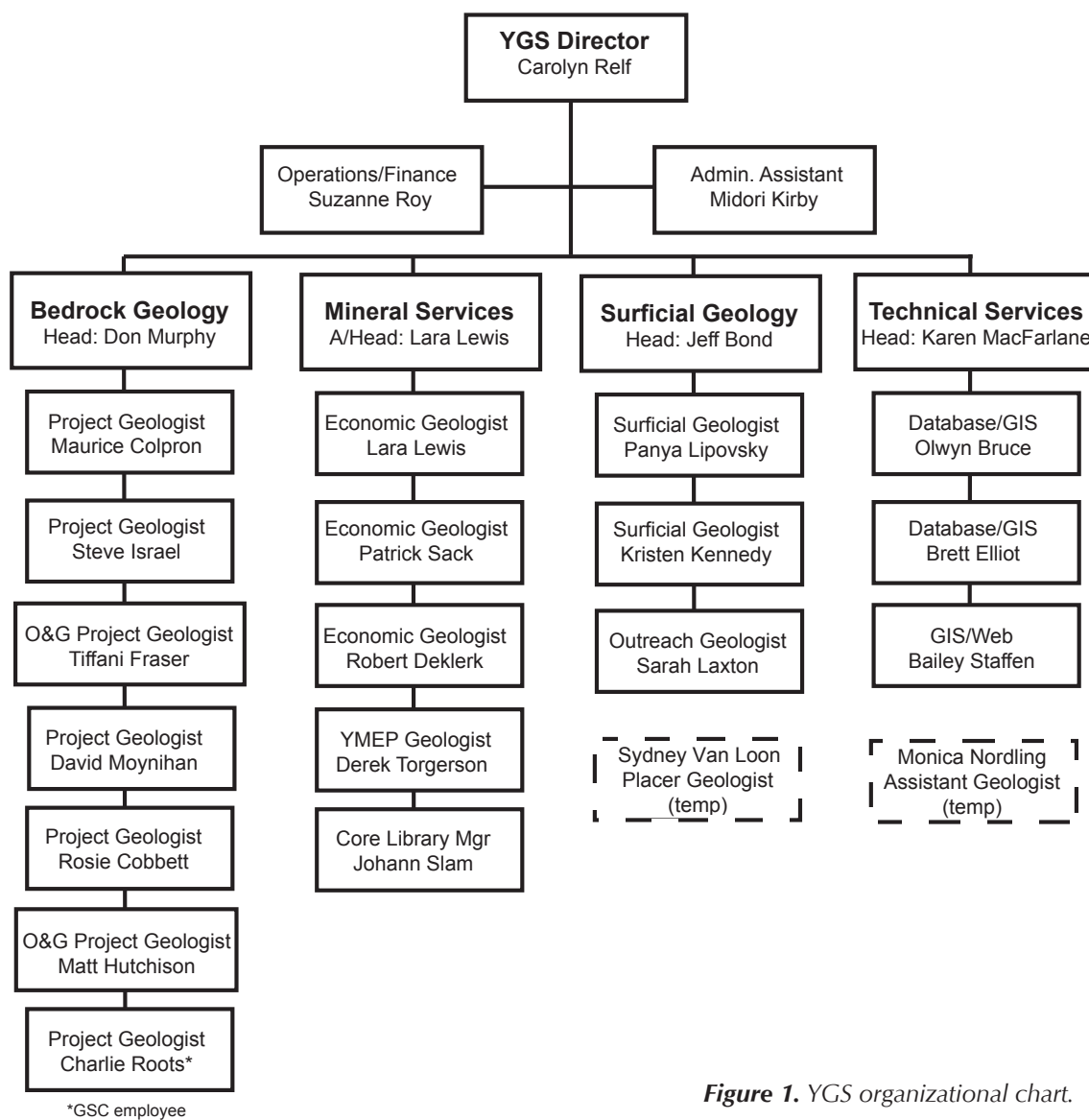


Figure 1. YGS organizational chart.

internal stratigraphic and structural relationships within the mixed metavolcanic and metasedimentary Bear Creek assemblage, and constrain the regional tectonic framework of the assemblage. Recent 1:50 000 scale mapping in adjacent areas (Israel *et al.*, 2011; Israel and Kim, 2013) provided a good contextual foundation for the project and allowed staff to effectively “blitz” the area in ten days. A colleague from the U.S. Geological Survey (Jonathon Caine) joined the team and carried out detailed kinematic studies of the Denali Fault, as part of a regional study of major crustal faults in the northern Cordillera.

A preliminary geology map of the study area was released in December 2014 (Israel *et al.*, 2014). In addition to

mapping the bedrock geology, staff from the Surficial Geology unit examined glacial deposits in several drainages to better understand the local ice movement history and assess placer potential. A number of interesting questions arose from the surficial reconnaissance, generating ideas for future graduate thesis projects in the area.

The Bear Creek project was both fun and intense. It not only allowed mapping to be completed at an accelerated rate, but it gave YGS staff a rare opportunity to work together in the field and share their different areas of expertise.

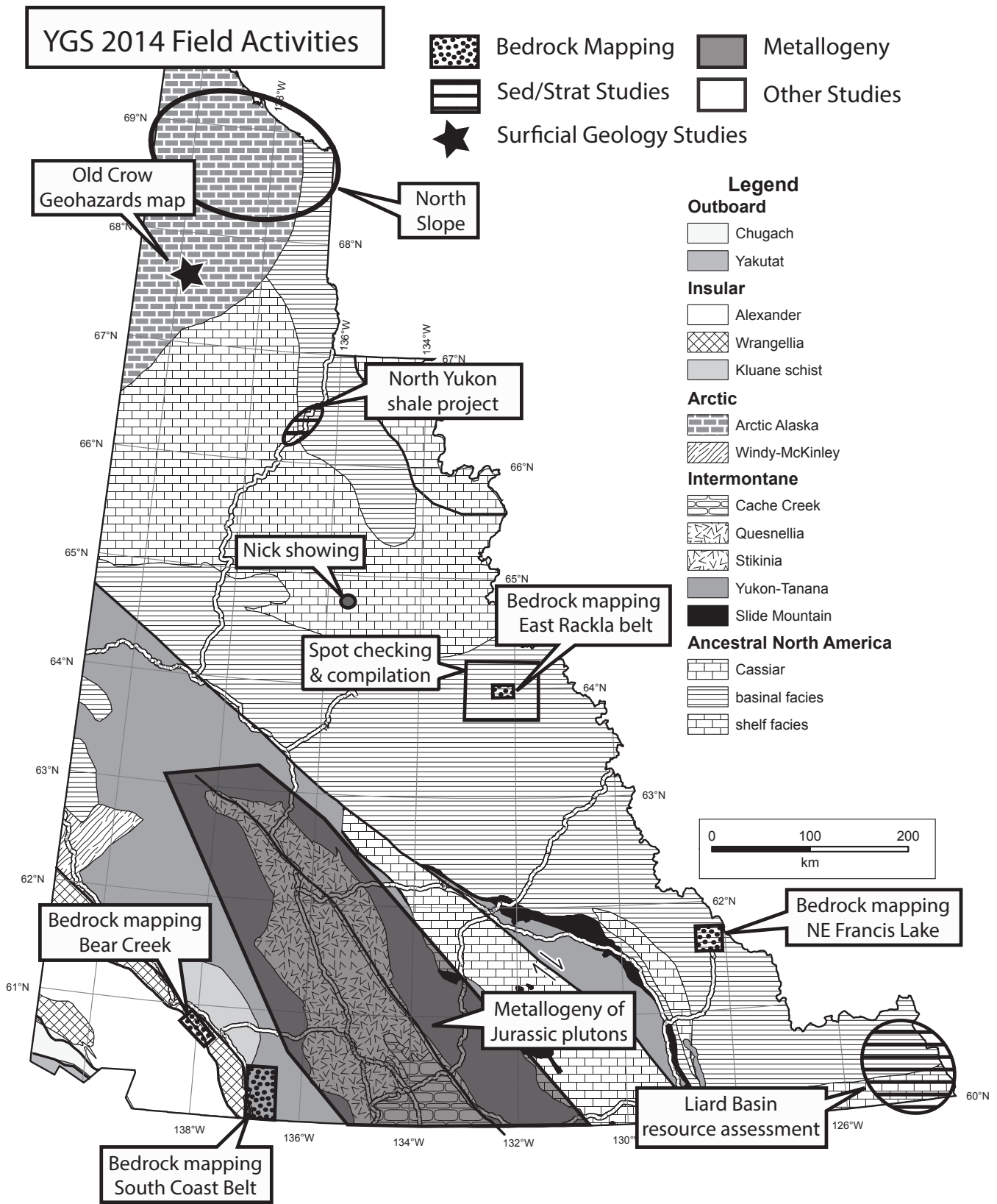


Figure 2. Simplified map of Yukon showing locations of 2014 field projects.



Figure 3. YGS field geologists Steve Israel (foreground) and Don Murphy mapping in the Bear Creek area.

South Coast Belt project

Following the mapping campaign at Bear Creek, Israel resumed 1:50 000 scale mapping in the Coast plutonic complex between Haines Junction and the British Columbia border (Fig. 2). Rocks in the area are interpreted to be the faulted extension of the Juneau gold belt of southeastern Alaska.

Mapping identified a package of metasedimentary rocks that may help to corroborate broad tectonic and stratigraphic correlations in this part of the Cordillera. Project highlights are presented in the 2015 Yukon Exploration and Geology volume (Bordet *et al.*, 2015). Two new maps (Bordet and Israel, 2014; Israel and Bordet, 2014) were released in December 2014.

Rackla Belt East project

This past summer, David Moynihan completed 1:50 000-scale mapping in the eastern part of the Rackla belt in east-central Yukon (Fig. 2). The project wraps up

five years of mapping in this belt (Chakungal and Bennett, 2011; Colpron, 2012a,b; Colpron *et al.*, 2013; Moynihan, 2014a,b). The main objective of the project was to establish the stratigraphic and structural framework of the region and particularly of sediment-hosted (Carlin-type) gold occurrences in the Rackla belt.

This summer, mapping concentrated on firming up the stratigraphic correlations between Neoproterozoic rocks of the Hyland Group and Windermere Supergroup and extending these relationships to the east and south of areas mapped in 2012-2013. Moynihan undertook systematic mapping mainly in NTS 105N/15 & 16, then spot checked outcrops across adjacent map sheets (105O/13, 106B/4 and 106C/1 & 2) to correlate units over a broad region. Moynihan and Colpron continue to collaborate with Jim Crowley (Boise State University) and Justin Strauss (Harvard University) to build geochronologic and chemostratigraphic datasets that support correlations established by mapping. A new map covering the six map sheets studied by Moynihan this summer will be released early in 2015.

Frances Lake area

Following completion of his work in the Rackla belt, David Moynihan initiated mapping in eastern Frances Lake area, following up on reconnaissance work he did there in 2012. Mapping focused in NTS map sheet 105H/09, which straddles the Nahanni Range Road and includes the Justin and 3Ace gold prospects, as well as the trace of the March fault, a regional structure that has been proposed to control gold mineralization along the Hyland valley (Hart and Lewis, 2006). This summer's mapping led to the recognition of two limestone/marble marker horizons in the upper part of the Hyland Group, the younger of which is stratigraphically equivalent to the Algae Formation elsewhere in Selwyn basin. Contrasting structural styles were noted on either side of the Hyland River and future work will assess the significance of postulated structures that may occupy the river valley in this area.

North Slope project

In 2013, Maurice Colpron (YGS) and Karsten Piepjohn (German Federal Institute for Geosciences and Natural Resources, or BGR) co-led the field component of a multi-partnered, multi-year study in the circumpolar Arctic. The 2013 expedition on the Yukon's North Slope (Fig. 2) involved a number of thematic studies that were briefly described in Relf (2014).

One of the studies focused on an occurrence of naturally-burning shale discovered near the confluence of Boundary Creek and Big Fish River. The organic-rich shale, which is part of the Upper Cretaceous Boundary Creek Formation, and the potential ignition mechanism, are described in the 2015 Yukon Exploration and Geology volume (Fraser and Reinhart, 2015).

Preliminary results of two other North Slope studies are presented in the same volume. McClelland *et al.* (2015) reports on detrital zircon geochronology of lower Paleozoic sandstones in the Barn Mountains and discusses their significance for paleogeographic reconstruction of northern Laurentia. In another paper, von Gosen *et al.* (2015) discuss their preliminary analysis of Tertiary brittle faults in the eastern part of the Yukon North Slope (the Rapid depression) and conclude that these results are inconsistent with propagation of a large-scale strike-slip fault zone, such as the Kaltag fault, through this region as previously inferred, but rather may indicate reactivation of older structural heterogeneity in the subsurface.

Further analyses of samples collected along the Yukon North Slope in 2013 is ongoing and will be subject of further publications in coming years.

PETROLEUM STUDIES

North Yukon upper Paleozoic shale project

Work continued this year on the North Yukon upper Paleozoic shale project (Fig. 2). The project, initiated in 2013, aims to better understand the petroleum potential of upper Paleozoic strata across northern Yukon, in particular, the Devonian-Carboniferous fine-grained clastic sequences. Stratigraphic units of interest are the upper Road River Group, Canol Formation, Ford Lake Shale and Blackie Formation. The project is being led by Tiffani Fraser and Matt Hutchison.

The Canol Formation was targeted as the first priority for the characterization of lithology, refinement of age and stratigraphic relationships, and assessment of hydrocarbon potential (as both a source rock and reservoir). Sedimentary logging and high-resolution sampling undertaken this past summer on outcrops at Trail River and on core from the Rich property have yielded a detailed sedimentological, lithogeochemical and petroleum potential data set with which to characterize this formation.

A detailed paleoenvironmental assessment of Canol shales is presented in the 2015 Yukon Exploration and Geology volume (Hutchison and Fraser, 2015).

Liard Basin resource assessment

As a result of current interest in shale gas in Liard basin, the BC Ministry of Natural Gas Development is partnering with the National Energy Board (NEB) to conduct an unconventional resource assessment of the basin, specifically targeting the Devonian Horn River Group and Besa River Formation. While most of Liard basin is in northeastern British Columbia, its northern limit extends into southeastern Yukon and southwestern Northwest Territories. YGS and the NWT Geoscience Office are therefore collaborating with BC and NEB to include the portion of the basin north of 60° in the resource model.

Geological data for the Yukon portion of Liard basin are very limited. YGS collected surface data from a few sections in 2012, and drill core and cuttings from the few Yukon wells were collected this fall. As a result,

the assessment will be based heavily on data from BC. Nevertheless, the study will provide a broad indication of the source rock and reservoir potential of shale on the Yukon side of the border.

MINERAL OCCURRENCE STUDIES

Jurassic Plutons

In response to input at YGS' February 2014 planning workshop, a new metallogenic study of Jurassic plutons in south-central Yukon was initiated this year by Patrick Sack and Maurice Colpron (Fig. 2). These plutons are the northern continuation of paired plutonic belts that host significant porphyry Cu-Au and Cu-Mo deposits in British Columbia, and Cu-Au-Ag mineralization at the Minto and Carmacks Copper deposits in Yukon. The goals of this study are to characterize the Jurassic plutonic suites in Yukon and evaluate their potential to host porphyry-style or Minto-type mineralization.

During the 2014 field season, samples were collected from nearly all Jurassic plutons south of Minto Mine (Fig. 4). Petrographic, physical rock property, whole-rock geochemical, isotopic and geochronological analyses are currently underway. These data will be reported in a separate publication.

An anticipated outcome of this project will be the compilation of an atlas of Jurassic plutonic rocks in Yukon. This study benefits from collaboration with the Mineral Deposit Research Unit (MDRU) of the University of British Columbia, and from coordination and funding from the

GEM-2 Cordilleran project of the Geological Survey of Canada. A complementary thermobarometric study of the Jurassic plutons is being conducted as a BSc Honours project at MDRU and aims at estimating the depth of emplacement of the various intrusive phases in Yukon.

Nick Showing

The Nick showing, located in the Wernecke Mountains about 130 km north of Mayo (Fig. 2), is characterized by anomalous Ni-Zn-PGE mineralization (Hulbert *et al.*, 1992) hosted in a massive sulphide layer up to 10 cm thick within a thick section of black shale in Selwyn basin. The mineralized layer is regionally extensive and corresponds to a Devonian disconformity between the Road River Group and overlying Canol Formation.

In 2014, Patrick Sack, Tiffani Fraser, Matt Hutchison and Don Murphy visited the property with Luke Beranek from Memorial University to examine the nature of this contact. Specifically, YGS is interested in its potential use as a regional stratigraphic marker to correlate shale from northern Yukon across Selwyn basin and into the western Canada sedimentary basin, as well as its metallogenic and tectonic significance.

Fieldwork consisted of mapping, diamond drill core logging, detailed section logging and sampling across the mineralized horizon. Follow-up analytical work currently underway includes microfossil identification, thermal maturity, XRD mineralogy and Re-Os whole-rock dating. Analytical results are expected by spring 2015.



Figure 4. Jurassic granodiorite tors in the northern part of Aishihik batholith.

Pyrite chemistry

Patrick Sack continued work on a regional study of pyrite chemistry in Selwyn basin, sampling early diagenetic and framboidal pyrite from fine-grained clastic rocks of the Hyland, Road River and Earn groups in 2014. The project is being carried out in collaboration with the Centre of Excellence in Ore Deposits at the University of Tasmania, as part of a global study of regional gold fertility of carbonaceous shale-rich basins. The study is also evaluating diagenetic pyrite as an exploration vector for gold. Variations in pyrite chemistry may also be useful as regional chemostratigraphic markers. Results of this project will be published in 2015.

COMMUNITY MAPPING

In 2014, YGS released new 1:25 000 surficial geology maps for the Faro (Turner *et al.*, 2014), Ross River (Turner, 2014) and Dawson City (McKenna and Lipovsky, 2014) areas. The maps support a series of community-based landscape hazard mapping projects being coordinated by Yukon College's Northern Climate Exchange (NCE). Final hazard maps and accompanying reports will be released by spring 2015.

As part of the community mapping program, Kristen Kennedy and Panya Lipovsky began a new surficial mapping project around Old Crow this summer (Fig. 2). They completed preliminary mapping in and around the community, and plan to acquire LiDAR imagery to assist with the evaluation of geologic hazards. Final maps and reports will be released by April 2016.

UPGRADES TO YUKON REGIONAL GEOCHEMICAL SURVEY DATA

For the past eight years, YGS has been working to systematically upgrade Regional Geochemical Survey (RGS) data from historic stream sediment surveys completed by the Geological Survey of Canada. The bulk of the work has been, and continues to be, funded by CanNor through their SINED program.

This fiscal year, YGS is continuing the re-analysis of stream sediment samples archived in Ottawa. Wayne Jackaman has been contracted to access archived pulps and generate new, 53-element ICP-MS analyses following GSC's QA/QC standards. A total of roughly 8100 samples

from nine 1:250 000 map sheets (105B, C, D, E, F and 115 F, G, H and I) are scheduled to be re-analyzed and new maps released (Fig. 5) over the coming spring/summer.

A second phase of the RGS upgrade work, initiated last fiscal year, involves digitizing the catchment areas for each stream sediment sample and undertaking weighted sums modeling for the various types of mineral occurrences known, or inferred, to exist in the area. Last year, Heberlein Geoconsulting was contracted to undertake a test study on two map sheets (Heberlein, 2013), and feedback from clients indicated the project added considerable value to the original single-element dataset. Specifically, the digitized polygons revealed a wide range in catchment area size, suggesting that some anomalies may be significantly diluted. The polygons also identified a number of catchments that were not sampled by the original surveys.

With respect to the weighted sums analysis, the two test maps showed a strong correlation between documented mineral occurrences and high modeled values. In areas that have seen little or no mineral exploration, the maps may serve to identify areas with previously unrecognized mineral potential. In December, YGS awarded a contract to CSA Global to continue the value-added modeling of Yukon RGS data. This work, funded with SINED grant money, will continue to March 2016. Map sheets identified for analysis are illustrated in Figure 5. The work will be staged such that those map sheets for which modern, ICP-MS data exist will be modeled first. Map sheets which currently lack ICP-MS data will await the completion of Jackaman's re-analysis before modeling begins.

At the February 2014 planning workshop, participants re-iterated the Technical Liaison Committee's advice that YGS should undertake in-fill stream sediment sampling between existing RGS data points. While such a project at a Yukon-scale would be prohibitively expensive without new, dedicated resources, YGS is considering ways to undertake targeted stream sediment sampling focused on gaps in existing RGS coverage.

A plan is in place for summer 2015 to evaluate Aurora Geoscience Ltd.'s Aerochem sampling unit (Fig. 6) as a potential tool for collecting additional stream sediment samples. The SINED-funded case study will assess the cost of sample collection (relative to on-the-ground sampling using field crews with shovels) and compare the analytical

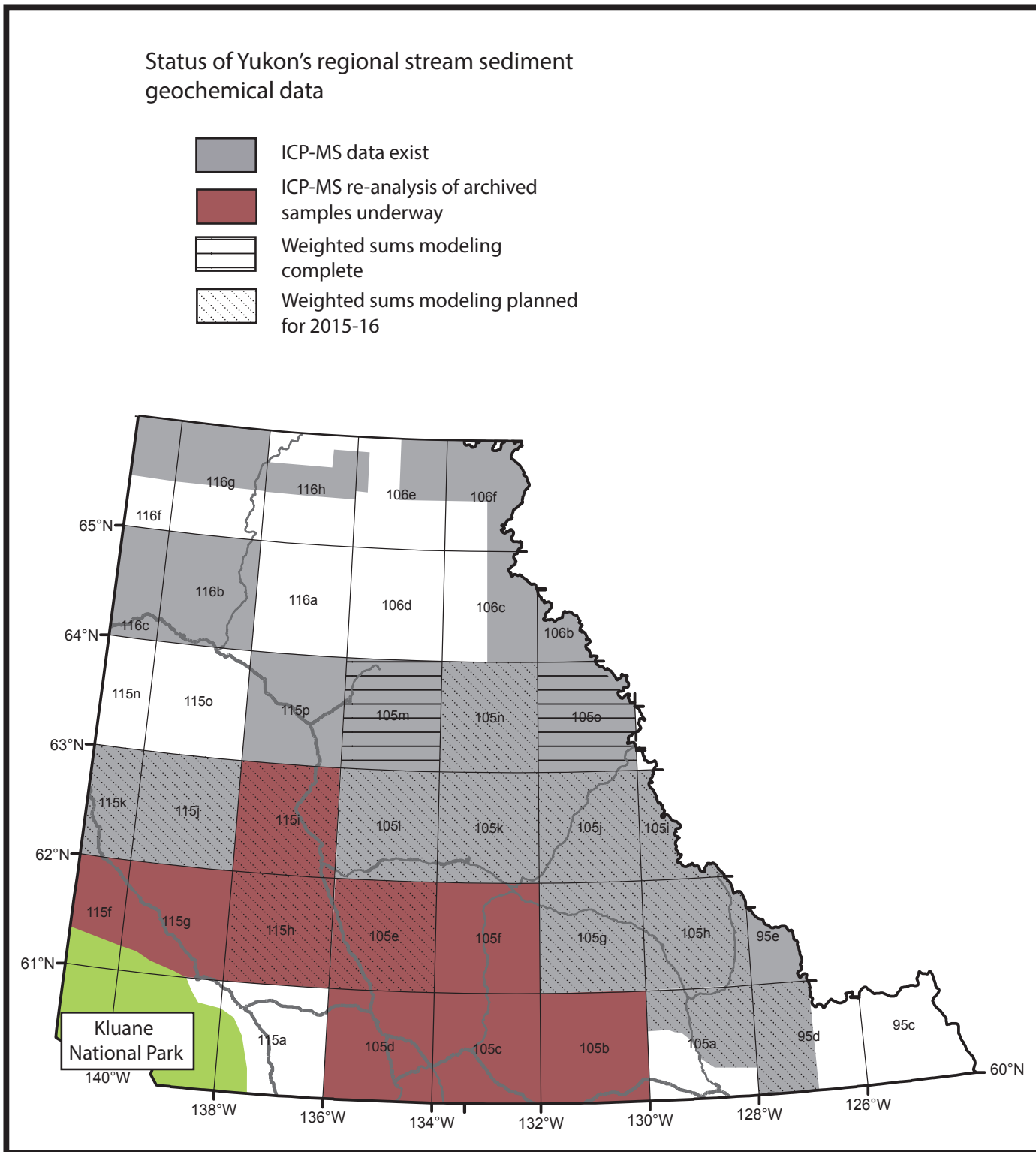


Figure 5. Status of Yukon stream sediment geochemistry projects. Map sheets for which modern, 53-element ICP-MS analyses exist are shaded grey; samples from pink-shaded areas are scheduled to be re-analyzed by spring, 2015. Map sheets prioritized for weighted sums modeling are indicated with diagonal cross-hatching. Modeling has been completed to date for two map sheets (horizontal hatching).



Figure 6. Photograph of Aurora Geoscience’s “Aerochem” unit.

results derived from Aerochem vs. manually-collected samples. If sample quality matches that of the manual samples (*i.e.*, if it matches that of the original RGS data) and sample collection proves to be more cost effective, the Aerochem tool may be a means to generate new RGS data in areas of low sample density.

GEOPHYSICS PROJECTS

This winter, YGS is planning an airborne geophysical survey in the vicinity of the Wellgreen Ni-Cu-PGM deposit (Fig. 7). The survey, to be flown in partnership with Klune Corporation, Wellgreen Platinum Ltd. and Victoria Gold Corp., will collect regional magnetic and EM data over a portion of Wrangellia terrane for which no publicly-available regional geophysical data exist. YGS’ financial contribution will be supported by SINED funds.

The Geological Survey of Canada has provided YGS with specifics for their national aeromagnetic survey program to help ensure the seamless integration of this survey with the national data set. The survey is expected to be completed by spring, with release of the maps and data over the summer.

In addition to the above-planned airborne survey, Sarah Laxton contributed ground-penetrating radar (GPR) surveys to a number of collaborative studies. These included ongoing collection of GPR data over Llewellyn glacier (Fig. 8) to assess the contribution of glacier melt water to the Whitehorse Hydro facility in partnership with Yukon College (NCE) and the Yukon Energy Corporation, and surveys of archeological sites in collaboration with Yukon’s Heritage Branch.

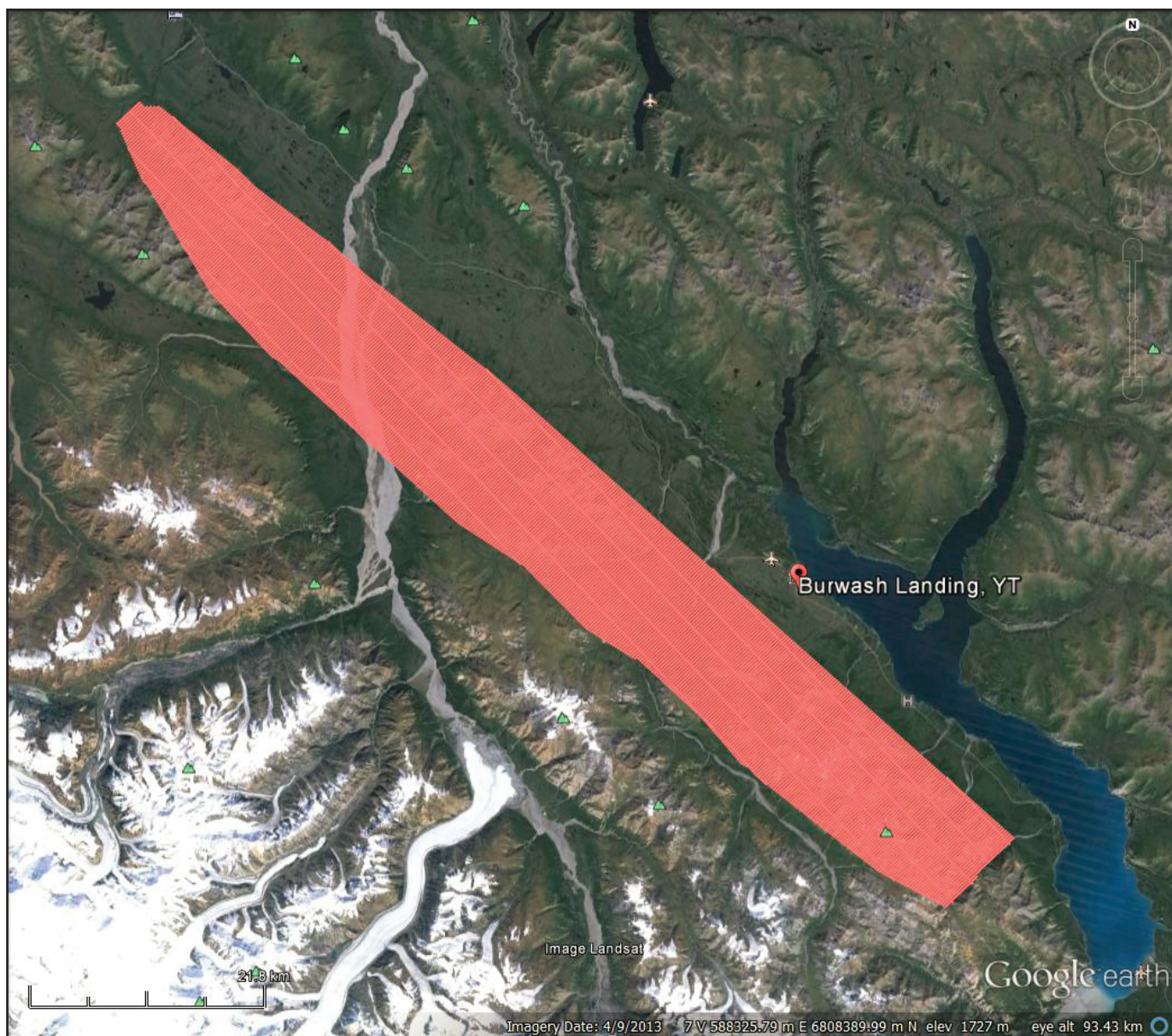


Figure 7. Google Map image of planned footprint for magnetic/EM survey in the Wellgreen area.

GEOSCIENCE OUTREACH

YGS enhanced its program of geological outreach and education this year. Under Sarah Laxton's leadership, several public "rock walks" were held over the summer around Whitehorse and in Tombstone Park, and geo-education events were held in conjunction with Canada Water Week in Faro, Ross River, Carcross, Haines Junction and Whitehorse. YGS hosted its annual Earth science workshop for Yukon teachers and worked with the Emergency Services office to run the first ever earthquake

awareness "Great Shake-out" event. Several of these events were highlighted in the media.

A number of schools were targeted for "Geo-Ed" events, including visits to Kluane and Robert Service schools, and Mining Matters activities were organized for Whitehorse schools during the annual Geoscience Forum. Classroom visits during the year included thematic presentations linked to school curricula, hikes and youth-focused activities at the Whitehorse Copper Belt railway.

YGS also worked with EMR's Oil and Gas Branch to develop information on Yukon's oil and gas resources.



Figure 8. Photo of field crew working near the Llewellyn glacier.

UNIVERSITY COLLABORATIONS

YGS provided support for three university projects this year through its SINED funding.

Brent Ward at Simon Fraser University is supervising two MSc thesis projects in Yukon. The first study, currently in its final year, is examining the timing and extent of the pre-Reid ice limit in the Ogilvie Mountains. Results of the project are presented in the 2015 Yukon Exploration and Geology volume (Brown *et al.*, 2015). The second study, initiated this year, will involve sampling of basal tills in the region underlain by the Jurassic pluton study described above. Surficial mapping and heavy mineral analysis will be used to assess till sampling as an exploration tool for unexposed Jurassic plutons in south-central Yukon.

In August, MDRU initiated the Yukon-Alaska Metallogeny project. This project will build on the emerging metallogenic models developed under their recently-completed Yukon Gold Project. One of the key objectives of the study is to improve our understanding of the regional and local structural and magmatic controls on gold mineralization in the Intermontane terranes between Whitehorse and Fairbanks. The Yukon-Alaska Metallogeny project is being led by Murray Allan, Craig Hart and Jim Mortensen (MDRU). YGS is one of a number of partners participating in the project.

ONGOING YGS ACTIVITIES

INDUSTRY LIAISON

In 2014, YGS Mineral Services staff visited eighteen mineral exploration properties and participated in the annual media tour organized by the Mineral Resources Branch. In addition to field visits, staff tracked 2014 mineral exploration results and expenditures and liaised with industry to provide access to YGS' diamond drill core collection. Highlights of the 2014 field season are presented elsewhere in this volume (Lewis *et al.*, 2015).

Staff in the Bedrock Geology unit collaborated with the Oil and Gas Branch to monitor petroleum exploration activity and review/approve requests to sample oil and gas drill core and cuttings (housed at the Geological Survey of Canada's facilities in Calgary). Murphy (2015) presents an overview of oil and gas exploration activities elsewhere in this volume.

Surficial Geology staff visited placer mining operations in the Klondike, Kluane and Mayo districts this year. The Yukon Placer Industry report, a compilation of production highlights and industry activity derived from site visits and data provided by miners, was released in the fall (Van Loon and Bond, 2014). The volume covers five years' of placer mining activity (2010-2014). An overview of Placer exploration and mining highlights for 2014 is presented elsewhere in this volume (Bond and Van Loon, 2015).

PERMAFROST MONITORING

Surficial Geology staff continued to maintain a network of permafrost monitoring stations in six Yukon communities (Whitehorse, Beaver Creek, Dawson, Faro, Ross River and Watson Lake). Results from the past six years of monitoring are discussed in the 2015 Yukon Exploration and Geology volume (Lipovsky, 2015). Information on Yukon permafrost can be viewed on the Yukon Permafrost Data network at <http://permafrost.gov.yk.ca>.

PUBLICATIONS

In 2014, YGS released eighteen Open Files, two Miscellaneous Reports, and four external publications in refereed journals, as well as its annual Yukon Exploration and Geology overviews and project update reports (see publication list at the end of this volume).

In addition to new publications, YGS is working this year with the National Archives in Ottawa to scan Yukon Consolidated Gold Corporation's files, based on interest

expressed by members of Yukon's placer community. A total of 546 maps and 400 documents have been identified for scanning. Once completed, they will be indexed and made available online. The project is supported by SINED funds.

UPDATING OF YGS DATASETS

In addition to online access to YGS publications and industry files, the survey manages a number of dynamic datasets in a corporate Enterprise database. Some have been accessible via YGS' website for a number of years (e.g., MINFILE and references), and others datasets, such as the drill core data and litho geochemistry, are in the process of being imported into the Enterprise database. Once imported, cleaned and tested, these data will be accessible online.

In November, YGS released preliminary shape files of the updated Yukon digital bedrock geology compilation, produced by Maurice Colpron with contributions by Steve Israel, Don Murphy and Murray Allan (MDRU). By that time, the map had been updated to include all new bedrock geology data between 60°N and 65°N, including recent maps by YGS and GSC, and industry contributions for part of Dawson Range and White Gold areas (through MDRU's Yukon Gold project). The objective is to complete the update of the entire Yukon by January 2015 and produce a revised bedrock legend to be released later in 2015. Files can be downloaded from http://www.geology.gov.yk.ca/update_yukon_bedrock_geology_map.html.

Robert Deklerk continues to manage MINFILE data and liaise with Technical Services staff to upgrade the database's web interface. Within the database itself, data entry and updates focused on east-central Yukon within the traditional territory of the Ross River Dena Council. Twelve new occurrences were added, and several more were updated. In addition, all resource/reserve data in the database were reviewed last year, and where publicly reported, resource/reserve data were updated.

Regarding the MINFILE web interface, modifications were made to enable easier access to the resource/reserve section, and work was initiated to link mineral occurrences to YGS references and assessment reports. Plans were announced last year to develop an online public comment form; however, staff turnover within Technical Services has delayed this project. YGS anticipates completing the form in 2015-16.

Last year, YGS developed an in-house application for collecting geo-referenced bedrock map data in the field

using Cartopac software on a hand-held Trimble Juno unit. The tool replaced the older GeoField application developed by the survey ten years earlier (Lipovsky *et al.*, 2003), and features customized pick lists, an integrated GPS and a number of other features. A number of adjustments to address technical issues and streamline data entry were made for the 2014 field season. In addition, the tool was tested for three other applications in 2014 with limited success: stratigraphic section logging, collection of placer data and drill core logging.

The system works very well for collecting point data in the field and has a number of functions, such as a built-in camera, that have yet to be fully used. The next phase of development for the bedrock mapping application is to write scripts to automate data uploading to the Enterprise database. Modifications to the other applications will require user feedback to fully address issues encountered in the field.

H.S. BOSTOCK CORE LIBRARY

Work continued in 2014 on the YGS drill core collection. Over the summer, over 6800 boxes of diamond drill core were moved to the new core library, catalogued and photographed. All core that was originally identified for relocation to the new core library has now been moved. Cleaning of drill core data is scheduled to be completed by spring 2015, and data will be migrated into a drill core module of the Enterprise database over the summer/fall.

As the core move and cataloguing phase of the drill core project approaches completion, YGS is turning its attention to expanding the core collection to include representative suites from all significant mineral occurrences in the territory. Over the next few years, YGS will pro-actively seek donations of core samples from deposits and occurrences of interest that are not currently represented in the collection. Acquisition was initiated this year with the donation of core from the Tom and Jason occurrences. Core from four holes, totalling 325 m, was donated by Hudson Bay Mining.

The H.S. Bostock Core Library continued to see an increase in use by clients since the drill program project was initiated. Mineral Services provided access to core from thirteen drillholes (representing eight properties), and approved requests to cut, photograph and/or undertake analyses of core from three of the holes. In addition to diamond drill core, cored sediment from Riverdale, drilled for geotechnical purposes, was accessed by a client. The rock saw facilities saw thirty person-days of use in 2014.

SUMMARY

YGS had another busy year in 2014. Regional bedrock mapping in the Rackla belt was wrapped up, and the long-awaited Placer Industry Report was released. Major progress was made on the update of the bedrock geology compilation, and a record number of education and outreach activities were held.

The planned geophysical survey in the Kluane Lake area represents a new type of research partnership for YGS. The survey will extend publicly-available data beyond that currently covered by the Geological Survey of Canada's regional magnetic surveys, and provide Kluane First Nation with information on a portion of their traditional territory adjacent to the Wellgreen deposit, enabling informed land use planning.

Information on YGS activities, publications, and staff contacts can be accessed on our website (www.geology.gov.yk.ca). As always, YGS welcomes information requests and feedback on our program.

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