

City of Whitefish- Policy and Government

Water Quality Improvement Task	Site	Description	Goal	Status, Partners, and Funding*	Peer Review Tier Ranking#
Whitefish Nutrient Trading Pilot Study	Whitefish Area Waterbodies**	A nutrient trading program targets non-point source pollution mitigation projects as partial credits for wastewater treatment facilities to meet nutrient criteria.	The reduction of non-point source nutrient loading to the Whitefish Wastewater Treatment Plant and to local waterbodies.	On-going. Anderson Montgomery Engineering prime contractor for the City of Whitefish. Pilot Project Funded.	
Whitefish Nutrient Trading Program-Final Project Prioritization and Sample and Analysis Plan	Whitefish Area Waterbodies	Water quality projects identified in the Whitefish Pilot Nutrient Trading Program report and from this report will need to be prioritized based on credit value and other considerations. A SAP will need to be developed for those priority projects to document load reductions for credit.	Assist the City of Whitefish in meeting nutrient criteria at the wastewater treatment plant via water quality projects.	Incomplete. WLI to partner with Whitefish Public Works Department to research project potential. Funding Required.	
Whitefish Lakeshore Protection Regulations	Whitefish Lake, Blanchard Lake, Lost Coon Lake	The Whitefish Lakeshore Regulations were implemented in 1974 via state legislation empowering local authorities. In 2015, Whitefish Lake Shoreline Regulations were transferred to Flathead County where the two lakes were folded into the broader county regulations. The county adopted WLI recommended new high and low water elevations.	During the process that folded Whitefish, Blanchard and Lost Coon Lakes into the Flathead County Lakeshore Regulations, it was acknowledged that the county regulations need updates. An unofficial ad-hoc committee could supply recommendations to the county.	On-going. WLI should facilitate an ad-hoc committee comprised of a diverse constituency. Funding Required.	
Whitefish Community Wastewater Management (Shoreline Septic)	Whitefish Lake	Based on the findings of the WLI <i>Investigation of Septic Leachate to the Shoreline Area of Whitefish Lake</i> (2012) and management recommendations of the ad-hoc Whitefish Community Wastewater Committee (2013), various mitigation tools have been identified.	Develop Preliminary Engineering Reports (PERs) for five identified neighborhood areas (Lion Mtn., Lazy Bay, Point of Pines, East Lakeshore Drive, and Viking Creek) to provide engineered solutions and associated cost estimates.	On-going. PER commitment made by City of Whitefish and project partners in 2015. TSEP and RRGL planning grants received for Lion Mountain PER. PER due spring of 2016. Funding Required for remaining PERs and mitigation.	

*Partners for each line item are a suggestion. The composition and number of partners need to reflect jurisdictional roles and be adaptive to leverage skills, staff availability and funding mechanisms of project partners.

Each Water Quality Improvement Task has been peer reviewed and tier ranked by WLI's Science Advisory Committee

**Whitefish Area Waterbodies include; Whitefish Lake, Upper Whitefish Lake, Blanchard Lake, Lost Coon Lake, Beaver Lake, Little Beaver Lake, Dollar Lake, Lazy Creek, Swift Creek, Brush Creek, Smith Creek, Hellroaring Creek, Viking Creek, Cow Creek, Haskill Creek, Walker Creek, and the upper Whitefish River.

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Whitefish Wastewater Treatment Plant Re-Use / Land Application Project	Whitefish River	Wastewater effluent can be partially mitigated through re-use or land application projects involving plant communities such as poplars or riparian species.	Reduce WWTP discharge to the Whitefish River. Grow plants for merchantable pulp or local restoration projects.	Incomplete. WLI to partner with Whitefish Public Works Department to research project potential. Funding Required.	I
City Beach Management	Whitefish Lake	The City of Whitefish no longer augments sand at City Beach, however, wave action erosion of historically placed sand and fine sediment continues to enter the lake with some material potentially transported to the Whitefish River.	Reduce sand and fine sediment loading to Whitefish Lake and the Whitefish River while still offering a quality recreational experience.	Incomplete. WLI to partner with Whitefish Parks Department to research project potential. Funding Required.	III
Whitefish Fireworks Display	Whitefish Lake	The City of Whitefish 4 th of July Fireworks is a cultural tradition, however, more water quality friendly firework products are on the market, but are more expensive.	Work with partners and fireworks donors to purchase non-perchlorate fireworks which decrease the amount of pollution to a waterbody. Consider a City ordinance for commercial displays.	Incomplete. WLI would need to partner with the Whitefish Chamber of Commerce and City of Whitefish. Funding Required.	III
Whitefish Aquatic Invasive Species (AIS) Plan	Whitefish Area Waterbodies	Since 2013, the City of Whitefish has approved the WLI recommended AIS Management Plan. Task items included Beaver Lake EWM control, eDNA, plant surveys, and supporting the Browning Boat Inspection Station.	WLI to submit an annual adaptive management plan to the City of Whitefish for review. Deploy turbidity curtain at Beaver Lake outlet annually. Continue active City and WLI partnership with FWP, FBC, DNRC, FCD, Dept. Ag., Flathead Weed District and others.	On-going. Projects based on City of Whitefish annual appropriation and grant dollars. First shoreline plant survey of Whitefish Lake completed by WLI in 2013. Funding Required.	I
Whitefish Water Treatment Plant Discharge	Viking Creek, Whitefish Lake, Haskill Creek	Discharge from the water treatment plant causes fluctuating volume loading to Viking Creek and increased sediment loading to Whitefish Lake. Water use efficiency and release timing needs to be maximized for in-stream flow volumes in Haskill Creek and Viking Creek.	Develop a discharge plan to reduce fluctuating discharge to Viking Creek and to normalize to a typical hydrograph to benefit aquatic life and reduce sediment loading and temperature fluctuation in Viking Creek and Whitefish Lake. Maintain in-stream flows in Haskill Creek to support aquatic life.	Incomplete. WLI to partner the Haskill Basin Watershed Committee, Stolze Land & Lumber, and Whitefish Public Works Department to address feasibility. Funding Required.	II

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Protect City of Whitefish Drinking Water Source	Unknown	An infestation of zebra or quagga mussels could jeopardize the City of Whitefish drinking water intake pipe located in Whitefish Lake. A catastrophic fire in the 2 nd and 3 rd creek drainages of Haskill Basin could cause sediment loading issues at the water treatment plant. Previous exploratory wells in the 1970s and 1990s by City of Whitefish have not yielded possible sites.	Reduce the amount of Whitefish Lake water needed to augment the Haskill Basin source for treatment cost savings. Develop contingency plan for either a catastrophic fire or mussel colonization. Provide additional investigations for a back-up (tertiary) source of domestic drinking water for the City of Whitefish.	On-going. AIS prevention and fire mitigation (Stoltze) are on-going. City of Whitefish and potentially an engineering firm to further investigate any potential tertiary drinking water sources. Funding required.	
"Bladder" Boats	Whitefish Lake	Bladder boats are becoming a more popular recreational pursuit with a potential for increased shoreline erosion and vector for AIS. WLI and WCWD have fielded many calls/complaints of shoreline erosion as a result of this watercraft type.	Conduct a literature review of the effects of bladder boats to have background information for educational materials or policy directives.	Incomplete. WLI to partner with WCWD to seek and fund a Master's level student to conduct a literature review/research the topic. Funding required.	
Haskill Basin Easement	Haskill Creek	The purchase of an easement on Stoltze land is currently pending to protect the City of Whitefish drinking water supply. As part of the transaction a component of the Whitefish Trail is proposed in the easement area. Stoltze currently allows for public access into the area. In 2015, voters approved a ballot measure to increase the local resort tax by 1% to pay the remaining balance of the easement.	Minimize threats to the public drinking water supply from pollutants and pathogens. Carefully plan any potential trail and any formal recreational access away from streams. Do not create any new stream crossings. Consider excluding dogs, fishing, swimming, and camping as user types from the municipal watershed to protect water quality and decrease fire potential.	Incomplete. City of Whitefish, Stoltze Land and Lumber, Whitefish Legacy Partners, Montana Department of Fish, Wildlife & Parks. Funding secured.	
City of Whitefish Storm Water	Whitefish	Develop a comprehensive storm water plan related to not only conveyance but treatment. See storm water sampling listed under <i>Research</i> projects. Storm water projects could be part of the Nutrient Trading Program.	Reduce sediment, nutrient or pollutant loading to Whitefish area waterbodies through storm water mitigation techniques.	Incomplete. Potential partnership between WLI and City of Whitefish and engineering firm for sampling and mitigation techniques. Funding required.	

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Water Quality Improvement Task	Site	Description	Goal	Status, Partners, and Funding	Peer Review Tier Ranking
Water Quality Property Acquisition	Whitefish Area Waterbodies	Strategic properties found in the Whitefish area could provide valuable water quality benefits. Examples include areas near the wastewater treatment plant for land application and/or re-use currently under review by Anderson & Montgomery Engineering, and sites for better management of stormwater.	The development of a list of strategic properties to acquire related to water quality.	On-going. Whitefish Public Works Department to continue to work with consultants and partners to develop list. High school GIS could develop maps. Funding Required.	II
Whitefish Qualified Vendor's List and/or Contractor Training	Whitefish Area Waterbodies	City of Whitefish formerly partnered with the City of Kalispell in past years on training workshops which DEQ now provides but is voluntary. The City of Whitefish requires an erosion control plan but does not provide a Qualified Vendor's List or training to contractors to ensure proper installation techniques. The inspection rate of building sites after the building permit process is unknown.	Education of contractors to reduce sediment, nutrient, and pollutant loading in waterbodies during construction activities. And/or increase inspection rates by increasing personnel or provide training through seminars, application notes, or web based module during building permit application.	Incomplete. WLI to partner with Whitefish Public Works Department and Whitefish Planning Department to research project potential. Funding Required.	III

Education & Outreach

Water Quality Improvement Task	Site	Description	Goal	Status, Partners, and Funding	Peer Review Tier Ranking
Homeowner Site Visits	Whitefish Area Waterbodies	Based on the Flathead Lakers "Ripple Effect" program, provide professional site visits to educate waterfront owners about BMPs as requested.	Decrease sediment and nutrient loading to area waterbodies by the implementation of BMPs on private lands.	Incomplete. WLI would need to discuss program and success with Flathead Lakers to determine suitability in Whitefish. Possible partnership with City of Whitefish. Funding required.	II
Delineate 200 foot "No Wake Zone"	Whitefish Lake	Many complaints have been received from shoreline residents about non-compliance with the 200 foot No Wake Zone. Additionally, an increase in "bladder" boats is suspected to have caused increased shoreline erosion. Shallow shoreline areas are susceptible sediment re-suspension from prop wash.	Strategic placement of Coast Guard approved "No Wake" buoys to decrease the amount of shoreline erosion from wave action and re-suspension of sediment caused by boats, and to provide on-lake boater education.	Incomplete. WLI would need to partner with the City of Whitefish and FWP Region 1 Law Enforcement. Funding required.	I
Whitefish Lake Institute Educational Programs	Whitefish Area	WLI currently presents annual preschool, 2 nd grade pond unit, 4 th grade fish dissection, and offers job shadow for high school students. WLI partners with Project FREEFLOW and offers college internships. WLI offers teacher in-service training and presents to various adults groups.	Increase school and group contact and develop specific guides like the 5 th grade Living Wetlands Curriculum and Flathead Audubon endorsed bird guide.	On-going. WLI to partner with school districts and other groups like Flathead Audubon and FCD. Funding required.	I
Interpretive Trail Development	Whitefish Area	Local interpretive nature trails are a good forum to communicate water quality issues to recreationalists. For this item, reference "Umbrella ID Team" under <i>Restoration and Habitat Protection</i> page 4 of 4.	Additional trails and trail locations should be evaluated for educational messaging. However, new trail construction should be carefully considered to limit habitat fragmentation and disruption to wildlife.	Incomplete. Partnerships between WLI, City of Whitefish and Whitefish Legacy Partners needed. Funding required.	III
Data Driven Interactive WLI website	Whitefish Lake Watershed	Data for Whitefish area waterbodies and natural resources are not centralized and easily accessible for a general user interested in obtaining information.	Develop a web based platform for a user friendly point and click retrieval of local natural resource and water quality information on an open source platform.	Incomplete. WLI to partner with Mobile Logistics Mapping and other partners including Whitefish High School GIS class. Funding required.	III

Education & Outreach

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Water Quality Improvement Task	Site	Description	Goal	Status, Partners, and Funding	Peer Review Tier Ranking
Montana Lakes Conference	Whitefish	There is currently no conference in Montana that focuses specifically on lake management, research, and issues.	The exchange of knowledge related to lake ecosystems among professionals and the public. Emphasis place on how engineers and natural resource professionals can better interface.	Incomplete. Feasibility of coordinating and hosting event currently under review at WLI. Partner with The Lodge at Whitefish Lake and agency partners. Funding required.	II
The Living Watershed Environmental Learning Center	Whitefish	An environmental learning center using sustainable construction and on-site practices, aquariums, and cutting edge technology to deliver water quality messaging and foster water resource stewardship.	Create an indoor/outdoor classroom at the Averill's Viking Creek Wetland Preserve. Reconnect people of all ages with nature and provide wetland education.	Incomplete. WLI is in the due diligence phase of addressing project feasibility. Outdoor classroom completed with the Living Wetlands Interpretive Nature Trail. Funding required.	II
Economic Analysis	Whitefish Lake Watershed	Direct and indirect economic benefits of Whitefish Lake to the community are largely unknown.	Educate the public on the value of the resource and clean water and why it's important to protect from a financial perspective.	Incomplete. WLI to potentially partner with the Whitefish Chamber of Commerce to facilitate project. Funding required.	III
Recreational User Contact at City Beach	Whitefish Lake	Recreationalists using City Beach and accessing Whitefish Lake can be reached by City staff during boat inspections or while purchasing launch permits.	Educational materials beyond those for AIS could be disseminated to users.	On-going. WLI to partner with City of Whitefish Parks and Recreation Department.	III

Research

Water Quality Improvement Task	Site	Description	Goal	Status, Partners, and Funding	Peer Review Tier Ranking
Baseline Trend Monitoring	Whitefish Area Waterbodies	Since 2007, WLI has collected baseline physical and chemical data on Whitefish Lake, its tributaries and other local streams; and atmospheric bulk loading. This trend monitoring is intended to be adaptive in nature to collect pertinent data to answer ecosystem questions.	Identify water quality trends over time and communicate results to the public. Determine if any future enacted water quality standards are being met. Modify sample plan as needed to supply relevant data to metrics and to answer specific questions.	On-going. This report will communicate baseline knowledge and trends. City of Whitefish DNRC RRGL Grant with Anderson-Montgomery Engineering as lead. Funded.	I
Near-shore Monitoring	Whitefish Lake	Impacts or changes to lake ecosystems are often displayed in the littoral area before symptoms occur at pelagic sites.	To identify changes in water quality or the biological community in the littoral zone to potentially tie to land management activities.	Incomplete. WLI could add this to the baseline monitoring program. Funding required.	I
Northwest Montana Lakes Volunteer Monitoring Network	40+ lakes in NW Montana	In 2010, WLI, FW&P and FBC collaborated to form a volunteer lake monitoring program engaging citizen scientists. A public website has been developed to assist volunteers. Annual program reports available on WLI and NWMTLVMN websites.	Determine water quality trends over time and provide first response to AIS. Promote stewardship by engaging local citizen scientists.	On-going. Annual funding and administrative partnership between WLI, FWP and FBC. Additional funding partners are needed for the long-term success of the program. Partially Funded.	I
Stream and Shoreline Macroinvertebrates and Periphyton	Whitefish Lake and tributaries	Macroinvertebrates and periphyton are commonly used as indicators of stream health; however no recognized metric exists for lakes.	Analyze species abundance and community assemblage to determine relative stream and lake health. Work towards metric development for lake with partners.	On-going. DNRC has collected some stream macroinvertebrate data. WLI to sample macroinvertebrates in tributaries and Whitefish Lake in 2015. Funding Required.	III
Identify any new Bull Trout Spawning Grounds	Swift Creek	Determine if any streams in addition to the West Fork of Swift Creek and upper Swift Creek offer spawning habitat for adfluvial bull trout.	Determine bull trout spawning escapement to the Swift Creek drainage and identify any additional spawning reaches for the adfluvial population.	Incomplete. WLI could partner with FWP to provide labor. Funding required.	III
Identify Lake Trout Spawning Grounds	Whitefish Lake	Non-native lake trout have outcompeted native bull trout as a top end predator in Whitefish Lake.	Determine spatial and temporal extent of lake trout spawning to support any future management actions.	Incomplete. WLI could partner with FWP to investigate. Funding required.	III

Research

Water Quality Improvement Task	Site	Description	Goal	Status, Partners, and Funding	Peer Review Tier Ranking
Mysis Shrimp Spatial and Temporal Density	Whitefish Lake	Little historical data exists for mysis shrimp density and life history in Whitefish Lake. <i>Mysis</i> represent a significant biomass in the lake. <i>Mysis</i> redistribute nutrients and substantially affect the food web.	Determine mysis shrimp density, life history, and affect on the aquatic food web. Potentially populate the LAKE2K model with a specific mysis module component.	Incomplete. WLI to sample on a determined cycle. Possible partnership with FWP or collection permit required. Funding required.	II
Pelagic Algae and Zooplankton	Whitefish Lake	Limited data exists on the phytoplankton and zooplankton communities of Whitefish Lake and how they respond to environmental inputs and shifts in the food web.	Determine trends in primary productivity as a water quality metric. Determine seasonal community structure that can be potentially used in the LAKE2K model.	Incomplete. FLBS with some data throughout the years going back to early 1980s. WLI or FLBS to sample on a determined cycle. Funding required.	II
Populate LAKE2K Computer Model	Whitefish Lake	Specific parameters, and those collected under the Baseline Monitoring effort, are required to populate the LAKE2K model. Additional data parameters and food web modules needed.	Establish and populate the LAKE2K model to be used as a predictive ecosystem lake response tool and to determine if any future water quality standards are met.	Incomplete. WLI to partner with a consultant for initial set-up. Funding required.	III
LOADEST Computer Model	Whitefish Lake and Tributaries	LoadEst is a computer program for estimating constituent loads in streams and rivers given a time series of streamflow, additional data variables, and constituent concentrations.	To independently calculate mass balance for Whitefish Lake tributaries and compare/corroborate other techniques.	Incomplete. WLI to complete. LOADEST is free USGS software. Funding required.	III
Storm Water Sampling & Analysis	Whitefish Area Waterbodies	The only water chemistry sampling for the storm water outfalls occurred in 1997 (FLBS). WLI submitted a conceptual SAP to the City in 2013 and sampled select sites twice in 2014 related to pilot Nutrient Trading project.	Mitigate sediment, nutrient and pollutant loading to Whitefish area waterbodies if identified. See <i>Restoration and Habitat Protection</i> .	Incomplete. Storm water sampling could fall under recommendations of the City of Whitefish Nutrient Trading Plan. Funding required.	I
Sediment Coring / Lake Sedimentation Rates	Whitefish Lake	Spencer (1991) determined sedimentation rates to Whitefish Lake and provided anecdotal land use accounts. However, a deep lake core may not reflect sedimentation rates in the littoral zone.	Sediment rates since 1991 would help to determine recent sedimentation rates. Additional coring would also validate previous work, and near shore sedimentation rates should be determined.	Incomplete. WLI could partner with FLBS and/or Spencer, or U of M to conduct field investigation. Funding required.	II

Research

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Small Stream Habitat Assessment	Whitefish area tributaries	A modified USFS R1/R4 habitat assessment was completed by Koopal for DNRC on Swift and Lazy Creek but not for smaller streams.	Follow a small stream rapid habitat assessment protocol developed by Koopal and DNRC to inventory fish habitat on small streams.	Incomplete. WLI to potentially partner with DNRC. Funding required.	III
Nutrient Standards (lake)	Whitefish Lake	A list of criteria to base health and trends of Whitefish Lake. Determine if DIN:TP is a better way to determining limiting nutrients than TN:TP.	Recommend nutrient standards for Whitefish Lake to be considered for DEQ Circular 12A by BER.	Incomplete. DEQ lead with potential WLI recommendations. Funding required.	I
Nutrient Standards (streams)	Whitefish area tributaries	Montana Wadeable Streams Nutrient Criteria have been established by DEQ.	Determine if and why some area streams do not regularly meet the proposed nutrient standards (i.e. Beaver and Viking Creeks).	Incomplete. WLI to partner with DEQ. Funding required.	I
WLI / DNRC water quality monitoring partnership	Whitefish Lake Tributaries	WLI and DNRC currently have an informal partnership to collect water quality data on Swift Creek where DNRC collects data to the end of the peak hydrograph period and then WLI monitors the remainder of the year.	Results from this report should allow WLI and DNRC to meet and fine tune monitoring strategies related to sites, parameters and sample intensity.	On-going. Partnership between WLI and Montana DNRC. Currently Funded.	II
Groundwater Study	Whitefish Lake	Groundwater information for Whitefish Lake is limited to Jourdonnais (1986).	Determine the significance of groundwater interaction to Whitefish Lake in specific shoreline areas.	Incomplete. WLI could partner with FLBS to investigate. Funding required.	III
Fisheries Inventories	Whitefish Area Waterbodies	Fisheries data should be reviewed to determine if more frequent or additional surveys are needed to accurately describe fish populations (community assemblages, densities, trends, pure genetic strains, etc.).	Collect baseline fisheries community data on a regular schedule to describe trends and to expand distribution information.	On-going. FWP lead. WLI willing to offer staff time or apply for a Scientific Collectors Permit. Funding required.	II
Whitefish River Nitrogen Load	Whitefish Lake and Whitefish River	The Whitefish River is listed as impaired for nitrogen; however the nitrogen source remains unclear.	Determine if nitrogen assimilative capacity of Whitefish Lake exports a high base load to the upper Whitefish River and investigate other sources.	Incomplete. WLI could partner with DEQ to investigate. Funding required.	II

Restoration & Habitat Protection

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Lower Swift Creek Restoration	Swift Creek	Flooding is a concern for property owners on lower Swift Creek. Past restoration projects have provided varying reach specific bank stability success. The county bridge is aging and in need of replacement offering good timing for an integrated project.	Provide a restoration strategy for lower Swift Creek through an open dialogue with landowners and agencies to provide ecosystem integrity and private lands protection for this high energy/delta stream reach.	Incomplete. Multi-agency and private landowner consensus needed. Funding required.	II
Whitefish River Riparian Weed Management	Whitefish River	Weeds have become a problem along the bike/pedestrian path along the river leading to erosion and sedimentation from shallow rooted vegetation and competition with native deeper rooted species.	Control and eradicate weeds along the river to reduce sediment loading. Plant native shrubs for increased soil binding and nutrient uptake.	Incomplete. WLI to potentially partner with Whitefish Public Works and/or Parks and Recreation. Funding required.	III
Cow Creek Streambank Protection and Stabilization	Cow Creek	The Cow Creek stream channel and riparian area is degraded throughout Whitefish due to grazing pressure, channel alteration, and development issues. As a result, there is streambank erosion, weed encroachment, and associated sediment/nutrient loading.	Implement a stream restoration strategy that removes broad scale livestock access to the stream, provide bank stability and revegetation. Involve Whitefish Middle School and Whitefish High School FREEFLOW students to implement and monitor.	Incomplete. WLI to partner with Project FREEFLOW, Flathead Conservation District, and BNSF. Project for open space of High Point on 2 nd development slated for fall 2015. Funding required.	I
Cow Creek Sediment Abatement	Cow Creek	Side casting of fine sediment directly above the box culvert along the BNSF tracks contributes heavy sediment loading to Cow Creek.	Mitigate fine sediment delivery to Cow Creek through the stabilization of the railroad ballast.	Incomplete. WLI to engage in discussion with BNSF. Funding required.	I
Whitefish River Town Pump Seep	Whitefish River	Groundwater seeps located near Town Pump convey petroleum constituents to the Whitefish River.	Determine source of pollution and mitigate to protect public and ecologic health.	On-going. Need to follow up with Montana DEQ on mitigation progress. Funding required.	II

Restoration & Habitat Protection

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Identify and Protect Genetically Pure Westslope Cutthroat Trout (WSCT) Populations	Haskill Creek, Johnson Creek, Stryker Creek	Near pure strain westslope cutthroat trout have been indentified in a few select Whitefish area tributaries.	Further define pure strain populations in Whitefish area tributaries. Provide habitat protection for isolated, pure strain WSCT in Whitefish Watershed tributaries. Conduct any needed electro-fishing surveys and submit DNA samples.	On-going. WLI to partner with DNRC and FWP. Funding required.	II
Swift Creek Drainage Culvert Replacements	Swift Creek	Culverts on the Swift Creek Road were surveyed to determine fish passage potential and some have been mitigated.	Mitigate remaining culverts found to block or limit fish passage if no isolated genetically pure strain WSCT is found above.	On-going. Potential culverts in need of mitigation on Swift Creek road have been identified. DNRC lead agency. Funding required.	III
Whitefish Fertilizer Blend & Denitrifying Permeable Barriers	Whitefish area	A soil amendment biochar can provide increased soil cation exchange capacity, microbial growth, soil water retention, and carbon storage in lawn applications or in the unsaturated zone between a leachfield and a waterbody.	Decrease nutrient loading to local waterbodies from the application of biochar amendments compared to traditional fertilizers. Investigate as a possible credit for nutrient trading.	Incomplete. Potential partnership between WLI, City of Whitefish and Algae Aqua-Culture Technology. Funding required.	III
Protected Lands	Whitefish	Conservation easements and deed ownership by conservation groups can benefit water quality and offer educational opportunities. WLI owns and manages the 28.82 acre Averill's Viking Creek Wetland Preserve.	Increase land holdings in the Whitefish area that are owned or placed in a conservation easement with a conservation organization. Assist process to protect lands in Haskill Basin and Lazy/Swift Creek.	On-going. WLI to partner or assist Whitefish Legacy Partners, Flathead Land Trust, Trust for Public Lands, Nature Conservancy and others. Funding required.	I
Riverside Storm Water Pond	Whitefish River	The Riverside Storm Water Pond water quality is degraded due to high filamentous algae and a monoculture of yellow-flag iris in the riparian/littoral zone. An informal management plan between WLI, City of Whitefish have started with floating island installation in 2015.	Develop a management plan and implement to mitigate water quality and improve aesthetics to the neighborhood. Mitigate Aquatic Invasive Species.	Incomplete. City of Whitefish Public Works lead. WLI could partner to develop plan. Funding required.	II

Restoration & Habitat Protection

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Lazy Bay Culvert	Lazy Creek Whitefish Lake	The culvert supplying water to Lazy Bay from Lazy Creek is undersized and not properly oriented leading to stagnant conditions in Lazy Bay during summer. In addition the grate on the culvert can get plugged exacerbating conditions in the channel. With the lack of flushing power, this channel gets very warm and promotes excessive macrophyte growth.	Replace existing culvert with a bridge or increase culvert diameter, adjust inlet and outlet elevations and change alignment to increase flushing capacity of Lazy Bay to reduce stagnant conditions that lead to warmer temperatures, macrophyte growth, and potential HABs.	Incomplete. Cooperation with private landowner and Lazy Bay HOA. Funding required.	I
Haskill Creek Restoration	Haskill Creek	The Haskill Basin Watershed Group, Flathead Conservation District and partners have implemented successful riparian and sediment reduction projects on the Voerman and Reimer properties.	Implement stream improvement tasks identified by HBWG in the Haskill Watershed Assessment such as mitigating culverts on Haskill Creek Road, and work on the Fagan and Hankinson Property.	Incomplete. Assist HBWG and FCD. Funding required.	II
Green Grass to Red Stem Initiative	Whitefish Area Waterbodies	Encourage and provide incentives for waterfront owners to convert disturbed riparian areas from grass back to native shrubs.	Thermal protection, weed abatement, streambank and lakeshore stability, wildlife habitat, and sediment reduction.	Incomplete. WLI would need to partner with Whitefish Schools Greenhouse Project or the City of Whitefish under the proposed WWTP Re-Use Project. Funding required.	II
Naturally Connect Viking Creek to Whitefish Lake	Viking Creek	Viking Creek currently enters a culvert under Wisconsin Avenue and is conveyed approximately 540 feet to its outlet to Whitefish Lake. According to Montana DOT <i>found in HDR (2006)</i> the culvert inlet is frequently clogged due to debris and beaver activity. In addition, debris jams have been found in the culvert.	Abandon culvert and move Viking Creek to a newly created stream channel on a property lot south of The Lodge at Whitefish Lake to benefit the aquatic community including a potential spawning and recruiting stream reach for westslope cutthroat trout. In addition, drainage conveyance issues currently exist on both the east and west sides of Wisconsin Avenue in the area.	Incomplete. The owners of The Lodge at Whitefish Lake acquired this property in 2014. Cooperation would be needed with Montana DOT and the City of Whitefish. Funding required.	II

Restoration & Habitat Protection

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Lazy Bay Riparian Fencing	Lazy Creek Whitefish Lake	Livestock on private property near Lazy Bay currently graze to the lakeshore.	Provide landowner education and incentive for lakefront fencing and off-lake watering.	Incomplete. WLI to facilitate with private landowner and possibly FWP. Funding required.	I
Development of Waterbody Specific Watershed Restoration Plans (WRPs) for temperature and/or sediment 303 (d) listed waterbodies.	Haskill Creek Whitefish River	WRP's are required for waterbodies with impairment status.	To develop actionable measures to mitigate impairment listing.	Incomplete. DEQ lead agency. WLI could partner with FCD or others to prepare WRPs. Funding required.	II
Umbrella Interdisciplinary Team for Recreational Trail Development and Management in the Whitefish Area	Whitefish Area Waterbodies	Recreational trail development around the City of Whitefish has expanded in recent years to the benefit of recreationalists and the economy.	Create an Interdisciplinary (ID) Team comprised of various land use experts to prioritize future trail alignments to reduce sediment to waterbodies, and to reduce wildlife habitat fragmentation.	Incomplete. City of Whitefish, Whitefish Legacy Partners, WLI. Funding required.	III
Swift Creek Clay Banks	Swift Creek	There is sediment and nutrient delivery to Swift Creek and Whitefish Lake from a series of mass wasting banks along Swift Creek. Many of these banks are inaccessible to equipment but the toe of the slopes could have some protection from shear stress with softer engineered techniques.	Decrease sediment and nutrient loading to Swift Creek by stabilizing the toe of the slope at mass wasting sites.	Incomplete. DNRC lead. WLI willing to provide support. Funding required.	III

Miscellaneous

Water Quality Improvement Task	Site	Description	Goal	Status, Partners, and Funding	Peer Review Tier Ranking
Review Fishing Regulations	Swift Creek, Whitefish Lake	Trends should be determined for any justification to alter regulations. Potential management options could include catch and release for WSCT and a more liberal lake trout quota.	Protect native fish species while continuing to offer quality angling and recreational experiences.	Incomplete. FWP lead. WLI could comment and facilitate input from community. Funding required.	III
Hazardous Spill Response	Whitefish area	Hazardous materials spills are a concern for the Whitefish River and Whitefish Lake based on rail line proximity. In 1989, 20,000-25,000 gallons of diesel spilled into Whitefish Lake from a train derailment. BNSF has a hazardous spill response plan but better coordination with the City of Whitefish and Flathead County could improve disaster response and overall mitigation.	A local Whitefish Lake specific response plan given the proximity of the tracks to the lake. Coordination of local multi-agency protocols and equipment for a quick response to all hazardous spill types.	On-going. Partnership between BNSF, WLI, City of Whitefish, Flathead County, and others Funding required.	I
Forestry Practices (Harvest & Fire)	Whitefish area	Timber harvest and associated road building have the potential to increase nutrients to tributaries. Fuels reduction slash burning during inversions increases atmospheric deposition of nutrients to the lake. Fire management such as slurry retardant placement near stream needs review to reduce nutrients to waterbodies. Aerial procurement of water to fight fires should be limited to one waterbody source to prevent the spread of AIS.	To develop forestry practices protocols and fire management practices to reduce nutrient loading and to prevent the spread of AIS.	Incomplete. DNRC, FS, Stoltz Land and Lumber, Plum Creek, and WLI could partner to develop protection measures. Funding required.	II