Plan of Study
Submitted by the International Elk-Kootenai/y Watershed Study Board
To the International Joint Commission

March 26, 2025

Executive Summary

In March 2024, the International Joint Commission (IJC) received a Reference under the Boundary Waters Treaty from the governments of the United States and Canada, in partnership with the Ktunaxa Nation, asking the IJC to carry out certain actions to address the impacts of transboundary water pollution in the Elk-Kootenai/y watershed. In September 2024, the IJC appointed the International Elk-Kootenai/y Watershed Study Board (IEKWSB) and then directed the IEKWSB to conduct transparent and coordinated transboundary data and knowledge sharing; share, synthesize, and analyze data and information to support a common understanding of pollution within the Kootenai/y watershed and the impacts of that pollution on people and species; and report results and make recommendations in a transparent and publicly available format.

The IEKWSB has developed a Plan of Study which describes how it will work with a Council of Indigenous Knowledge Holders (CoIKH), with the support of a Study Management Team, to accomplish the Directive from the IJC. The IEKWSB will establish four Technical Working Groups (TWGs) to provide the technical foundation for its work established by the IJC. The TWGs will be established to assist in carrying out the work under this Directive to "*support a common understanding of pollution within the Elk-Kootenai/y watershed. This includes the impacts of that pollution on people and other species*" focused on the following four topics:

- Water Quality Status and Trends
- Impacts to Human Health and Well-Being
- Impacts to Ecosystems, Including Cumulative Effects
- Mitigation

Given that Ktunaxa knowledge and language flows through all TWG themes, the recommendation from the CoIKH is that there be interaction across the CoIKH and each of the TWGs with the option for support from staff from Ktunaxa governments as needed and available within the TWGs.

As required by the Directive, the IEKWSB will provide the IJC with an interim report on its progress in September 2025 and a final report in September 2026. The final report will include recommendations of areas for further study. Any recommended follow-up work to be conducted under the auspices of the IJC would require a new reference from the governments. The Board is requesting $4.9 million in funding to accomplish the Directive as articulated in this Plan of Study.

Contents

1 Preamble

As a transboundary water, the Elk-Kootenai/y watershed is subject to the Boundary Waters Treaty of 1909 between Great Britain and the United States which is intended to prevent and resolve disputes over the use of the waters shared by Canada and the United States. The Treaty established the International Joint Commission (IJC) to help the two countries carry out its provisions when issues are referred to the IJC by the Parties to the Treaty.

On March 8th, 2024, the Governments of the United States and Canada, joined by the transboundary Ktunaxa Nation, sent letters to the International Joint Commission, that included a shared "Proposal to Address Transboundary Water Pollution in the Elk-Kootenai/y Watershed." The proposal was developed in partnership by Ktunaxa, Canada, and the United States, with support from the Province of British Columbia and the States of Montana and Idaho. In accordance with Article IX of the Boundary Waters Treaty of 1909, the Governments of the United States and Canada, via the Reference, requested the IJC to take actions as described in the preamble of their joint Proposal with the transboundary Ktunaxa Nation.

The Elk-Kootenai/y watershed is defined in the Reference, and therefore the Study Area for this Plan of Study (POS), as "the Kootenai/y River flowing through Canada and the United States to its confluence with the Columbia River downstream in Canada, the Elk Subbasin, Koocanusa Reservoir, and Kootenay Lake." The entire watershed is in the unceded territory of the transboundary Ktunaxa Nation and is central to the Ktunaxa Creation Story. The Ktunaxa Creation Story has been passed down orally for generations amongst the Ktunaxa people and elders. Several websites share a short rendition of the Ktunaxa Creation Story (for example: Creation Story : Ktunaxa Nation) but the telling of the story in its entirety takes days.

As per the Reference, the Nations requested the "IJC to convene experts and knowledge holders in an IJC Study Board to conduct transparent and coordinated transboundary data and knowledge sharing", and to develop a Plan of Study (POS).

2 Acknowledgements

This POS was written by the International Elk-Kootenai/y Watershed Study Board (IEKWSB) and Study Management Team (SMT) with contributions from the Council of Indigenous Knowledge Holders (CoIKH) - Council of Ksanka ɛ Ktunaxa Knowledge Holders (CoKKKH). The incorporation of Ktunaxa placenames and language throughout this document is intended to promote the recognition and learning of the Ktunaxa language. Additional resources (including alphabet, pronunciation, and links for further learning) are included as an appendix.

The members of the IEKWSB were appointed by the IJC to provide the expertise needed to develop and guide the scientific activities and tasks required to complete this POS. Although IEKWSB members may have formerly been employed by government agencies in both Canada and the United States, all members have agreed to serve objectively in their personal and professional capacities, and not as representatives of their current or former agencies, countries, organizations, or special interest groups.

3 Introduction

The Kootenai/y watershed covers parts of southeastern British Columbia, northwestern Montana, and northern Idaho, all of which are part of ʔamakʔis Ktunaxa (Ktunaxa Territory) (Figure 1).The Elk-Kootenai/y water pollution Reference is the first Reference to the IJC that the two federal governments have developed in partnership with First Nations and Indigenous groups, with signatories from Canada, the United States, and the transboundary Ktunaxa Nation[1]. This is particularly important because of the geography and history of the watershed.

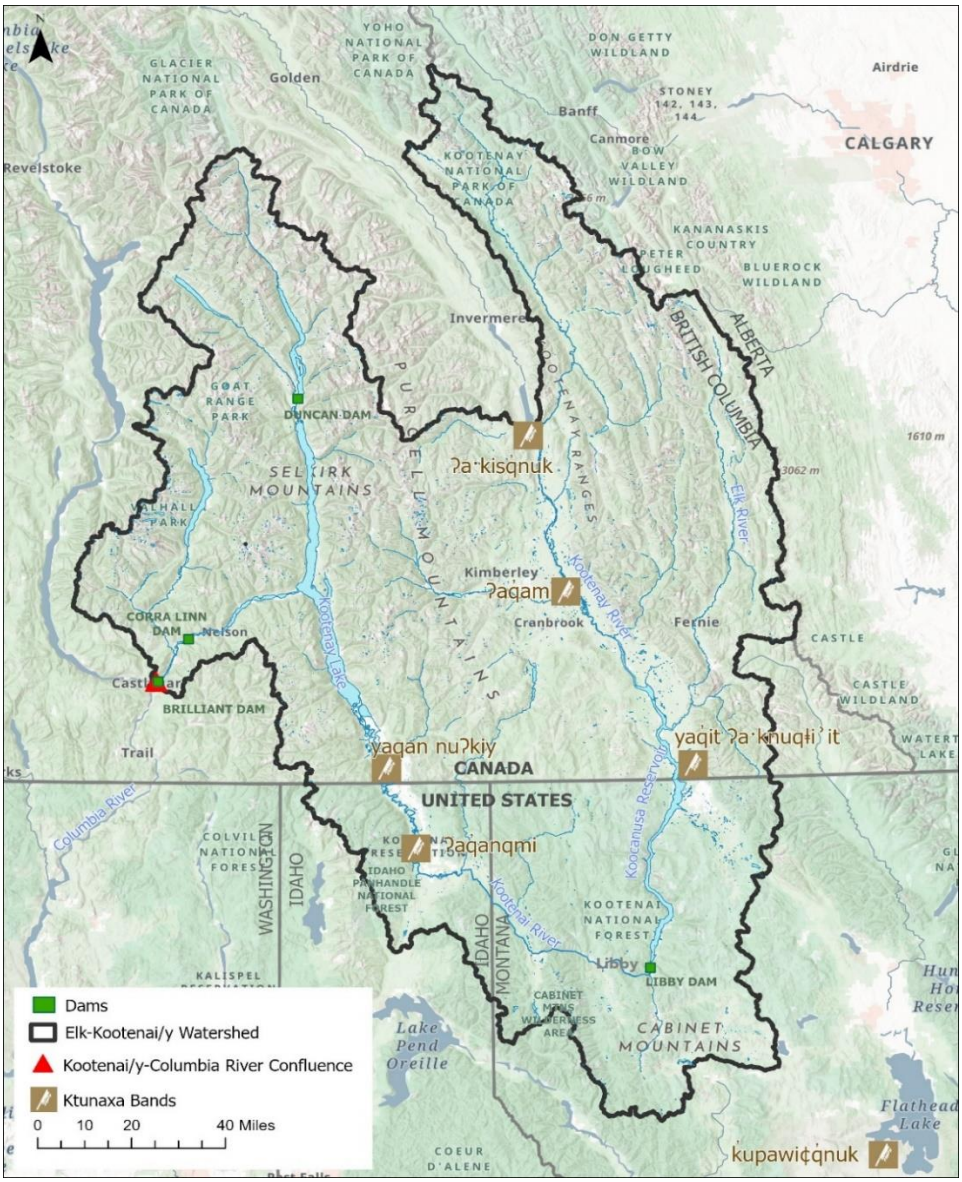

Figure 1. The Elk-Kootenai/y watershed within the ʔamakʔis Ktunaxa (Ktunaxa Territory), including the Study Area.

[1] For the purposes of this document, the Ktunaxa Nation is defined to include the six Tribal and First Nation governments: ʔa·kisq̓nuk, ʔaq̓am, yaqan nuʔkiy, Yaq̓it ʔa·knuqƛi̓it (Tobacco Plains Indian Band), Confederated Salish and Kootenai Tribes (Ksanka Band), and ʔaq̓anqmi (Kootenai Tribe of Idaho).

According to the Ktunaxa Creation Story, the Kootenai/y River is central to and woven into the heart of ʔamakʔis Ktunaxa (Ktunaxa Territory). The headwaters of the Kootenay River flow from the Ktunaxa land district of kyawa¢ ʔamakʔis (Land of the Spruce Goose; known as Kootenay National Park in southeastern British Columbia) and the ʔakisq̓nuk First Nation, before flowing south through ʔaknuqǂuǂam̓ ʔamakʔis (Land of the Eagle) and the First Nation of ʔaq̓am. From there it receives flows from the Elk River from qukin ʔamakʔis (Land of the Raven) and flows downstream through ƛam̓na ʔamakis (Land of the Wood Tick) and the First Nation of Yaq̓it ʔa·knuqɬiˀit.

The river continues its journey through ʔamakʔis Ktunaxa (Ktunaxa Territory) before crossing the international boundary between Canada and the United States, into Montana. The Kootenai River then flows through the Ktunaxa territories of kˀupawi¢q̓nuk (Ksanka Band, Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation in Montana) and ʔaq̓anqmi (Kootenai Tribe of Idaho near Bonners Ferry, Idaho) before turning north and crossing the international boundary back into Canada, flowing through the First Nation of yaqan nuʔkiy and into Kootenay Lake.

In October 2012, the transboundary Ktunaxa requested the Elk and Kootenai/y Rivers be referred to the IJC under Article IV of the Boundary Waters Treaty whereby "it is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other." Concerns about reduced water quality and quantity from ongoing and expanding coal mine operations and the implications to wildlife and fish populations as well as impacts to human health were noted to be of cultural, historic, and subsistence importance and concern to the transboundary Ktunaxa. Concerns for more impacts resulting from potential mine expansions prior to any mitigation planning or demonstrated mitigation efficacy were also highlighted.

British Columbia (BC) issued a Ministerial Order in 2013 for the development of an Area Based Management Plan (ABMP) to stabilize and reduce contaminants from the effluent of coal mines in the Elk Valley. The Order named increasing concentrations of selenium, cadmium, nitrate, sulphate, and deposition of calcite in the aquatic receiving environment. Many of these parameters exceeded provincial water quality guidelines and were suspected of causing impairment to ecosystem health (Ministerial Order 113). Through the approval of this ABMP, commitments were made by BC, in partnership with the State of Montana, to create a Lake Koocanusa Monitoring and Research Working Group (LKMRWG) to develop a reservoir-specific selenium target. The LKMRWG was set up in 2015 and was active until 2021.

In 2017, a second request for a federal-led international response was sent by the transboundary Ktunaxa to both Federal Governments due to concerns related to fish and wildlife, increasing trends in water pollutants, challenges in mitigations, and more coal mine development. In 2019, in response to elevated fish tissue levels of selenium, the transboundary Ktunaxa again raised concern regarding water quality and selenium impacts, requesting BC set a lower limit to protect aquatic life while the LKMRWG completed their work.

The outcome of the work done by the LKMRWG resulted in Ktunaxa leadership in British Columbia approving a site-specific selenium water quality objective of 0.85 µg/L (total Se) in the British Columbia portion of Koocanusa Reservoir in September 2020 and Montana setting a selenium water quality standard for Koocanusa Reservoir of 0.8 µg/L (dissolved Se) south of the international boundary. The Montana water quality standard was subsequently approved by the United States Environmental Protection Agency (USEPA) for Clean Water Act purposes in February 2021. British Columbia's guideline

is 2.0 µg/L (total Se). The United States Environmental Protection Agency selenium criterion and the water quality standard for Montana and Idaho for the Kootenai River downstream of Koocanusa Reservoir is 3.1 µg/L (dissolved). There is a disconnect between these various water quality objectives, guidelines, criteria, and standards. During this time, Ktunaxa leadership sent letters requesting a reference to the IJC (February and December 2021).

On March 24, 2023, the US and Canadian governments released a joint statement announcing a commitment to "reach an agreement in principle by this summer to reduce and mitigate the impacts of water pollution in the Elk-Kootenay watershed, in partnership with Tribal Nations and Indigenous Peoples, and in order to protect the people and species that depend on this vital river system."

The closure of the LKMRWG was announced by BC and the State of Montana in December 2023, noting that the feedback in 2020 from participants in the group had outlined more work was needed in inclusive governance and a broader geographic region (the watershed rather than just the Reservoir).

On March 8, 2024, the IJC received a Reference under the Boundary Waters Treaty related to the March 24, 2023 statement by the US and Canadian governments, in partnership with the Ktunaxa Nation, asking the IJC to carry out certain actions to address the impacts of transboundary water pollution in the Elk-Kootenai/y watershed. The Reference was made under Article IX of the Treaty. This is the first Reference to the IJC that the two Federal Governments have developed in partnership with First Nations and Indigenous groups.

For the purposes of this Study, the term "*water pollution*" is understood to mean "*alteration or degradation of water quality through the addition of a substance(s) that causes deleterious impacts*" to ʔa·kxamǂis q̓api qapsin (All Living Things)."

The Reference included a request to the IJC to convene experts and knowledge holders in an IJC study board by September 8, 2024, to conduct transparent and coordinated transboundary data and knowledge sharing; share, synthesize, and analyze data and information to support a common understanding of pollution within the Kootenai/y watershed and the impacts of that pollution on people and species; report results and make recommendations in a transparent and publicly available format; and broadly engage with Federal, Provincial, State, First Nations, Métis, and Tribal governments, industry, local communities, organizations, the public and others who live, work or have interests in the watershed, as well as other IJC boards working in the watershed or on similar issues.

On September 26, 2024, the IJC announced the formation of the International Elk-Kootenai/y Watershed Study Board (IEKWSB) to conduct the study requested in the March 8, 2024, Reference from governments.

3.1 Clarify Relationships

The IEKWSB is aware of two other regionally important, binational/bilateral efforts: 1) the IJC's International Kootenay Lake Board of Control (IKLBC) and 2) the United States and Canada Columbia River Treaty (CRT). The work of the IEKWSB does not encompass the ongoing work related to either of these other bodies/agreements. The mandate of the IKLBC is distinct from that of the IEKWSB. The IKLBC

was created by an IJC Order in 1938 to oversee operations at Corra Linn Dam to store up to six feet of water in Kootenay Lake and to excavate the lake outlet at Grohman Narrows. The IKLBC currently operates under its 2016 Directive. IJC jurisdiction does not encompass the CRT. Canada and the United States reached an agreement-in-principle (AIP) in July 2024 to extend CRT operations following six years of negotiations. Created in 1961 and ratified in 1964 partially in response to the 1948 flood, the CRT provided some flood mitigation and power creation for both countries and resulted in the construction of four major dams (Duncan, Hugh L. Keenleyside and Mica in Canada, and Libby in the United States) initially, with several more built since.

3.2 Watershed Characteristics

The Kootenai/y River watershed is an international watershed that represents the third largest tributary of the Columbia River; of the total watershed area of 19,300 miles^2 (49,987 km^2), 14,500 miles^2 (37,555 km^2) are in British Columbia, Canada, with 3,750 miles^2 (9,712 km^2) in Montana and 1,150 miles^2 (2,978 km^2) in Idaho in the United States. The Kootenai/y River is about 485 miles (775 km) long with 165 miles (266 km) or a little more than one-third of its length in the United States (adapted from ICERB, 1959 and Knudson, 1994). The watershed is largely undeveloped, with only 0.35% of the watershed having been developed, 0.6% in agricultural use, and <0.25% being mined with all of that in the Elk River basin (Stickney et al., 2021; Table 1).

The Continental Divide forms much of the eastern watershed boundary, with the Selkirk Mountains to the west, the Cabinet Range to the south and the Purcell Mountains in the center of the "J"-shaped flow (Figure 1). The headwaters of the Kootenay River are in the Rocky Mountains about 40 miles (64 km) west of Banff, Alberta, and the Kootenay River flows south into Koocanusa Reservoir which is located at the Montana-British Columbia border. Libby Dam, located on the mainstem Kootenai River near Libby, Montana, creates Koocanusa Reservoir. The dam was authorized by the U.S. Congress in the 1950 Flood Control Act for hydropower and flood protection, and construction was completed in 1973. Koocanusa Reservoir extends 90 miles (145 km) upstream into British Columbia, Canada. It has an average depth of 125 feet (38 meters), a maximum depth of 348 feet (106 meters), and a total storage capacity of 5,869,000 acre-feet (7.2 km^3) of water. Libby Dam was the fourth dam constructed under the Columbia River Treaty between the United States and Canada, and it is operated by the U.S. Army Corps of Engineers. After leaving Libby Dam, the Kootenai River flows west through Montana and Idaho before flowing north into Kootenay Lake in British Columbia. The river finally flows southwest from Kootenay Lake to enter the Columbia River near Castlegar, B.C.

Kootenay River flows are largely driven by winter accumulation of snow in the adjacent mountain systems, with the slopes of mountain peaks 7,000 to 12,000 feet (2,134 to 3,658 m) in elevation. Generally, the elevation of the mountains is higher in the northern part of the watershed than in the southern part. Winter flows are ordinarily low, but as spring progresses into summer with warmer temperatures, these accumulated snows of the preceding winter melt and cause the spring flood. Ordinarily the rise is gradual, beginning in April and continuing until late in May or early June, when maximum stage occurs.

Historically, the average annual discharge of the Kootenay River to the Columbia River was 868 m^3/s (30,650 ft^3/s); and 87% of the inflow to Koocanusa Reservoir (301 m^3/s, 10,615 ft^3/s) comes from three Canadian rivers, the Kootenay, the Elk, and the Bull. Reductions in snowpack, earlier spring runoff, warming water temperatures, and reductions in annual stream flows are already evident in the Columbia

River (reviewed in Chaffin et al., 2024). Warming temperatures and changes from snow-dominated to rain-dominated precipitation and changes in timing will impact flow, as well as power and irrigation demands. Changing hydroclimatic conditions in the watershed and increasing variability means that there is uncertainty in trying to understand transboundary water pollution dynamics.

Table 1. Land cover in the Kootenai/y River watershed organized by 8-digit hydrologic unit code (HUC-8) watersheds (modified from Stickney et al., 2021).

HUC-8 watershed	Total Area, in km^2 (mi^2)	Agricultural, in km^2 (mi^2)	Developed, in km^2 (mi^2)	Mining, in km^2 (mi^2)
Kootenay River Headwaters	5,390 (2,081)	5.15 (1.99)	0 (0)	0 (0)
Upper Kootenay River	6,595 (2,546)	61.23 (23.64)	53.36 (20.60)	0 (0)
Middle Kootenai	9,533 (3,681)	43.15 (16.66)	56.44 (21.79)	0 (0)
Elk	4,414 (1,704)	36.97 (14.27)	10.17 (3.93)	121.57 (46.94)
Lower Kootenai	9,693 (3,742)	151.29 (58.41)	36.06 (13.92)	0 (0)
Total[1]	**50,074 (19,334)**	**302.85 (116.93)**	**175.09 (67.60)**	**121.57 (46.94)**

[1]Total includes data for Fisher, Yaak, Moyie, Duncan, and Slocan tributaries. Those HUCs not shown in Table.

3.3 Human Activities and Associated Stressors

The Study Area has a variety of human activities within it that are typical for the region. Industrial activities tend to be focused on natural resource use and extraction. Forestry and mining have historically been and continue to be predominant industries in the Study Area. Recently, tourism, residential development, transportation, recreational activities, and agriculture have increased. Current human activities with the largest footprint and the most extensive activity are forestry, metallurgical coal mining, hydroelectric dams, and linear development (roads, electrical transmission lines, and pipelines).

In the Canadian portion of the Study Area, logging and associated road building have occurred in many of the lower elevation valleys and on higher elevation ridges on both private and public lands. Forests on public land in BC are managed for multiple uses. Under BC legislation, forest licensees must manage for 10 values, including fish/riparian, biodiversity, soils, wildlife and cultural heritage. Timber harvesting methods depend on the terrain, stand type, and values in the stand, and include partial retention, partial cuts, patch cuts, seed-tree cuts and clearcuts with retention. Under BC legislation, Wildlife Habitat Areas for species-at-risk have been established throughout the Study Area. These are reserves in which timber harvest is prohibited and/or with specialized management designed to protect the species in question; e.g., grizzly bear, mountain goat, American badger, Williamson's sapsucker, Lewis' Woodpecker and others. There is a relatively high proportion of privately managed forest land where timber harvesting takes place in the Elk Valley. Timber harvest on privately held lands greater than 25 hectares in the Study Area falls under the BC Private Managed Forest Land Program. The Program is administered by the Private Managed Forest Land Council. This is primarily a “results-based” regulatory model. Instead of specifying rules for how land must be managed, management objectives are set for landowners. Another forest industry activity includes the Skookumchuk pulp mill, which discharges to the Kootenay River about 43 miles (70 km) upstream of the northern end of the Koocanusa Reservoir.

In the U.S. portion of the Study Area, ownership and forest management is predominantly the United States Forest Service (specifically the Kootenai National Forest and Idaho Panhandle National Forest), which manages resources for multiple uses (clean water, healthy ecosystems, timber, livestock forage, minerals and energy, and recreation). Timber harvest in the U.S. portion is a blend of road-based pre-

commercial thinning, fuels management, clear cutting, intermediate, and seed tree harvest. Management of the forest must consider grizzly bears which are listed as endangered under the U.S. Endangered Species Act. Environmental stressors associated with the forest industry and associated roads include changes in the timing, volume and intensity of water flows off logged areas (with associated release and transport of sediments and other substances of concern to streams), nutrient loss, declines in terrestrial and aquatic habitat suitability for certain species of wildlife, loss of habitat connectivity, and loss of biodiversity.

Metallurgical coal mining is the primary economic driver in Canada's East Kootenay portion of the Study Area and contributes significantly to provincial and national economies. The current gross mine footprint (including reclaimed area) is approximately 58 mi^2 (122 km^2) (Table 1). Environmental stressors associated with metallurgical coal mining include water pollutants such as selenium, nitrates, and sulphates; alterations in groundwater/surface water connections, water flows, and overall water balance due to mine dewatering, water diversions, and water withdrawals; and habitat alterations or destruction due to the creation of open pits, filling of creek valleys with waste rock, erosion, and deforestation.

Historic mining activities in the US portion of the Study Area were extensive, due to occurrences of valuable metals such as gold, silver, copper, platinum, and lead. Larger historic mines include the Troy Mine (copper and silver) in the Lake Creek watershed south of Troy, MT and the WR Grace Vermiculite Mine near Libby, MT. Stressors associated with mineral extraction and processing include pollutants such as metals in the Troy Mine tailings, and asbestos in outdoor and indoor air and soils near Libby, MT. Remediation of the Troy Mine tailings storage area was declared complete by the current owner of the property in 2022. The vermiculite site was placed on the USEPA Superfund National Priorities List in 2002 and subsequently has undergone extensive remediation to reduce risk to human health to acceptable levels.

The production of hydroelectricity is an important industry in the Study Area. The Libby Dam/Koocanusa Reservoir complex is by far the largest human-made structure in the watershed. The Brilliant, Cora Linn and Kootenay Canal dams (all located between Nelson and Castlegar, BC) generate electricity upstream of the Kootenay River's confluence with the Columbia River.

In addition to the power, flood control, and recreational benefits that dams provide to society, dams can also have ecological impacts. Dams can fragment a watershed, obstructing fish migration. Dams and reservoirs can change natural water temperatures, water chemistry, river flow, and sediment loads. All these changes can affect the ecology and the physical characteristics of the river, while creating new habitat and conditions within the reservoir. These changes may have negative effects on native plants and animals in and around the river. Reservoirs may cover important natural areas (especially low elevation floodplain habitat), agricultural land, or archeological sites. A reservoir and the operation of a dam may also result in the relocation of people, which occurred in the Study Area due to the construction of Libby Dam. The impacts of a dam and reservoir, its operations, and the use of the water can change the environment over a much larger area than the area a reservoir covers.

Linear developments of all kinds often follow river valleys in the Study Area, resulting in parallel roads, railroads, pipelines, and electrical transmission lines. River and creek crossings are numerous and not necessarily built with protection of aquatic habitat as a top priority. The Elk Valley Cumulative Effects Management Study found that the primary hazard to fish in the Elk River Basin was road density.

Impacts of linear development include erosion (with subsequent sedimentation), blocking of fish migration, removal or degradation of riparian habitat, alteration of flow volume and pattern due to engineered streambank protections such as rip rap, and introduction of pollutants from road surfaces, road de-icing agents, and spills (road, rail and pipeline).

Recreation and urban and semi-urban development are increasing in the Study Area. Recreation includes hunting, fishing, hiking, biking, skiing, paddling, recreational driving (including off-highway vehicles), wildlife viewing, photography, camping, horseback riding and packing. Recreation increases human presence, with accompanying disturbances such as overuse of established trails and proliferation of informal trails (with accompanying erosion), increased fishing pressure, improper disposal of human waste leading to water pollution, and introduction of invasive species. Increased urban and semi-urban development (partly in response to increased demand for accommodation for visitors and seasonal residents) is usually in valley bottoms, where impacts on riparian habitats and water quality are already evident.

Only a small percentage of the Study Area is agricultural land, much of it used for pasture and forage production. Agricultural development is confined primarily to valley bottoms. Though it utilizes a relatively small area, it has had a large impact on habitats of the mainstem river and tributary mouths because most of the activity occurs in the floodplain. The largest contiguous block of agricultural land is within the Purcell Trench, which extends roughly from Bonners Ferry, Idaho to the river's entry into Kootenay Lake. Agriculture in valley bottoms and floodplains can degrade or eliminate riparian and wetland habitat, introduce water pollutants such as nutrients, pesticides, and pathogens, alter water flows via irrigation withdrawals, and reduce biodiversity of aquatic, semi-aquatic, and terrestrial habitats.

All human activities and associated stressors can interact in a cumulative manner. The effects of such activities on resources in the watershed indicated in the Reference to the IJC will be a cross-cutting area of study and a focus of the outputs from the Technical Working Groups.

4 Study Objective and Deliverables

The International Joint Commission established the IEKWSB with the objective of assisting the Commission in completing the study mandated in the Elk-Kootenai/y Reference, Proposal, and Directive, as set out below.

To achieve this objective, the Reference and Directive outline the following duties for the IEKWSB. The IEKWSB will:

1. Conduct transparent and coordinated transboundary data and knowledge sharing; share, synthesize, and analyze data and information to support a common understanding of pollution within the Elk-Kootenai/y watershed and the impacts of that pollution on people and species; and report and recommend in a transparent and publicly available format on the following matters:
    a. The best available observational data, scientific research, and Indigenous knowledge regarding influences on, sources of, status of, and trends in pollution in water and associated effects on ecosystem health, which could include but is not limited to fish and aquatic life, wildlife, human health, and cultural uses in the Elk-Kootenai/y watershed;

b. Data and research gaps, assumptions and uncertainties including any factors affecting data accessibility and comparability, such as data types and collection and reporting methods relevant to improving understanding, measurement, and monitoring of the matters reviewed by the IEKWSB;
c. Recommendations for strengthening, coordinating, and prioritizing efforts on data sharing and transparency, science, monitoring and research, and inclusion of Indigenous knowledge, and other next steps and recommended actions on the matters reviewed by the IEKWSB;
d. A synthesis of the available data and scientific information and a resulting understanding of the water quality issues in the Elk-Kootenai/y watershed including contaminants of concern, areas, and water and ecological resources affected; and
e. Methods and procedures for ongoing monitoring and data analyses to further define the extent of pollution and identify trends in concentrations of contaminants in the watershed.

2. Report and make recommendations related to governance and decision-making that directly addresses, impacts or relates to 1 (a) to (e) above. The SB should also include information or considerations related to how governance and decision-making as it is currently structured creates challenges or opportunities in the potential implementation of study board recommendations.
3. Conduct broad engagement: Consistent with the March 8, 2024, Reference to the Commission, the IEKWSB is expected to draft and implement an Engagement Work Plan that includes engagement with Federal, Provincial, State, First Nations, Métis, and Tribal governments, industry, local communities, organisations, the public and others who live, work or have interests in the watershed. The overarching goal is to build relationships and seek, document, and consider the resulting input and perspectives in assessments, conclusions, and recommendations, as appropriate.
4. The SB will provide:
    a. a Phase 1 Plan of Study for conducting the study to the Commission including a detailed schedule and proposed budget for the studies, engagement and other tasks to be undertaken.
    b. an Interim Report in September 2025, which will include, at a minimum, a summary of achievements, IEKWSB and working groups activities, independent peer review, communications/engagements with the public, Indigenous collaboration, study timeline and expenditures, looking forward, and issues requiring Commission advice and guidance.
    c. a Final Report in September 2026, which will consist of reporting and recommendations on the matters that were studied, and a summary of public engagement. It will also, per the Directive, include a Phase 2 Plan of Study recommending potential future work, including public engagement, associated cost, and how and by whom this future work could be conducted.

5 Organization of the Study and Governance Structure

On September 26, 2024, the Commission provided the IEKWSB with a detailed Directive, which included a proposed governance structure for the study. Study governance will be key to successful efforts on

behalf of the IEKWSB (Figure 2). Active engagement from various interests in the watershed, including government entities that have responsibilities for water management in the watershed, is necessary to ensure project success. The IEKWSB has adopted the proposed governance structure and has begun implementing it with the help of the Commission. The following sections, largely summarizing information in the Directive, describe the various components of the governance structure. All members of the Study, including IEKWSB members, Study Management Team members, and Technical Working Group members are expected to serve the Commission in the best interest of the watershed and in their personal and professional capacities, and not as representatives of their respective countries, communities, agencies, organizations, or any other interests and affiliations. The IEKWSB and each of its members will be guided by principles of transparency, open communication, good faith, accountability, timeliness and respect, and will work inclusively, collaboratively, and with a positive spirit of cooperation.

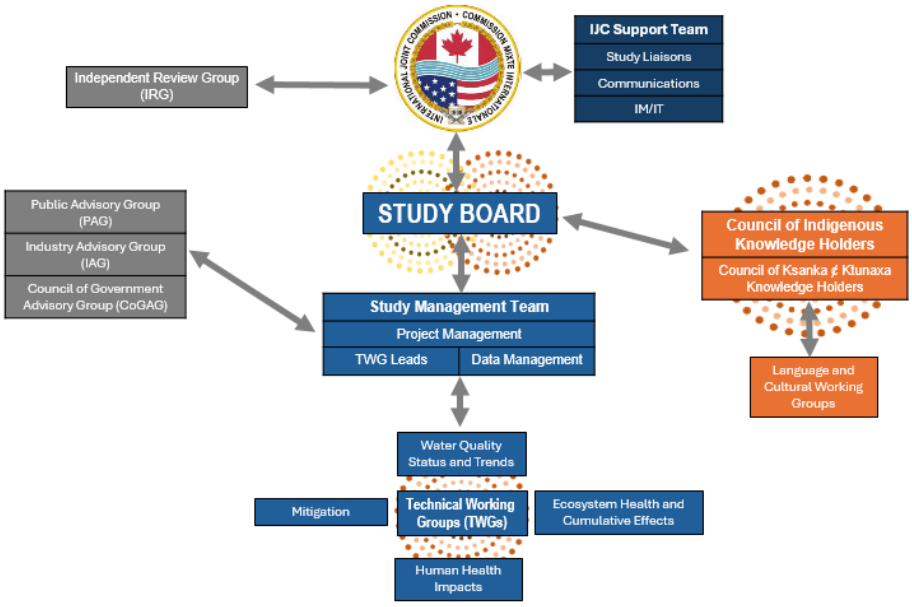

Figure 2. Governance Structure for the International Elk-Kootenai/y watershed Study. The circle illustrations have been modified from Ryder et al. (2020).

5.1 IEKWSB (Study Board)

The IEKWSB reports directly to the Commission but maintains objectivity and independence in conducting its work to report its findings and recommendations. The Commission provides oversight of the IEKWSB, assuring adherence to the Reference and the Directive. The IEKWSB is separate and independent from the other structure set out in the Reference, the Elk-Kootenai/y Governance Body (Governance Body).

The members of the IEKWSB are:

- Tom Bansak, University of Montana, United States Co-Chair,

- Oliver Brandes, University of Victoria, Canadian Co-Chair,
- Vi Birdstone, ʔaq̓amnik̓, Ktunaxa Nation member,
- Kelly Munkittrick, University of Calgary, Canadian member,
- Stella Swanson, Environmental consultant, Canadian member,
- Clayton Matt, Tribal Resource Management, retired director, Confederated Salish and Kootenai Tribes member,
- Rich Di Giulio, Duke University, retired, United States member,
- Jill Frankforter, US Geological Survey, retired, United States member.

IEKWSB members will prioritize the work of the IEKWSB to ensure that it will function effectively and efficiently, make best efforts to attend all meetings, be familiar with the contents of the Directive and the Reference to the Commission, and review relevant information to ensure they are fully prepared to participate in meetings. If there is a critical gap in the composition of the IEKWSB, the IEKWSB may communicate this to the Commission.

5.2 IEKWSB Co-Chairs

The IEKWSB Co-chairs will convene and preside at all meetings of the IEKWSB and will jointly take a leadership role in planning and implementing the IEKWSB's mandate, including facilitating the IEKWSB's deliberations on its work, and securing consensus of the IEKWSB on its findings and recommendations. In the case that one of the IEKWSB Co-chairs cannot attend a meeting, that Co-chair will designate another IEKWSB member to assume the role for that specific meeting.

5.3 Council of Indigenous Knowledge Holders

As per the Directive, the IEKWSB will regularly consult with a Council of Indigenous Knowledge Holders (CoIKH) comprised of members from Indigenous Nations (which may include Tribal, First Nation and Métis) throughout the entire Study, to ensure that knowledge relevant to the Reference is requested, shared, synthesized, analyzed, and fully considered in the work of the IEKWSB. To help with this engagement of information, knowledge, and ideas, at least one of the IEKWSB members sits on the CoIKH.

A Council of Ksanka ɂ Ktunaxa Knowledge Holders (CoKKKH) has already been appointed by the Commission's U.S. and Canadian Secretaries. Members were invited from each of the six Ktunaxa Nation governments. If needed, other Councils of Indigenous Knowledge Holders composed of members of other Tribal, First Nation, and Métis groups may also be formed as the study proceeds.

The circular structure in Figure 2 reflects the iterative and connected nature of knowledge, which is foundational to the Ksanka ɂ Ktunaxa stewardship responsibility for ʔa·kxaʕis q̓api qapsin (All Living Things). Ksanka ɂ Ktunaxa ʔaqɬsmaknik̓ (people) have occupied Ktunaxa ʔamakʔis for more than 10,000 years. Through the significant and ongoing impacts to wuʔu ɂ ʔamak (water and lands) impacts to ʔa'kxaʕis q̓api qapsin have occurred. As part of the covenant made with the Creator, Ksanka ɂ Ktunaxa continue to be a voice for those who cannot speak for themselves – the four legged, the winged, the ones who crawl on the ground and swim in the waters – in upholding the responsibility given by the Creator to safeguard ʔa'kxaʕis q̓api qapsin for future generations. This is part of the Ktunaxa role and responsibility throughout ʔamakʔis Ktunaxa, to steward wuʔu ɂ ʔamak ɂ ʔa·kxaʕis q̓api qapsin by continuing to honor relationships in the ways that have been taught generation upon generation.

5.4 Study Management Team

The Commission appointed a six-person Study Management Team (SMT) to assist the IEKWSB in delivering its mandate. SMT members are not IEKWSB members, but they are charged with acting in the best interests of the IEKWSB in discharging all their IEKWSB duties. The SMT will work under the joint direction of the Study Co-chairs, will participate in every IEKWSB meeting, and will remain fully aware of the IEKWSB's ongoing work. The SMT will maintain financial, travel, and other records as may be necessary to document the contributions of those involved in this work. The SMT will also oversee the Technical Working Groups (TWGs), provide logistics and lead the Study Board's communications and engagement processes, and be responsible for knowledge and data management for the duration of the Study. SMT members will also serve as liaisons to each of the Study's Advisory Groups. The SMT is responsible for developing meeting agendas in collaboration with the Study Board Co-chairs, posting meeting minutes and other relevant information to the Commission's website and social media platforms, and tracking public discussion. The IJC will provide technical and other support to the SMT members in fulfilling their duties.

Two-person sub teams of the SMT will be assigned to the following tasks:

Project Management – Two SMT members, one from Canada and one from the United States (hereafter Project Managers), will be responsible for assisting the IEKWSB on delivering its mandate. The Project Managers will work under the joint direction of the Co-chairs of the IEKWSB and will keep fully abreast of the work of the different groups, and function as liaisons between the IEKWSB and those groups. The SMT Project Managers will be responsible for the effective management of the IEKWSB's Phase 1 POS. The SMT Project Managers are responsible for communicating to the different groups the direction of the IEKWSB and assisting in general administrative support (e.g., meeting set-up; travel; administrative and contract matters; coordination of various teams and tasks; maintenance of digital files and repositories including SharePoint file systems; meeting minutes, documentation of study activities, distribution of study products; and providing briefings to the IEKWSB on tasks and topics identified by the Co-Chairs). The SMT members are responsible for maintaining clear confidentiality boundaries between their work as SMT members, and any other professional positions they may hold.

Technical Working Group Oversight – Two SMT members, one from Canada and one from the United States (hereafter TWG Liaisons/Leads) will serve as IEKWSB Liaisons with TWGs and the CoIKH, coordinating and supporting activities of Working Groups, helping TWGs develop work plans and ensuring work plans are completed within agreed timelines and budgets. The TWG Liaisons/Leads will provide a direct line of communication between the IEKWSB and the TWGs and will provide technical guidance and support to the IEKWSB. Specific tasks include:

- Reporting to the Board and IJC regarding TWG activities, progress and matters of potential concern;
- Assisting the direction of TWG work based on the Board's request for information;
- Supporting the development of and reviewing all TWG documents;
- Attending all TWG meetings to provide overall study information and support meetings with meeting facilitation and note taking;
- Coordinating TWG assignments, communication, and facilitating inter-TWG communication;
- Providing general GIS support to all TWGs as needed.

Data Management – Two SMT members, one from Canada and one from the United States (hereafter Data Managers) will work with TWGs to ensure their data storage and acquisition needs are met, including planning and implementing long-term archiving of Study products and associated datasets. Specifically, the Data Managers will oversee data management, including the development of a data policy, Data Management Plan, and associated templates. This role includes ensuring that protocols for working with any data obtained during the study are followed. They are also responsible for management and stewardship of Indigenous knowledge and data.

It is expected that the IEKWSB will store all digital data and files, including models, working files, etc. on the IJC SharePoint websites to manage, protect and preserve all Study data throughout the Study period.

5.5 Technical Working Groups

The IEKWSB will establish Technical Working Groups (TWGs) to assist the Board in carrying out the work under its Directive to share, synthesize and analyze information on pollution within the Kootenai/y watershed (i.e., sources of, status of, trends in, mitigation efforts and efficacy), and the impacts of that pollution on human and ecosystem health (i.e., human well-being, cultural uses, fish/aquatic life, wildlife)(Section 7). TWG members are appointed by the IEKWSB and reflect a diversity of membership to ensure that they can address all relevant dimensions of the work required under the Directive.

Through the SMT, the IEKWSB will ensure that the TWGs have clear direction as to the scope of their work, have ongoing opportunities to provide their advice to the IEKWSB, and that communication amongst TWGs is regular and consistent to ensure all recommendations and advice are informed by each other's expertise. The IEKWSB will also provide opportunities for all TWGs to hear the views of the other TWGs, where relevant, and provide opportunities for engagement with the Council of Indigenous Knowledge Holders.

6 Engagement

Throughout the Study, the interests and perspectives of the public, stakeholders, Indigenous Nations and their members, basin communities (rural and urban), and appropriate local, State/Provincial, Federal government agencies will be actively sought to contribute hydrological, ecological, socio-economic, and other relevant information and data to the Study to foster dialogue, communication, and participation at all levels, in both Canada and the United States.

The IJC and the IEKWSB are committed to providing all interested parties with convenient opportunities to be heard, as required in the Boundary Waters Treaty. The IJC emphasizes the importance of public outreach, consultation and participation, and promotes policies and programs that enable community input in the water management decision-making process to meet the needs of all stakeholders and rights holders. Such broad engagement includes the general public and must be driven by the concept that IEKWSB members, and members of associated committees and groups, participate and communicate objectively and independently of their native countries and organizations.

With IJC Communications staff, the IEKWSB has developed an Engagement Work Plan, as required by the IJC's Directive, to achieve the engagement objectives described in the following sections. We recognize this Engagement Work Plan will be a living document that will be regularly updated on the IEKWSB internal SharePoint site. All public engagement is required to be reviewed by IJC Technical and

Communications staff and approved by the IEKWSB. A key goal with broad engagement of diverse peoples and sectors is to ensure the management of the Elk-Kootenai/y watershed will meet the needs of all stakeholders and rights holders. The IEKWSB does not pre-suppose what will be needed to meet these needs and what other criteria are considered balanced and fair, but the IEKWSB does seek to develop an understanding of factors considered during evaluation of trade-offs.

6.1 Engagement Objectives

The IEKWSB will provide opportunities for direct in-person or virtual engagement with Federal, Provincial, State, Tribal and First Nation governments, industry, local communities, organizations, the public, and others who live, work or have interests in the watershed. In addition, the Study Board will provide opportunities for more general ongoing communication for those that wish to remain informed about the study.

6.1.1 Engagement Principles

Participation in the Study will be driven by the following key objectives:

- Strive to ensure that the Study process is open, inclusive and fair;
- Provide opportunities for the public to become aware of the study, its purpose, and process, including how decisions will be made;
- Provide opportunities to all interested parties to participate;
- Strive to enhance public understanding of sources, trends, and effects of water pollution in the Elk-Kootenai/y watershed;
- Inform the Study by identifying and building on local expertise, knowledge and information;
- Invite and consider the views of all interests of the principal issues;
- Identify and consider the priorities and preferences of the public, industry, and governments in the plan formulation;
- Broadly disseminate Study findings as they become available; and
- Encourage the public as well as industry and government representatives to share Study findings with others.

6.1.2 Engagement Methods and Approaches

The IEKWSB will invite comments about specific or general issues associated with the Study as well as provide opportunities for all people with interest to express their views and provide data related to the Study. The IEKWSB will use several important means for participation and outreach including public meetings, which will be held at least once in each country per year, either virtually, in person, or both. In order to inform and provide context for the technical investigations associated with the Study, the public will be consulted at the beginning of the Study to identify the public's views on the principal issues, questions of interest, and Study objectives; acquire any available knowledge in the form of historical data and anecdotal information; and identify existing or future plans, activities, and initiatives that may relate to improving water quality in the watershed.

The IEKWSB may engage with the public in a variety of ways, including but not limited to listening sessions and open houses, community meetings, and webinars, as well as various methods of digital communication including social media, press releases, newsletters and videos posted to the IEKWSB website (www.ijc.org/elk).

Advisory Groups will also be enlisted to help with engagement to provide an opportunity for specific interests and information to be heard by the IEKWSB throughout the Study.

6.2 Advisory Groups

Advisory Groups form a critical part of the Study process. In addition to informing the IEKWSB, the Advisory Groups will be a forum for interested parties to learn about the IEKWSB's activities and to offer their input, knowledge, insights, and perspectives.

The SMT, on behalf of the IEKWSB, will ensure that the Advisory Groups have clear direction as to the scope of their requested advice, have ongoing opportunities to provide their advice to the IEKWSB, and that communication amongst Advisory Group members is regular and consistent to ensure all recommendations and advice are informed by the collective group's expertise. The SMT will also provide an opportunity for all Advisory Groups to hear the views of the other Advisory Groups, where relevant. The IEKWSB will regularly apprise the IJC of communications with Advisory Groups, but at a minimum, the IEKWSB will document and present on its engagement and interactions with its Advisory Groups at the semi-annual meetings with Commissioners.

The IEKWSB, in coordination with Commission staff, may request establishment of additional Advisory Groups and appointment of additional members to established Advisory Groups as needed to carry out the work under the Directive. Members of Advisory Groups should have a presence or connection in the watershed, except in cases where a member may be appointed for their specialized knowledge or expertise, even if they do not have a presence or connection in the watershed. Advisory Groups are not required to make decisions or reach consensus in providing advice to the IEKWSB but must clearly present the areas of non-consensus to the IEKWSB for their consideration and determination. Co-chairs will be selected, one from Canada and one from the United States, to serve as central points of contact for each of the Advisory Groups. The IJC, with advice from the IEKWSB and SMT, established a Public Advisory Group, an Industry Advisory Group, and a Council of Governments Advisory Group to advise and report to the IEKWSB.

6.2.1 Public Advisory Group

The PAG is an important means of engaging the public in the Study on an ongoing basis, with members from each country representing key interests and geographic regions across the Elk-Kootenai/y watershed. Members of the Public Advisory Group (PAG), including co-chairs, are appointed by the IJC, in consultation with the IEKWSB. Interests represented include recreation, conservation, and environmental protection. PAG members will have the opportunity to provide advice and input to the IEKWSB throughout the Study's duration. Membership of the PAG may be expanded in the future if the Study Board identifies gaps in the representation of public entities.

The PAG members, the SMT and the IEKWSB will seek to develop effective techniques to engage the public and stakeholders on a wide range of issues. More specifically, the PAG will be asked to:

- Assist the IEKWSB in the implementation of planned engagement activities;
- Advise the IEKWSB on public consultation, involvement and information exchange;
- Serve as a conduit for public input and broad local knowledge and data input to the Study process;

- Serve as a conduit for public dissemination of Study outcomes by sharing approved information from the IEKWSB to their various networks throughout the community and continue the dialogue by bringing back views from their communities for consideration by the IEKWSB;
- Review and provide feedback on IEKWSB approaches, reports, products, findings, and conclusions as requested; and
- Advise the IEKWSB on the responsiveness of the Study process to public concerns.

6.2.2 Industry Advisory Group

Members of the Industry Advisory Group (IAG), including co-chairs, are appointed by the IJC in consultation with the IEKWSB. The IAG will offer representatives from various industrial and commercial interests an opportunity to inform the Study of their knowledge, insights, data and perspectives on possible water management options being considered. The IAG will include members from each country representing vested industries from the United States and Canada, including mining, tourism, forestry, fisheries, commerce, and hydropower. It will provide advice, feedback and guidance to the IEKWSB.

6.2.3 Council of Governments Advisory Group

The Council of Governments Advisory Group (CoGAG) will serve as the primary means for the IEKWSB to engage governments that might be interested in or affected by the work of the IEKWSB. It will provide local, State/Provincial, Federal, and Indigenous governments an opportunity to hear directly from the IEKWSB about study progress and offer governments an opportunity to directly communicate with the IEKWSB. The CoGAG will include members from each country representing various locally and regionally relevant levels of government having relevant roles in the watershed. Members are appointed by the IJC and will include local and State/Provincial elected officials and employees of local, State/Provincial, and Federal governments. Engagement will include, at a minimum, meetings to discuss the Study Board's penultimate draft Interim and Final Reports.

6.3 Communications

The IEKWSB established a Communications Committee. The Committee includes at least one Board member from each country, a member of the SMT from each country, IJC Communications staff from both Canada and United States and may also include contracted technical writers, contracted facilitators and co-chairs of the Public Advisory Group. The SMT members will co-chair the Communications Committee. The Committee will ensure the Board's communications to Advisory Groups and the IJC are consistent. The Committee will rely on help from IJC Communications staff for contributions focused on strategic design, planning, and creating communications products; establishing target audiences; and scheduling and delivery of communications products. Additionally, IJC Communications staff will help with media outreach and media training. Communications Committee members will work on behalf of the IEKWSB, not their home organizations.

7 Technical Working Groups

Technical Working Groups (TWGs) will be established to assist in carrying out the work under this Directive to "*support a common understanding of pollution within the Elk-Kootenai/y watershed. This includes the impacts of that pollution on people and other species."* The TWGs will receive their scopes of work from the IEKWSB and will regularly provide findings and advice to the IEKWSB. The IEKWSB will ensure that there is regular and consistent communication among TWGs so there are opportunities for

integration and iteration of findings. TWGs will be formed by appointing a small group of experts knowledgeable about a theme of concern in the Study Area, selected through an iterative process with the IJC and the IEKWSB.

Initially, the following TWGs will be established to accomplish the technical work needed to support the IEKWSB:

- Water Quality Status and Trends
- Impacts to Human Health and Well-Being
- Impacts to Ecosystems, Including Cumulative Effects
- Mitigation

TWGs will be responsible for identifying cross-cutting issues relevant to many or all of these themes such as possible effects of climate and climate change.

Upon formation, each TWG will be asked to prepare a work plan describing the tasks required to fulfill their mission, including associated costs, timelines, and products for each task. Upon Board approval, each TWG will implement the work plan with the support and oversight of the SMT to ensure their success.

7.1 Principles for the TWGs

Principles for the TWGs that will contribute to sound decision-making include:

1. **Recognition of the transboundary nature of the watershed.**
2. **Recognition that the Directive is the first Reference to the IJC that the two Federal governments have developed in partnership with First Nations and Indigenous groups:** it is essential to include Indigenous knowledge, culture and language because Ktunaxa knowledge contributes to our understanding of the accumulated watershed conditions, status and trends, and because it is mandated in the Reference. Uncertainties related to Indigenous knowledge will be addressed in first instance by the CoIKH and contribute to the development of key questions.
3. **Development of key questions**: initial questions tasked to the TWGs in the POS are at a high level, and the TWGs will need to formulate and formalize more specific questions, assign boundaries to their tasks, and use formal uncertainty analysis and priority setting to focus their work to accomplish the goals of the Directive within the very tight time frame provided. The TWGs will need to have a clear understanding of a conceptual model of pollution sources, pathways, and effects to inform their work, recognizing that there will be overlap and fluidity between TWGs, and there will need to be clear communication between TWGs that will be assisted by the SMT.
4. **Assessment of data pertaining to the accumulated watershed condition or state:** the TWGs are tasked with assessing the existing accessible data and information and evaluating whether entities throughout the Study Area are measuring the right things in the right places at the right time in order to achieve the duties assigned to the IEKWSB in the Directive.
5. **Transparency through accessible, comparable, and quality-assured data:** TWG activities should include evaluating the consistency of data and indicators, spatial and temporal boundaries; adequacy of baseline data, spatial or temporal trends (including error limits); and the existence, adequacy, and consistency of monitoring triggers or benchmarks.

6. **Relationships between environmental responses and system drivers (stressors)**: TWGs should include any existing studies or efforts to link observed impacts and specific stressors, causes, or mitigation efforts. Key uncertainties lead to the identification of critical data gaps or data insufficiencies.
7. **Identification of gaps and required enhancements to improve the characterization of the state of the watershed and to understand cumulative effects:** TWGs should include assessment of the information required for the IEKWSB to make recommendations regarding governance and the ability to assess or understand any reduction or mitigation of the impacts of water pollution in the watershed. Key uncertainties are those where information about important influences or impacts, their potential causes, or how decisions relate to those influences or impacts are made if the data or information are imperfect or lacking. Key uncertainties are the basis for prioritization and will guide the identification of recommendations for adjustments to the current monitoring (and research) conducted in the Study Area. Recommendations for any subsequent areas for further study, as required by the Directive, will likely require further design development, implementation of monitoring to address critical uncertainties and study questions, and evaluation of the new data collected during these phases.

7.2 TWG Objectives

The Directive tasks the Study Board to conduct transparent and coordinated data and knowledge sharing, make recommendations, report on progress, and seek opportunities for collaboration. The Study will result in the sharing, synthesis, and analysis of data and information to support a common understanding of pollution in the watershed, and the impacts of that pollution on people and species. Ultimately the Study Board will report and make recommendations on certain specified related matters.

TWG members will be supplied with guidance from the Study Board and a set of objectives cross-referenced with duties articulated in the Directive. The TWGs will need to complete these tasks within a specified time frame and budget (see Section 10) and their work will be grounded in, and guided by, Indigenous Knowledge as determined by the CoIKH.

The work of the TWGs will accomplish their objectives by assembling, synthesizing, and assessing existing data, studies, summaries, risk assessments, and well-being studies; and identifying gaps that need to be filled. TWGs will be responsible for assembling and synthesizing data from a wide variety of sources, operated by different agencies or groups, and communicated and stored in a wide variety of ways. The work of the TWGs will need to be prioritized, and the initial focus of activities will be on the identification of issues and key questions associated with water pollution according to the geographic extent defined in the Reference to the IJC. The TWGs will present the analyses and syntheses of data within their assigned and refined objectives so that the IEKWSB can accomplish the goals of the Directive. *33*

7.3 TWG Themes

TWG themes were developed by the IEKWSB using a combination of emphasis from the Directive and collective knowledge held by the IEKWSB, SMT, and IJC staff. 10While some of the TWG themes will have relatively well-developed points of commencement (e.g. Water Quality Status and Trends), others may require an iterative process to refine TWG objectives (e.g. Impacts to Ecosystems, Including Cumulative Effects).

7.3.1 Water Quality Status and Trends

Objective 1. Assemble and synthesize available hydrologic data, studies, reports, and peer reviewed science for the Elk-Kootenai/y watershed related to water quality and pollutants.
Objective 2. Identify and describe the occurrence of pollutants in the waters of the Elk and Kootenai/y Rivers, Koocanusa Reservoir, and Kootenay Lake including sources and trends in concentrations and loads of these pollutants.
Objective 3. Identify relationships between hydrologic and water-quality data, including the identification of gaps in the data and research. Recommend procedures for screening credible data; statistically describing and reporting on the status of pollutants in the Study Area including associated uncertainty; coordinating collection and analysis of existing data to fill gaps; and suggesting next steps, including methods and procedures for ongoing monitoring and data analysis.

7.3.2 Impacts to Human Health and Well-Being

Objective 1. Identify known or suspected human-health hazards from currently identified pollutants in the Study Area. Expand this analysis to include any additional pollutants/constituents of concern identified by the Water Quality Status and Trends TWG.
Objective 2. Assemble and review existing risk assessments and well-being studies and synthesize to report an assessment of risk using current information. Report on health and well-being including threats to health based on both western and cultural science.
Objective 3. As discussed in the POS preamble, identify high-priority data gaps in health-related information needed to fully meet objectives 1 and 2 based on uncertainty analyses and provide recommendations on approaches to gather additional information to fill these gaps.

7.3.3 Impacts to Ecosystems, Including Cumulative Effects

Objective 1. Modify the draft IEKWSB conceptual model focusing on identified pollutants but also identifying other key linkages that need further study. Identify terrestrial and aquatic features that are affected or potentially affected by identified water pollutants and other stressors in the Study Area.
Objective 2. Report on knowledge status of data for each component with respect to measured impacts attributable to water pollution.
Objective 3. Identify high-priority data gaps in ecosystem impacts analyses (including cumulative effects) that would need to be filled to fully meet objectives 1 and 2 based on uncertainty analyses and recommend a set of prioritized studies to address gaps.

7.3.4 Mitigation

Objective 1. Identify, assemble and review available data and information about the extent to which mitigation and remediation efforts, including techniques (e.g., best management practices) and technologies related to water pollution from known sources (including forestry, industry, land development, mining, and other identified sources of stressors), have influenced, impacted sources of, altered the status of, or shifted the trends in water pollution in the Study Area. Identify gaps in science, monitoring and research, or incorporation of Indigenous knowledge in this data.
Objective 2. Assess from the data above, the extent to which mitigation and remediation efforts have influenced, impacted sources of, altered the status of, or shifted the trends in water pollution in the Study Area. Identify gaps in science, monitoring and research, or incorporation of Indigenous knowledge related to this assessment, including through comparison with viable methods being used outside of the Study Area.

Objective 3. Compile and examine the development, content, and any inconsistencies between existing regulatory standards and guidelines for water pollutants in the Study Area, and assess if these inconsistencies have influenced, impacted sources of, altered the status of, or shifted the trend in water pollution in the Study Area.

7.4 Interaction between the Council of Ksanka ɛ Ktunaxa Knowledge Holders and the Technical Working Groups

Currently, the only Council of Indigenous Knowledge Holders formed to support the IEKWSB is the Council of Ksanka ɛ Ktunaxa Knowledge Holders (CoKKKH). The CoKKKH share that Ktunaxa knowledge and language is all-encompassing, and therefore cross cutting all of the TWG themes and objectives. ʔa·kxaw̓is q̓api qapsin, the Ktunaxa belief in *all living things,* expresses this interrelatedness and that culture, language and knowledge are ubiquitous. Given that Ktunaxa knowledge and language flows through all TWG themes, the recommendation from the CoKKKH is that there be interaction across the CoKKKH and each of the TWGs and the option for support from Ktunaxa staff as needed and available within the TWGs. In addition, the CoKKKH has suggested that although there is not likely capacity within the Ktunaxa Nation to sit on all TWGs, the CoKKKH will meet periodically with the IEKWSB, and SMT liaisons to the CoKKKH, to ensure consistent and iterative engagement throughout the development of the TWG membership and questions that each TWG will address. Through consistent and iterative engagement and discussion with the CoKKKH, the IEKWSB will ensure that Ktunaxa oversight, voice, and principal values are represented. In addition, both the IEKWSB and CoKKKH have requested that the option remain to develop a TWG specific to Ktunaxa Knowledge and Language should there be a need for this. If additional Councils of Indigenous Knowledge Holders are formed during the study, similar efforts will be made to incorporate their knowledge and perspectives into the work of the IEKWSB.

8 Data Management Approach

There are wide variety of data management initiatives that exist within the watershed, and for data from the watershed. Some examples include current data assembly, synthesis and interpretive work being conducted by groups such as the Flathead Biological Station, the Elk River Watershed Monitoring Collaborative, the Columbia Basin Water Hub, Collective for Lower Elk Aquifer Restoration (CLEAR), United States Geological Survey (USGS), US Army Corps of Engineers, B.C. Ministry of Environment and Park's Elk Valley Water Quality Hub and the provincial Environmental Monitoring System (EMS), Environment and Climate Change Canada, as well as other relevant data, etc.

The Data Management Plan defines the framework and protocols to ensure that all data collected, processed, generated, curated, archived, or utilized by the Study and the IEKWSB is secure, authoritative, well-documented, and accessible for long-term use. The DMP offers clear guidance for managing both existing data and all customized or unique datasets and data products created during the Study. Aligned with IJC data archiving practices, the DMP promotes data discoverability, quality, and usability for Study participants and the broader user community. The Study will prioritize the use of openly available data, except for data subject to confidentiality agreements with partner organizations. The DMP also respects the intellectual property rights of data originators, ensuring proper credit through authorship, citation, or acknowledgment. All data will adhere to Federal Geographic Data Committee/International Standards Organization (FGDC/ISO) Data Standards as stated in the IJC Data Management and Geospatial Policy. The DMP is a living document, updated as necessary to maintain relevance and effectiveness.

Key elements of the DMP include protocols for internal data sharing during the Study and public data access after its completion. It establishes clear procedures for data and metadata preparation, defines the role of the data management system, and ensures the quality, discoverability, and availability of all project datasets and products. The DMP also supports short- and long-term data archiving, timely information sharing, and adherence to IJC Data Policy objectives. These measures ensure that data remains a valuable, accessible resource for researchers, decision-makers, and stakeholders in the Elk-Kootenai/y watershed.

The IEKWSB holds primary responsibility for the development, maintenance, and oversight of the DMP, with direct support from a dedicated Data Management Team (DMT). The DMT manages and approves updates, ensuring alignment with Study objectives.

Data sensitive to the Ktunaxa Nation will be managed as directed by Ktunaxa knowledge holders in accordance with the IJC Data Management and Geospatial Policy.

9 Study Technical Reviews

Three general levels of study review will be used to assure technical quality of the activities:

- Internal review by the IEKWSB and CoIKH;
- Internal technical review of models, reports, and etc. produced by Federal or State/Provincial agencies before release to Technical Working Groups;
- Independent external reviews conducted by an Independent Review Group (IRG).

Reviews will be scalable to the content of each component of the study, deliberately included as part of the study process throughout the life cycle of the study (scoping, interim products, and final products), and concurrent with recommendations to include previous work in the study and completion of new study phases/products from each contributing agency/contractor and the IEKWSB.

9.1 Internal Review

The IEKWSB will conduct a preliminary review of existing/completed products and their associated documented peer and independent reviews. This review can be done by the IEKWSB or Technical Working Groups of the Board. These reviews will ensure consistency and coordination across all study components.

9.2 Agency Technical Review of Requested Materials

Technical Working Group members are expected to serve the IEKWSB and the Commission in the best interest of the watershed and in their personal and professional capacities, and not as representatives of their respective countries, communities, agencies, organizations, or any other interests and affiliations. The work planned, conducted or produced by the Technical Working Groups is not subject to approval by agencies. Some of the products produced by Technical Working Groups may be from government sources and may require review by the home agencies before release to the IEKWSB. Agency technical reviews are internal quality control processes that apply to the work of its scientists and engineers and are focused on scientific merit. These reviews are performed within agencies by supervisors, senior staff, peers and others within agencies or in some cases by outside peers. The Board recognizes the value of these

processes. Technical Working Groups should anticipate these reviews, and their timelines should account for them when products by agencies are requested by the TWGs.

9.3 Independent Review Group (IRG)

The Independent Review Group (IRG), appointed by the IJC, will provide independent technical review and documentation of appropriate Study components and documents produced jointly during the Study process. The IRG, while appointed by the IJC, will operate independently outside the control of the IJC and the IEKWSB. Independent peer review is key to improving the quality of work in studies and the IRG will undertake interim reviews as well as the final reviews to facilitate early checks on methods and assumptions, thus reducing the risk of late-stage issues for the study. An example of an interim review would involve the IRG reviewing the State of Knowledge documents prepared by each TWG.

An IRG review will be completed on all recommendation and implementation documents and specific study products identified as fundamental to making those recommendations. For other products, the IRG will receive documentation of existing reviews, with background documentation and recommendations for targeted reviews as may be needed. The IRG can subsequently request a review or other additional reviews of these products at their discretion.

10 Budget and Timelines

The budget for each group of tasks planned by the IEKWSB is shown in Table 2 and reflects the needs associated with:

- The high levels of investment for Indigenous engagement and participation because the "Study to Address Transboundary Water Pollution in the Elk-Kootenai/y watershed" is the first Reference to the IJC that the two Federal governments have developed in partnership with First Nations and Indigenous groups;
- An accelerated timeline, which requires increased levels of funding to enable the TWGs to function and achieve their objectives over a shorter time period, and
- The increased costs for data management coordination amongst the multiple and extensive data repositories currently in existence within the watershed.

The POS will likely be revised as the Study progresses, the scope of work is modified, stakeholders and public inputs are provided, funding levels are determined, and results become available.

The IEKWSB anticipates several feedback loops related to engagement, input, and questions provided by the CoKKKH, Advisory Groups, the public, and other interested parties. The overall timeline for the TWG efforts may change as the questions, engagement-led discussions, and initial findings are assessed; and the required time to revisit or refine individual TWG outcomes are determined.

Table 2- Budget, activities required to meet the IJC Directive to the IEKSWB.

Activity or TWG	Requested Funding
General Engagement/Communications	$250,000
Indigenous Engagement – Council of Indigenous Knowledge Holders Support	$350,000
Study Management	$1,350,000

Data Management	$250,000
Travel	$300,000
Total Study Activities Request	**$2,500,000**
Water Quality Status and Trends TWG	$600,000
Ecosystem Health TWG	$600,000
Human Health TWG	$600,000
Mitigation TWG	$600,000
TWG Funding Request	**$2,400,000**
TOTAL STUDY REQUEST	**$4,900,000**

The overall time available to complete the Study as described in the Directive is relatively short, with the work of the IEKWSB required to be completed within two years of the date of the Directive. The following are the primary deadlines for the Study:

Feb. 26, 2025 Plan of Study provided to Commission after public comment.

Sept. 26, 2025 Interim Report of the IEKWSB provided to the Commission after public comment.

Sept. 28, 2026 Final Report of the IEKSWB provided to the Commission after public comment.

11 References

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Appendix A – Ktunaxa Language Resources

Joe Pierre's telling of the Creation Story, along with many of the place names included in the Plan of Study is available to be listened to here (https://www.youtube.com/watch?v=WnMXwq58Q5I)

To hear a Ktunaxa speaker pronounce the Ktunaxa alphabet please visit First Voices here (https://www.firstvoices.com/ktunaxa/kids/alphabet?char=a%C2%B7) or download the App. For those new to the language, sounds and vocal exercises are available here (https://www.youtube.com/watch?v=5DbqY9uw4bI)

A pronunciation guide to the alphabet is provided here (https://www.aqamnikschool.com/s/Ktunaxa-Pronunciation-Quick-Guide.pdf) as well as additional downloadable language pdfs.

Want to learn more?

For those interested in challenging their language learning further, Ktunaxa language courses are offered online https://outdoorlearning.com/event/ktunaxa-spring-2025/