

Table 4.2 B

Bridge Deck Modifications

Environmental Component	Potential Impact	Project or Activity	Mitigation Required
Airshed	ambient air quality	equipment operation, construction	<ul style="list-style-type: none"> ensure all vehicles are properly tuned, in good operating order, and are fitted with standard air emission control devices minimize idling of combustion engines at all times chemicals, including herbicides, should not be sprayed in windy conditions such that the chemicals may be caused to drift
	dust	construction	<ul style="list-style-type: none"> minimize sandblasting activities confine construction activities to days with little or no wind use physical barriers (e.g. shrouds, scaffold canopies) to contain dust activities during adverse weather conditions shall be avoided
	noise	equipment operation, construction	<ul style="list-style-type: none"> noise affecting other parties shall be controlled by the proponent (e.g. restriction of daily construction hours)
Soils	soil mixing & compaction	site preparation, equipment operation, construction	<ul style="list-style-type: none"> the proponent must comply with terms and conditions of Provincial Approvals regulating work that affects the shores or banks of waterbodies the proponent must comply with terms and conditions of Provincial Approvals or Codes of Practice regulating the modification and maintenance of bridges and shores of waterbodies activities shall not be undertaken when soils are frozen
	erosion	site preparation, post construction	<ul style="list-style-type: none"> catch water ditches should be installed on newly constructed backstops to minimize soil erosion upon completion of the bridge, backstops inside and outside the right-of-way should be scarified to a minimum depth of 0.3 m and re-topsailed all re-topsailed areas must be reseeded as soon as possible after construction activities during adverse weather conditions shall be avoided
	contamination	equipment operation, construction	<ul style="list-style-type: none"> levels of contaminants on the site should not constitute a hazard to human or animal health or to soil and water quality; contaminants should not impede the germination, growth, survival or management of vegetation used for site reclamation or adjacent to the site. spills of contaminants should be contained and reported immediately to Provincial Authorities for remediation. chemicals should not be sprayed during or immediately preceding showers or rain storms
Vegetation	non-native vegetation	not applicable	
	native vegetative cover	site preparation, post construction	<ul style="list-style-type: none"> disturbance to areas of natural vegetation such as native prairie, bush, forest and wetland areas will be minimized disturbed areas of native vegetation shall be successfully revegetated with species that reflect the pre-disturbance plan community as soon as possible after construction construction waster, surplus and hazardous materials will be removed from the site and disposed of a provincially approved facility
	harvestable timber	not applicable	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	rare/threatened plan species	site preparation, post construction	
Watershed	water quality	equipment operation, construction, post construction	<ul style="list-style-type: none"> precautionary measures shall be implemented at all drainage crossings to ensure that no potentially hazardous chemical is inadvertently spilled or deposited into surface waters contain and immediately clean up any spills or leaks using a suitable commercial absorbent spills of contaminants must be contained and reported immediately to Provincial Authorities for remediation do not store petroleum products or herbicides within 100 m of an existing surface water drainage course mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a surface water body keep all construction equipment within the existing access road right-of-way or the pit and do not permit equipment to enter a surface water drainage course the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of sealcoating agent precautionary measures shall be implemented at all drainage crossings to ensure that no paints, sealcoat agent or other potentially hazardous chemical is inadvertently spilled or deposited into surface waters precautions should be taken to ensure that asphalt and tar shall not enter the water contain and immediately clean up any spills or leaks using a suitable commercial absorbent spills of contaminants must be contained and reported immediately to Provincial Authorities for remediation chemicals, including emulsions, tackifiers and paints used in the construction of bridge decks should not be directly sprayed into or onto surface water bodies chemicals should not be sprayed in windy conditions such that the chemicals may be caused to drift bridge skirting shall be used during painting and sandblasting activities do not store paints, sealcoat agent, fuels or other petroleum products along the right-of-way within 100 m of an existing surface water drainage course all waste and surplus materials will be removed from the site and disposed of at a provincially approved facility; littering by work crews is strictly prohibited provide temporary erosion control measures as necessary on each side of each drainage course on both sides of the road to prevent or reduce the likelihood of sediment or other deleterious substances entering the drainage course activities during adverse weather conditions shall not be conducted disturbed soils will be stabilized and replanted as soon as possible chemicals should not be sprayed during or immediately preceding showers or rain storms drainage control measures will be implemented to intercept stormwater run-on to the bridge deck and to provide for the diversion of on-deck drainage away from receiving waterbodies stormwater run on and deck drainage will be treated before it is discharged into receiving waters control measures to catch materials resulting from sandblasting, cleaning and painting will be implemented

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Bridge Deck Modifications

Environmental Component	Potential Impact	Project or Activity	Mitigation Required
	hydrology		<ul style="list-style-type: none"> not applicable: in-water works excluded from class assessment process
	navigability	post construction	<ul style="list-style-type: none"> ensure that potential for navigation is not impeded by removing any waste materials from watercourses
Groundwater	recharge & supply	not applicable	
	aquifer contamination	equipment operation, construction, post construction	<ul style="list-style-type: none"> contain and immediately clean up any spills or leaks using a suitable commercial absorbent
	other users	equipment operation, construction	<ul style="list-style-type: none"> contain and immediately clean up any spills or leaks using a suitable commercial absorbent
Wildlife	terrestrial wildlife habitat	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> disturbance to areas that serve as terrestrial habitat such as native prairie, bush, forest and wetland areas will be avoided construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility disturbance, including noise associated with equipment operation during key periods during waterfowl, other migratory birds, and wildlife staging and reproductive periods will be avoided; key periods for projects can only be defined by provincial or federal government biologists containment measurements will be implemented to capture sandblasting materials and debris spills of contaminants are to be contained and reported immediately to Provincial Authorities for remediation
	aquatic habitat	site preparation, construction, post construction	<ul style="list-style-type: none"> mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a surface water body keep all construction equipment within the existing road right-of-way and do not permit equipment to enter a surface water drainage course the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of fuels or other hazardous materials construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility
	rare/threatened wildlife species	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	parks & protected areas	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
Socio/economic	historical resources	not applicable	
	agricultural operations	not applicable	
	aboriginal land use	site preparation, equipment operation, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	landowners and other users	site preparation, equipment operation	<ul style="list-style-type: none"> site preparation, construction, & post construction activities, including siting and timing of work, shall conform to the terms and conditions of signed agreements with all potentially affected landowners and other users

Table 4.2 C

Borrow and Aggregate Pits

Environmental Component	Potential Impact	Project or Activity	Mitigation Required
Airshed	ambient air quality	equipment operation	<ul style="list-style-type: none"> ensure all vehicles are properly tuned, in good operating order, and are fitted with standard air emission control devices minimize idling of combustion engines at all times
	dust	site preparation, construction	<ul style="list-style-type: none"> dust affecting other parties shall be controlled by the proponent (e.g. the wetting down of dry, exposed soils during construction) activities during extreme weather events shall not be undertaken
	noise	equipment operation	<ul style="list-style-type: none"> noise affecting other parties shall be controlled by the proponent (e.g. restriction of daily construction and pit operational hours)
Soils	soil mixing and compaction	site preparation, construction, post construction	<ul style="list-style-type: none"> to ensure that sufficient time is provided to properly plan borrow and aggregate pit developments proponents (or the construction contractor on behalf of the proponent) will prepare a development and reclamation plan for each borrow and aggregate pit developed for the subject proposal plans must be made available upon request to the Reclamation Officer and the applicable landowner prior to the development of the pit(s) the plan should include the following information: <ul style="list-style-type: none"> site location plan showing <ul style="list-style-type: none"> the proposed pit location topsoil storage area overburden and subsoil storage areas access road location information regarding the pre-construction depth of topsoil, subsoil, overburden and proposed excavation, and depth to groundwater cross-section schematic plans showing existing site conditions, proposed pit design, and the reclaimed site conditions information regarding the post-construction depth of topsoil, subsoil, overburden, and proposed excavation, and depth to groundwater the existing land use the proposed end land use for the reclaimed site site plans for pits on private land must be developed in consultation with the landowner(s) all existing topsoil within the pit boundaries, access road right-of-way and from areas to be covered by materials stockpiles should be salvaged and stockpiled in accordance with environmental best practices stockpiled topsoil, subsoil and overburden materials should be placed on equivalent soil materials (e.g. topsoil should be placed on topsoil, subsoil should be placed on subsoil, etc.) the separation distances between stockpiled topsoil, subsoil and overburden should be a minimum of 1 m borrow and aggregate pits, along with any associated haul roads must be sited, constructed and reclaimed in consultation with, and to the satisfaction of the landowner(s) and the appropriate Municipal/Provincial authority stockpiled topsoil, subsoil and overburden shall be replaced in an order that minimizes mixing and in an order that ensures placement with like materials
	erosion	site preparation, post construction	<ul style="list-style-type: none"> appropriate geotechnical control measures to stabilize soils and slopes must be implemented stockpiled soils should be stabilized and protected from wind and water erosion catch ditches should be installed on newly constructed back-slopes to minimize soil erosion upon completion of the access road, back-slopes inside and outside the right-of-way should be scarified to a minimum depth of 0.3 m and re-topsoiled all re-topsoiled areas must be reseeded as soon as possible after construction activities during extreme weather events shall not be undertaken
	contamination	equipment operation, post construction	<ul style="list-style-type: none"> levels of contaminants on the site should not constitute a hazard to human or animal health or to soil and water quality; contaminants should not impede the germination, growth, survival or management of vegetation used for site reclamation or adjacent to the site. spills of contaminants should be contained and reported immediately to Provincial Authorities for remediation. chemicals shall not be sprayed during or immediately preceding showers or rain storms
Vegetation	non-native vegetation	site preparation, post-construction	<ul style="list-style-type: none"> disturbance to areas of vegetation will be minimized stockpiled topsoil, subsoil and overburden shall be replaced in an order that minimizes mixing and in an order that ensures placement with like materials for pits to be reclaimed to equivalent land capability, non-native vegetation shall be successfully revegetated with species approved by the respective landowners as soon as possible after construction
	native vegetation	site preparation, post construction	<ul style="list-style-type: none"> disturbance to areas of natural vegetation such as native prairie, bush, forest and wetland areas will be avoided stockpiling of topsoil, subsoil and overburden materials and disposal of excavated materials should be avoided in areas of native vegetation stockpiled topsoil, subsoil and overburden shall be replaced in an order that minimizes mixing and in an order that ensures placement with like materials construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility after construction, soil will be tilled ready for revegetation for pits to be reclaimed to equivalent land capability, native vegetation shall be successfully revegetated with species that reflect the pre-disturbance plant community as soon as possible after construction
	removal of harvestable timber	site preparation	<ul style="list-style-type: none"> loss of merchantable timber will be minimized in areas of forest cover provincial requirements may exist for timber salvage on public lands including road right-of-ways; non-merchantable timber and slash will be disposed of in an approved manner
	rare/threatened plant species	site preparation, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment

Table 4.2 C

Borrow and Aggregate Pits

Environmental Component	Potential Impact	Project or Activity	Mitigation Required
Watershed	water quality	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> appropriate geotechnical control measures to stabilize soils and slopes must be implemented precautionary measures shall be implemented at all drainage crossings to ensure that no potentially hazardous chemical is inadvertently spilled or deposited into surface waters contain and immediately clean up any spills or leaks using a suitable commercial absorbent mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a surface water body keep all construction equipment within the existing access road right-of-way or the pit and do not permit equipment to enter a surface water drainage course the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of sealcoating agent do not store petroleum products or herbicides within 100 m of an existing surface water drainage course halt construction during heavy rains all waste and surplus materials will be removed from the site and disposed of at a provincially approved facility; littering by work crews is strictly prohibited activities during extreme weather events shall not be undertaken chemicals shall not be sprayed during or immediately preceding showers or rain storms a 30 m buffer of vegetation should be maintained between the pit and the waterbody pits will be kept out of active flood plains or at least at a elevation that will not be flooded for a 1 in 50 year period dewatering water should be directed to settling ponds and/or filtered through vegetation before returning to watercourses
Groundwater	hydrology navigability recharge & supply aquifer contamination	construction not applicable not applicable equipment operation, construction, post construction	<ul style="list-style-type: none"> provision for drainage of borrow pits shall be made unless otherwise specified where feasible and where requested by the landowner, borrow pits may be converted into dugouts
	other groundwater users	equipment operation, construction, post construction	<ul style="list-style-type: none"> contain and immediately clean up any spills or leaks using a suitable commercial absorbent
Wildlife	terrestrial wildlife habitat	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> disturbance to areas that serve as terrestrial habitat such as native prairie, bush, forest and wetland areas will be minimized disturbance, including noise associated with equipment operation during key periods in waterfowl, other migratory birds, and wildlife staging and reproductive periods will be avoided; key periods for projects can only be defined by provincial or federal government biologists stockpiled topsoil, subsoil and overburden shall be replaced in an order that minimizes mixing and in an order that ensures placement with like materials construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility spills of contaminants are to be contained and reported immediately to Provincial Authorities for remediation
	aquatic habitat	site preparation, construction, post construction	<ul style="list-style-type: none"> whenever possible, waterbodies including wetlands and water courses will be avoided mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a surface water body keep all construction equipment within the existing road right-of-way and do not permit equipment to enter a surface water drainage course the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of fuels or other hazardous materials stockpiling of topsoil, subsoil and overburden materials and disposal of excavated materials should take place in an area that is least favourable for terrestrial habitat replacement of conserved soil materials should be done in a way to avoid sedimentation into waterways construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility for pits to be reclaimed to equivalent land capability, native vegetation shall be successfully revegetated with species that reflect the pre-disturbance plant community as soon as possible after construction herbicides for weed control shall not be sprayed within 30 m of a waterbody herbicides shall not be sprayed in windy or raining conditions
	rare/threatened wildlife species	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	parks & protected areas	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment

Table 4.2 C

Borrow and Aggregate Pits

Environmental Component	Potential Impact	Project or Activity	Mitigation Required
Socio/economic	historical resources	site preparation, construction	<ul style="list-style-type: none"> all known archeological, paleontological, cultural or historical sites will be avoided unless otherwise permitted by Provincial Authorities if required by Provincial Authorities, the recommendations of a completed Historical Resources Impact Assessment (HRIA) must be followed in the event of the discovery of archeological or historical sites during construction, activity at the location must be suspended until permission to proceed is granted by Provincial Authorities in the event of the discovery of archeological or historical sites during construction, activity at the location must be suspended until permission to proceed is granted by Provincial Authorities
	agricultural operations	site preparation, construction, post construction	<ul style="list-style-type: none"> site preparation, construction & post-construction activities should be scheduled to minimize disturbance to normal agricultural operations (e.g. seeding or harvesting of crops) mitigation can take the form of compensation where such scheduling is not feasible
	landowners and other users	site preparation, equipment operation	<ul style="list-style-type: none"> site preparation, construction, & post construction activities, including siting and timing of work, shall conform to the terms and conditions of signed agreements with all potentially affected landowners and other users mutually agreed upon strategies intended to mitigate noise effects shall be implemented by proponent (e.g. restriction of daily construction hours)
	aboriginal land use	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment

Asphalt Plants

Table 4.2 D			
Environmental Component	Potential Impact	Project or Activity	Mitigation Required
Airshed	ambient air quality	equipment operation, plant operation	<ul style="list-style-type: none"> ensure all vehicles are properly tuned, in good operating order, and are fitted with standard air emission control devices minimize idling of combustion engines at all times plant operation shall be in compliance with provincial requirements, including air emission standards, monitoring and reporting procedures plant shall be sited so as to minimize adverse impacts downwind
	dust	site preparation, plant operation	<ul style="list-style-type: none"> dust affecting other parties shall be controlled by the proponent (e.g. the wetting down of dry, exposed soils during site preparation) plant operation shall be in compliance with provincial requirements, including air emission standards, monitoring and reporting procedures activities during adverse weather conditions shall be avoided
	noise	equipment operation, plant operation	<ul style="list-style-type: none"> noise affecting other parties shall be controlled by the proponent (e.g. restriction of daily equipment and plant operation hours)
Soils	soil mixing and compaction	site preparation, post-construction	<ul style="list-style-type: none"> all existing topsoil within the right-of-way and from areas to be covered by materials stockpiles should be salvaged and stockpiled in accordance with environmental best practices stockpiled topsoil, subsoil and overburden materials should be placed on equivalent soil materials (e.g. topsoil should be placed on topsoil, subsoil should be placed on subsoil, etc.) the separation distances between stockpiled topsoil, subsoil and overburden should be a minimum of 1 m stockpiled topsoil, subsoil and overburden shall be replaced in an order that minimizes mixing and in an order that ensures placement with like materials
	erosion	site preparation, post construction	<ul style="list-style-type: none"> appropriate geotechnical control measures to stabilize soils and slopes must be implemented stockpiled soils should be stabilized and protected from wind and water erosion catch water ditches should be installed on newly constructed backslashes to minimize soil erosion all re-topsoiled areas must be reseeded as soon as possible after construction activities during adverse weather conditions shall be avoided
	contamination	equipment operation, plant operation, post construction	<ul style="list-style-type: none"> levels of contaminants on the site should not constitute a hazard to human or animal health or to soil and water quality; contaminants should not impede the germination, growth, survival or management of vegetation used for site reclamation or adjacent to the site spills of contaminants should be contained and reported immediately to Provincial Authorities for remediation contaminated soils must be removed and treated at a provincially approved facility chemicals shall not be sprayed during or immediately preceding showers or rain storms
Vegetation	non-native vegetation	site preparation, post construction	<ul style="list-style-type: none"> disturbance to areas of vegetation will be minimized after construction, soil will be tilled ready for revegetation all disturbed areas of non-native vegetation shall be successfully revegetated with species approved by the respective landowners as soon as possible after construction
	native vegetation	site preparation, post construction	<ul style="list-style-type: none"> disturbance to areas of natural vegetation such as native prairie, bush, forest and wetland areas will be avoided stockpiling of topsoil, subsoil and overburden materials is to be avoided in areas of native vegetation construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility after construction, soil will be tilled ready for revegetation disturbed areas of native vegetation shall be successfully revegetated with species that reflect the pre-disturbance plant community as soon as possible after plant decommissioning
	harvestable timber	site preparation, post-construction	<ul style="list-style-type: none"> disturbance to areas of merchantable timber will be minimized provincial requirements may exist for timber salvage on public lands; non-merchantable timber and slash will be disposed of in an approved manner
Watershed	rare/threatened plant species	site preparation, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	water quality	site preparation, equipment operation, plant operation, construction, post construction-decommissioning	<ul style="list-style-type: none"> appropriate geotechnical control measures to stabilize soils and slopes must be implemented the asphalt plant and associated parking, loading and storage areas and fuel storage areas must be sited at least 100m from water bodies; areas of potential surface water contamination will be avoided halt site preparation during heavy rains precautionary measures shall be implemented at all drainage crossings to ensure that no potentially hazardous material is inadvertently spilled or deposited into surface waters do not store fuels or other petroleum products within 100 m of an existing surface water drainage course mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a waterbody keep all construction equipment within the boundaries of the site and do not permit equipment to enter a surface water drainage course the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of hazardous materials provide temporary erosion control measures as necessary between the site and access roads and any drainage courses to prevent or reduce the likelihood of sediment or other deleterious substances entering the drainage course contain and immediately clean up any spills or leaks using a suitable commercial absorbent contaminated soils must be removed and treated at a provincially approved facility all waste and surplus materials will be removed from the site and disposed of at a provincially approved facility; littering by work crews is strictly prohibited herbicides for weed control shall not be sprayed within 30 m of a waterbody herbicides shall not be sprayed in windy or raining conditions activities in adverse weather conditions shall be avoided

Table 4.2 D

Asphalt Plants

Environmental Component	Potential Impact	Project or Activity	Mitigation Required
			<ul style="list-style-type: none"> chemicals shall not be sprayed during or immediately preceding showers or rain storms keep out of active floodplains
Wildlife	hydrology navigability		
	terrestrial wildlife habitat	site preparation, equipment operation, construction, post-construction	<ul style="list-style-type: none"> disturbance to areas that serve as terrestrial habitat such as native prairie, bush, forest and wetland areas will be avoided disturbance, including noise associated with equipment operation during key periods in waterfowl, other migratory birds, and wildlife staging and reproductive periods will be avoided; key periods for projects can only be defined by provincial or federal government biologists the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of fuels or other hazardous materials construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility
	aquatic habitat	equipment operation	<ul style="list-style-type: none"> appropriate geotechnical control measures to stabilize soils is to be implemented in areas that sedimentation into a waterbody may occur mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a surface water body keep all construction equipment within the existing road right-of-way and do not permit equipment to enter a surface water drainage course the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of fuels or other hazardous materials construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility herbicides for weed control shall not be sprayed within 30 m of a waterbody herbicides shall not be sprayed in windy or raining conditions
	rare/threatened wildlife species	site preparation, equipment operation, plant operation	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	parks and protected areas	site preparation, equipment operation, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
Socio/economic	historical resources	site preparation, construction	<ul style="list-style-type: none"> all known archeological, paleontological, cultural or historical sites will be avoided unless otherwise permitted by Provincial Authorities if required by Provincial Authorities, the recommendations of a completed Historical Resources Impact Assessment (HRIA) must be followed in the event of the discovery of archeological or historical sites during construction, activity at the location must be suspended until permission to proceed is granted by Provincial Authorities in the event of the discovery of archeological or historical sites during construction, activity
	agricultural operations	site preparation, construction, plant operation, decommissioning	<ul style="list-style-type: none"> activities should be scheduled to minimize disturbance to normal agricultural operations (e.g. seeding or harvesting of crops) mitigation can take the form of compensation where such scheduling is not feasible
	landowners and other users	site preparation	<ul style="list-style-type: none"> site preparation, including siting and timing of work, shall conform to the terms and conditions of signed agreements with all potentially affected landowners and other users
	aboriginal lands	site preparation, construction, plant operation, decommissioning	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment

Table 4.2 E

Watercourse / Waterbody Culvert Replacement or Installation

		Mitigation Required	
Environmental Component	Potential Impact	Project or Activity	
Airshed	ambient air quality	equipment operation	<ul style="list-style-type: none"> ensure all vehicles are properly tuned, in good operating order, and are fitted with standard air emission control devices minimize idling of combustion engines at all times
	dust	site preparation	<ul style="list-style-type: none"> activities during adverse weather conditions shall be avoided
	noise	equipment operation	<ul style="list-style-type: none"> noise affecting other parties shall be controlled by the proponent
Soils	soil mixing & compaction	site preparation, post construction	<ul style="list-style-type: none"> all existing topsoil within the right-of-way and from areas to be covered by materials stockpiles should be salvaged and stockpiled in accordance with environmental best practices stockpiled topsoil, subsoil and overburden materials should be placed on equivalent soil materials (e.g. topsoil should be placed on topsoil, subsoil should be placed on subsoil, etc.) the separation distances between stockpiled topsoil, subsoil and overburden should be a minimum of 1 m the proponent must comply with terms and conditions of Provincial Approvals or Codes of Practice regulating the modification of the beds or shores of waterbodies stockpiled topsoil, subsoil and overburden shall be replaced in an order that minimizes mixing and in an order that ensures placement with like materials
	erosion	site preparation, post construction	<ul style="list-style-type: none"> appropriate geotechnical control measures to stabilize soils and slopes must be implemented stockpiled soils should be stabilized and protected from wind and water erosion catch water ditches should be installed on newly constructed backslopes to minimize soil erosion upon completion of the road, backslopes inside and outside the right-of-way should be scarified to a minimum depth of 0.3 m and re-topsoiled all re-topsoiled areas must be reseeded as soon as possible after construction activities during adverse weather conditions shall be avoided
	contamination	equipment operation, post construction	<ul style="list-style-type: none"> levels of contaminants on the site should not constitute a hazard to human or animal health or to soil and water quality; contaminants should not impede the germination, growth, survival or management of vegetation used for site reclamation or adjacent to the site. spills of contaminants should be contained and reported immediately to Provincial Authorities for remediation. chemicals shall not be sprayed during or immediately preceding showers
Vegetation	non-native vegetation	site preparation, post construction	<ul style="list-style-type: none"> minimize vegetation clearing to the width of the buffer zone (recommendation from PFRA REOs or federal or provincial fishery biologists) utilize hand clearing instead of mechanical clearing where possible to prevent disturbance of organic soil layer all disturbed areas of non-native vegetation shall be successfully revegetated with species approved by the respective landowners as soon as possible after construction
	native vegetation	site preparation, post construction	<ul style="list-style-type: none"> disturbance to areas of natural vegetation such as native prairie, bush, forest and wetland areas will be minimized utilize hand clearing instead of mechanical clearing where possible to prevent disturbance of organic soil layer after construction, soil will be tilled ready for revegetation disturbed areas of native vegetation shall be successfully revegetated with species that reflect the pre-disturbance plant community as soon as possible after construction
	removal of harvestable timber	site preparation	<ul style="list-style-type: none"> loss of merchantable timber will be minimized in areas of forest cover traversed by the road provincial requirements may exist for timber salvage on public lands including road right-of-ways; non-merchantable timber and slash will be disposed of in an approved manner
	rare/threatened plant species	site preparation, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	water quality	site preparation, equipment operation, construction, post construction	<ul style="list-style-type: none"> appropriate geotechnical control measures to stabilize soils and slopes must be implemented precautionary measures shall be implemented at all drainage crossings to ensure that no potentially hazardous material is inadvertently spilled or deposited into surface waters do not store petroleum products along the right-of-way within 100 m of an existing surface water drainage course mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a surface water body keep all construction equipment within the existing road right-of-way and do not permit equipment to enter a surface water drainage course the proponent will be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of fuels or other hazardous materials use clean, washed, rock for rip rap use only clean, washed, granular fill as fill in the reconstructed section of the roadway in contact with wetland areas place excess material from culvert installations where it will not erode into waterways all waste and surplus materials will be removed from the site and disposed of at a provincially approved facility; littering by work crews is strictly prohibited provide temporary erosion control measures as necessary on each side of each drainage course on both sides of the road to prevent or reduce the likelihood of sediment or other deleterious substances from entering the drainage course herbicides for weed control shall not be sprayed within 30 m of a waterbody herbicides shall not be sprayed in windy or raining conditions activities during adverse weather conditions shall be avoided chemicals shall not be sprayed during or immediately preceding showers and rain storms
Watershed	hydrology	construction	<ul style="list-style-type: none"> culverts should be located and designed so as to not impede the natural flow of surface or ground water
	navigability	site preparation,	<ul style="list-style-type: none"> the proponents shall adhere to all the recommendations and requirements of the Canadian Coast Guard when planning and constructing culvert replacements on all navigable waterbodies and watercourses

Table 4.2 E

Watercourse / Waterbody Culvert Replacement or Installation

		Mitigation Required	
Environmental Component	Potential Impact	Project or Activity	
Groundwater	recharge & supply	construction	
	aquifer contamination	not applicable	
	other groundwater users	equipment operation, post construction	<ul style="list-style-type: none"> contain and immediately clean up any spills or leaks (i.e. petroleum products or herbicides) using a suitable commercial absorbent contain and immediately clean up any spills or leaks (i.e. petroleum products or herbicides) using a suitable commercial absorbent
Wildlife	terrestrial wildlife habitat	equipment operation, construction, post-construction	<ul style="list-style-type: none"> disturbance to areas of natural vegetation that serves as terrestrial habitat such as native prairie, bush, forest and wetland areas will be minimized disturbed areas shall be successfully revegetated with species that reflect the pre-disturbance plant community as soon as possible after construction disturbance, including noise associated with equipment operation, during key periods in waterfowl and wildlife staging and reproductive periods will be avoided; key periods for projects can only be defined by provincial or federal government biologists construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of fuels or other hazardous materials contain and immediately clean up any spills or leaks using a suitable commercial absorbent spills of contaminants must be contained and reported immediately to Provincial Authorities for remediation
	aquatic habitat	site preparation, construction, equipment operation, post construction	<ul style="list-style-type: none"> work shall be done in the dry or at least in isolation ensure the culvert opening is large enough to allow the passage of debris align the crossing perpendicular to the direction of flow to minimize crossing length maintain a culvert gradient as close to the natural stream grade as possible position culverts where there are no sudden increases in water velocity above, below, or at the crossing location install culverts a minimum of 30 cm or 20% of culvert diameter below the normal stream bed and fill with granular material to stream bed level protect stream banks and stream bed at culvert openings with erosion-resistant material such as rip rap use clean washed rock for rip rap minimize vegetation clearing to the width of the buffer zone (recommendation from PFRA REOs or federal or provincial fishery biologists) appropriate geotechnical control measures to stabilize soils is to be implemented preserve vegetative cover for as long as possible (i.e. no pre-cutting) construction waste, surplus and hazardous materials will be removed from the site and disposed of at a provincially approved facility mobile machinery should not be serviced or washed within 100 m of a surface water drainage do not park equipment within 30 m of a surface water body keep all construction equipment within the existing road right-of-way and do not permit equipment to enter a surface water drainage course the proponent should be responsible for conforming with all requirements of the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, Provincial Regulations and other relevant regulations, with particular reference to the transport, handling, accidental releases, and disposal of fuels or other hazardous materials contain and immediately clean up any spills or leaks using a suitable commercial absorbent prevent sedimentation by grading soils in the direction away from the watercourse and never into the stream itself place excess materials from culvert installations where it will not erode into waterways ensure that oil, asphalt, and tar are restricted to the road surface during application and do not enter surface waters provide temporary erosion control measures as necessary on each side of each drainage course on both sides of the road to prevent or reduce the likelihood of sediment or other deleterious substances from entering the drainage course spills of contaminants must be contained and reported immediately to Provincial Authorities for remediation herbicides for weed control shall not be sprayed within 30 m of a waterbody herbicides shall not be sprayed in windy or raining conditions
Socio/Economic	rare/threatened wildlife species	site preparation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	parks and protected areas	site preparation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment
	historical resources	not applicable	
	agricultural operations	not applicable	
	landowners and other users	site preparation	<ul style="list-style-type: none"> site preparation, construction, & post construction activities, including siting and timing of work, shall conform to the terms and conditions of signed agreements with all potentially affected landowners and other users

Watercourse / Waterbody Culvert Replacement or Installation

Table 4.2 E				Mitigation Required
Environmental Component	Potential Impact	Project or Activity		
	aboriginal lands	site preparation, construction, post construction	<ul style="list-style-type: none"> excluded from class screening, reclassified to individual assessment 	

4.7 Follow-up and Monitoring

Depending on the scale and type of project, on-site supervision may be the responsibility of the construction contractor, the project engineer or the proponent (usually a rural municipality officer). PFRA staff are not usually involved in the supervision or monitoring during construction of prairie grain road projects. In most cases compliance with mitigative measures and other contract requirements will be confirmed through a Statement of Completion signed by the project engineer or municipal officer. The Statement of Completion must be provided to PFRA before final payment on the project is approved.

Any follow-up or monitoring requirements other than the Statement of Completion are identified through the CSPR on a project-specific basis (see Section 6 for details on the application of the CSPR in regard to follow-up and monitoring requirements).