Appendix A: Erosion and Sediment Control Plan

Erosion and Sediment Control Plan

Goals

The Erosion and Sediment Control Plan addresses conditions encountered during construction and post construction. The effective use of sediment and erosion control measures during construction is dependent upon timely intervention by:

- anticipating conditions that initiate the response; and
- responding to the event.

The mitigative measures in the following sections have been developed and will be employed to meet the following objectives:

- To avoid or minimize the potential for erosion and sedimentation to occur as a result of construction related activities;
- To comply with the habitat protection provisions of the Fisheries Act and the principle of no net loss of productive fish habitat of DFO's Policy for the Management of Fish Habitat;
- To ensure preventative measures are implemented where weather events threaten the integrity of erosion and sediment control measures employed on the Project;
- To comply with all regulatory permit and approval conditions; and
- To employ environmentally and economically responsible construction practices at all times and in accordance with applicable industry standards.

Specific Measures

Materials and Equipment	1.	Necessary quantities of erosion and sediment control materials shall be available at all times.
	2.	The contractor will identify the locations of all required materials. Materials will be stored separately from other construction materials. Materials and equipment will be located to provide timely response as directed by Keystone.
	3.	Materials will include specified minimum quantities of: • geotextile fabric (one roll) • sediment fencing (2 rolls) • plastic snow fencing (2 rolls) • spill response materials • absorbents material and/or booms (100 kg of absorbents and/or 2–25 m booms) • sand and sand bags (25) • meter bags (6) • filter bags (1) • T-bar posts (12) • erosion control matting (50 m) • poly sheeting (1 roll, 6 mil)
Equipment	4.	The list of equipment, the contractor will make available for might include: • tracked backhoes; • bulldozers; and • trash pumps.

Implementation	5.	The contractor shall ensure mitigation techniques and structures for erosion and sediment control are implemented correctly, working properly, and required maintenance is performed.
	6.	Runoff from the Project site / RoW / access roads shall be directed into stable areas (preferably vegetated), in a controlled manner. Approval is required from the crown and lessee on crown lands or from the landowner or occupant on private land if runoff is directed to off-RoW areas.
	7.	Site-specific factors such as slope gradient, length and uniformity, and soil texture will vary. Protective measures will be implemented during construction to reduce erosion and mass movement hazards. These measures will include the control of surface, subsurface and trench line flows as described in Table A1.

Table A-1 Summary of Erosion and Sediment Control Measures

Control Measures	Comments	Principal Applications					
		Large Slope Areas	**Limited Slope Areas**	**Large Flat Areas**	**Minor Channels**	**Streams Etc**	**Adjacent Property**
EROSION PROTECTION - Vegetative Cover							
Grass and Legume Seeding	Effective permanent surface stabilization measure. Effectiveness of seeding alone is limited on steeper slopes.	✓	✓	✓	✓	✓	
Erosion Control Blanket with Seeding	Effective for immediate protection of small critical areas such as channels and steep slopes.		✓		✓	✓	
Other vegetative Cover	Trees/shrubs cuttings and transplants. Effective erosion control and provides habitat value (shading, overhang protection).		✓			✓	
Non-Vegetative Cover							
Straw Mulch	Very effective especially if 'crimped' into the surface.	✓	✓	✓	✓		
Gravel Sheeting	Useful for permanent cover where vegetation cannot be grown, or to control seepage. Might require filter beneath.		✓				
Rock Rip-rap	Widely used to control channel and bank erosion. Rip-rap is effective and economical, in limits.		✓		✓	✓	✓

Table A-1 Summary of Erosion and Sediment Control Measures (cont'd)

Control Measures	Comments	Principal Applications					
		Large Slope Areas	Limited Slope Areas	Large Flat Areas	Minor Channels	Streams Etc	Adjacent Property
Bank Protection	Refer to bank restoration alternatives outlined in Appendix J: Watercourse Crossing Data Sheets.				✓	✓	✓
Tackifiers	Used to control wind and water erosion of topsoil piles and slopes		✓	✓		✓	
RUNOFF CONTROL - Slope Modification							
Slope Flattening	Might be economical where surplus fill and adequate width are available, or where flattening cut slopes would provide needed borrow fill.		✓		✓	✓	
Slope Benching	Effective if sufficient width available. Positive drainage needed, and uncontrolled overflow down slope must be prevented.		✓				
Temporary Runoff Controls							
Diversion Berms and Drains	Important, effective and economical means of controlling surface runoff and erosion. Might be temporary or permanent.	✓	✓	✓	✓	✓	✓
Chutes (Spillways)	Very effective for conveying runoff down steep, confined slopes. Might be temporary or permanent. Careful design necessary, with outlet protection.	✓	✓		✓	✓	
Groundwater Control (i.e. French drains)	Reduces slope failures caused by seepage.	✓	✓			✓	
Check Dams							
Straw Bale and Silt Fence Check Dams	For controlling channel erosion and sediment transport until permanent protection established. Requires occasional maintenance.				✓	✓	
Sandbag Check Dams	Temporary measure that is easy to install, will be used in-conjunction with filter fabric				✓	✓	
Permanent Check Dams	For reducing channel gradient and velocity.				✓	✓	
Miscellaneous Runoff Controls							
Ditch Stops	Prevent ditchline channelling of water and potential erosion. Used in conjunction with diversion berm.	✓				✓	

Table A-1 Summary of Erosion and Sediment Control Measures (cont'd)

Control Measures	Comments	Principal Applications					
		Large Slope Areas	Limited Slope Areas	Large Flat Areas	Minor Channels	Streams Etc	Adjacent Property
SEDIMENT INTERCEPTION							
Vegetative Buffer Strips	Economical and easily maintained. Buffer strips are very effective for intercepting sediment.				✓	✓	✓
Silt Fences (Geotextile)	Useful for intercepting sheet flow sediment.		✓	✓	✓	✓	✓
Silt Fences (Burlap)	Suitable for very small sheet flows for up to 3 months.		✓	✓		✓	✓
Straw Bale Barriers	Effective for sheet flows for 3 to 6 months.		✓	✓		✓	✓
Sediment traps	Useful for controlling runoff where topography is suitable and sufficient space available.	✓	✓	✓		✓	✓
Filter Berms	Permeable gravel or stone berm permits water to filter through. More effective with filter cloth.		✓	✓		✓	✓
Outlet Protection	Occasionally necessary to dissipate water discharge at chute, berm, culvert, and other outlets. Might be temporary or permanent.	✓	✓		✓	✓	✓

Appendix B: Hydrovac Cutting Disposal

Objective:

- Ensure the disposal of Hydrovac slurry complies with all applicable Provincial and/or Federal Guidelines and reclamation objectives.

General Measures:

- The contractor will ensure that Keystone has reviewed and approved a disposal site prior to starting Hydrovac operation.
- The hydrovac contractor is to ensure that all tanks are clean and free of contaminants prior to arriving on site.
- Ensure the contractor is aware of the disposal location, and that any road weight restrictions are adhered to.
- Conservation of topsoil is required from the area being hydrovaced.
- Non-contaminated tailings might be released into the hydrovac excavation if future subsidence of the site is not a concern and the area is fenced until the tailings are dry.
- If temporary on site storage is to be constructed (e.g., sump or bermed area) the area must be stripped of topsoil and able to contain slurry and prevent any off site migration of stored slurry. If a dyke is required to contain slurry, dyke material shall be of impermeable clay. Salvaged topsoil will be stored on one or two sides of the stripped sump/dyke area to provide equipment access and potential sump/dyke expansion.
- Hydrovac contractor might temporarily store slurry in their trucks or at a site that is designed to safely store slurry. Use CLEAN oilfield storage tank or metal slop bin for temporary storage if other more practical storage options (i.e. temporary pits) are not desirable for the site.
- Do not mix contaminated slurry with uncontaminated slurry.
- Potentially contaminated slurry needs special handling storage and disposal requirements (see below).
- Wet hydrovac slurry will not be sent to a landfill even if it is not contaminated with other hazardous substances. Landfills will only accept dry materials.
- 'Wet' hydrovac slurry can be disposed of by the hydrovac contractor to a licensed treatment or disposal facility if accepted. Appropriate documentation must be provided to Keystone to verify that hydrovac slurry disposal is in accordance with regulatory requirements and to the satisfaction of Keystone.

Site Specific Measures:

New Pipeline:

- As hydro-vac slurry from new facilities is generally of mineral soil content and is not likely to be contaminated, on-site disposal is the preferred method if subsidence is not a concern. The disposal area must be in a location that has been stripped of topsoil. If a dyke is required to contain slurry, dyke material shall be of subsoil material and able to prevent any surface water run-off from the slurry.
- If contaminants are suspected, do not remove the hydrovac slurry from the site. Arrangements will be made to temporarily contain the slurry on-site pending analysis and final disposal arrangements.
- All hydrovac holes shall be back filled with mineral soil and shall be compacted to ensure settling of material does not pose a hazard for wildlife, livestock or the general public.

Appendix C: Construction Access and Traffic Management Plan

Introduction

The Project will traverse land primarily used by the agricultural industry for crop production and livestock grazing. The route traverses lands used for production of hay and annual crops, along with native prairie used for livestock grazing.

Native prairie traversed by the route is susceptible to pulverization and compaction from excess vehicle activity that can result in the destruction of the native sod layer and make the area susceptible to invasion of non-native species and increasing the risk of wind and water erosion.

Objectives

The objectives of Construction Access and Traffic Management Plan are:

- To ensure RoW access for construction purposes, the plan will consider traffic volume and type of equipment, the location and protection of significant environmental features, and safety factors;
- To minimize effects to sensitive native prairie from excess vehicle access during construction;
- To comply with local municipal and county bylaws and permit conditions;
- To comply with approval conditions, including landowner commitments;
- To minimize the duration and magnitude of project effects on local communities to the extent possible; and
- To control unwanted public access including vehicular traffic and ATVs along those portions of the proposed pipeline RoW that is not adjacent to existing access roads.

Access Development

For the most part, the Project traverses areas that have a substantial number of existing roads that the Project can use to reduce the need for vehicle travelling the RoW for access. There will be limited need to develop new access roads except for permanent access to valve sites and a short 400 metre road to the Fox Valley Pump Station.

Access Management Measures

Construction of the Project will increase the amount of traffic on local roads and highways. The following mitigation measures have been developed to ensure the safety of the public, construction personnel and to ensure the protection of environmentally sensitive areas such as native prairie, wetlands, watercourses, rare plant areas, wildlife habitat features, and historical/palaeontological resources.

Access Control Measures	1.	The application of access control measures will not restrict the essential construction equipment from travelling on the work side of the RoW and will not compromise safety considerations.
	2.	Wherever available, all project vehicles, including all-terrain vehicles, will travel on approved access roads or shoo-flies instead of travelling down the RoW.

Awareness	3.	Information on access restriction areas will be provided by Keystone to the Contractor in the EPP and prior to construction commencement. The Contractor shall provide information as part of the project orientations, tailgates and updates to ensure all crews are aware of and abide by the access restrictions.
Signage	4.	The contractor will clearly mark all approved access roads to direct authorized personnel to the RoW or project site. If necessary, barriers, fences, signs, or flagging, might be used to limit access to sensitive areas.
	5.	Areas and features where traffic controls are in effect will be flagged and / or signed to ensure compliance.
	6.	All construction traffic will abide by all appropriate traffic control signing and public/pedestrian safety protocols and relevant legislation.
	7.	Signs prohibiting unauthorized vehicle travel along the RoW during construction will be posted at road crossings in the vicinity of construction activities to prevent public access.
	8.	Construction personnel will car pool and/or be transported to and from the worksites by bus, whenever possible, to minimize vehicle traffic between lodging and work site locations.
	9.	During construction, access control measures will be monitored by the Environmental Inspector for effectiveness. Enhancement of the current measure and/or implementation of additional measures will be undertaken as necessary.
Dust	10.	Where project generated dust, from vehicle or equipment traffic, is causing hardship to human residents and/or workers, the dust will be controlled through the application of water, tackifier or other approved products such as calcium carbonate, and/or the reduction of speed limits.
Vegetation/Soil Protection	11.	Where the vegetation or soil is susceptible to pulverization, vehicles will be directed to use the primary work area immediately beside the pipe for most travel to the extent possible.
	12.	In consultation with landowners, occupants, and/or regulatory agencies, fencing might be used to exclude livestock grazing along portions of the RoW where rare and or SARA-listed plants exist.
Native Prairie Protection	13.	The Environmental Alignment Sheets (see Appendix R) will clearly show where there are restrictions or limitations to vehicle travel on the RoW.
	15.	Non-essential construction traffic will be restricted from using the RoW for access, where alternate approved access is available.

	16. The contractor will avoid unnecessary turning of tracked equipment such as bulldozers, track hoes, and side booms. Avoid unnecessary wheel spin with wheeled vehicles and equipment.
	17. Low ground pressure vehicles including ATVs and tracked equipment will be used in native prairie where specified by Keystone.
	18. On native prairie, the number of trips will be restricted to a daily single in-out trip for construction workers, to the extent possible, and where restrictions do not prolong work activities within the sensitive areas.
	19. Once cleanup is completed on quarter section by quarter section basis, those portions of the RoW within native prairie will be closed to further construction traffic except for tie-ins, pressure testing, and repairs.

Appendix D: Adverse Weather Contingency Plan

Keystone's Environmental Inspection staff is responsible for monitoring and implementing all adverse weather contingency procedures in consultation with the Construction Manager, and will liaise with the appropriate regulatory representatives, as necessary, to obtain their input. Keystone believes it is critical in addressing adverse weather contingency plans to maintain effective communication between the Construction Management Team, the Contractor, the appropriate regulatory representatives, and the landowner or occupant. Therefore, if necessary, a meeting will be held in the field to ensure all involved parties mutually understand adverse weather concerns.

To maintain and stabilize the RoW, it is necessary to examine the methods of reducing environmental effects during adverse weather conditions. The following mitigation procedures allow for the continuation of activities by outlining specific measures that reduce the potential to cause adverse environmental effect.

It is recognized that specific environmental mitigation is subjective and dependent upon specific RoW conditions and the Project schedule.

Where adverse weather conditions and activities have the potential to, or are causing wind erosion, water erosion, the ability to negatively affect equivalent soil capability and/or to cause Harmful Alteration, Disruption or Destruction (HADD) of fish and fish habitat, Keystone's Environmental Inspection staff will suspend that phase of the operation until weather conditions abate or effective mitigation procedures have been implemented.

The following are mitigation measures that might be applied.

WIND EROSION	
OPTION 1. MULCH AND TACKIFIER APPLICATION TO TOPSOIL PILES	
Description	Uniform application of mulch or tackifier to topsoil piles and/or other areas affected by wind erosion.
Materials	Hydromulch, tackifier or approved equivalent.
Activation	Keystone's Construction Manager or contractor will initiate application of a tackifier to areas where sufficient winds have created the potential for topsoil erosion.
OPTION 2. WATERING	
Description	Watering of the topsoil pile and other areas affected by wind erosion.
Materials	Water.
Activation	Keystone's Construction Manager or contractor will initiate watering of identified areas when activities or sufficient winds have created the potential for topsoil erosion.
OPTION 3. STRAW APPLICATION	
Description	Application of straw to topsoil and/or other areas where winds have created the potential for soil erosion.
Materials	Straw from local sources acceptable to the landowner, subject to availability, and approved by Keystone's Environmental Manager.
Activation	Keystone's Construction Manager and contractor will monitor for erosion, and initiate application where and when required. When clean weed free straw is unavailable, then alternative methods such as tackifier or seeding a cover crop to control surface erosion might be required.

WATER EROSION	
OPTION 1. TEMPORARY BERMS/ SILT FENCE	
Description	Temporary berms and/or silt fence and/or other appropriate mitigation measures (e.g., log bundle trenches, straw rolls); will be installed where the potential for water erosion has been identified. To prevent ponding and/or erosion, cross RoW drainage will be maintained. In addition to silt fencing or berms, straw rolls, etc, other appropriate measures (e.g., sumps, pumping excess water) to prevent deleterious material from entering a watercourse will be implemented, when and where required.
Materials	Subsoil available in-situ or other specified material.
Activation	Highly erodible and sensitive areas, and/or other areas identified by Keystone's Environmental Inspector(s).
OPTION 2. STRAW OR MULCH APPLICATION	
Description	Placement of bales or the spreading of straw or mulch along erosion prone areas.
Materials	Clean weed free straw from local sources or mulch acceptable to the landowner, subject to availability, and approved Keystone's Environmental Inspector(s).
Activation	Erosion prone areas identified by landowners or Keystone's Environmental Inspector(s) during routine RoW monitoring.

Soil Conservation, ROW Maintenance, Stabilization – Adverse Weather Conditions	
1.	Adverse weather conditions can result in saturated or blowing soil conditions which can potentially result in soil degradation through soil compaction, pulverization, soil rutting, topsoil/subsoil mixing, and soil loss. The contingency measures below will be implemented on all agricultural lands to avoid or mitigate the potential for soil degradation or loss. Recognition of wet soil conditions or soil movement that might be in the initial stages of soil degradation can be distinguished through the following observations: • Excessive build-up of mud on tires and cleats; • Excessive wheel slippage; • Reduced moisture infiltration resulting in surface ponding; • Evidence of rutting through the topsoil or root zone layer into the subsoil zone. • Excessive dust movement from wind while equipment is moving or during windy and dry conditions. During adverse weather conditions, Keystone will direct the contractor to reduce unnecessary traffic and the number of vehicles on the RoW. Additional planning of activities will be required by the contractor to either tighten up, move crews or spread out the work crews as warranted (e.g., close proximity of ditching, lower in, and backfill operations) to other areas not affected by wind or water erosion. To reduce effect, a one trip in, one trip out philosophy will be implemented for all RoW access.
2.	Traffic will be restricted to the RoW.
4.	Under adverse weather conditions, the contractor will be directed to back-blade the RoW at the end of the day. Back-blading of the RoW fills in ruts, thereby assisting in the prevention of water erosion and re-establishing a firm working RoW surface.
5.	Under adverse weather conditions, additional topsoil/surface material and/or subsoil might be stripped and placed at the edge of the RoW. Topsoil, surface material and/or subsoil will be re-distributed evenly across the RoW during clean up.
6.	When available and practical, tracked equipment might be required for specific activities.
7.	Install swamp mats, geotextiles, or corduroy in perennial saturated soil conditions or other areas of concern.
8.	Work in highly sensitive areas will be stopped and shifted to low sensitive areas, such as lands with good sod mats or well drained soils. During realized saturated soil or soil movement conditions, topsoil stripping, grading, cleanup and topsoil replacement or other construction activities may be temporarily suspended, or moved to areas where erosion issues are not taking place or can be mitigated.
9.	If all mitigation fails, Project activities might be suspended until adverse weather conditions abate, thereby incurring a schedule delay. Project shutdown will be based upon discussions between Keystone's Construction Manager, Environmental Inspector(s) and construction contractor. Recommencement of work must be authorized by Keystone's Construction Manager, in consultation with the Environmental Inspector(s) prior to Project restart.

Appendix E: Waste Management Plan

Waste Management Plan

A variety of hazardous and non-hazardous waste materials might be generated during construction. These materials will also require special handling and disposal methods. By-products from a project might include:

- Fugitive dust and smoke
- Sanitary sewage
- Hydrostatic water
- Used oil/contaminated liquids
- Sediment laden water
- Domestic solid waste
- Contaminated soil
- Construction/demolition wastes (wood, scrap metal, etc.)
- Hazardous (batteries, container residue)

Waste treatment and disposal options generally applicable to a project are:

- regional landfill for approved solid waste
- recycling/redemption/composting facilities
- construction and demolition disposal/recovery sites
- scrap metal dealers
- return to suppliers
- approved used oil treatment centres
- licensed hazardous waste disposal centres
- approved contaminated soils and water (hydrocarbon) treatment sites

The contractor will provide a list of all facilities for the disposal of wastes to be approved by Keystone.

Objectives

The objective of these mitigation measures is to:

- reduce the potential of an accidental release of contaminating products being generated or used during pipeline construction;
- comply with applicable regulations including those administered by the governments of Alberta and Saskatchewan, as well as the DFO, Environment Canada, and all relevant local municipal officials; and
- employ environmentally and economically responsible construction practices at all times and in accordance with applicable industry standards.

These measures apply to all Company employees, contractors and subcontractors handling or transporting materials during the construction of the Project through all sections of the RoW and facility sites, all staging areas, construction yards, pipe storage areas and public or private roadways.

All Project personnel will abide by federal, provincial, municipal, and Company requirements for the storage, handling, manifesting, transporting, disposal, and spill reporting of products and waste materials that are potentially hazardous to the environment.

Awareness of these requirements will be integrated as appropriate into various levels of an environmental orientation program.

Keystone's contractors and subcontractors are responsible for ensuring compliance with all permits, applicable codes, regulations and industrial standards for waste management. The Environmental Inspection staff or other authorized personnel will ensure waste management policies and procedures used to handle and dispose of all wastes associated with construction are followed. In the event of a spill, the Spill Contingency Plan (see Appendix H) will be implemented.

Specific Measures

The following mitigation measures will be implemented:

- all reasonable preventative measures will be taken to avoid the release of wastes or hazardous materials into the environment;
- all waste and hazardous material spills will be reported to the Environmental Inspector(s) and Construction Manager, and to the NEB and Environment Canada 24 hour call in number and to Alberta Environment in accordance with applicable regulations;
- all waste and hazardous material spills will be thoroughly cleaned up as soon as possible;
- where a choice of products exists to perform the same function, the least hazardous product for the application will be selected;
- wherever reasonable to do so, wastes will be recycled; and
- hazardous and waste materials will, to the extent practical, be disposed of or moved to a secure staging area as required.

Description and Effects of Wastes and Hazardous Materials

Waste and hazardous materials have been divided into three categories for discussion of storage, handling, and disposal procedures.

Solid Non-hazardous Wastes

Solid, non-hazardous wastes are garbage and debris generated by human activity during construction. Although non-toxic in nature and unlikely to result in any harmful effects, these materials are generally considered a nuisance and can be further divided into domestic, building and industrial wastes. Domestic wastes include garbage such as food and consumable product wrappings; building and industrial wastes include quantities of spent welding rods, grinder pads, wood, wire, survey stakes and flagging tape, used geo-textile and polyethylene.

Industrial Wastes

Industrial wastes are wastes and products generated during pipeline construction include:

- pipe coating materials;
- used lube filters;
- spent grease cartridges;
- containers and cans (oil, antifreeze);
- drilling mud (depending on additives); and

- contaminated soil, vegetation or absorbents which might contain hydraulic fluid, gasoline, diesel fuel or lube oil.

Liquid Products and Wastes

Liquid wastes pose the greatest threat to the environment due to their ability to flow and to seep into porous material if not properly contained. Some liquid wastes such as lubricating oil, methanol and antifreeze contain components that are toxic to plants and animals. In addition, many of these materials are readily flammable or explosive. Antifreeze (ethylene glycol) is toxic and has a sweet smell that might attract wildlife. Should these products enter the environment, localized contamination would require either removal of contaminated soil and vegetation or in -situ remediation. Materials that are likely to be found on the construction sites include: fuels (e.g., gasoline, diesel and, propane); lubricants (e.g., engine oil, transmission or drive train oil, hydraulic oil, gear oil, and lubricating grease;), coolants (e.g., ethylene glycol, and propylene glycol); methanol; sewage; paints; solvents; and film processing chemicals.

Handling, Storage, Use, and Disposal

All contractors, subcontractors and employees of Keystone will be required to comply with applicable regulations for the containment, handling, manifesting, and disposal of wastes and potentially hazardous materials.

Specific Measures

1. The contractor will provide Keystone with a list of potential wastes that could be generated as a result of construction activity and the appropriate classification of the waste facility proposed for disposal of construction wastes. The contractor must obtain approval for its plan from Keystone prior to the start of construction
2. The contractor shall register with the appropriate provincial government department with respect to hazardous materials (to obtain a hazardous waste generator number or equivalent) and shall, at that time, provide detailed manifest information regarding the location of the staging areas, the types of waste that will be produced, and the transport vehicle that will be collecting the waste for disposal.
3. Personnel who will be handling potentially hazardous materials will possess valid Workplace Hazardous Materials Information System (WHMIS) certification.
4. All hazardous materials stored on the Project site will be labelled according to WHMIS regulations.
5. Waste materials from the construction of the Project will be contained, manifested, transported and disposed in accordance with all relevant provincial and federal regulations:
6. Fuel and service vehicles will carry:
    - fire extinguishers;
    - shovels and fire blankets;
    - polyethylene sheeting or equivalent, for placing under vehicles to be serviced; and
    - a minimum of 25 kg of commercial sorbent material as well as sorbent pads.
7. Before the initiation of construction activities, the contractor will ensure all spill response equipment and materials are readily available.
8. Construction staging areas will be selected and designated to:

- avoid water bodies and runoff channels, sensitive vegetation, highly permeable soils, steep slopes and water supply wells;
- prevent vehicle incidents by providing unobstructed access for delivery vehicles and emergency vehicles;
- provide safe storage areas, including secondary containment, for all liquid hazardous materials and wastes; and
- provide unobstructed access to and egress from emergency response materials and equipment.

9. Wastes and bulk products will be stored in designated areas except for quantities generated or required for daily construction activities.

10. Bulk fuel, oil or hazardous materials required to be stored onsite will not be located within 100 m of a waterbody.

11. Bulk storage tanks will be contained in a bermed area lined with an impervious liner. Containment berms will be large enough to contain 125 percent of the largest tank in the containment area. Any rainwater that accumulates in the containment structure might be removed if authorized by the Environmental Inspector. If there is visible hydrocarbon sheen, the water will be collected for disposal at an approved facility.

12. The Contractor will visually inspect above ground tanks on a regular basis, as well as when the tank is refilled. The Contractor shall maintain inspection records for each tank. Should a leak be detected, remedial action will be immediately taken.

13. The Contractor shall ensure that all sub-contractors (bulk fuel suppliers, etc) follow their respective companies practices and procedures, as well as applicable Federal, Provincial Acts, Legislation and Regulations or local requirements when transporting, handling and/ or disposing of fuel or other materials related to project sites and activities.

14. Contaminated soil resulting from construction activities and equipment will be disposed of at a Class I approved facility. The contractor will provide Keystone a waste manifest and a list of facilities for approval.

15. Hazardous materials will be appropriately labelled in accordance with the Transportation of Dangerous Goods Act and WHMIS regulations for worker protection during handling and incident response. Materials Safety Data Sheets (MSDS) will be available for each product stored at a particular construction yard or staging area.

16. Hazardous waste and material storage areas will be clearly identified and secured.

17. Containers and tanks will be closed when not in use. Drain valves will be locked to prevent accidental or unauthorized releases.

18. Procedures for safe loading and unloading of bulk products will be as follows:

- service vehicles must be equipped with automatic shut-off valves;
- the vehicle will be grounded if the product is flammable;
- the operator will observe loading and unloading operations at all times; and
- when completed, the operator will examine all outlets for leakage and take corrective action if warranted.

19. Each construction crew will be equipped with adequate garbage receptacles for solid non-hazardous wastes and debris. These materials will be collected daily or as they are generated, and disposed of at a facility approved by Keystone. The contractor will provide verification to Keystone that the waste was disposed at the approved facility.

20. Receptacles for industrial wastes generated during construction will be provided to keep them segregated from non-hazardous waste. Used oil and oil filters will be placed in

sealed containers and delivered for disposal by a qualified service contractor. Copies of waste manifests will be provided to the Environmental Inspector(s).

21. Portable domestic sewage facilities and vacuum truck services will be provided on each spread.

Appendix F: Directional Drill Mud Release Contingency Plan

Objectives

The contingency plan outlined below has been developed and will be employed to meet the following objectives:

- to ensure the contractor has measures in place to minimize potential effects in the event of an inadvertent mud release during a directional drill; and
- to ensure corrective action processes are in place to properly manage inadvertent releases of drilling mud.

The Contractor shall provide a Directional Drill Mud Release Contingency Plan to Keystone for review and approval. Some specific measures are noted below, and the Contractor is responsible for implementing and maintaining all mitigation measures unless otherwise specified.

Specific Measures

Cleanup Plan	1.	A cleanup plan will be developed before commencement of drilling and will be available on site. The plan will be prepared by the drill contractor in consultation with Keystone inspection staff. The appropriate approvals to access the release area if off RoW and for mud pump-off will be acquired prior to drilling.
	2.	The contractor will ensure that supervisory personnel are aware of the contingency plan and cleanup plan before commencement of drilling activity.
Surface Casing	3.	Install surface casing at the entry point to a depth that extends beyond the coarsest material, if required by the design or the Companies HDD Consultant.
	4.	Install surface casing at the exit point, after completion of the pilot hole if coarse textured near-surface deposits could interfere with drilling mud circulation, if required by the design or the Companies HDD Consultant.
Mud Composition	5.	Ensure that drilling mud composition is limited to bentonite, fresh water and, if warranted, other inert additives.
Drilling Sumps	6.	Construct berm(s) or sump(s) using clay subsoil's down slope from the directional drill entry point and proposed exit point with a capacity adequate to capture anticipated volumes of drilling mud that could be released during pullback and or other drilling operations.
Contingency Plan Equipment	7.	Certain equipment will be required onsite in sufficient quantities during drilling operations to contain any inadvertent drilling mud releases. This equipment might include: • sandbags (25); • filter cloth (e.g., silt fence) (2 rolls); • t-bar posts (12); • clean, weed free straw bales (12); • shovels (2); • 6 mil polyethylene or equivalent (1 roll); and • Two trash pumps each complete with 200 metres of leak free hose and suction heads.
	8.	The contractor will maintain vacuum trucks onsite during pullback operations, as necessary.

Monitoring	9. Contractor's personnel will monitor on-shore during drilling, reaming and pullback operations to ensure that contingency plan measures will be implemented immediately and effectively, as required. Keystone will also assign inspection personnel to the site during all phases of drilling of the watercourse.
	10. The contractor will monitor and record the amount of fluid return to the mud tank/pit and the amount of makeup drilling fluid required in the mixing tanks during drilling of the pilot hole and reaming.
	11. Monitor both onshore and appropriate instream portions of the drill path and surrounding area (i.e., as per project approvals and Codes) for signs of drilling mud release. The size of the area to be monitored will be determined by evaluating geotechnical conditions (i.e., amount of fracturing, type and depth of substrate) and drilling conditions (i.e., depth of drill path, distance between watercourse, and entry and exit points). Monitoring will be on a continual basis during drilling operations, and will continue for at least 12 hours after shutdown. Ensure that contact is maintained at all times between monitoring and drilling personnel.
	12. The Contractor shall maintain proper lines of communication with the water quality monitors at all times to ensure onshore and instream monitoring is conducted as efficiently and effectively as possible.
Water Quality Monitoring	13. Keystone will have a water quality monitoring program in place before start of drilling. The plan will include the following information: • Sample locations (both an upstream control site as well as appropriate downstream sites); • Frequency of sampling; and • Sampling procedures • Communications with the Contractor
	14. The contractor will increase the frequency of on-shore foot traverse/ monitoring, if monitoring of drilling mud returns indicate that a release might have occurred.
Geotechnical Information	15. Keystone has completed a geotechnical borehole investigation at each crossing to assess the subsurface soil conditions. Keystone will design each crossing to optimize constructability with the subsurface conditions and will hire a qualified contractor to install each crossing.
Pilot Hole Deviation	16. If the pilot bore encounters conditions that interfere with steering accuracy, then the contractor, with Keystone's approval, will need to take the appropriate action to complete the crossing. These actions could include: • accepting the new drill path; and/or • adjusting the depth of the borehole path so the drill can avoid the problematic stratum; or • pulling out, moving over, and drilling a new pilot hole; or • abandoning the drill and employing an alternative crossing method.

Loss of Circulation	17. If loss of circulation is encountered during the directional drill, then the contractor and Keystone will need to assess the extent of fluid loss, determine its likely cause, and take the best remedial action. These actions might include: • determining the acceptable amount of fluid loss, and continuing to drill/ream/pull; or • stopping the operation, re-establishing circulation, and restarting the operation; or • abandoning the hole, moving over, and starting a new crossing path; or • abandoning the drill and employing an alternative crossing method.

Appendix G: Contaminated Soils Contingency Plan

Contaminated Soils Contingency Plan

Soil excavation is required for the installation of the Project. During these activities, it is possible that soil (and accompanying water) suspected of contamination from known or unknown sources might be encountered. The purpose of this contingency plan is to set out the recommended steps for consistent, safe and environmentally responsible handling of contaminated soil (and accompanying water).

Goals

The contingency plan outlined below has been developed and will be employed to:

- minimize adverse effects to an acceptable level (see Keystone's Contaminated Soils Environmental Field Procedures, and CCME 1997 Recommended Canadian Soil Quality Guidelines)
- ensure appropriate federal and provincial reporting (see Appendix H: Spill Contingency Plan)
- maintain a safe working environment on the RoW or facility site
- employ environmentally and economically responsible construction practices at all times and in accordance with applicable industry standards

Keystone, its contractor(s), and subcontractor(s) are responsible for implementing and maintaining all mitigation measures unless otherwise specified.

Known Contaminated Sites

Contaminated soils will be excavated and stored onsite in approved locations for disposal.

1. Contaminated soils will be manifested and disposed of in accordance with the waste management plan and Canadian Council of the Ministers of the Environment (CCME), as applicable.

If conditions dictate an environmental risk to adjacent properties, Keystone will direct the contractor to install additional measures such as an impervious berm around the work area; lined sediment ponds; and additional soil and water testing to monitor the potential for offsite product migration and contamination.

Unknown Contaminated Sites

In the event a suspected contaminated area is encountered, the procedure will be as follows:

1. The contractor will suspend all work in the immediate area.
2. The contractor will immediately notify the Construction Manager and Environmental Inspector of the situation.
3. Keystone will conduct a preliminary site assessment to determine whether the soil in question is potentially contaminated.
4. Keystone will assess whether the soil in question could potentially be contaminated based on:
    - the specific location of the suspect/contaminated soil
    - adjacent land uses
    - how it was encountered (excavated, oozing, flowing, solid, etc.)
    - quantity of contaminant (volume of soil/liquids)
5. Based on the site indicators, including olfactory and visual indicators, Keystone might decide a third party consultant is required to determine if the site is contaminated, including the necessity for boreholes or test pits to sample and test soils.
6. An incident report will be provided to the NEB as to the suspected contaminated area in accordance with the Onshore Pipeline Regulations, 1999; s. 52.
7. The contractor will secure the area and any suspect excavated soil, and any unnecessary contact/disturbance of the soil will be avoided. Potential securing methods include:

- placing the excavated soil on a impervious liner
- covering the excavated soil with an impervious membrane to isolate it from weather events
- storing the excavated soil away from any watercourses, wetlands, or crops
- placing impermeable berms around the excavated material to isolate and contain the soil

8. If an excavation can be safely left open, the area will be secured until further direction can be obtained. If the excavation cannot be safely left open, it will be backfilled with its own excavated materials.
9. Work will be suspended if:

    - continuing to excavate in a suspect/contaminated site could pose a threat to the health and safety of the worker(s) (see CCME 1999. Canadian soil quality guidelines for the protection of environmental and human health)
    - issues of non-compliance with environmental legislation might result from continuing to work in areas of contaminated soils
    - Resolution of the management of contaminated materials will include the following points:
    - completion of the work
    - ensuring compliance concerns are addressed
    - ensuring health and safety concerns are addressed (see CCME 1999. Canadian soil quality guidelines for the protection of environmental and human health)
    - ensuring proper manifesting, removal, treatment, and disposal of any soil and/or waters where Keystone has responsibility (see Appendix H: Spill Contingency Plan)

10. Contaminated soils will be excavated, stockpiled, manifested, and disposed of at an approved facility. Based on olfactory and visual indicators, specialists will be deployed to the area to direct cleanup and disposal of contaminated materials.

Appendix H: Spill Contingency Plan

Spill Contingency Plan

Objectives

The spill contingency plan outlined below has been developed and will be employed to meet the following objectives:

- to ensure the contractor has measures in place to minimize potential effects on the environment in the event of a spill or accidental release; and
- to ensure corrective action processes are in place to properly manage spills and accidental releases during construction.
- To ensure that before the initiation of construction activities, the contractor has all spill response equipment and materials readily available.

The contractor is responsible for implementing and maintaining all mitigation measures unless otherwise specified.

Specific Measures

Materials	1.	Spill response materials and equipment will be readily available. Fuel and service vehicles will carry a minimum of 25 kg of commercial sorbent material, as well as sorbent pads and/or sorbent booms suitable for spill containment and cleanup on open water.
Watercourse	2.	Where immobile equipment is required to operate within 100 metres of a waterbody, the following measures will be employed: • all containers, hoses and nozzles are to be maintained free of leaks; and • operators are to be stationed at both ends of the hose during fuelling, unless the nozzle ends are visible and readily accessible by one operator, and an automatic valve shut off is located on the hose.
Initial Response	3.	In the event of a spill of hazardous material, the first person on the scene will: • if possible without further assistance, control danger to human life (e.g., remove ignition sources); • identify the material spilled and implement appropriate safety procedures; • based on the nature of the hazard cut off the source of the spill if possible; • immediately obtain the assistance of others and begin to contain and clean up the spill; and • Follow the Contractors procedures and notify the Construction Manager and Environmental Inspector(s).

	4.	The Contractor will immediately ensure that: • action is taken to control danger to human life; • an onsite Safety Supervisor is designated; • the appropriate provincial services, local police and RCMP have been notified if a risk to the public exists; • the necessary equipment and personnel are mobilized and measures are being implemented to stop the source of the spill and commence cleanup; and • a spill contingency kit will be available at the site.
	5.	The contractor will make all necessary resources available to contain and clean up the spill.
	6.	Once the emergency contacts are made by Keystone and the initial efforts to contain and clean up the spill are underway, the Environmental Inspector will notify Keystone's environmental representative and the appropriate government agencies (including NEB, Alberta Environment, ERCB, Saskatchewan Environment, Saskatchewan Energy and Resources, Fisheries and Ocean), and the local fire department (see Table H-1).
	7.	Volumes of spills to be reported are located in Table H-2.
Containment Procedures	8.	Containment measures will be immediately initiated to limit the spread of the spill, minimize effects on water bodies or other areas of environmental concern, and to prevent damage to property.
	9.	If the spill source is a leaking fuel truck, the tanker will be pumped dry and the contents will be transferred into another tanker or other appropriate and secure container(s).
	10.	Culverts will be blocked to limit spill travel.
	11.	A shallow depression will be excavated or surface berm constructed in the path of the spill to stop and contain flow. If practical, without delaying containment efforts, topsoil will be salvaged and stored separately during excavations.
	12.	All free product will be collected and transported to an approved waste treatment facility.
	13.	Sorbent materials will be applied to contain and recover spilled material.
	14.	Heavily contaminated soil and vegetation, as well as sorbent material will be collected, manifested, and disposed of at an approved waste treatment and disposal facility.
	15.	No traffic will be allowed on contaminated areas.
	16.	The spill will be documented and a report describing the type of spill, cause of spill, location, and the cleanup and reclamation procedures undertaken. Confirmatory samples may be taken, if warranted, after all cleanup has finished to ensure all contaminated material has been removed. For larger spills that may cause an adverse affect, documentation may include the preparation of a sketch with dimensions showing the spill location and other relevant details to support a potential investigation.
	17.	Wildlife and livestock will be restricted from entering the affected area by fencing.

	18.	Final cleanup and reclamation will be conducted following appropriate laboratory analysis of contaminants and approved by the appropriate provincial or federal regulator (see CCME 1999. Canadian soil quality guidelines for the protection of environmental and human health).
Spills Adjacent to or in a Waterbody	19.	Berms or trenches will be constructed to contain spilled product and prevent its entry into a waterbody.
	20.	If spilled material enters a waterbody, booms, skimmers and sorbents will be deployed, if practical, to contain and recover the spilled material.
	21.	Free product will be recovered or, where access is not possible, ignited to reduce quantities and potential for migration.
	22.	Contaminated areas, including downstream shorelines, will be cleaned up in consultation with spill response specialists and the appropriate government agencies.
Reclamation	23.	The Environmental Inspector, in consultation with the Construction Manager and Keystone's environmental representative will determine appropriate methods to remove or restore contaminated soils. Heavily contaminated soil and vegetation will be manifested and disposed of at an approved facility.
	24.	Since effects from small spot spills can generally be minimized if immediate action is taken, all small spot spills will be cleaned up immediately by the first person onsite and then reported to the Environmental Inspector. Spills will be cleaned up either by using a shovel or backhoe and the contaminated material will be placed in 45 gallon drums, manifested, and disposed of by the Contractor at an approved facility.

Table H-1 Spill Reporting Authorities

Province	Federal Authority	Notes
For all NEB regulated Facilities, regardless of Province	Transportation Safety Board* Phone: 1-819-997-7887 Facsimile: (403) 299–3913 NOTE: The Transportation Safety Board will notify the NEB of any reportable spills	"incident" means an occurrence that results in (a) the death of or serious injury to a person; (b) a significant adverse effect on the environment; (c) an unintended fire or explosion; (d) an unintended or uncontained release of LVP hydrocarbons in excess of 1.5 m3; (e) an unintended or uncontrolled release of gas or HVP hydrocarbons; (f) the operation of a pipeline beyond its design limits as determined under CSA Z662 or CSA Z276 or any operating limits imposed by the Board. (incident) Transportation Safety Board will notify the NEB. Note that Keystone is still required to report the incident to the National Energy Board in accordance with Memorandum of Understanding between the NEB and TSB
Alberta: Alberta Environment 24 Hour Spills 1-800-222-6514	Environment Canada Spill Reporting 403-499-2432	Any spill, release, or emergency that might cause, is causing, or has caused an adverse effect to the environment
Saskatchewan: Saskatchewan Energy and Resource Management 24 Hour Spills 1-800-667-7525	Environment Canada Spill Reporting 403-499-2432	All spills of refined products that exceed reporting limits noted below; all spills of refined products that enter a main watercourse or navigable water body; all spills of refined products that occur while under transport.

Table H-1 Spill Reporting Authorities (cont'd)

ALBERTA			
COMMUNITY	**RCMP**	**Ambulance and Fire**	**HOSPITAL OR HEALTH CENTRE**
Hardisty	780-842-4461 (Wainwright)	911	780-888-3742
Wainwright	780-842-4461	911	780-842-3324
Provost	780-753-2214	911	780-453-2291
Coronation	403-578-3622	911	403-882-3434
Consort	403-577-3000	911	403-577-3555
Oyen	403-664-3883	911	403-664-3526
Medicine Hat	403-548-2222 (Red Cliff)	911	403-529-8000 (Ambulance)
A.P.S.S. (Alberta Public Safety Services) Disaster Services and Dangerous Goods Incidents			800-272-9600
Environmental Emergency (Alberta Environmental Protection)			800-222-6514
Forest/Prairie Fires (Alberta Government)		780-427-6807	Emergencies: 310-3473
Alberta First Call			800-242-3447

SASKATCHEWAN			
COMMUNITY	RCMP	Ambulance and Fire	HOSPITAL OR HEALTH CENTRE
Maple Creek	306-662-5550	911	306-662-2611
Swift Current	306-778-4870	306-773-2666	306-778-9400
Gull Lake	306-672-3140	911	306-672-4700
Shaunavon	306-297-5550	306-297-2644	306-297-2644
Eastend	306-297-5550	911	306-295-3534
Saskatchewan Power 306-566-3033			
Swift Current 1-888-757-6937			
Government of Saskatchewan Natural Emergencies			Emergencies: 1-800-667-7525

Table H-2 Release Reporting Criteria

National Energy Board					
	Substance	Amount		Units	Comments
	Low Vapour Pressure Hydrocarbons	1.5		m3	
Alberta (specific substances regulated under Alberta Release Reporting Regulation, (AR 117/93)					
	Substance	Amount		Units	Comments
	Containers & scrap				releases to watercourse or adverse effect
	Diesel	=>	200	L	or adverse effect
	Gasoline	=>	200	L	or adverse effect
	Glycols			Adverse effect	
	Hydraulic oil			Adverse effect	
	Ozone depleting substances	=>	10	kg	
	Persistent plastics and materials			releases to watercourse or adverse effect	
	Used oil	=>	5	kg or L	and adverse effect
	Refined products (e.g., diesel, gasoline, sulphur, sweeteners, inhibitors, treating chemicals)			Amounts listed in TDGR Clear Language or adverse effect	
Alberta (Federal TDGR regulated substances) reportable under Alberta Release Reporting Regulation, (AR 117/93)					
Class	Division	Amount		Units	Comments
3	Flammable liquid	=>	200	L	(According to the TDG Clear Language limit)
4	Flammable solid	=>	25	kg	(According to the TDG Clear Language limit)
9	Environmentally hazardous substance		25	kg	(According to the TDG Clear Language limit)
Alberta (reportable to ERCB)					
	Substance	Amount		Units	Comments
	Unrefined products e.g., conventional crude oil, LPG, diluent, condensate synthetic crude (on-lease)	=>	2 or 2000	m3 L	
Saskatchewan (reportable to Saskatchewan Environment)					
	Substance	Amount		Units	Comments
	Gasoline	=>	200	L	100 litres if spill is offsite
	Diesel Fuel	=>	200	L	100 litres if spill is offsite
	Bunker oils, kerosene, stove oil	=>	200	L	100 litres if spill is offsite
	Lubricating oils	=>	100	L	50 litres if spill is offsite
	Other petroleum products	=>	100	L	50 litres if spill is offsite

Appendix I: Weed Management Plan

Current as of June 1, 2010. To be updated as surveys are completed and will be filed with the National Energy Board consistent with Certificate OC-56 Condition 12, and 13 (b).

Keystone XL Pipeline Project

Updated Weed Management Plan

Revision 1

May2010

TransCanada Keystone Pipeline GP Ltd.
Calgary, Alberta

Prepared by:

Stantec Consulting Ltd.
Calgary, Alberta

and;

TransCanada Keystone Pipeline GP Ltd.
Calgary, Alberta

Keystone XL Pipeline Project
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April 2010

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Appendices

1.0 INTRODUCTION

In February 2009, TransCanada Keystone Pipeline GP Ltd. (Keystone) filed the Keystone XL Environmental and Socio-Economic Assessment (ESA) with the National Energy Board. Included in the Environmental Protection Plan (Appendix A, Attachment A9 of the ESA) was a Weed Management Plan (WMP).

This updated WMP has been prepared in accordance with the National Energy Board OH-1-2009 Reasons for Decision, Condition 13(a)(iii), and includes evidence of consultation with appropriate provincial and federal agencies and directly affected landowners. The updated WMP will be incorporated into the Keystone Environmental Protection Plan, due to be submitted to the National Energy Board prior to the start of construction, in accordance with Condition 13(a)(iii).

1.1 Objective

The objective of the WMP is to prescribe methods to prevent and control the spread of restricted, noxious, and invasive plants on the Keystone XL Pipeline Project (the Project) during pre-construction, construction, and operations.

1.1.1 Short-Term Objectives

Short-term objectives which will be implemented in the preconstruction and construction phases of the Project, based on land use and existing vegetative cover, include:

- identifying locations of restricted and noxious weeds and invasive plants on facility sites, along the right-of-way (RoW), and along access roads
- preventing the spread of restricted and noxious weeds and agronomic invasive plants on facility sites, along the RoW and access roads (as defined in Section 2.1.1), by implementing effective mitigation measures
- working in co-operation with municipal, provincial, federal representatives, and landowners to use effective weed management strategies.

1.1.2 Long-Term Objectives

Long-term objectives which will be implemented post-construction, based on land use and existing vegetative cover, include:

- reducing existing infestations on the pipeline RoW and associated facility sites, to a level equivalent to that observed in adjacent lands with equivalent or similar land use

- preventing the spread of restricted and noxious weeds and agronomic invasive plants on the pipeline RoW and associated facility sites
- addressing landowner issues
- working co-operatively with municipal, provincial, and federal representatives, as well as landowners to actively evaluate and use new weed management techniques and practices to improve the WMP.

1.2 Reporting and Accountability

Keystone is committed to ensuring that the WMP for the Project is effectively implemented and well documented. The WMP will be reviewed and revised as required to ensure that the most effective vegetation monitoring and weed control practices are used.

2.0 WEED MANAGEMENT PLAN

There are six elements of a MWP:

- identification
- treatment thresholds
- treatment options
- prevention
- monitoring
- evaluation

A summary of each element is provided in the following sections.

2.1 Identification - Preconstruction Weed Survey

2.1.1 Introduction

The purpose of the Preconstruction Weed Survey is to identify infestations of noxious and restricted weeds, and invasive agronomic grasses of concern, providing baseline data for determining treatment thresholds and for assessment as to whether objectives of the WMP are being achieved.

A Preconstruction Weed Survey will be conducted in native range, in hay/tame pasture at sites of known infestations, and at sites where there is a higher potential for restricted and noxious weeds and invasive plants to exist. Cultivated lands (lands used for annual crop production) will not be surveyed unless there is existing information on a weed problem.

Within these land uses, the weed survey will be conducted on these specified areas:

- RoW: the area defined by the grade plan, including Extra Temporary Workspace
- Access Roads: roads or trails that require a minor upgrade used to access the RoW or facility sites
- Facility Sites:
  - pump stations
  - Valve sites and associated new or upgraded access by project
  - temporary work camps (if upgrades are required)
  - temporary storage yards (if upgrades are required)

2.1.2 Survey Protocol

2.1.2.1 Survey Site Selection

Desktop Data Review

In order to define where surveys will be conducted, many sources of information will be reviewed:

- Vegetation data collected (in 2008 and 2009) on the Project: Surveys were conducted on native range for rare plants[1] and wetlands, and weed data was opportunistically recorded. Those noxious and restricted weeds and agronomic invasive plants of concern recorded in these surveys are listed in Table 2-1.
- Weed data opportunistically collected on the existing Keystone pipeline project
- Review of project footprint
- External weed information provided by regulators and landowners

Species records will be extracted from the data and used to identify specific survey locations for noxious and restricted weeds and invasive plants of concern on the RoW, access roads requiring upgrades and facility sites (the Project footprint). Surveys from sites of known infestations, or new sites of infestation identified during the survey, will be extended along the RoW up to 150 m, to determine whether the infestation may have spread (Hansen and Clevenger 2005, Tyser and Worley 1991).

Potential Sources of Infestation

Existing infrastructure is a potential source of infestation onto the Project footprint. Wherever existing infrastructure is intersected, or proximate, the Project footprint in the area of the intersection, or nearest to the infrastructure, will be surveyed for presence of noxious and restricted weeds and agronomic invasive plants of concern. Existing infrastructure that potentially could provide a source of infestation includes trails and roadsides, dugouts, cattle watering points, farmyards, gates and industrial sites. Landowners and occupants intersected by the Project will be consulted as part of the pre-construction assessment to determine if existing infrastructure is present, along with their knowledge of known issues. Keystone will utilize the landowner information as part of the determination for the applicability of a survey of the project footprint in relation to the infrastructure in that area.

Land use changes also raise the potential of weeds and invasive species – in head lands or along fence lines. In consideration of this, native range adjacent to cultivated land or hay/tame pasture, or hay/tame pasture adjacent to cultivated land, will be assessed for potential occurrence of noxious and restricted weeds and invasive plants of concern. Survey of the Project footprint at these locations will extend into the native range, or hay/tame pasture, where the potential for occurrence is considerable, or if noxious or restricted weeds or agronomic invasive plants of concern are encountered. Potential for occurrence will be determined in the field, based upon the condition of the candidate survey area. Native range or hay/tame pasture that is in good condition would be considered low potential for occurrence of weeds or

[1] Rare plant includes both provincially and federally listed plant species at risk.

invasive plants and would not be surveyed. Conversely, the Project footprint would likely be surveyed in native range that is heavily overgrazed, or hay/tame pasture in poor condition (e.g., uneven stand with patches of open ground) or recently seeded. Survey of the Project footprint in this case would be extended to a point where the condition of the vegetation cover improves – as it might with increasing distance from a dugout or fenceline, for example – and is therefore less susceptible to invasive, noxious or restricted weed species, or a change in land use occurs.

A survey schedule will be produced, providing a detailed listing of the specific locations (by legal description and kilometer post) and scheduled date for survey. The survey schedule will be submitted to Land Agents, to co-ordinate land access, before the crews are scheduled to be onsite.

Table 2-1 Noxious and Restricted Weeds and Agronomic Invasive Plants of Concern Encountered in KXL Project Area

Common Name	Scientific Name	Alberta Ranking	Saskatchewan Ranking	Plant Category[2]		
				Alberta	Saskatchewan	PFRA
Weeds						
Bindweed, field	*Convolvulus arvensis*	Noxious	Noxious	Category 2	Category 2	Category 1
Bluebur	*Lappula squarrosa*	Nuisance	Noxious	Category 2	Category 2	Category 2
Brome, downy	*Bromus tectorum*	Nuisance	Noxious	Category 1	Category 1	Category 1
Brome, Japanese	*Bromus japonicas*	Nuisance	Noxious	Category 1	Category 1	Category 1
Chamomile, scentless	*Matricaria perforata*	Noxious	Noxious	Category 2	Category 2	Category 1
Dogbane, spreading	*Apocynum androsaemifolium*	Noxious	-	Category 2	Category 3	Category 2
Green foxtail	*Setaria viridis*	Nuisance	Noxious	Category 3	Category 2	Category 1
Knapweed, spotted	*Centaurea maculosa*	Restricted	Noxious	Category 1	Category 1	Category 1
Mustard, tumbling	*Sisymbrium altissimum*	-	Noxious	Category 3	Category 2	Category 2
Night-flowering catchfly	*Silene noctiflora*	Nuisance	Noxious	Category 3	Category 2	Category 2
Round-leafed mallow	*Malva rotundifolia*	Nuisance	Noxious	Category 3	Category 2	Category 2

Common Name	Scientific Name	Alberta Ranking	Saskatchewan Ranking	Plant Category[2]		
				Alberta	Saskatchewan	PFRA
Sowthistle, annual	*Sonchus asper*	Nuisance	Noxious	Category 3	Category 3	Category 2
Sowthistle, perennial	*Sonchus arvensis*	Noxious	Noxious	Category 2	Category 2	Category 2
Spurge,leafy	*Euphorbia esula*	Noxious	Noxious	Category 1	Category 1	Category 1
Stork's bill	*Erodium cicutarium*	Noxious	-	Category 2	Category 2	Category 2
Tansy, common	*Tanacetum vulgare*	Noxious	-	Category 2	Category 2	Category 2
Thistle, Canada	*Cirsium arvense*	Noxious	Noxious	Category 2	Category 2	Category 1
Thistle, nodding	*Cordus nutans*	Restricted	Noxious	Category 1	Category 1	Category 1
Thistle, Russian	*Salsola pestifer*	Nuisance	Noxious	Category 3	Category 2	Category 2
Toadflax	*Linaria vulgaris*	Noxious	Noxious	Category 2	Category 2	Category 1
Agronomic Invasive Plants						
Bluegrass, Kentucky	*Poa pratensis*	-	-	Category 3	Category 4	Category 3
Brome, smooth	*Bromus inermis*	-	-	Category 3	Category 4	Category 3
Reed canary grass	*Phalaris arundinacea*	-	-	Category 3	Category 4	Category 4
Sweet clover, white	*Melilotus alba*	-	-	Category 3	Category 3	Category 2
Sweet clover, yellow	*Melilotus officinalis*	-	-	Category 3	Category 3	Category 3
Timothy	*Phleum pratense*	-	-	Category 3	Category 4	Category 4
Wheatgrass, crested	*Agropyron pectiniforme*	-	-	Category 3	Category 3	Category 3

[1] The plant category in Table 2-1 is determined by aggressiveness, range of habitat and the ease of control. The region and land disposition where the plant is found also influence the category rating. The rating is subject to discussion with regulatory authorities and will be reviewed on an ongoing basis.

- Category 1: plants are extremely invasive, capable of invading and dominating undisturbed habitats and very difficult to control when established.
- Category 2: plants are very invasive; they can become very prevalent and may form dense patches but usually do not dominate the entire site.
- Category 3: plants can invade undisturbed habitats but usually require some disturbance to gain entry; once established they usually do not become dominant.

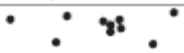
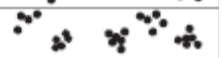
- Category 4: plants are aggressive, but relatively easy to control, and may go through cyclic fluctuations.

2.1.2.2 Survey Method and Timing

The Preconstruction Weed Survey will be completed by vegetation specialists traversing in a meandering pattern within facility sites, along the RoW and along access roads, in areas with high potential for weeds or invasive species, as described in Section 2.1.2.1.

If noxious or restricted weeds or agronomic invasive plants of concern are found, information will be recorded on the Weed and Invasive Plant Monitoring Form (see Appendix A). The Weed and Invasive Plant Monitoring Form details the infestation location, size, density, and species. The infested area within the project footprint will be delineated with on-the-ground flagging just prior to construction. The density of weeds and invasive plants of concern in the adjacent (20 m) buffer will also be recorded, where access allows, and used to establish post-construction treatment threshold, discussed in Section 2.2. Noxious and restricted weed and invasive plant density will be ranked according to the 13-point Alberta Sustainable Resource Development classes (Adams et al. 2005) (see Table 2-2).

Table 2-2 Density Distribution Guide for Rating Weed Infestation

Density Distribution		
Class	Description of abundance in polygon	Distribution
0	None	
1	Rare	
2	A few sporadically occurring individual plants	
3	A single patch	
4	A single patch plus a few sporadically occurring plants	
5	Several sporadically occurring plants	
6	A single patch plus several sporadically occurring plants	
7	A few patches	
8	A few patches plus several sporadically occurring plants	
9	Several well spaced patches	
10	Continuous uniform occurrences of well spaced plants	
11	Continuous occurrence of plants with a few gaps in the distribution	
12	Continuous dense occurrence of plants	
13	Continuous occurrence of plants with a distinct linear edge in the polygon	

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Accurate weed and invasive species identification is central to the success of the program. Weeds, like all other plant species, have specific times throughout the growing season when they are most readily identified. To ensure that as many species as possible are identifiable during the survey, a survey window of late May to the end of June has been defined. The Project spans a long distance and it is expected that in the southern regions, the optimum window for identifying species will be earlier than in the north; therefore, the survey will start at the south end and work north.

2.2 Treatment Threshold and Priority

Following identification of noxious and restricted weeds or invasive plants of concern (see Table 2-1) a decision will be made regarding the control of the infestation and the priority of treatment required to minimize the risk of the spread of weeds or invasive plants. Treatment threshold and priority differ for pre-construction and post-construction.

2.2.1 Pre-Construction

Pre-construction treatment will focus on restricted and noxious weeds and agronomic invasive plants of concern found on the Project footprint, including temporary or extra-temporary workspace, access roads and facility sites. Treatment options will be reviewed, with a decision and action for the appropriate level of treatment (could be mechanical or chemical treatment, or further monitoring) conducted prior to construction to help prevent their spread during construction. The extent of infestation adjacent to Project footprint is not a determining factor in the decision to control the infestation during the pre-construction phase. The purpose of preconstruction treatment is to apply effective measures, and the most appropriate level of control or additional monitoring to minimize the chances of spread, given the risk presented by the species, the local site conditions and the length of time available prior to construction to exercise control. Removal of foliage prior to seed set, or the application of systemic herbicide, to kill both above and below ground plant parts, are desired treatments, where applicable. Where the concern is the spread of live root fragments or seed in the topsoil, topsoil will be managed as described in the EPP. Efforts during the Post Construction Monitoring Program will determine whether follow up treatment may be required to control the infestation.

Control of agronomic invasive plants will be determined on a site-by-site basis. Where agronomic plants of concern are found along roadside ditches within the Project footprint, mitigation measures, including topsoil management, may be necessary to control the spread of these invasive plants. Control will not be considered where these species have been seeded for hay/tame pasture, revegetation of an adjacent RoW, or where these species have become a naturalized component of native rangeland. For example, control of Kentucky bluegrass or crested wheatgrass found in native fescue range in the northern portion of the Project would likely not be considered, because these species have become a common component of this grassland. In the southern portions of the Project, in the Mixed and Dry-Mixed grassland, Kentucky bluegrass is commonly found in moist soils along margins of wetlands. Control of Kentucky

bluegrass would not be considered in these situations because spread to the adjacent rangeland is not a concern as site conditions are generally too dry in the upland.

2.2.2 Post Construction

Post construction, the objective is to control infestations of noxious and restricted weeds and agronomic invasive plants of concern identified during the preconstruction weed survey, as well as any additional infestations identified during, and following, construction. The threshold at which treatment will be required and the priority of this treatment will be determined using plant categories (see Table 2-3) and site risk levels (see Table 2-4).

The treatment threshold levels are as follows:

- all noxious and restricted weeds and agronomic invasive plants of concern will be reduced and maintained at levels of density and distribution equivalent to or less than levels adjacent to the footprint, with equivalent or similar land use;
- noxious and restricted weeds and agronomic invasive plants of concern must be treated in compliance with relevant provincial regulations including Weed Control Acts, and existing local or provincial land use guidelines.

Table 2-3 Treatment Thresholds for Noxious and Restricted Weeds and Agronomic Invasive Plants of Concern Within the Project Footprint

Plant Category	Site Risk Level		
	1	2	3
1	Priority 1	Priority 1	Priority 1
2	Priority 2	Priority 3	Priority 4
3	Priority 2	Priority 3	Priority 4
4	Priority 3	Priority 4	Priority 5

The priority assigned to a weed or invasive plant is based on the species, plant category, the size of the infestation and the site susceptibility.

- Priority 1: action required as soon as possible; immediate suppression treatment required (e.g., cut to prevent seed set), to be followed up with treatment when conditions are optimal
- Priority 2: action required as soon as conditions are optimal for treatment
- Priority 3: treat when conditions are optimal and once all Priority 2 sites have been treated
- Priority 4: assess again and treat within the next year to prevent the spread of weeds
- Priority 5: assess again the following year and treat once Priority 4 sites have been treated

The priority for treating sites where the threshold has been reached will be determined using the matrix provided in Table 2-3, and will be based on information provided in Tables 2-1 and 2-4.

Table 2-4 Site Risk Levels

Risk	Purpose or Intent
1 High Risk	To stop the spread of invasive plants currently threatening non-infested or highly susceptible sites including cultivated, hay and pasture lands. Infested areas on facility sites, the RoW and access roads will be considered Priority 1 if the Vegetation Specialist identifies a high potential for these plants to spread off the site and invade agricultural areas, or if the site is adjacent to roads, railways or waterways.
2 Moderate Risk	To stop the enlargement of sites in less susceptible areas. This includes sites adjacent to lands that have a well-established vegetation cover and are therefore less susceptible to invasive or noxious or restricted weed species introduction.
3 Low Risk	To stop the enlargement/contain sites on and adjacent to industrial lands

Each infestation site within the Project footprint will be assigned a site risk level based upon the criteria outlined in Table 2-1. The sites of infestation will be detailed in a company database administered by Keystone's Calgary office. This database will provide information designed to assist Vegetation Specialists and weed management contractors at regional levels to determine the site risk level for the area of concern. This information will be shown on the Environmental Alignment Sheets and includes land use and any specific environmental issues that Environmental Co-ordinators, operators and weed management contractors should be aware of including:

- location of any nearby watercourses or waterbodies
- rare plants
- concerns that the local land authority or adjacent landowners have expressed

This information will be updated as required and will include any additional information about weeds identified at the site and additional site plans for other facilities or segments of the RoW or access roads where a need for weed control arises. The site priority will be reviewed annually as part of the review of the overall WMP.

2.3 Treatment Options

When an established treatment threshold has been exceeded, an approved course of action will be taken that considers all options that are available for any particular vegetation complex and the treatment priority guidelines.

A Weed and Invasive Plant Monitoring Form (Appendix A) will be completed prior to a weed management decision being made. This form outlines the environmental considerations that must be taken into account and the rationale for choosing a particular treatment option. Protection of waterbodies, landowner requirements, local/ provincial guidelines, type of equipment being used, potential for drift, the soil type and the slope of the ground will be considered when deciding on the most appropriate treatment.

Protection of the various environmental features may require appropriately-sized buffer zones around established pesticide free zones (PFZs) that take into account such factors as the type of equipment being used, the potential for drift, the soil type and the slope of the ground.

Depending on the type of vegetation to be controlled, mechanical or manual, (introduction of desirable grass species) or chemical (herbicide) weed management options will be considered by Keystone or their contractors for vegetation control on the facility sites, the RoW or access roads. An integrated approach, combining chemical and non-chemical treatment options, is generally most effective when tailored to the species and conditions on the facility site, RoW or access road.

Once treatment priorities and thresholds have been established, a timeline and list of treatment areas will be developed and an appropriate treatment will be determined and evaluated based on:

- whether the ground is bare or vegetated
- location of the problem area
- accessibility to the problem vegetation (terrain, slope remote areas);
- safety issues regarding Keystone staff, contractors and the public
- short- and long-term impacts of the method(s) being considered
- expected efficacy of the method(s) being considered
- benefits and limitations of each method
- cost-effectiveness of each method
- environmental considerations such as proximity to water sources, waterbodies, areas where food is grown for human consumption, riparian areas, wildlife and fish habitat
- the choice of herbicide, herbicide properties and toxicity, and appropriate application methods, techniques and equipment.
- consultation with affected landowners, and appropriate regulators.

2.4 Implementation

2.4.1 Prevention

Prevention is the least expensive and most effective way to halt the spread of weeds and invasive plants. Preventing the establishment or spread of noxious and restricted weeds and agronomic invasive plants of concern will rely upon:

- educating workers about the importance of identification and management of noxious and restricted weeds
- properly identifying weed species and agronomic invasive plants of concern
- avoiding or treating existing noxious and restricted weed and invasive plant populations

- incorporating mitigation measures that prevent weed or invasive plant seeds or other plant parts from establishing new or bigger populations

2.4.2 Pre-Construction Weed Management

Restricted and noxious weeds and agronomic invasive plants found on proposed facility sites, the RoW or access roads will be identified and a plan for monitoring and/ or treatment will be implemented prior to construction as required (see Section 2.2.1), to help prevent their spread during construction. Post construction monitoring will determine the need for follow up treatment.

2.4.3 Post Construction Monitoring and Weed Management

Under NEB Condition 19, Keystone is required to conduct post-construction environmental monitoring for 5 years following commencement of operation. Keystone's Post Construction Monitoring program includes the Weed Management Plan.

2.4.3.1 Monitoring

Monitoring will consist of regular inspections of known infestations to determine the areal extent of weed problems and will provide the information needed to determine:

- whether follow-up treatment (i.e., after the pre-construction control treatment) is necessary
- the best timing of treatments
- the best treatment option

Monitoring will be conducted by a Vegetation Specialist or a qualified environmental monitor where deemed appropriate.

On-ground weed monitoring of known infestations of noxious and restricted weeds and invasive plants of concern will be conducted at least once during the growing season. Specific target species, such as downy brome, may require an additional site visit/ treatment.

Areas inspected will include:

- areas on facility sites and along the RoW and access roads where infestations have been identified and controlled prior to construction.
- areas of infestation identified during construction

2.4.3.2 Weed Management

Weed management activities during construction and operations will take place in the spring, summer or fall, depending on:

- weed species and agronomic invasive plants identified

- optimal time for treatment of the target species
- treatment priority
- ideal treatment type

The Vegetation Specialist or environmental monitor, in consultation with the weed management contractor, will determine the frequency of weed management activities required until the weed problems return to below the threshold level, based on the available and effective treatment strategies.

2.5 Evaluation

The effectiveness of the WMP will be evaluated as required as part of the Post-Construction Monitoring Program. More frequent post-treatment evaluations are mandatory for all treatment areas following herbicide application.

Accurate records of weed monitoring results, as well as all weed control activities will be retained by Keystone at the appropriate office, to ensure consistency in meeting the short- and long-term objectives of the WMP.

3.0 CONSULTATION

3.1 Regulatory Consultation

Regulatory consultations pertaining to the WMP are outlined in Table 3-1. Responses were not received from the Special Areas Board or Saskatchewan Environment. Consultation documentation is appended to this report (see Appendix B).

Table 3-1 Summary of Regulatory Consultation

Date	Agency	Comment	Response
March 5, 2010	Alberta Sustainable Resource Development – Geoff Smith	Smith indicated that if no comments are provided in response to a document, it is to be understood that his department has no concerns..	N/A
April 16, 2010	Alberta Sustainable Resource Development – Pat Porter	The document is definitely comprehensive. Porter has a couple of additional comments to offer. Noxious /Restricted and Agronomic Invasive Plants of Concern (Table 2-1, 2-4). Suggests including Absinthe (Artemisia absinthium); Common Burdock (Arctium minus) and Baby's Breath (Glysophila spp.) and Black Henbane (Hyoscyamus niger) – poisonous, rarer. These species are also present in area (Wainwight, Czar, Provost, Bodo) and are increasing in distribution (maybe not the Black Henbane). May also wish to mention, "But not limited to these species listed in tables." Chemical Control Options (section 5-2.6). No Treatment Zone (NTZ). Should this not also state a specified parameter (distance) like 45m buffer	Species suggested are no listed as noxious or restricted in Alberta and are not on the Saskatchewan Noxious Species List. No changes were made to the document. On Page 5-2, under the Chemical Control heading, item 6 specifies " Do not apply herbicides within the No Treatment Zones (NTZ) or PFZ of water, both fish-bearing and non-fish bearing, and classified wetlands, measured

Date	Agency	Comment	Response
		zone from wetlands/riparian areas? 30m should be considered the absolute closest one could spray weeds next to a wetland. Noted that water wells/water intakes are properly covered off in item 5-2.5 at 30m.	horizontally from the high watermark. Check the appropriate Acts and Regulations for NTZ and PFZ for specific herbicides". As a 30 m zone is specified, no changes to address 45 m were added to the document.
May 7, 2010	Environment Canada	The report states "Post construction, the objective is to control infestations of noxious and restricted weeds and agronomic invasive plants of concern identified during the preconstruction weed survey, as well as any additional infestations identified during construction." What is missing is monitoring for new weed infestations, in the several years post construction, which may have been precipitated as a result of the construction activities. There may be indicators of which sites would be most at risk for this (e.g. access points, areas where soil is disturbed, etc). Second point is clarifying how many years monitoring will continue for.	Keystone includes the assessment and monitoring of new infestations as part of its post construction monitoring program. A clarification was made in Section 2.2.2. Under NEB Condition 19, Keystone is required to conduct post-construction environmental monitoring for 5 years following commencement of operation. Keystone's Post Construction Monitoring program includes the Weed Management Plan. A statement with regards to this has been added to Section 2.4.3.
May 10, 2010	Agriculture and Agri-Food Canada	Page 2-3, Table 2-1 Noxious and restricted weeds and agronomic…..Species that need to be included in the list are: 1) Absinthe Wormwood (*Artemisia absinthium*) 2) Common burdock (*Artium minus* subsp. *minus*) 3) Baby's breath (*gypsophila paniculata*). Also the target species are not to be limited	Species suggested are no listed as noxious or restricted in Alberta and are not on the Saskatchewan Noxious Species List. No changes were made to the document. Table 2-1 lists noxious and restricted species found on the Project to date; it is possible that additional species may be identified. Should this occur, the

Date	Agency	Comment	Response
		to this list. Page 2-8 "Each infestation site within the Project footprint will be assigned a site risk level based upon the criteria outlined in Table 2-1. The sites of infestation will be detailed in a company database administered by Keystone's Calgary office. This database will provide information designed to assist Vegetation Specialists and weed management contractors at regional levels to determine the site risk level for the area of concern. This information will be shown on the Environmental Alignment Sheets and includes land use and any specific environmental issues that Environmental Co-ordinators, operators and weed management contractors should be aware of including: ○ location of any nearby watercourses or waterbodies ○ rare plants ○ concerns that the local land authority or adjacent landowners have expressed" AAFC indicates species at risk need to be added to this list.	species would be added to Table 2-1 and managed accordingly. The bullet for species at risk was intended to include by provincially and federally listed plant species at risk. A footnote has been added to Section 2.1.2.1 to clarify the definition of rare plant.
May 21, 2010	Saskatchewan Environment	SENV noted the plan speaks to educating staff about the	Identification is an important component of the education

Date	Agency	Comment	Response
		importance of weed management and that this is key to long term success in control. SENV asked if training of the staff to identify these weeds will be included as part of the education.	program. A clarification has been made in Section 2.4.1.

3.2 Landowner Consultation

Keystone undertook consultation with affected landowners regarding the WMP. Consultation document is appended to this report (see Appendix C).

4.0 PRECONSTRUCTION WEED SURVEY RESULTS

Refer to Appendix D.

5.0 MITIGATION PLAN

Weed Management Plan – General Mitigation Measures

The following headings provide a breakdown of each of the steps required for effective weed control. This section is intended for guidance to Vegetation Specialists and/or for those conducting inspection or evaluation of herbicide applicators. Subject to revisions to address issues that may arise as part of the pre-construction weed surveys and post-construction monitoring and treatment program.

Identification of Problem Weeds or Invasive Plants

1. Identify types of problem vegetation, and record their location and height, at facilities during normal inspection/patrols, maintenance and monitoring activities. The Vegetation Specialist will monitor for problem vegetation. Refer to Table 2-1 (Noxious and Restricted Weeds and Agronomic Invasive Plants of Concern Encountered in KXL Surveys) for a list of high-risk vegetation species and weeds that will be the target of controls.
2. Ensure that problem weeds include weeds of concern and/ or invasive plants to the landowner or local land authority.

Vegetation Monitoring and Recording

1. Conduct regular inspections to visually inspect the right-of-way and facilities during maintenance and/or during routine operation activities and document the density, location and type of vegetation present.
2. On a regular basis, document vegetation presence, population density and extent. Also inspect areas on the perimeter of facilities, including fence lines and access roads. Record the following on forms provided in Appendix A:
   - evaluation of any previous weed management; and
   - weeds or invasive plant species, location, extent and density distribution (or other appropriate method).

Treatment Threshold

1. Compare the density distribution of each weed species present onsite to the density distribution of the same species offsite, to determine whether the treatment threshold has been reached. Record the information required for treatment decision (whether treatments are necessary, the best timing of treatments and the best treatment option[s]).
2. Consult with the local land authority or landowner, as required, prior to making a treatment decision.
3. Initiate weed management decision process and action when the treatment threshold for a particular facility or defined area within a facility has been exceeded.

Treatment Options

1. Choose treatments that will have the least environmental impact while providing adequate control.
2. Complete a Weed Monitoring Form prior to a weed management decision being made. List the strategies that will be used to protect the various environmental features that are listed including the establishment of appropriate size buffer zones around the established Pesticide Free Zones (PFZ) that take into account such factors as the type of equipment being used, the potential for drift, the soil type and the slope of the ground.

Non-chemical Control Options

1. Consider non-chemical control options as the primary methods to manage problem vegetation.
2. Mow problem vegetation, where warranted, and primarily grasses or other herbaceous species. Mowed vegetation using equipment such as commercial lawnmowers, garden tractors or industrial tractors.
3. Cut weeds at the ground surface to remove herbaceous vegetation growing on gravel areas, within cracks in asphalt or concrete, within landscaped areas and along fence lines and access roads.
4. Combine the use of string trimmers with a pre-mowing herbicide application, where necessary. Allow an appropriate time between herbicide treatment and mowing to allow herbicide to be absorbed by the plants.
5. Conduct hand pulling for certain established weeds that can be easily uprooted such as patches of noxious weeds and invasive plants.
6. Use natural controls which promote the establishment of local, competitive vegetation, including grasses, to provide long-term control of weeds, where feasible.

Chemical Control Options

1. Use herbicides if they are the only effective way to establish a stable plant community. Herbicides may be required to target specific plant species and complexes within facilities, primarily grasses and herbaceous broad-leaf plants growing on gravel areas. The use of herbicides may be required for the following:
   - vegetation control in areas where non-chemical methods are not feasible or practical; and
   - control of invasive plants where manual and mechanical control methods are not effective or practical.
2. Initiate and monitor contracts for weed management that involve herbicide applications. Be knowledgeable of the application equipment, methods or techniques that may be used by contractors, including the benefits and limitations of each method, and the rationale/selection criteria that will be used in selecting a particular method or technique for weed management. All contractors are to be aware of Keystone safety requirements for facilities and for the pipeline right-of-way.
3. Be familiar with the properties, uses, and label directions, precautions and limitations for each of the herbicide products applied.
4. Consider the choice of herbicide, herbicide properties and toxicity, and appropriate application methods/techniques/equipment.
5. Do not apply herbicides for vegetation control within 30 m (100 ft) of well or water intake including domestic, agricultural, commercial and industrial unless completely satisfied that a smaller no treatment zone will ensure that no herbicide enters the water supply, intake or well.
6. Do not apply herbicides within the No Treatment Zones (NTZ) or PFZ of water, both fish-bearing and non-fish bearing, and classified wetlands, measured horizontally from the high watermark. Check the appropriate Acts and Regulations for NTZ and PFZ for specific herbicides.
7. Be aware of and maintain appropriate protective buffer zones around inhabited raptor and heron nests, wildlife trees and mineral licks during weed management activities. Assess the size of these buffer zones on a site-by-site basis.
8. Field check each treatment site prior to undertaking weed management to confirm treatment area boundaries, the locations of any required PFZs, NTZs, sites for posting required treatment notices, and the presence of other environmental conditions that would preclude the use of herbicides.

9. Conduct or supervise all applications of herbicides by a person who holds a Pesticide Applicator Certificate in the Industrial Vegetation and Noxious Weed Category. Record the name and certificate numbers of the Applicator(s) who will supervise/undertake herbicide applications.
10. The Certified Pesticide Applicator must:
    - be in continuous attendance at the site;
    - have available (with them at each treatment site) proof of certification; • have up to six assistants for Schedule 5 chemicals and up to two assistants for all others, according to the Environmental Code of Practice for Pesticides (AENV 2001);
    - maintain continuous contact, auditory and/or visual, with the uncertified assistants; and
    - be within 500 m of persons being supervised.
    - must meet Keystone safety requirements and be prepared to provide proof of completion of safety courses.
11. Treatment notices must be posted or given before each herbicide use and must not be removed for at least 14 days after the use or as defined by appropriate regulatory authority. Each treatment notice must be posted so that it is clearly visible and legible from each approach to access the treatment area, and must contain the following information:
    - the trade name or active ingredient of the herbicide that will be used;
    - the date and time of the herbicide use;
    - precautions to be taken to prevent harm to people entering the treatment area; and
    - how to contact the plan holder or that person's agent to obtain information about the herbicide or herbicide use.
12. Ensure that all use requirements specified in the applicable Saskatchewan and Alberta Acts and/ or Regulations are adhered to during herbicide applications.
13. Adhere to Workplace Hazardous Materials Information System and Transportation of Dangerous Goods standards for pesticide containment, transport, storage and spill response.
14. Store, handle and transport herbicides in a container in which they were originally packaged and with the label originally affixed by the herbicide manufacturer, or in a labelled container designed for containing a herbicide. The labelling on the replacement container must include the herbicide trade name, the name and concentration of each active ingredient in the herbicide and the product registration number under the federal *Pest Control Products Act*. The containment standards do not apply to tanks being used for mixing herbicides or for holding pesticide during use.
15. Ensure that pesticides are transported, or caused to be transported, in a secure manner that prevents:
    - the escape, discharge or unauthorized removal of the herbicides from the transport vehicle; and
    - the contamination of food or drink intended for animal or human consumption, household furnishings, toiletries, clothing, bedding or similar items that are transported with the herbicides.

16. If temporary pesticide storage in vehicle(s) is required, the storage area in the vehicle must:
    - be separate from, and not used for storage of, food intended for human or animal consumption;
    - be ventilated so that herbicide vapours are vented to the outside;
    - have on each door providing access to the vehicle herbicide storage area, a sign that is clearly visible to a person approaching the door with the words, written in block letters: “WARNING: CHEMICAL STORAGE - AUTHORIZED PERSONS ONLY”;
    - be locked when unattended; and
    - be accessible only to authorized personnel.
17. Have a spill response plan and procedures for responding to herbicide spills.
18. Ensure spill treatment equipment is present or near storage (including mobile storage), mixing and loading sites. Equipment shall include: personal protective equipment; absorbent material; neutralizing material; a long handled broom; shovel; and a waste receiving container with lid.
19. Keep a copy of the spill response plan at or near each work site; ensure all personnel working on the Project are familiar with its contents.
20. Provide a copy of the spill response plan to Keystone for approval prior to any herbicide applications.
21. Ensure that:
    - measurements shall be made to record weather conditions prior to and periodically during herbicide applications;
    - wind speed and direction, precipitation, temperature and sky conditions (clear, overcast, cloudy, partly cloudy) are recorded for foliar and soil herbicide applications;
    - temperature, precipitation, frost and dew conditions are recorded for wick/wipe-on applications; and
    - persons applying herbicides are responsible for checking each product label for guidelines for applying herbicides under various weather conditions.
22. Stop herbicide applications if any of the following occur:
    - the maximum/minimum temperature stated on the herbicide label is exceeded;
    - the wind speed and/or direction cause the foliar or soil application of herbicide to drift and/or miss the target vegetation;
    - ground wind velocity is over 8 km/hour;
    - it begins to rain steadily, increasing the chances of excessive runoff and leaching; or
    - there is ice or frost on the foliage.

6.0 REFERENCES

Adams, B.W., G. Ehlert, C. Stone, D. Lawrence, M. Alexander, M. Willoughby, C. Hincz, D. Moisey, A. Burkinshaw and J. Carlson. 2005. *Rangeland health assessment for grassland, forest and tame pasture*. Prepared for Alberta Sustainable Resources Development, Public lands and Forests Division, Rangeland Management Branch. Pub. No. T/044. ISBN Number: 0-7785-2848-0. 120 pp.

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Tyser, R.W. and C.A. Worley. 1992. Alien flora in grasslands adjacent to road and trail corridors in Glacier National Park, Montana (U.S.A.). Conservation Biology Vol. 6, No. 2, 253-262.

APPENDIX A

Weed and Invasive Plant Monitoring Form

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Appendix A: Weed and Invasive Plant Monitoring Form
April 2010

KEYSTONE WEED and INVASIVE PLANT MONITORING FORM

Page 1 – Site Assessment

Date:_____ Daily Page: _____ Name:_____

Location: _____ **Type**: RoW / Facility / Access Road **Land Use**: NP / THP / C / RD **Photos**:_____

Preconstruction Weed Survey / Post Construction Weed Control

Species Observed (corresponds to site sketch)	Location	**Growth Stage** (S / J /M)	**Height** (cm)	**Density Code** (1-13)	**Designation** (R / Nox / Nus)	**Plant Category** (1 – 4)
1.	On Site					
	Adjacent[1]					
2.	On Site					
	Adjacent					
3.	On Site					
	Adjacent					
4.	On Site					
	Adjacent					
5.	On Site					
	Adjacent					
6.	On Site					
	Adjacent					
7.	On Site					
	Adjacent					
8.	On Site					
	Adjacent					
9.	On Site					
	Adjacent					
10.	On Site					
	Adjacent					

Sketch of Site – Show Distribution of Weeds/Invasives

Additional Comments

[1]Adjacent: the area within 20 m of the Project footprint

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Appendix A: Weed and Invasive Plant Monitoring Form
April 2010

Page 2 – Course of Action

A - PRECONSTRUCTION WEED CONTROL – RoW, Facility Site, or Access Road

- If restricted or noxious weeds are present, recommend control method for **immediate suppression**
- If agronomic invasives are present, recommend either:
  1. No treatment, if not invasive where found, or
  2. Control method (see Treatment Options, below), or
  3. Topsoil management during construction (See EPP), or
  4. Both 2 & 3

B – POST CONSTRUCTION MONITORING – RoW, Facility Site or Access Road

Course of Action Key:

1. Are restricted or noxious weeds present?
2. If Yes, are weeds more abundant on site than off?
3. If Yes, determine Treatment Priority

Treatment Threshold			
Plant Category	Site Risk Level		
	High	Mod	Low
1	P 1	P 1	P 1
2	P 2	P 3	P 4
3	P 2	P 3	P 4
4	P 3	P 4	P 5

Plant Category
1 - Extremely Invasive, dominant
2 - Very Invasive, dense patches
3 - Somewhat invasive, not dominant
4 - Aggressive, relatively easy to control
(For plant rating, see Table 2-2, WMP)

Treatment Priority
P 1 - As soon as possible, immediate suppression treatment
P 2 - As soon as conditions are optimal for treatment
P 3 - When conditions are optimal, treat once P 2 sites treated
P 4 - Assess again next year and treat to prevent spread
P 5 - Assess again next year, treat once P 4 sites treated

Environmental Protection

Water source/Waterbody within 30 m ☐ Yes ☐ No comments_____

Waterbody/Riparian area within 10 m ☐ Yes ☐ No comments_____

Site requiring protection ☐ Yes ☐ No comments_____

Environmental feature within 10 m (e.g., wildlife habitat ☐ Yes ☐ No comments_____

Native/rare plants present ☐ Yes ☐ No comments_____

Accessibility (circle) good / fair / poor comments_____

Other: _____

_____

_____

Treatment Options

Control Methods (circle) seeding / mechanical / chemical / biological

Rationale/Comments: _____

_____

_____

Treatment Decision

Recommendations reviewed by: _____

Approved course of action:_____

Rationale for approved course of action:_____

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Keystone XL Pipeline Project
Appendix A: Weed and Invasive Plant Monitoring Form
April 2010

KEYSTONE POST-TREATMENT MONITORING FORM

Date:_____ **Name:**_____ **Daily Page**:_____ **Overall Page:**_____
Location: _____ **Type:** RoW/ Facility/ Access Road **Land Use:**_____

Treatment Info

Date of Treatment: _____ **Area of Treated (ha):**_____ **_Methods:** Chemical / Mechanical / Other
Licensee Name: _____ **_ Licence #:**_____
Address: _____ _ Phone No. _____
Application Equipment:_____

Chemical Summary

Product Name	Active Ingredient	Pesticide Control Product #	Target Species	App. Rate (L/ha)	Total Vol. (L)

Notes:

Non-Chemical Summary
Treatment Use: _____
Description: _____
_____
_____

Environmental Protection

Required PFZs and NTZs were marked	☐ Yes	☐ No	comments
Required PFZS and NTZs were maintained	☐ Yes	☐ No	comments
Treatment area boundaries were marked	☐ Yes	☐ No	comments
Treatment area boundary markings were adequate	☐ Yes	☐ No	comments
Treatment notices posted	☐ Yes	☐ No	comments
Water source/Water body within 30 m were observed	☐ Yes	☐ No	comments
Water body/Riparian area within 10 m were observed	☐ Yes	☐ No	comments
Environmental feature within 10 m were observed	☐ Yes	☐ No	comments
Rare/native plants were observed	☐ Yes	☐ No	comments
Rare plants were protected	☐ Yes	☐ No	comments
Pesticides applied in accordance with IMVP and IPMR	☐ Yes	☐ No	comments
Off-site pesticide movement observed	☐ Yes	☐ No	comments

Non-target effects observed: ☐ Yes ☐ No comments: _____
_____
Other: _____
_____

Treatment Objectives

Treatment objectives were achieved ☐ Yes ☐ No
Describe how/where objectives were/were not achieved: _____
_____
_____
_____
_____

APPENDIX B

Regulatory Consultation Documentation

TransCanada – Keystone XL Pipeline
Meeting Minutes

Meeting Location: ASRD Office, Medicine Hat, 3rd floor boardroom

Date & Time: March 5, 2010 1:00 pm – 3:00 pm

Attendees:

Name	Organization	Title	E-mail address
Geoff Smith	ASRD	Land Management Specialist	geoff.smith@gov.ab.ca
Doug Brunning	TransCanada PipeLines	Project Manager, North Spread	Douglas_brunning@transcanada.com
Dean Burnett	TransCanada PipeLines	Land Representative	dean_burnett@transcanada.com
Darwin McNeely	TransCanada Pipelines	Contract Environmental Coordinator	Darwin_mcneely@transcanada.com
Christine Nicholls	Stantec	Senior Environmental Planner	christine.nicholls@jstantec.com

Meeting Purpose:

- Update on project
- Progress consultations required by NEB under draft CPCN conditions
- Discuss 2010 environmental field program
- Discuss PLA applications on crown land

Minutes:

Item	Reference document*	Action item
1. Recap of Activities and Reporting Since November 26, 2009 Meeting • NEB Draft Environmental Screening Report • Reasons for Decision expected by end of Q1 2010	Attachment 2	
2. Follow-up from July and November Meetings • Seed mixes o ASRD first preference is for natural recovery, followed by assisted natural recovery, then seeding. o ASRD wants the reclaimed area on the contingency route through the river badlands to blend in with undisturbed environment. o Keystone discussed maintaining cover and controlling erosion on the contingency route using means such as lined diversion berms, check dams, jute matting, flax and fall rye cover crop, tackifying hydromulch. ASRD requested no straw crimping. o Keystone indicated 2010 vegetation surveys would provide a characterization of the vegetation community on the contingency route. o If seeding is required, ASRD advised using same mixes approved by ASRD agrologist on the existing Keystone project would facilitate discussions. The specific Keystone seed mix will be included in the contingency EFR application. ASRD noted any detailed seed mixes proposed would also be referred to the area agrologist. o The seed mix report will be amended to include the Keystone seed mix for use on crown lands at the South Saskatchewan River crossing.	Attachment 4	Stantec
3. Requirements of NEB Draft Conditions • **2009 surveys** – present methods, results, mitigation; document consultation o 2009 Rattlesnake survey of South Saskatchewan River HDD and contingency ▪ Keystone noted the three observations are all more than 200 m from the ditchline. ▪ Keystone noted Ed Hofman's comments that the observations may be rookeries ▪ ASRD indicated if the observations are rookeries, the setback is 200 m. As the observations are beyond 200 m from the ditchline, further assessment is not required; Keystone will review and determine if follow-up field observations are warranted in 2010, based on thoughts the sites may be rookeries only.	Attachment 6	

4. Tasks for Coming Months **Requirements of NEB Certificate Conditions** • **2009 surveys** – review methods, results, mitigation o 2009 Soil survey (Condition I) o 2009 Fisheries assessment of South Saskatchewan River contingency (Condition I) ▪ ASRD requested a cc when the report is sent to Terry Clayton and DFO o 2009 summer SARA plant survey (Condition I) ▪ ASRD indicated Environment Canada's 300 m setback are valuable in the absence of a provincial guideline. There is a provincial 30 m setback that has been communicated by email but not in a formal document. If the 30 m setback cannot be met, ASRD would accept discussion of mitigation measures. ▪ Discussion regarding mitigation measures implemented on the existing Keystone pipeline's – erosion fabric on sod, no new disturbance or temporary workspace within 30 m without ASRD approval, using shovels and compressed air to ensure traffic into the area was clean. • **2010 surveys** –priority is to review methods; can review mitigation upon completion of surveys. Discuss timeline (reference document) o Rare plant/rec delineation survey (Condition D, F) o Spring SARA survey at South Saskatchewan River HDD and contingency (Condition I) o Pre-construction weed survey (Condition J) ▪ ASRD noted weeds could be prolific along the edge of the river. o Preconstruction wildlife surveys of South Saskatchewan River (grouse, raptors, amphibians and breeding birds at both crossings; burrowing owl and Ord's (west side) only at contingency crossing) (Condition I) and wildlife confirmatory surveys (Condition E,I) ▪ Keystone indicated a response was not received from John Taggart regarding the 2010 wildlife surveys methods report. Geoff Smith indicated no response indicates there are no concerns and that all ASRD protocols posted on the website should be the guidelines for reference. Keystone indicated the wildlife survey methods adhere to ASRD protocol. ▪ ASRD reconnaissance surveys or sweeps should be done in the year of construction, to augment the previous year(s) survey data and identify any additional mitigation required. o Archaeological assessment of stone features (Condition I) ▪ Scope of work under HDD route • ASRD requests natural recovery of archaeological excavations.	Attachment 7 Attachment 7 Attachment 8	Keystone

• Discussion that it may be advantageous to use a rubber hoe to minimize duration and facilitate excavation and replacement of sod. • Traffic management plan (Condition K)		

5. 2010 Planning and Consultation
 	
• Darwin McNeely will be Keystone's "one window"
• ASRD requests Keystone submit a TFA application for the 2010 environmental field programs.
• Aboriginal engagement
  ○ ASRD requests Keystone provide a list of:
  ▪ Locations where there is current use of land for traditional purposes and what is being done to mitigate effects
  ▪ Locations of cultural or spiritual sites and what is being done to mitigate effects
		Keystone
		
		Keystone

6. PLA and MLLs
 	
• HDD surface disposition application
  ○ HDD will not create surface disturbance in this quarter section therefore no reclamation is required
  ○ ASRD requested HDD EFR application mention boat access to install rebar or tiepost for turbidity monitoring.
  ○ ASRD indicated the HDD EFR application should note the archaeological work (see section 4 of minutes). The EFR application may be referred for agrologist input regarding manual work versus the use of a backhoe
  ○ ASRD indicated the EFR application should mention the Tru-Tracker (helps steer the HDD) would be placed on the surface. It is an 8-10 gauge wire that would be secured with stakes or tent pegs, and would be removed once the HDD is complete.
• Timing for contingency surface disposition
  ○ Keystone will follow up with ASRD in fall 2010, once environmental surveys on contingency route are complete. A draft EFR application will be provided to ASRD for review and feedback, so that should the HDD fail and the contingency be required, any concerns with the EFR will already been reviewed and resolved.		

*Click on FTP link below to download the reference documents. Note that the FTP site is temporary so documents should be downloaded by February 24, 2010. Please allow time for these documents to download; time will be a function of file size.

ftp://s0224094413:9697843@ftptmp.stantec.com

Nicholls, Christine

From: Patrick Porter [Patrick.Porter@gov.ab.ca]
Sent: Friday, April 16, 2010 9:51 AM
To: Darwin McNeely; Nicholls, Christine
Cc: Geoff Smith; Jordon Christianson; Dave Moore; Patrick Porter; Kari Roberts
Subject: FW: Keystone Project - Draft Weed Management Plan for review
Attachments: Keystone-Draft Weed Management Plan rev 0-April 15-2010.pdf

Hi Darwin,

I completed a quick review of the Keystone XL Pipeline Project- Updated Weed Management Plan. The document is definitely comprehensive. I only have a couple of additional comments to offer.

*** Noxious /Restricted and Agronomic Invasive Plants of Concern. Table/chart 2-1.2-4. You may also wish to include Absinthe (Artemisia absinthium); Common Burdock (Arctium minus) and Baby's Breath (Glysophila spp.) and Black Henbane (Hyoscyamus niger) - poisonous, rarer. These species are also present in our area (Wainwight,Czar,Provost,Bodo) and are increasing in distribution (maybe not the Black Henbane). May also wish to mention, "But not limited to these species listed in tables."

*** Chemical Control Options 5-2.6. No Treatment Zone (NTZ). Should this not also state a specified parameter (distance) like 45m buffer zone from wetlands/riparian areas ? 30m should be considered the absolute closest one could spray weeds next to a wetland. I see water wells/water intakes are properly covered off in item 5-2.5 @ 30m's.

Please call me @ (780) 842-7551 if you need to discuss this in further detail. Thanks.

Patrick Porter
Land Management Specialist
ASRD/PLFD, Land Management Branch
Prairies Area, Wainwright

From: Darwin McNeely [mailto:darwin_mcneely@transcanada.com]
Sent: Thursday, April 15, 2010 10:17 AM
To: Patrick Porter; Jordon Christianson; Geoff Smith; paul.gregoire@ec.gc.ca; Ken.Dillabaugh@gov.sk.ca; Al.Arsenault@gov.sk.ca; Graham.Mutch@gov.sk.ca; Bret.Ward@AGR.GC.CA; Dean.Smith@AGR.GC.CA; Don.Sweet@AGR.GC.CA
Cc: Nicholls, Christine; Lorenzo Fontana
Subject: Keystone Project - Draft Weed Management Plan for review

Hello All,

The National Energy Board issued the Reasons for Decision (OH-1-2009), applicable to TransCanada Keystone Pipeline GP Ltd. in March 2010, with Certificate Conditions relating to provision of a project Weed Management Plan including evidence of consultation with appropriate provincial and federal regulatory agencies.

The Certificate Conditions are provided in Appendix III of the Reasons for Decision (OH-1-2009), and more specifically the conditions that reference a Weed Management Plan are:

- Condition 12 a, b, and c; and
- Condition 13 a (iii), and b.

As a component of the overall Weed Management Program for the Keystone Project, a draft Weed Management Plan that describes objectives, survey methodologies, treatment thresholds and options, post-construction, as well as general

mitigation developed by Keystone is attached. Upon completion of the pre-construction weed survey, the results will be included in Keystone Weed Management Plan, and updated mitigation measures, if any, will also be provided as part of the consultation process with appropriate provincial and federal regulatory agencies.

Please review the attached document and provide any comments back by May 5, 2010, so Keystone can finalize the document prior to commencement of the pre-construction weed surveys. Your attention on this matter is appreciated. Thanks

Regards,
Darwin McNeely
Contract Environmental Coordinator
Keystone Pipeline Projects
Tel: 403.920.6465
Fax: 403.920.2661
Cell: 403.818.1886

Nicholls, Christine

From: Darwin McNeely [darwin_mcneely@transcanada.com]
Sent: Friday, May 07, 2010 3:16 PM
To: Nicholls, Christine
Subject: FW: Keystone Project - Draft Weed Management Plan for review

FYI – comments from Envi Canada on the Keystone Weed Management Program.

Regards,
Darwin McNeely
Contract Environmental Coordinator
Keystone Pipeline Projects
Tel: 403.920.6465
Fax: 403.920.2325
Cell: 403.542.9778

From: Gregoire,Paul [Edm] [mailto:Paul.Gregoire@EC.gc.ca]
Sent: Friday, May 07, 2010 2:52 PM
To: Darwin McNeely
Subject: RE: Keystone Project - Draft Weed Management Plan for review

Hi. Just two items caught my eye.

The report states "Post construction, to objective is to control infestations of noxious and restricted weeds and agronomic invasive plants of concern identified during the preconstruction weed survey, as well as any additional infestations identified during construction." What is missing is monitoring for new weed infestations, in the several years post construction, which may have been precipitated as a result of the construction activities. There may be indicators of which sites would be most at risk for this (e.g. access points, areas where soil is disturbed, etc).

My second point is clarifying how many years monitoring will continue for.

Regards,
Paul

Paul Gregoire, MSc.
Wildlife Biologist
Senior Environmental Assessment Officer
Canadian Wildlife Service | Service canadien de la faune
Environmental Stewardship Branch | Direction générale de l'intendance environnementale
Prairie & Northern Region | Région des Prairies et du Nord
Environment Canada | Environnement Canada
#200, 4999–98 Avenue | 4999, 98^{e} avenue, bureau 200
Edmonton, AB T6B 2X3
paul.gregoire@ec.gc.ca
Telephone | Téléphone 780-951-8695
Facsimile | Télécopieur 780-495-2615

From: Darwin McNeely [mailto:darwin_mcneely@transcanada.com]
Sent: Thursday, May 06, 2010 2:46 PM
To: Jordon Christianson; Geoff Smith; Gregoire,Paul [Edm]; Ken.Dillabaugh@gov.sk.ca; Al.Arsenault@gov.sk.ca; Graham.Mutch@gov.sk.ca; Bret.Ward@AGR.GC.CA; Dean.Smith@AGR.GC.CA; Don.Sweet@AGR.GC.CA
Cc: Nicholls, Christine; Lorenzo Fontana
Subject: RE: Keystone Project - Draft Weed Management Plan for review

Hello All,

Just checking back to see if you have any comments on the attached Keystone Weed Management Plan. If possible, please have your comments back by the end of the day, May 11th, as we would like to get geared up for the surveys fairly soon. Thanks

Regards,
Darwin McNeely
Contract Environmental Coordinator
Keystone Pipeline Projects
Tel: 403.920.6465
Fax: 403.920.2325
Cell: 403.542.9778

From: Darwin McNeely
Sent: Thursday, April 15, 2010 10:17 AM
To: Patrick Porter; Jordon Christianson; Geoff Smith; paul.gregoire@ec.gc.ca; Ken.Dillabaugh@gov.sk.ca; Al.Arsenault@gov.sk.ca; Graham.Mutch@gov.sk.ca; Bret.Ward@AGR.GC.CA; Dean.Smith@AGR.GC.CA; Don.Sweet@AGR.GC.CA
Cc: Nicholls, Christine; Lorenzo Fontana
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Please review the attached document and provide any comments back by May 5, 2010, so Keystone can finalize the document prior to commencement of the pre-construction weed surveys. Your attention on this matter is appreciated. Thanks

Regards,
Darwin McNeely
Contract Environmental Coordinator
Keystone Pipeline Projects
Tel: 403.920.6465

Fax: 403.920.2661
Cell: 403.818.1886

This electronic message and any attached documents are intended only for the named addressee(s). This communication from TransCanada may contain information that is privileged, confidential or otherwise protected from disclosure and it must not be disclosed, copied, forwarded or distributed without authorization. If you have received this message in error, please notify the sender immediately and delete the original message. Thank you.

Nicholls, Christine

From: Darwin McNeely [darwin_mcneely@transcanada.com]
Sent: Monday, May 10, 2010 4:11 PM
To: Nicholls, Christine; Martens, Harvey; Harvey Martens
Cc: Lorenzo Fontana
Subject: FW: Keystone Project - Draft Weed Management Plan for review

A couple more comments.

Regards,
Darwin McNeely
Contract Environmental Coordinator
Keystone Pipeline Projects
Tel: 403.920.6465
Fax: 403.920.2325
Cell: 403.542.9778

From: Ostrander, Dustin [mailto:Dustin.Ostrander@AGR.GC.CA]
Sent: Monday, May 10, 2010 3:59 PM
To: Darwin McNeely
Cc: Sweet, Don; Ward, Bret
Subject: RE: Keystone Project - Draft Weed Management Plan for review

Hello,
Don Sweet has asked me to review the Draft Weed Management Plan.

Comments:

Page 2-3, Table 2-1 Noxious and restricted weeds and agronomic…..
Species that need to be included in the list are: 1) Absinthe Wormwood (*Artemisia absinthium*) 2) Common burdock (*Artium minus* subsp. *minus*) 3) Baby's breath (*gypsophila paniculata*).
Also the target species are not to be limited to this list.

Page 2-8
"Each infestation site within the Project footprint will be assigned a site risk level based upon the criteria outlined in Table 2-1. The sites of infestation will be detailed in a company database administered by Keystone's Calgary office. This database will provide information designed to assist Vegetation Specialists and weed management contractors at regional levels to determine the site risk level for the area of concern. This information will be shown on the Environmental Alignment Sheets and includes land use and any specific environmental issues that Environmental Co-ordinators, operators and weed management contractors should be aware of including:

location of any nearby watercourses or waterbodies

rare plants

concerns that the local land authority or adjacent landowners have expressed"

- Species at risk need to be added to this list.

If there are any comments or concerns, please contact me.

Dustin Ostrander
AAFC-AESB
Cell: 306-774-4149

-----Original Message-----
From: Sweet, Don
Sent: April 15, 2010 10:53 AM
To: Ostrander, Dustin
Subject: FW: Keystone Project - Draft Weed Management Plan for review

Dustin,

Might you have a look at this?

Bret is out of the office for the next week or so.

Thanks.

dhs

Don H. Sweet
Manager, Real Property Section|Gestionaire, biens immobliers
Agriculture and Agri-Food Canada/Agriculture et Agroalimentaire Canada
408, 1800 Hamilton Street|rue Hamilton, pièce 408
Regina, Saskatchewan|Regina (Saskatchewan) S4P 4L2
E-mail Address / Adresse courriel Don.Sweet@agr.gc.ca
Telephone/Téléphone: 306-780-5171
Facsimile/Télécopieur: 306-780-6683
Government of Canada|Gouvernement du Canada

-----Original Message-----
From: Darwin McNeely [mailto:darwin_mcneely@transcanada.com]
Sent: April 15, 2010 10:17 AM
To: Patrick Porter; Jordon Christianson; Geoff Smith; paul.gregoire@ec.gc.ca; Ken.Dillabaugh@gov.sk.ca; Al.Arsenault@gov.sk.ca; Graham.Mutch@gov.sk.ca; Ward, Bret; Smith, Dean; Sweet, Don
Cc: Nicholls, Christine; Lorenzo Fontana
Subject: Keystone Project - Draft Weed Management Plan for review

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Please review the attached document and provide any comments back by May 5, 2010, so Keystone can finalize the document prior to commencement of the pre-construction weed surveys. Your attention on this matter is appreciated. Thanks

Regards,
Darwin McNeely
Contract Environmental Coordinator
Keystone Pipeline Projects

Tel: 403.920.6465
Fax: 403.920.2661
Cell: 403.818.1886

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Nicholls, Christine

From: Darwin McNeely [darwin_mcneely@transcanada.com]
Sent: Monday, May 24, 2010 2:08 PM
To: Dillabaugh, Ken ENV
Cc: Nicholls, Christine
Subject: RE: Keystone Project - Draft Weed Management Plan for review

Hi Ken,

That is correct. Thanks for your comments.

Regards,
Darwin McNeely
Contract Environmental Coordinator
Keystone Pipeline Projects
Tel: 403.920.6465
Fax: 403.920.2325
Cell: 403.542.9778

From: Dillabaugh, Ken ENV [mailto:Ken.Dillabaugh@gov.sk.ca]
Sent: Friday, May 21, 2010 9:40 AM
To: Darwin McNeely
Subject: RE: Keystone Project - Draft Weed Management Plan for review

Darwin, I have looked at the weed management plan. One comment. The plan speaks to educating staff about the importance of weed management. This is key to long term success in control. I am assuming that in the education portion training of the staff to identify these weeds will be included.

Ken D

From: Darwin McNeely [mailto:darwin_mcneely@transcanada.com]
Sent: Thursday, May 06, 2010 2:46 PM
To: Jordon Christianson; Geoff Smith; paul.gregoire@ec.gc.ca; Dillabaugh, Ken ENV; Arsenault, Al ENV; Mutch, Graham ENV; Bret.Ward@AGR.GC.CA; Dean.Smith@AGR.GC.CA; Don.Sweet@AGR.GC.CA
Cc: Nicholls, Christine; Lorenzo Fontana
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Fax: 403.920.2325
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Sent: Thursday, April 15, 2010 10:17 AM
To: Patrick Porter; Jordon Christianson; Geoff Smith; paul.gregoire@ec.gc.ca; Ken.Dillabaugh@gov.sk.ca; Al.Arsenault@gov.sk.ca; Graham.Mutch@gov.sk.ca; Bret.Ward@AGR.GC.CA; Dean.Smith@AGR.GC.CA;

Don.Sweet@AGR.GC.CA
Cc: Nicholls, Christine; Lorenzo Fontana
Subject: Keystone Project - Draft Weed Management Plan for review

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Fax: 403.920.2661
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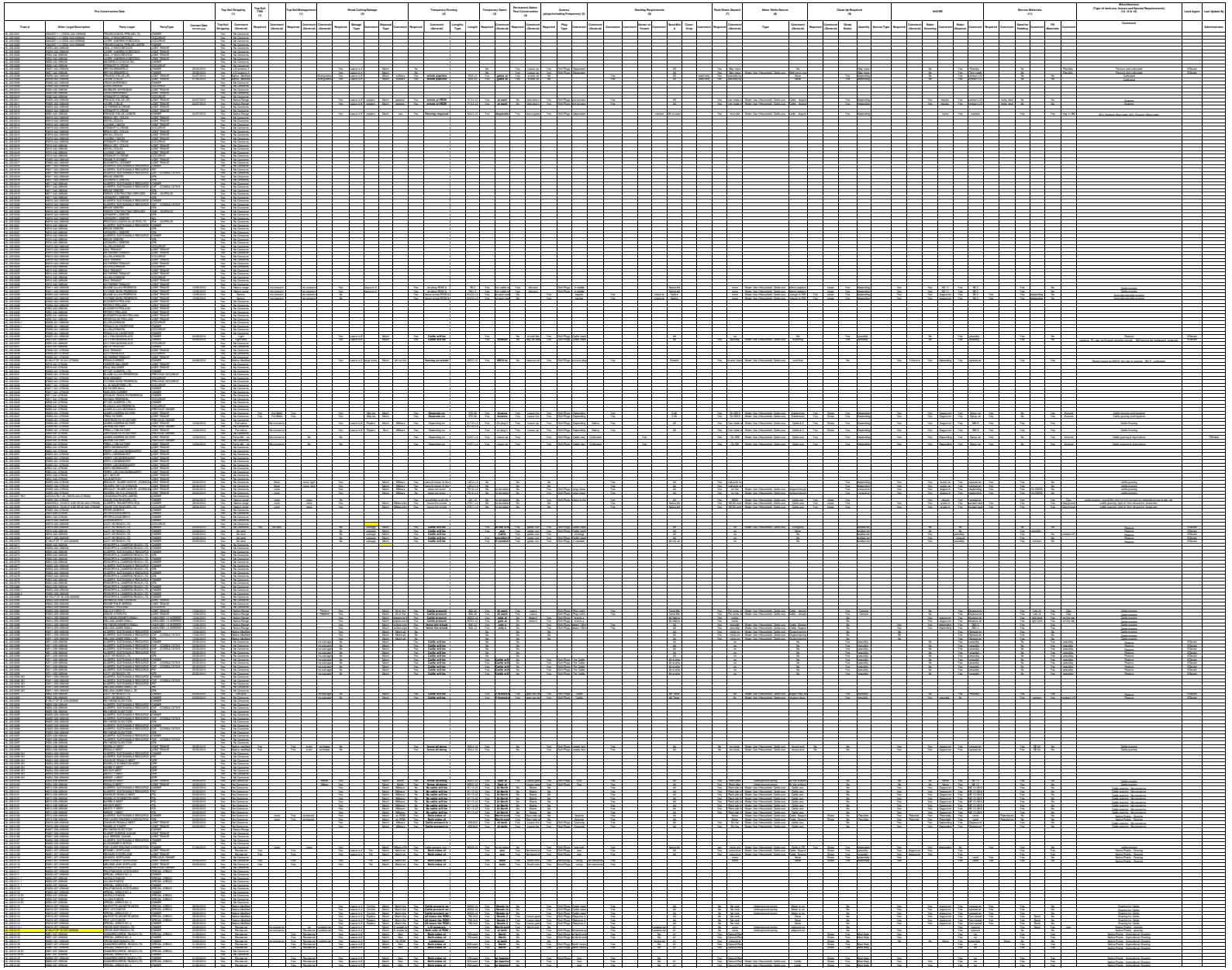
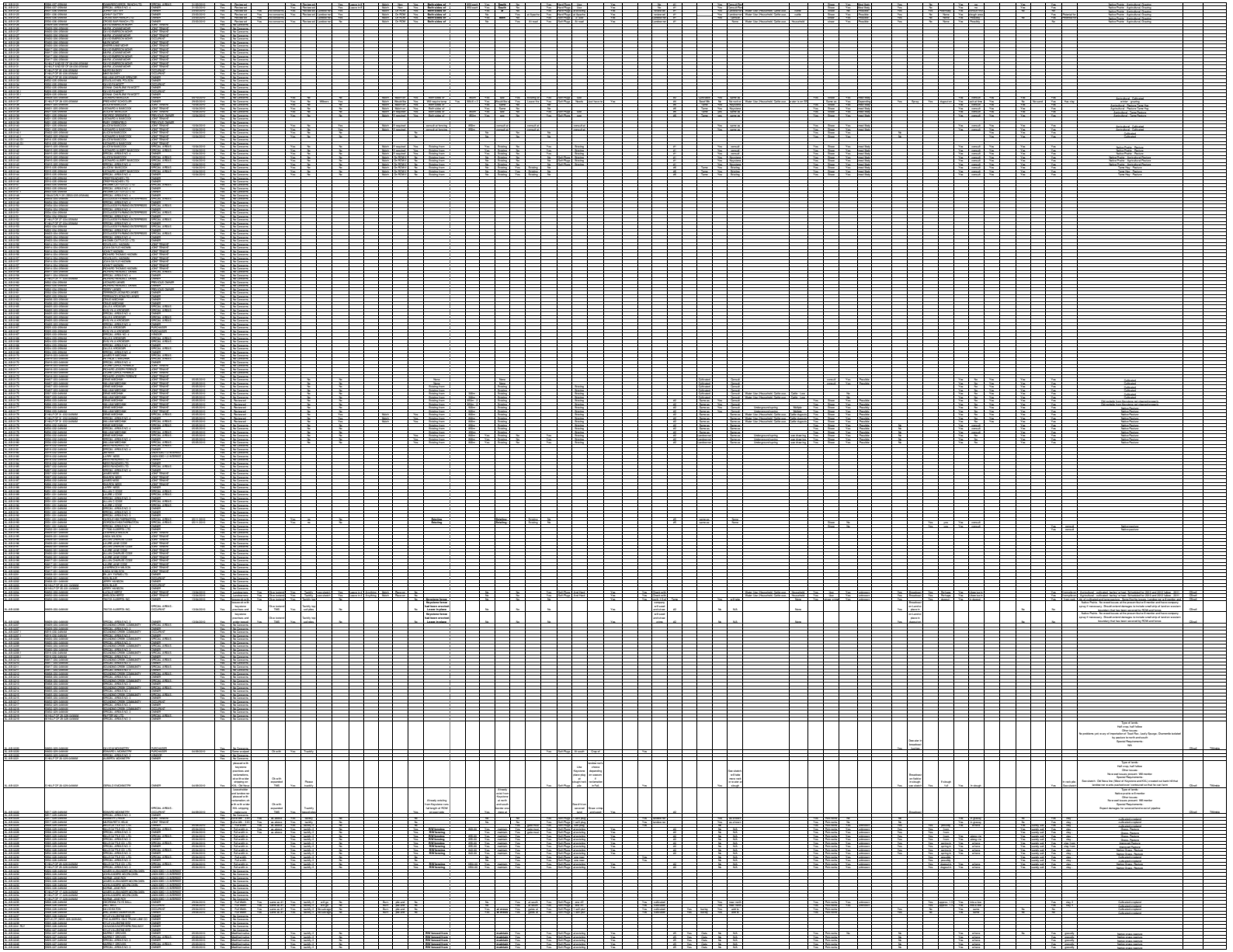
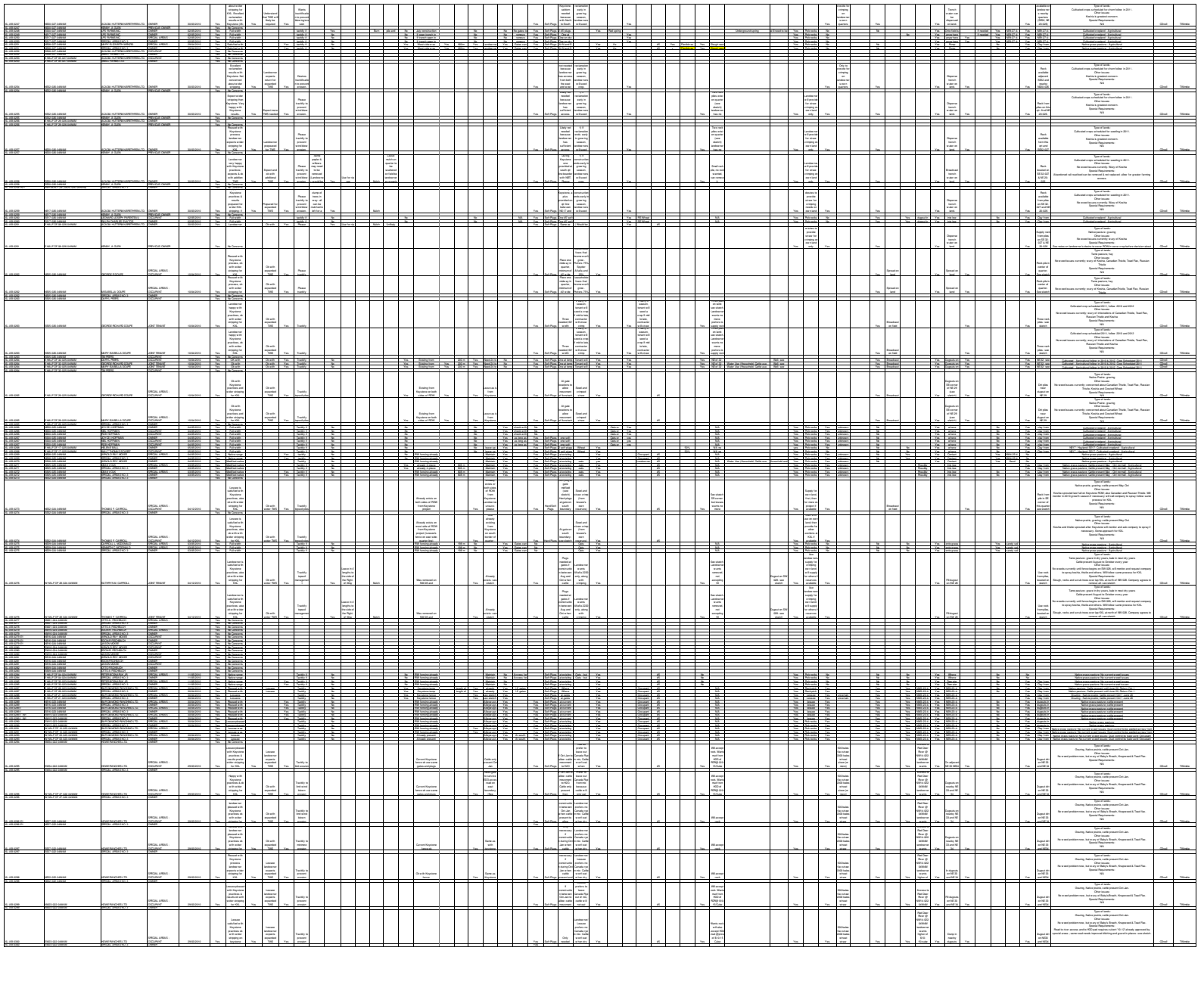
APPENDIX C

Affected Landowner Consultation Documentation

Keystone XL Pipeline Project
Appendix C: Affected Landowner Consultation Documentation







Pre-Construction Spreadsheet - Alberta

XL-AB-0301	SE23-022-04W4M	HOWE RANCHES LTD.	SPECIAL AREAS - OCCUPANT	29/03/2010	Yes	Lessee pleased with Keystone			Yes	Trackify any stripped piles								HDD quater										Lessee prefers to leave Canada Rye out of mix because cattle won't	Yes				#5, #6			Yes	Will accept rock. Wants mud from HDD @ $10-15/Cube			Yes		Yes	500 flax bales 2000 wheat bales		Yes		Yes	Access to Red Deer River from adjacent NW14-022-04W4M landowner	Yes	Fill dugouts on NE 33 and NE 34	Yes				Yes	Dugout dirt on NE 33 and NE 34	Type of lands: Grazing, Native prairie, cattle present Oct-Jan. Other issues: No weed problem now, but wary of Baby's Breath, Knapweed & Toad Flax. Special Requirements: N/A	CSnell	TWimble

Pre-Construction Spreadsheet - Saskatchewan

Pre-Construction Data					Top Soil Stripping (1)		Top Soil TWS (1)		Top Soil Management (1)		Wood Cutting/Salvage (2)						Temporary Fencing (3)				Temporary Gates (3)		Permanent Gates-Post Construction (4)		Access (plugs/including Frequency) (5)			Seeding Requirments (6)							
Tract #	Other Legal Description	Party Legal	PartyType	Contact Date dd/mm/yyyy	Top Soil Stripping	Comment (General)	Required	Comment (General)	Required	Comment (General)	Comment (General)	Required	Salvage Type	Comment	Disposal Type	Comment	Required	Comment (General)	Lengths Type	Length	Required	Comment (General)	Required	Comment (General)	Requried	Plug Type	Comment	Comment (General)	Contractor	Comment	Owner or Tenant	Comment	Seed Mix #	Cover Crop	Comment
XL-SK-0378	SW06-020-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0379	SE06-020-29W3M	KENNETH KREIN	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Landowner demands that straw crimping is done		No					No				No		No		No										
XL-SK-0382	NE31-019-29W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0383	NE31-019-29W3M	OWEN FREDRICK WITTIG	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	For erosion prevention, straw crimping preferred		No					No				No		No		No		Landowner								
XL-SK-0383	NE31-019-29W3M	JANET ROSEABETH WITTIG	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	For erosion prevention, straw crimping preferred		No					No				No		No		No		Landowner								
XL-SK-0384	NW32-019-29W3M	CALVIN KREIN	OWNER		Yes	No Concerns	Yes	3 Lift, full	Yes	Occupant demands straw crimping		No					No				No		No		No										
XL-SK-0384	NW32-019-29W3M	KENNETH KREIN	OCCUPANT		Yes	No Concerns	Yes	3 Lift, full	Yes	Occupant demands straw crimping		No					No				No		No		No										
XL-SK-0384	NW32-019-29W3M	DEREK KREIN	OCCUPANT		Yes	No Concerns	Yes	3 Lift, full	Yes	Occupant demands straw crimping		No					No				No		No		No										
XL-SK-0385	SW32-019-29W3M	WAYNE GARTHUS	OCCUPANT		Yes	No Concerns																													
XL-SK-0385	SW32-019-29W3M	GEORGE ROBERT WITTIG	OWNER		Yes	No Concerns																													
XL-SK-0386	SE32-019-29W3M	OWEN FREDRICK WITTIG	JOINT TENANT		Yes	No Concerns	Yes	3 Lift, full	Yes	For erosion prevention, straw crimping preferred		No					No				No		No		No		Landowner								
XL-SK-0386	SE32-019-29W3M	JANET ROSEABETH WITTIG	JOINT TENANT		Yes	No Concerns	Yes	3 Lift, full	Yes	For erosion prevention, straw crimping preferred		No					No				No		No		No		Landowner								
XL-SK-0387	NE29-019-29W3M	ERWIN BECKER	JOINT TENANT		Yes	No Concerns	Yes	3 Lift, full	Yes	Contact occupant prior to construction		No					No				No		No		No										
XL-SK-0387	NE29-019-29W3M	JACQUELINE BECKER	JOINT TENANT		Yes	No Concerns	Yes	3 Lift, full	Yes	Contact occupant prior to construction		No					No				No		No		No										
XL-SK-0387	NE29-019-29W3M	DENNIS BECKER	OCCUPANT		Yes	No Concerns	Yes	3 Lift, full	Yes	Contact occupant prior to construction		No					No				No		No		No										
XL-SK-0388	NE29-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0389	NW28-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0390	NW28-019-29W3M	5A FARMS LTD.	OWNER		Yes	No Concerns	Yes	Three Lift,	Yes	Straw Crimping preferred		No					No				No		No		No										
XL-SK-0391	SW28-019-29W3M	ALEX FAUTH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		No										
XL-SK-0391	SW28-019-29W3M	YVONNE FAUTH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		No										
XL-SK-0392	SW28-019-29W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0393	SE28-019-29W3M	LUDWIG KIRSCHENMAN	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil Erosion Prevention - Straw crimping preferred		No					No				No		No		No										
XL-SK-0394	NW21-019-29W3M	DENNIS H. BECKER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Contact prior to construction		No					No				No		No		No										
XL-SK-0394.1	NE21-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0395	NE21-019-29W3M	LUDWIG KIRSCHENMAN	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0395	NE21-019-29W3M	RYAN KIRSCHENMAN	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0395-E1	NE21-019-29W3M	RYAN KIRSCHENMAN	OCCUPANT		Yes	No Concerns																													
XL-SK-0395-E1	NE21-019-29W3M	LUDWIG KIRSCHENMAN	OWNER		Yes	No Concerns																													
XL-SK-0397	SE21-019-29W3M	CANADIAN PACIFIC RAILWAY	OWNER		Yes	No Concerns																													
XL-SK-0398	SE21-019-29W3M	LUDWIG KIRSCHENMAN	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		No										
XL-SK-0398	SE21-019-29W3M	RYAN KIRSCHENMAN	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		No										
XL-SK-0399	SE21-019-29W3M	RYAN KIRSCHENMAN	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		No										
XL-SK-0399	SE21-019-29W3M	LUDWIG KIRSCHENMAN	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		No										
XL-SK-0400	SW22-019-29W3M	LARRY LIPPERT	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil prevention - Landowner prefers straw crimping		No					No				No		No		No		Landowner								
XL-SK-0401	NW15-019-29W3M	ROSE EVELYN GRUSIE	JOINT TENANT		Yes	No Concerns																													
XL-SK-0401	NW15-019-29W3M	CORINNE ROSE NEIGUM	JOINT TENANT		Yes	No Concerns																													
XL-SK-0401	NW15-019-29W3M	LYLE NEIGUM	OCCUPANT		Yes	No Concerns																													
XL-SK-0402	NE15-019-29W3M	LYLE NEIGUM	OCCUPANT		Yes	No Concerns																													
XL-SK-0402	NE15-019-29W3M	ROSE EVELYN GRUSIE	JOINT TENANT		Yes	No Concerns																													
XL-SK-0402	NE15-019-29W3M	CORINNE ROSE NEIGUM	JOINT TENANT		Yes	No Concerns																													
XL-SK-0403	SE15-019-29W3M	VOLDY STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		No										
XL-SK-0403	SE15-019-29W3M	DELORES STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		No										
XL-SK-0403	SE15-019-29W3M	CAGED FARMS LTD.	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		No										
XL-SK-0403	SE15-019-29W3M	JOANNE STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		No										
XL-SK-0404	SW14-019-29W3M	ALLEN JACOB JOB	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil Erosion Prevention - Straw Crimping (Rye Straw) preferred		No					No				No		No		No										
XL-SK-0404	SW14-019-29W3M	EILEEN VICTORIA JOB	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil Erosion Prevention - Straw Crimping (Rye Straw) preferred		No					No				No		No		No										
XL-SK-0405	NW11-019-29W3M	VOLDY STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0405	NW11-019-29W3M	DELORES STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0405	NW11-019-29W3M	JOANNE STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0405	NW11-019-29W3M	CAGED FARMS LTD.	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0406	NE11-019-29W3M	CAGED FARMS LTD.	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0406	NE11-019-29W3M	VOLDY STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0406	NE11-019-29W3M	DELORES STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0406	NE11-019-29W3M	JOANNE STICKELMIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (rye straw, not wheat straw)		No					No				No		No		No										
XL-SK-0407	SE11-019-29W3M	RONNIE LIPPERT	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention, straw crimping preferred		No					No				No		No		No		Landowner								
XL-SK-0407.1	SE11-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0408	NE02-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0409	NE02-019-29W3M	RONNIE LIPPERT	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		No		Landowner								
XL-SK-0410	NW01-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0411	NW01-019-29W3M	LARRY LIPPERT	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw Crimping Preferred		No					No				No		No		No		Landowner								
XL-SK-0411	NW01-019-29W3M	RITA JOANNE LIPPERT	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil prevention - Landowner prefers straw crimping		No					No				No		No		No		Landowner								
XL-SK-0412	SW01-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0412	SW01-019-29W3M	EWARD RIEHL	OCCUPANT		Yes	No Concerns																													
XL-SK-0413	SE01-019-29W3M	EDWARD RIEHL	OCCUPANT		Yes	No Concerns																													
XL-SK-0413	SE01-019-29W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0414	NE35-018-29W3M	GORDON LAVERNE GOMKE	JOINT TENANT		Yes	No Concerns																													
XL-SK-0414	NE35-018-29W3M	JEANETTE JOYCE GOMKE	JOINT TENANT		Yes	No Concerns																													
XL-SK-0415.3	NW36-018-29W3M	BRAD HAAS	OCCUPANT		Yes	No Concerns																													
XL-SK-0415.3	NW36-018-29W3M	PAUL MEHRER	OWNER		Yes	No Concerns																													
XL-SK-0416	SW36-018-29W3M	KEVIN SCOTT GOMKE	OWNER		Yes	No Concerns																													
XL-SK-0417	NW25-018-29W3M	KENNETH BEIERBACH	UNDIVIDED 1/2 INTEREST		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No						No				
XL-SK-0417	NW25-018-29W3M	RODNEY BEIERBACH	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No		Occupant				No				
XL-SK-0418	NW25-018-29W3M	RODNEY BEIERBACH	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No		Occupant				No				
XL-SK-0418	NW25-018-29W3M	DENNIS BEIERBACH	UNDIVIDED 1/2 INTEREST		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No		Occupant				No				
XL-SK-0419	NE25-018-29W3M	DENNIS BEIERBACH	UNDIVIDED 1/2 INTEREST		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No		Occupant				No				
XL-SK-0419	NE25-018-29W3M	RODNEY BEIERBACH	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No		Occupant				No				
XL-SK-0420	NE25-018-29W3M	RODNEY BLAIN BEIERBACH	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No		Occupant				No				
XL-SK-0420	NE25-018-29W3M	KENNETH BEIERBACH	UNDIVIDED 1/2 INTEREST		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		No		Occupant				No				
XL-SK-0421	SE25-018-29W3M	CECILIA MARIE BEIERBACH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		Yes	Hard Plugs	Pending								
XL-SK-0421	SE25-018-29W3M	RODNEY BLAIN BEIERBACH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion control measures, straw crimping if local straw		No					No				No		No		Yes	Hard Plugs	Pending								
XL-SK-0422	SW30-018-28W3M	RODNEY BLAIN BEIERBACH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion prevention measure if dry year - straw crimping if local straw		No					No				No		No		Yes	Hard Plugs	Pending				No				
XL-SK-0422	SW30-018-28W3M	CECILIA MARIE BEIERBACH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Erosion prevention measure if dry year - straw crimping if local straw		No					No				No		No		Yes	Hard Plugs	Pending				No				
XL-SK-0423	NW19-018-28W3M	BRIAN SEHN	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention (Straw Crimping if certified disease/weed free)		No					No				No		No		No		Occupant								
XL-SK-0423	NW19-018-28W3M	CLAYTON SEHN	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention (Straw Crimping if certified disease/weed free)		No					No				No		No		No		Occupant								
XL-SK-0424	NE19-018-28W3M	CLAYTON SEHN	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention (Straw Crimping if certified disease/weed free)		No					No				No		No		No		Occupant								
XL-SK-0424	NE19-018-28W3M	BRIAN SEHN	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention (Straw Crimping if certified disease/weed free)		No					No				No		No		No		Occupant								
XL-SK-0425	SE19-018-28W3M	ROBERT EDGAR ZIEGLER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Utilize soil erosion techniques - straw crimping		No					No				No		No		No		Compensat								
XL-SK-0426	SW20-018-28W3M	ROBERT EDGAR ZIEGLER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Utilize soil erosion techniques - straw crimping		No					No				No		No		No		Compensat								
XL-SK-0427	NW17-018-28W3M	BENEDICT KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (landowner has straw older than 2 years he wants		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0427	NW17-018-28W3M	DARRELL KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (landowner has straw older than 2 years he wants		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0427	NW17-018-28W3M	ALICE KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred (landowner has straw older than 2 years he wants		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0428	NE17-018-28W3M	ALICE KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0428	NE17-018-28W3M	DARRELL KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0428	NE17-018-28W3M	BENEDICT KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw crimping preferred		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0429	SE17-018-28W3M	CORY ALLAN SCHELL	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw Crimping preferred (wheat or durum straw)		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0429	SE17-018-28W3M	JACQUELINE LINDA SCHELL	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Straw Crimping preferred (wheat or durum straw)		No					No				No		No		Yes	Hard Plugs	If								
XL-SK-0430	SW16-018-28W3M	RDTT FARMS LTD.	OWNER		Yes	No Concerns																													
XL-SK-0432	SW16-018-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0433	NW09-018-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0434	NW09-018-28W3M	MARTHA FLAIG	OWNER		Yes	No Concerns	Yes	3 Lift, full	Yes	If land left bare over winter straw crimping or soil tackifier to prevent top soil		No					No				No		No		No		Occupant								
XL-SK-0434	NW09-018-28W3M	OSCAR WILSON	OCCUPANT		Yes	No Concerns	Yes	3 Lift, full	Yes	Landowner requires soil erosion prevention, straw crimping preferred		No					No				No		No				Occupant								
XL-SK-0435	NE09-018-28W3M	OSCAR WILSON	OWNER		Yes	No Concerns	Yes	3 Lift, full	Yes	Landowner requires soil erosion prevention, straw crimping preferred		No					No				No		No				Landowner								
XL-SK-0436	SE09-018-28W3M	OSCAR LLOYD WILSON	OWNER		Yes	No Concerns	Yes	3 Lift, full	Yes	Landowner requires soil erosion prevention, straw crimping preferred		No					No				No		No				Landowner								
XL-SK-0437	SW10-018-28W3M	OSCAR WILSON	OWNER		Yes	No Concerns	Yes	3 Lift, full	Yes	Landowner requires soil erosion prevention, straw crimping preferred		No					No				No		No				Landowner								
XL-SK-0438	NW03-018-28W3M	EDWIN KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw crimping (local straw) preferred		No					No				No		No		No		Landowner								
XL-SK-0438	NW03-018-28W3M	MELITA KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw crimping (local straw) preferred		No					No				No		No		No		Landowner								
XL-SK-0439	SW03-018-28W3M	EDWIN KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw crimping (local straw) preferred		No					No				No		No		No		Landowner								
XL-SK-0439	SW03-018-28W3M	MELITA KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw crimping (local straw) preferred		No					No				No		No		No		Landowner								
XL-SK-0440	SE03-018-28W3M	EDWIN KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw crimping (local straw) preferred		No					No				No		No		No		Landowner								
XL-SK-0440	SE03-018-28W3M	MELITA KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - Straw crimping (local straw) preferred		No					No				No		No		No		Landowner								
XL-SK-0441	SE03-018-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0442	NE34-017-28W3M		OWNER		Yes	No Concerns																													
XL-SK-0443	NE34-017-28W3M	EDWIN KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention, straw crimping preferred		No					No				No		No		No		Landowner								
XL-SK-0443	NE34-017-28W3M	MELITA KOCH	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention, straw crimping preferred		No					No				No		No		No		Landowner								
XL-SK-0444	NE34-017-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0445	NW35-017-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0446	NW35-017-28W3M	MARCEL JEROME KOCH	OWNER		Yes	No Concerns																													
XL-SK-0446	NW35-017-28W3M	PATRICK WILLIAM MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0446	NW35-017-28W3M	JORDAN SCHELL	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0447	SW35-017-28W3M	CJ ENTERPRISES INC.	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Straw Crimping preferred (wheat or durum straw)		No					No				No		No		No										
XL-SK-0447	SW35-017-28W3M	LORRETTA MILLER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Straw Crimping preferred (wheat or durum straw)		No					No				No		No		No										
XL-SK-0448	SE35-017-28W3M	LEONARD MILLER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Straw Crimping preferred (wheat or durum straw)		No					No				No		No		Yes	Soft Plugs	If								
XL-SK-0448	SE35-017-28W3M	CJ ENTERPRISES INC.	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Straw Crimping preferred (wheat or durum straw)		No					No				No		No		Yes	Soft Plugs	If								
XL-SK-0449	NE26-017-28W3M	JORDAN SCHELL	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0449	NE26-017-28W3M	PATRICK WILLIAM MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0449	NE26-017-28W3M	DARRELL PATRICK KOCH	OWNER		Yes	No Concerns																													
XL-SK-0449.1	NE26-017-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0449.2	NE26-017-28W3M	DARRELL PATRICK KOCH	OWNER		Yes	No Concerns																													
XL-SK-0450	NW25-017-28W3M	DAVID BERNARD TUCHSCHERER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - No preference		No					No				Yes	**Required if**	No		Yes	Soft Plugs	If	Tame	Yes				H6 and		
XL-SK-0451	SW25-017-28W3M	DAVID BERNARD TUCHSCHERER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - No preference		No					Yes	**If construction**			No		No		No			Tame	Yes				#6		
XL-SK-0452	SE25-017-28W3M	DAVID BERNARD TUCHSCHERER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - No preference		No					No				Yes	**If**	Yes		Yes	Hard Plugs	If								
XL-SK-0453	SE25-017-28W3M	CANADIAN PACIFIC RAILWAY	OWNER		Yes	No Concerns																													
XL-SK-0454	SE25-017-28W3M	CANADIAN PACIFIC RAILWAY	OWNER		Yes	No Concerns																													
XL-SK-0455	SE25-017-28W3M	CANADIAN PACIFIC RAILWAY	OWNER		Yes	No Concerns																													
XL-SK-0456	SE25-017-28W3M	DAVID BERNARD TUCHSCHERER	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Soil erosion prevention - No preference		No					No				Yes	**If**	Yes	There is an	Yes	Hard Plugs	If								
XL-SK-0457	SE25-017-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0458	NE24-017-28W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0459	NE24-017-28W3M	EDWARD JOSEPH BOSCH	JOINT TENANT		Yes	No Concerns																													
XL-SK-0459	NE24-017-28W3M	JANE BERNADETTE BOSCH	JOINT TENANT		Yes	No Concerns																													
XL-SK-0460	NW19-017-27W3M	STEWART DIRK	OWNER		Yes	No Concerns																													
XL-SK-0460	NW19-017-27W3M	ROBERT METZ	OCCUPANT		Yes	No Concerns																													
XL-SK-0460	NW19-017-27W3M	DEAN FANDRICK	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0461	SW19-017-27W3M	ROBERT EDWARD METZ	OCCUPANT		Yes	No Concerns																													
XL-SK-0461	SW19-017-27W3M	BILL BROWN	OCCUPANT		Yes	No Concerns																													
XL-SK-0461	SW19-017-27W3M	CROSSROADS LAND AND CATTLE	OWNER		Yes	No Concerns																													
XL-SK-0462	SE19-017-27W3M	KAMBEITZ FARM LTD.	OWNER		Yes	No Concerns																													
XL-SK-0462	SE19-017-27W3M	ROBERT EDWARD METZ	OCCUPANT		Yes	No Concerns																													
XL-SK-0463	NE18-017-27W3M	ROBERT EDWARD METZ	OWNER		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		Yes	Soft Plugs	30ft wide, 1				Yes				
XL-SK-0464	NW17-017-27W3M	ROBERT EDWARD METZ	OWNER		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0465	SW17-017-27W3M	CROSSROADS LAND AND CATTLE	OWNER		Yes	No Concerns																													
XL-SK-0465	SW17-017-27W3M	ROBERT EDWARD METZ	OCCUPANT		Yes	No Concerns																													
XL-SK-0466	NW08-017-27W3M	ALEXANDER DAVID METZ	OWNER		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0466	NW08-017-27W3M	ROBERT EDWARD METZ	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0467	NE08-017-27W3M	ROBERT EDWARD METZ	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0467	NE08-017-27W3M	ALEXANDER DAVID METZ	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0467	NE08-017-27W3M	YVONNE JANET METZ	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0467	NE08-017-27W3M	ORVILLE JOSEPH METZ	PREVIOUS OWNER		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0468	SE08-017-27W3M	JEAN SANFRED METZ	PREVIOUS OWNER		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0468	SE08-017-27W3M	ORVILLE JOSEPH METZ	PREVIOUS OWNER		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0468	SE08-017-27W3M	YVONNE JANET METZ	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0468	SE08-017-27W3M	ROBERT EDWARD METZ	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0468	SE08-017-27W3M	ALEXANDER DAVID METZ	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0469	SW09-017-27W3M	ROBERT EDWARD METZ	OWNER		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No						Yes				
XL-SK-0470	NW04-017-27W3M	LIYOA HOLDINGS LTD.	OWNER		Yes	No Concerns																													
XL-SK-0470	NW04-017-27W3M	ROBERT EDWARD METZ	OCCUPANT		Yes	No Concerns																													
XL-SK-0471	NE04-017-27W3M	BRADLEY RICHARD FLECK	OWNER		Yes	No Concerns																													
XL-SK-0472	SE04-017-27W3M	BRADLEY RICHARD FLECK	UNDIVIDED 1/2 INTEREST		Yes	No Concerns	Yes	Full Width	Yes	Landowner would like to use their own straw on their own land		No					No				No		No		Yes	Soft Plugs	If the crop is				Yes				
XL-SK-0473	SE04-017-27W3M	BRADLEY RICHARD FLECK	UNDIVIDED 1/2		Yes	No Concerns	Yes	Full Width	Yes	Landowner would like to use their own straw on their own land		No					No				No		No		Yes	Soft Plugs	If the crop is				Yes				
XL-SK-0474	SE04-017-27W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0475	SE04-017-27W3M	BRADLEY RICHARD FLECK	UNDIVIDED 1/2 INTEREST		Yes	No Concerns	Yes	Full Width	Yes	Landowner would like to use their own straw on their own land		No					No				No		No		Yes	Soft Plugs	If the crop is				Yes				
XL-SK-0476	SE04-017-27W3M	BRADLEY RICHARD FLECK	UNDIVIDED 1/2		Yes	No Concerns	Yes	Full Width	Yes	Landowner would like to use their own straw on their own land		No					No				No		No		Yes	Soft Plugs	If the crop is				Yes				
XL-SK-0477	SW03-017-27W3M	CHARLES MICHAEL HEPFNER	OWNER		Yes	No Concerns																													
XL-SK-0477	SW03-017-27W3M	RICHARD FLECK	OCCUPANT		Yes	No Concerns																													
XL-SK-0478	NW34-016-27W3M	SEAN MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0478	NW34-016-27W3M	ANNA MARY HEPFNER	OWNER		Yes	No Concerns																													
XL-SK-0479	SW34-016-27W3M	LIYOA HOLDINGS LTD.	OWNER		Yes	No Concerns																													

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XL-SK-0479	SW34-016-27W3M	ROBERT FOLK	OCCUPANT		Yes	No Concerns																													
XL-SK-0480	SE34-016-27W3M	LARRY CHISHOLM	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes	Follow the agreement		No					No				No		No		Yes	Soft Plugs	Refer to								
XL-SK-0480	SE34-016-27W3M	KENNETH LEONARD CHISHOLM	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Follow the agreement		No					No				No		No		Yes	Soft Plugs	Refer to								
XL-SK-0480	SE34-016-27W3M	SHEILA DIANE CHISHOLM	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Follow the agreement		No					No				No		No		Yes	Soft Plugs	Refer to								
XL-SK-0481	NE27-016-27W3M	MARIO ANTHONY KOCH	OWNER		Yes	No Concerns																													
XL-SK-0481	NE27-016-27W3M	PATRICK WILLIAM MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0482	NW26-016-27W3M	PATRICK MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0482	NW26-016-27W3M	MARCEL JEROME KOCH	OWNER		Yes	No Concerns																													
XL-SK-0483	SW26-016-27W3M	MARGARET MACPHAIL	JOINT TENANT		Yes	No Concerns																													
XL-SK-0483	SW26-016-27W3M	PATRICK WILLIAM MACPHAIL	JOINT TENANT		Yes	No Concerns																													
XL-SK-0484	SE26-016-27W3M	MACPHAIL ENTERPRISES INC.	OWNER		Yes	No Concerns																													
XL-SK-0485	NE23-016-27W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0485	NE23-016-27W3M	LINACRE GRAZING COOP LTD	OCCUPANT		Yes	No Concerns																													
XL-SK-0486	NW24-016-27W3M	MARGARET MACPHAIL	JOINT TENANT		Yes	No Concerns																													
XL-SK-0486	NW24-016-27W3M	ARNOLD JOHNNIE MACPHAIL	JOINT TENANT		Yes	No Concerns																													
XL-SK-0486	NW24-016-27W3M	SEAN MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0487	SW24-016-27W3M	PATRICK WILLIAM MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0487	SW24-016-27W3M	ROSALEE ANNE OBRITSCH	OWNER		Yes	No Concerns																													
XL-SK-0488	NW13-016-27W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0488	NW13-016-27W3M	SNOWDOWN GRAZING CO-	OCCUPANT		Yes	No Concerns																													
XL-SK-0488.1	SE24-016-27W3M	SEAN MACPHAIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0488.1	SE24-016-27W3M	ARNOLD JOHNNIE MACPHAIL	OWNER		Yes	No Concerns																													
XL-SK-0489	NE13-016-27W3M	SNOWDOWN GRAZING CO-	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Follow the agreement	No						No				Yes	Gate north	Yes	After	No				Yes			5			
XL-SK-0489	NE13-016-27W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Follow the agreement	No						No				Yes	Gate north	Yes	After	No				Yes			5			
XL-SK-0490	SE13-016-27W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Follow the agreement	No						No				No		No		No				Yes			5			
XL-SK-0490	SE13-016-27W3M	SNOWDOWN GRAZING CO-	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Follow the agreement	No						No				No		No		No				Yes			5			
XL-SK-0491	SW18-016-26W3M	SNOWDOWN GRAZING CO-	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Follow the agreement	No						No				Yes	Temp gate	Yes	Take down	No				Yes			5			
XL-SK-0491	SW18-016-26W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Follow the agreement	No						No				Yes	Temp gate	Yes	Take down	No				Yes			5			
XL-SK-0492	NW07-016-26W3M	HARVEY MUHLBEIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No				Yes						
XL-SK-0492	NW07-016-26W3M	MARIE MUHLBEIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No				Yes						
XL-SK-0492	NW07-016-26W3M	DONALD WITHGE	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0492	NW07-016-26W3M	KLASS WOUDWIJK	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0492	NW07-016-26W3M	DARREN MUHLBEIER	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No				Yes						
XL-SK-0493	NE07-016-26W3M	DARREN MUHLBEIER	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		Yes	Soft Plug	Refer to		Yes						
XL-SK-0493	NE07-016-26W3M	DONALD WITHAGE	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0493	NE07-016-26W3M	KLAAS WOUDWOJK	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0493	NE07-016-26W3M	HARVEY MUHLBEIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		Yes	Soft Plug	Refer to		Yes						
XL-SK-0493	NE07-016-26W3M	MARIE MUHLBEIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		Yes	Soft Plug	Refer to		Yes						
XL-SK-0494.1	NW08-016-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0495	SW08-016-26W3M	ESTHER MUHLBEIER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0495	SW08-016-26W3M	KAREN WEISS	JOINT TENANT		Yes	No Concerns																													
XL-SK-0495	SW08-016-26W3M	GREGORY MUHLBEIER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0495	SW08-016-26W3M	DARREN MUHLBEIER	OCCUPANT		Yes	No Concerns																													
XL-SK-0496	NW05-016-26W3M	HARVEY MUHLBEIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No				Yes						
XL-SK-0496	NW05-016-26W3M	MARIE MUHLBEIER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No				Yes						
XL-SK-0496	NW05-016-26W3M	DONALD WITHAGE	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0496	NW05-016-26W3M	KLAAS WOUDWIJK	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0496	NW05-016-26W3M	DARREN MUHLBEIER	OCCUPANT		Yes	No Concerns	Yes	Full Width	Yes			No					No				No		No		No				Yes						
XL-SK-0497	NE05-016-26W3M	LAVERNE MUHLBEIER	OCCUPANT		Yes	No Concerns																													
XL-SK-0497	NE05-016-26W3M	DORIS BECK	EXECUTOR		Yes	No Concerns																													
XL-SK-0497	NE05-016-26W3M	MARILYN BECK	EXECUTOR		Yes	No Concerns																													
XL-SK-0497	NE05-016-26W3M	JOANNE BECK	EXECUTOR		Yes	No Concerns																													
XL-SK-0497	NE05-016-26W3M	EDNA WINNIFRED MUHLBEIER	OWNER		Yes	No Concerns																													
XL-SK-0498	SE05-016-26W3M	BIG STICK ENTERPRISES LTD.	OWNER		Yes	No Concerns																													
XL-SK-0498.1	NW04-016-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0499	SW04-016-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0500	SE04-016-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0501	NE33-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0502	NW34-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0503	SW34-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0504	SE34-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0505	NE27-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0506	NW26-015-26W3M	SCHMIDT ORGANIC ACRES	OCCUPANT		Yes	No Concerns																													
XL-SK-0506	NW26-015-26W3M	HERALD ADAM	JOINT TENANT		Yes	No Concerns																													
XL-SK-0506	NW26-015-26W3M	LOIS AKERS	JOINT TENANT		Yes	No Concerns																													
XL-SK-0507	SW26-015-26W3M	HAVEN HUTTERIAN BRETHERN OF	OWNER		Yes	No Concerns																													
XL-SK-0508	SW26-015-26W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0510.1	SE26-015-26W3M	DELORES KOHLS	OWNER		Yes	No Concerns																													
XL-SK-0511	NE23-015-26W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0512	NE23-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0513	SE23-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0514	SE23-015-26W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0514.1	SW24-015-26W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0515	SW24-015-26W3M	HAVEN HUTTERIAN BRETHREN OF	OWNER		Yes	No Concerns																													
XL-SK-0516	NW13-015-26W3M	LENORA GLENDA NEITZ	OWNER		Yes	No Concerns																													
XL-SK-0516	NW13-015-26W3M	ARNOLD SCHMIDT	PREVIOUS OCCUPANT		Yes	No Concerns																													
XL-SK-0516	NW13-015-26W3M	SCHMIDT ORGANIC ACRES	OCCUPANT		Yes	No Concerns																													
XL-SK-0517	NE13-015-26W3M	THOMAS MICHAEL FLANAGAN	UNDIVIDED 1/3		Yes	No Concerns																													
XL-SK-0518	NE13-015-26W3M	SEAN THOMAS FLANAGAN	UNDIVIDED 1/3 INTEREST		Yes	No Concerns																													
XL-SK-0519	NE13-015-26W3M	STUART JOSEPH FLANAGAN	UNDIVIDED 1/3		Yes	No Concerns																													
XL-SK-0520	SE13-015-26W3M	THOMAS MICHAEL FLANAGAN	UNDIVIDED 1/3		Yes	No Concerns																													
XL-SK-0521	SE13-015-26W3M	SEAN THOMAS FLANAGAN	UNDIVIDED 1/3 INTEREST		Yes	No Concerns																													
XL-SK-0522	SE13-015-26W3M	STUART JOSEPH FLANAGAN	UNDIVIDED 1/3		Yes	No Concerns																													
XL-SK-0523	SW18-015-25W3M	EDWARD FEIL	OCCUPANT		Yes	No Concerns																													
XL-SK-0523	SW18-015-25W3M	WESSLY FEIL	OWNER		Yes	No Concerns																													
XL-SK-0524	NW07-015-25W3M	DEAN ELDON NEITZ	JOINT TENANT		Yes	No Concerns	Yes	Full Width,	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	After	Yes	Soft Plugs	1 Plug /		Yes			4			
XL-SK-0524	NW07-015-25W3M	CAROLINE ALFREDA NEITZ	JOINT TENANT		Yes	No Concerns	Yes	Full Width,	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	After	Yes	Soft Plugs	1 Plug /		Yes			4			
XL-SK-0525	SW07-015-25W3M	DEAN ELDON NEITZ	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	After	Yes	Soft Plugs	1 Plug /		Yes			4			
XL-SK-0526	SE07-015-25W3M	DEAN ELDON NEITZ	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	After	Yes	Soft Plugs	1 Plug /		Yes			4			
XL-SK-0526	SE07-015-25W3M	CAROLINE ALFREDA NEITZ	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	After	Yes	Soft Plugs	1 Plug /		Yes			4			
XL-SK-0527	NE06-015-25W3M	MARVIN SULZ	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes			No					Yes	Aaron would like			Yes	Landowne	No		No				Yes	Aaron would like Seed mix #7		7			
XL-SK-0527	NE06-015-25W3M	JEANNETTE SULZ	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes			No					Yes	Aaron would like			Yes	Landowne	No		No				Yes	Aaron would like Seed mix #7		7			
XL-SK-0527	NE06-015-25W3M	SULZ FARMS LTD.	PURCHASER		Yes	No Concerns	Yes	Native Range	Yes			No					Yes	Aaron would like			Yes	Landowne	No		No				Yes	Aaron would like Seed mix #7		7			
XL-SK-0528	NW05-015-25W3M	DEAN NEITZ	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	Refer to	No				Yes	Dean thinks seed mix #7 would be better,		6			
XL-SK-0528	NW05-015-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	Refer to	No				Yes	Dean thinks seed mix #7 would be better,		6			
XL-SK-0529	NW05-015-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	Refer to	No				Yes	Dean thinks seed mix #7 would be better,		6			
XL-SK-0529	NW05-015-25W3M	DEAN NEITZ	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not let soil blow away		No					Yes	Fence breaks			Yes		Yes	Refer to	No				Yes	Dean thinks seed mix #7 would be better,		6			
XL-SK-0530	SW05-015-25W3M	SULZ FARMS LTD.	PURCHASER		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					No				Yes	Landowne	Yes	South East	No				Yes	Would like some alfalfa and crested wheat		6			
XL-SK-0530	SW05-015-25W3M	MARVIN SULZ	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					No				Yes	Landowne	Yes	South East	No				Yes	Would like some alfalfa and crested wheat		6			
XL-SK-0530	SW05-015-25W3M	JEANNETTE SULZ	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					No				Yes	Landowne	Yes	South East	No				Yes	Would like some alfalfa and crested wheat		6			
XL-SK-0531	SE05-015-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0531	SE05-015-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0532	NE31-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0532	NE31-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0533	NW32-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0533	NW32-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0534	SW32-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0534	SW32-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0534.1	SE32-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0534.1	SE32-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0535	NW29-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0535	NW29-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0536	NE29-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0536	NE29-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0537	SE29-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0537	SE29-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0538	SW28-014-25W3M	HER MAJESTY THE QUEEN IN RIGHT	OWNER		Yes	No Concerns																													
XL-SK-0538	SW28-014-25W3M	BIG STICK PFRA	OCCUPANT		Yes	No Concerns																													
XL-SK-0539	NW21-014-25W3M	ED SANDERSON RANCHING LTD.	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					Yes	Temp fence along		300m	Yes		No		No				Yes			6			
XL-SK-0540	NE21-014-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					Yes	Temp fence along		600m	No		No		Yes	Soft Plugs	One soft		Yes			6			
XL-SK-0540	NE21-014-25W3M	ED SANDERSON RANCHING LTD.	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					Yes	Temp fence along		300m	No		No		Yes	Soft Plugs	One soft		Yes			6			
XL-SK-0541	SE21-014-25W3M	ED SANDERSON RANCHING LTD.	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					Yes	Temp fence along		1000m	Yes	At road	No		No				Yes			6			
XL-SK-0542	SW22-014-25W3M	ED SANDERSON RANCHING LTD.	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Follow agreement and re-vegetation plan		No					Yes	Temp fence along			Yes	At road	No		Yes	Soft Plugs	One soft		Yes			6			
XL-SK-0542-E1	SE22-014-25W3M	JAMES DAVID KRUCZKO	UNDIVIDED 1/2		Yes	No Concerns																													
XL-SK-0542-E2	SE22-014-25W3M	CHRISTOPHER JAMES DAVID	UNDIVIDED 1/2		Yes	No Concerns																													
XL-SK-0544	NE15-014-25W3M	BAILEY HORTON	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Landowner does not want to lose top soil (ie wind, water erosion)		No					No				No		No		No				Yes	Alfalfa and CWG					
XL-SK-0544	NE15-014-25W3M	TIMOTHY HORTON	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Landowner does not want to lose top soil (ie wind, water erosion)		No					No				No		No		No				Yes	Alfalfa and CWG					
XL-SK-0544	NE15-014-25W3M	VIOLET HORTON	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Landowner does not want to lose top soil (ie wind, water erosion)		No					No				No		No		No				Yes	Alfalfa and CWG					
XL-SK-0545	SE15-014-25W3M	BAILEY HORTON	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Landowner does not want to lose top soil (ie wind, water erosion)		No					Yes	Temp fence for		20m	Yes	At the end	No		No				Yes			6			
XL-SK-0545	SE15-014-25W3M	VIOLET HORTON	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Landowner does not want to lose top soil (ie wind, water erosion)		No					Yes	Temp fence for		20m	Yes	At the end	No		No				Yes			6			
XL-SK-0545	SE15-014-25W3M	TIMOTHY HORTON	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Landowner does not want to lose top soil (ie wind, water erosion)		No					Yes	Temp fence for		20m	Yes	At the end	No		No				Yes			6			
XL-SK-0546	SW14-014-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0546	SW14-014-25W3M	BIG STICK STOCKMEN'S GR CO-OP	OCCUPANT		Yes	No Concerns																													
XL-SK-0547	NW11-014-25W3M	STEPHEN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Natve Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Should be 3		Yes	Native mulch applied where erosion is a		6			
XL-SK-0547	NW11-014-25W3M	CHRISTOPHER KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Should be 3		Yes	Native mulch applied where erosion is a		6			
XL-SK-0547	NW11-014-25W3M	JUSTIN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Should be 3		Yes	Native mulch applied where erosion is a		6			
XL-SK-0547	NW11-014-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Should be 3		Yes	Native mulch applied where erosion is a		6			
XL-SK-0548	NE11-014-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native	Yes	Do not lose top spol		No					No				No		No		No				Yes	Native mulch applied where erosion is a		6			
XL-SK-0548	NE11-014-25W3M	CHRISTOPHER KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native	Yes	Do not lose top spol		No					No				No		No		No				Yes	Native mulch applied where erosion is a		6			
XL-SK-0548	NE11-014-25W3M	JUSTIN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native	Yes	Do not lose top spol		No					No				No		No		No				Yes	Native mulch applied where erosion is a		6			
XL-SK-0548	NE11-014-25W3M	STEPHEN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native	Yes	Do not lose top spol		No					No				No		No		No				Yes	Native mulch applied where erosion is a		6			
XL-SK-0550	SE11-014-25W3M	STEPHEN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Refer to		Yes	Native mulch applied where erosion is a		6			
XL-SK-0550	SE11-014-25W3M	CHRISTOPHER KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Refer to		Yes	Native mulch applied where erosion is a		6			
XL-SK-0550	SE11-014-25W3M	JUSTIN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Refer to		Yes	Native mulch applied where erosion is a		6			
XL-SK-0550	SE11-014-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	Refer to		Yes	Native mulch applied where erosion is a		6			
XL-SK-0550.1	SW12-014-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	1 Plug		Yes	Native mulch applied where erosion is a		6			
XL-SK-0550.1	SW12-014-25W3M	STEPHEN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	1 Plug		Yes	Native mulch applied where erosion is a		6			
XL-SK-0550.1	SW12-014-25W3M	CHRISTOPHER KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	1 Plug		Yes	Native mulch applied where erosion is a		6			
XL-SK-0550.1	SW12-014-25W3M	JUSTIN KRUCZKO	OCCUPANT		Yes	No Concerns	Yes	Native Range	Yes	Do not lose top spol		No					Yes	Make sure cattle			Yes	Refer to	No		Yes	Soft Plugs	1 Plug		Yes	Native mulch applied where erosion is a		6			
XL-SK-0552	NW01-014-25W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns																													
XL-SK-0552	NW01-014-25W3M	KEITH WINZER	OCCUPANT		Yes	No Concerns																													
XL-SK-0553	SW01-014-25W3M	KEITH HENRY WINZER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0553	SW01-014-25W3M	ANITA COLLEEN WINZER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0554	SE01-014-25W3M	KEITH HENRY WINZER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0554	SE01-014-25W3M	ANITA COLLEEN WINZER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0555	NE36-013-25W3M	ANITA COLLEEN WINZER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0555	NE36-013-25W3M	KeiTH HENRY WINZER	JOINT TENANT		Yes	No Concerns																													
XL-SK-0556	NW31-013-24W3M	JOHN ALEXANDER SWANSON	JOINT TENANT		Yes	No Concerns																													
XL-SK-0556	NW31-013-24W3M	DIANE LUCILLE SWANSON	JOINT TENANT		Yes	No Concerns																													
XL-SK-0557	SW31-013-24W3M	JERRY JAMES FREY	JOINT TENANT		Yes	No Concerns																													
XL-SK-0557	SW31-013-24W3M	NANCY ELAINE FREY	JOINT TENANT		Yes	No Concerns																													
XL-SK-0558	SE31-013-24W3M	JAMES DAVID KRUCZKO	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Contact Jim prior to construction		No					Yes	Refer to sketch			Yes	Take down	No		No				Yes	Alfalfa and CWG - Would like a ratio of 3					
XL-SK-0559	NE30-013-24W3M	JERRY JAMES FREY	JOINT TENANT		Yes	No Concerns																													
XL-SK-0559	NE30-013-24W3M	NANCY ELAINE FREY	JOINT TENANT		Yes	No Concerns																													
XL-SK-0559.1	NW29-013-24W3M	JAMES DAVID KRUCZKO	OWNER		Yes	No Concerns	Yes	Full Width	Yes	Contact Jim prior to construction		No					Yes	Refer to sketch			Yes	Refer to	No		No				Yes	Alfalfa and CWG, would like ratio of 3 + 2					
XL-SK-0560	SE30-013-24W3M	JACK SWANSON	JOINT TENANT		Yes	No Concerns																													
XL-SK-0560	SE30-013-24W3M	DIANE SWANSON	JOINT TENANT		Yes	No Concerns																													
XL-SK-0561	SW29-013-24W3M	ALICE RUBY KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0561	SW29-013-24W3M	GARRY GEORGE KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0561	SW29-013-24W3M	YLLA LEE KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0562	NW20-013-24W3M	ALICE RUBY KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0562	NW20-013-24W3M	GARRY GEORGE KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0562	NW20-013-24W3M	YLLA LEE KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0563	NE20-013-24W3M	ALICE RUBY KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0563	NE20-013-24W3M	GARRY GEORGE KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0563	NE20-013-24W3M	YLLA LEE KLIEN	JOINT TENANT		Yes	No Concerns																													
XL-SK-0564	SE20-013-24W3M	GRAHAM FREDRICK MARKERT	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Use caution with topsoil		No					No				Yes		No		Yes	Soft Plugs			Yes			6			
XL-SK-0564	SE20-013-24W3M	JANICE ALEXIS MARKERT	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Use caution with topsoil		No					No				Yes		No		Yes	Soft Plugs			Yes			6			
XL-SK-0565	SW21-013-24W3M	ALFRED GEORGE WAKELAM	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Would like crimping for reclamation		No					Yes	Cattle present			Yes	Requiredb	No		No				Yes			6			
XL-SK-0565	SW21-013-24W3M	FREDA MAY WAKELAM	JOINT TENANT		Yes	No Concerns	Yes	Native Range	Yes	Would like crimping for reclamation		No					Yes	Cattle present			Yes	Requiredb	No		No				Yes			6			
XL-SK-0566	NW16-013-24W3M	JOHN MAGEE	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					Yes	Contact John prior			Yes	Remove	No		Yes	Soft Plugs			Yes			6			
XL-SK-0566	NW16-013-24W3M	RUTH MAGEE	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes			No					Yes	Contact John prior			Yes	Remove	No		Yes	Soft Plugs			Yes			6			
XL-SK-0567	NE16-013-24W3M	HER MAJESTY THE QUEEN	OWNER		Yes	No Concerns	Yes	Full Width,	Yes			No					Yes	Contact John prior			Yes	Remove	No		Yes	Soft Plugs			Yes			6			
XL-SK-0567	NE16-013-24W3M	JOHN MAGEE	OCCUPANT		Yes	No Concerns	Yes	Full Width,	Yes			No					Yes	Contact John prior			Yes	Remove	No		Yes	Soft Plugs			Yes			6			
XL-SK-0567	NE16-013-24W3M	RUTH MAGEE	OCCUPANT		Yes	No Concerns	Yes	Full Width,	Yes			No					Yes	Contact John prior			Yes	Remove	No		Yes	Soft Plugs			Yes			6			

Pre-Construction Spreadsheet - Saskatchewan

XL-SK-0568	SE16-013-24W3M	PETER HECKER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Follow the proper criteria		No					Yes	**If grass does not**		About 700	Yes	**At both**	Yes	Take down	Yes	Soft Plugs	One soft	Alfalfa,	Yes						
XL-SK-0568	SE16-013-24W3M	HEATHER HECKER	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Follow the proper criteria		No					Yes	**If grass does not**		About 700	Yes	**At both**	Yes	Take down	Yes	Soft Plugs	One soft	Alfalfa,	Yes						
XL-SK-0569	SW15-013-24W3M	IRENE JONES	OWNER		Yes	No Concerns																													
XL-SK-0569	SW15-013-24W3M	WADE HAROLD WEISS	OCCUPANT		Yes	No Concerns																													
XL-SK-0570	NW10-013-24W3M	GRAHAM FREDRICK MARKERT	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Use caution with topsoil		No					No				No		No		No										
XL-SK-0570	NW10-013-24W3M	JANICE ALEXIS MARKERT	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Use caution with topsoil		No					No				No		No		No										
XL-SK-0571	NE10-013-24W3M	GRAHAM FREDRICK MARKERT	JOINT TENANT		Yes	No Concerns	Yes	Full Width	Yes	Use caution with topsoil		No					No				No		No		No										

APPENDIX D

Preconstruction Weed Survey Results

Appendix J: Watercourse Crossing Data Sheets

Geographical Data

UTM Location: 12U 561425.4 5616995.4
Datum: NAD 83
Province: AB
Survey Date: July 29, 2009
Crew Initials: CB. BN

Alberta Code of Practice

Class: Mapped Class C
Restricted Activity Period: April 1 to July 31
Management Area: Medicine Hat

Fish Sampling Data

Methods: None
Fish species captured: None
Historical Data: EMSH, BNTR, BURB, FTMN, BKST, FLCH, GOLD, LKST, LKWH, LNDC, LNSC, MOON, QUIL, RVSH, SAUG, SHRD, SLRD, SPSH, TRPR, WALL, WHSC, YI PR

Habitat rating: Critical
Level of protection: High

Physical Channel Data

Transect	1	2	HDD	4	5
Channel and Flow					
Channel Width (m)	170	210	160	195	230
Wetted Width (m)	141	175	140	148	186
Depth at 25% (m)	2.3	1.0	1.5	2.5	2
Vel. at 25% (m/s)	N/A	N/A	N/A	N/A	N/A
Depth at 50% (m)	1.8	1.4	3.5	2.2	2.1
Vel. at 50% (m/s)	N/A	N/A	N/A	N/A	N/A
Depth at 75% (m)	0.8	0.9	12.0	2.2	1.0
Vel. at 75% (m/s)	N/A	N/A	N/A	N/A	N/A
Banks					
Left Bank Ht (m)	2.5	2.5	1.2	1.0	1.0
Right Bank Ht (m)	2.5	2.5	1.0	1.0	0.7
Bank Stability	H	H	H	M	M
Substrate Type and Distribution (%)					
Fines	50	40	60	50	40
Gravel	15	20	20	20	20
Cobble	15	20	10	20	30
Boulder	20	20	10	10	10
Instream Cover (%)	60	60	60	60	60
Overhead Cover (%)	0	0	0	0	0

Habitat Assessment Summary

	Forage Fish	Coarse Fish	Sport Fish
Rearing Habitat:	Moderate	Moderate	Moderate
Overwintering Habitat:	Excellent	Excellent	Excellent
Spawning Habitat:	Moderate	Moderate	Poor/Moderate
Migration:	Excellent	Excellent	Excellent

Comments: The South Saskatchewan proposed crossing is located within a large valley of rolling prairie and badland topography. At the time of the assessment the river had a discharge of 70 m^3/s (measured at Medicine Hat) and was slightly turbid. Bank habitat was moderately stable with bank slopes averaging approximately 30 degrees. Along the shoreline, instream cover is limited to boulders and bedrock slabs eroding from adjacent valley walls. Instream vegetation is minimal. Turbidity, water depth and surface turbulence provide good overhead cover. There was sufficient depth to provide excellent overwintering for a variety of fish species, including lake sturgeon. At the proposed HDD location, depth is suitable to provide overwintering for lake sturgeon. Riffles within the study area could provide spawning for coarse fish species. There are no barriers within the watercourse to impair fish migration.

Water Quality Data

Date	29/07/09
Time of Day	8:30 AM
Water Temperature (°C)	19.8
pH	8.24
Dissolved Oxygen (mg/L)	8.56
Conductivity (μscm^{-1})	359
Turbidity (NTU)	8.5

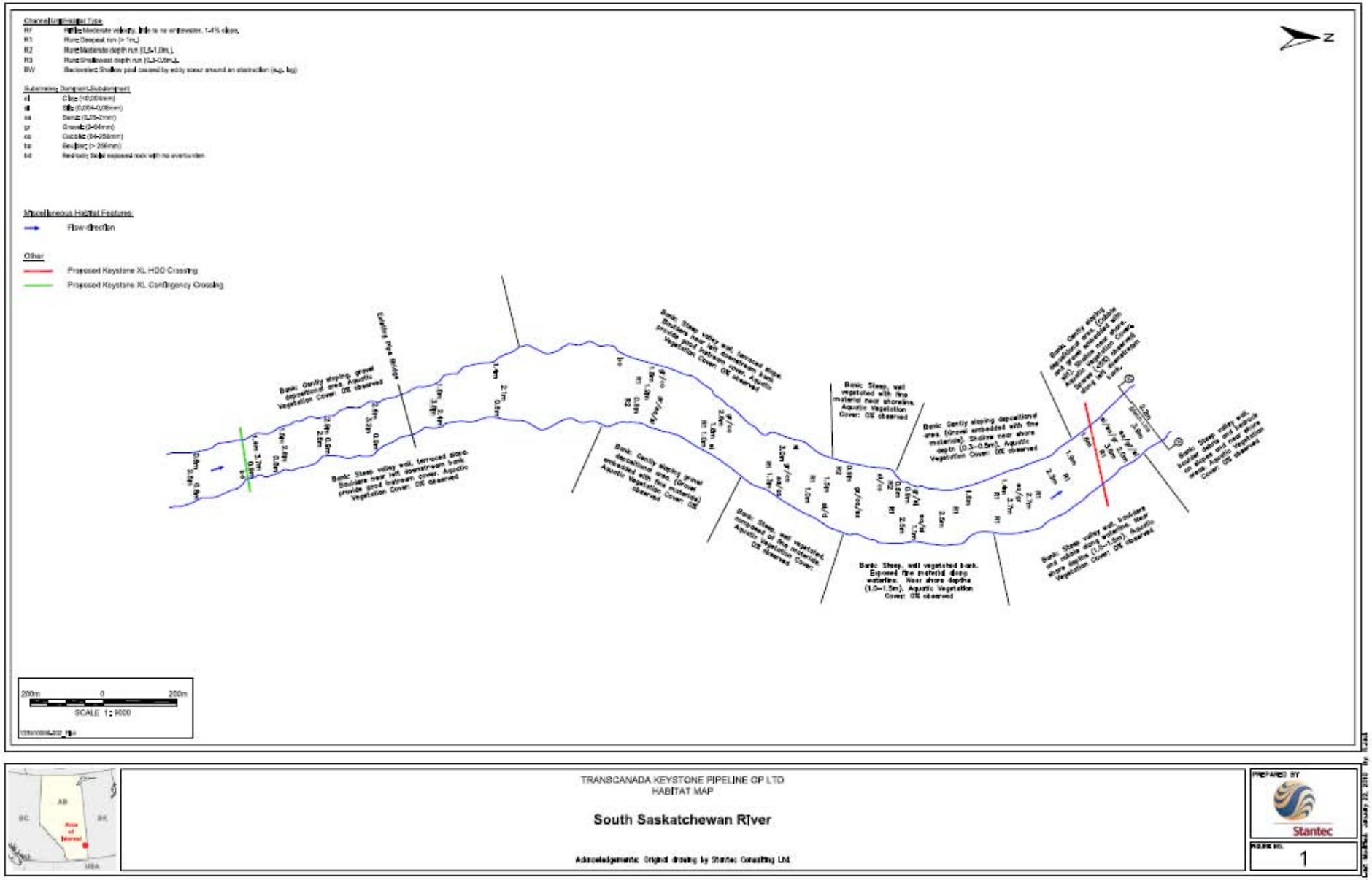
Proposed Crossing Methods

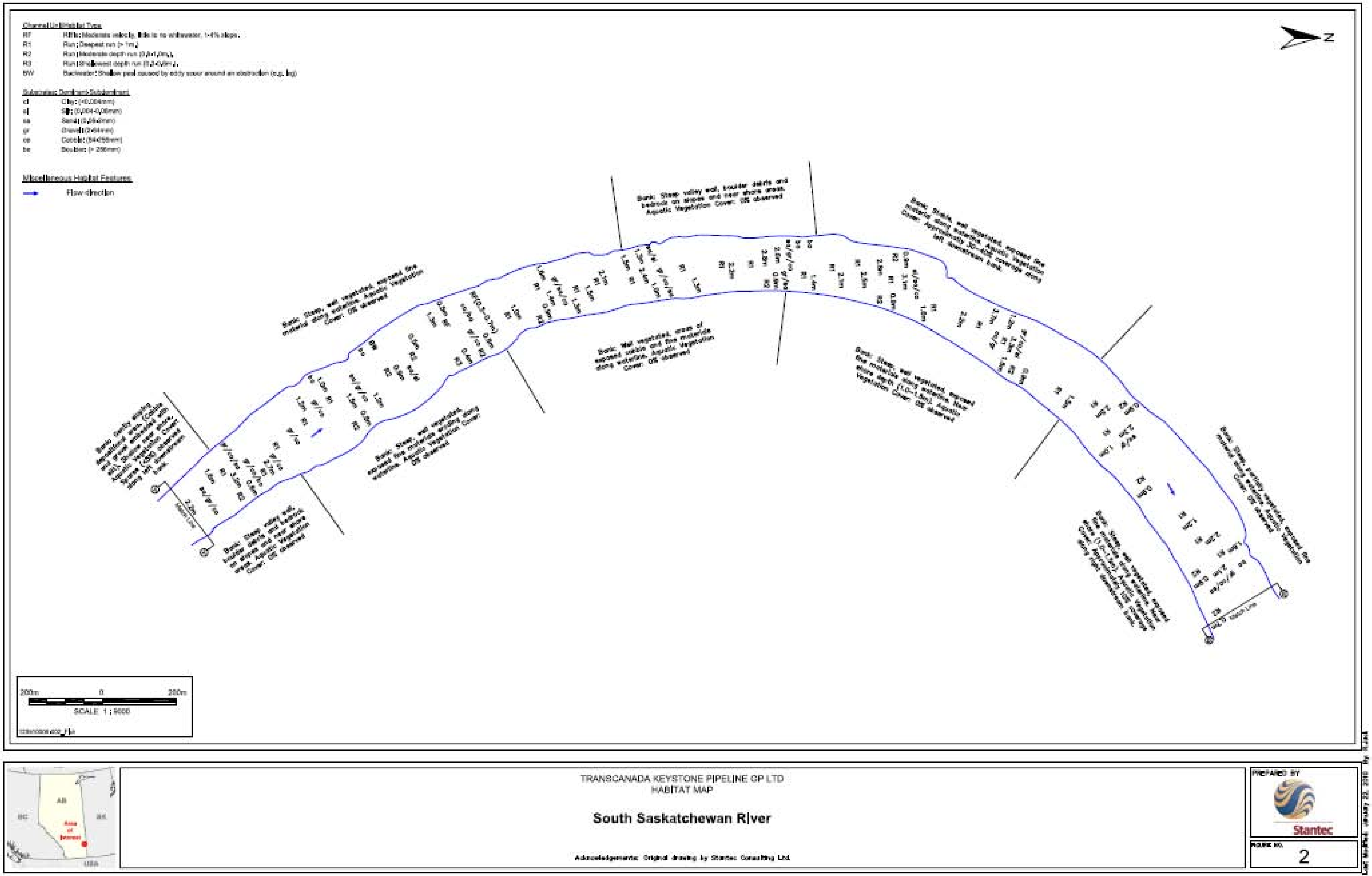
Pipeline: HDD is preferred. Contingency is a hybrid isolation method.
Vehicle Access: Existing permanent bridge

Data Summary Sheet

Site 47: South Saskatchewan River HDD

Keystone XL Pipeline Project


Channel Unit/Habitat Type
RF Riffle: Moderate velocity, little to no whitewater, 1-4% slope.
R1 Run: Deepest run (> 1m)
R2 Run: Moderate depth run (0.5-1.0m)
R3 Run: Shallowest depth run (0.3-0.5m)
BW Backwater: Shallow pool caused by eddy scour around an obstruction (e.g., log)
Substrate: Dominant Substratum
cl Clay (<0.004mm)
si Silt (0.004-0.06mm)
sa Sands (0.06-2mm)
gr Gravels (2-64mm)
co Cobble (64-256mm)
bo Boulder (> 256mm)
bd Bedrock: Solid exposed rock with no overburden
Miscellaneous Habitat Features
Flow direction
Other
Proposed Keystone XL HDD Crossing
Proposed Keystone XL Contingency Crossing
Existing Pipeline
Bank: Gently sloping, gravel depositional area. Aquatic Vegetation Cover: 0% observed
Bank: Steep valley wall, terraced slope. Boulders near toe downstream bank provide good instream cover. Aquatic vegetation Cover: 0% observed
Bank: Steep valley wall, terraced slope. Boulders near toe downstream bank provide good instream cover. Aquatic Vegetation Cover: 0% observed
Bank: Gently sloping gravel depositional area (Gravel embedded with fine material). Aquatic Vegetation Cover: 0% observed
Bank: Steep, wall vegetated with fine materials. Aquatic Vegetation Cover: 0% observed
Bank: Steep, wall vegetated with fine materials. Aquatic Vegetation Cover: 0% observed
Bank: Gently sloping depositional area. (Gravel embedded with fine material). Shallow near shore depth: (0.3–0.5m). Aquatic Vegetation Cover: 0% observed
Bank: Steep, wall vegetated bank. Exposed fine material along waterline. Near shore depths (1.0–1.5m). Aquatic Vegetation Cover: 0% observed
Bank: Gently sloping depositional area. Cobble and gravel embedded with silt. Shallow near shore. Aquatic vegetation Cover: 0% observed. Stream velocity (<0.5m/s) observed along left bank.
Bank: Steep valley wall, boulder debris and cobble along waterline. Aquatic vegetation Cover: 0% observed
Bank: Steep valley wall, boulder debris and cobble along waterline. Aquatic vegetation Cover: 0% observed
200m 0 200m
SCALE 1:2,000
TRANSCANADA KEYSTONE PIPELINE GP LTD
HABITAT MAP
South Saskatchewan River
Acknowledgements: Original drawing by Stantec Consulting Ltd.
PREPARED BY
Stantec
FIGURE NO.
1


Miscellaneous Habitat Features
Flow direction
N
SCALE 1 : 5000
TRANSCANADA KEYSTONE PIPELINE GP LTD
HABITAT MAP
South Saskatchewan River
Acknowledgements: Original drawing by Stantec Consulting Ltd.
PREPARED BY
Stantec
2

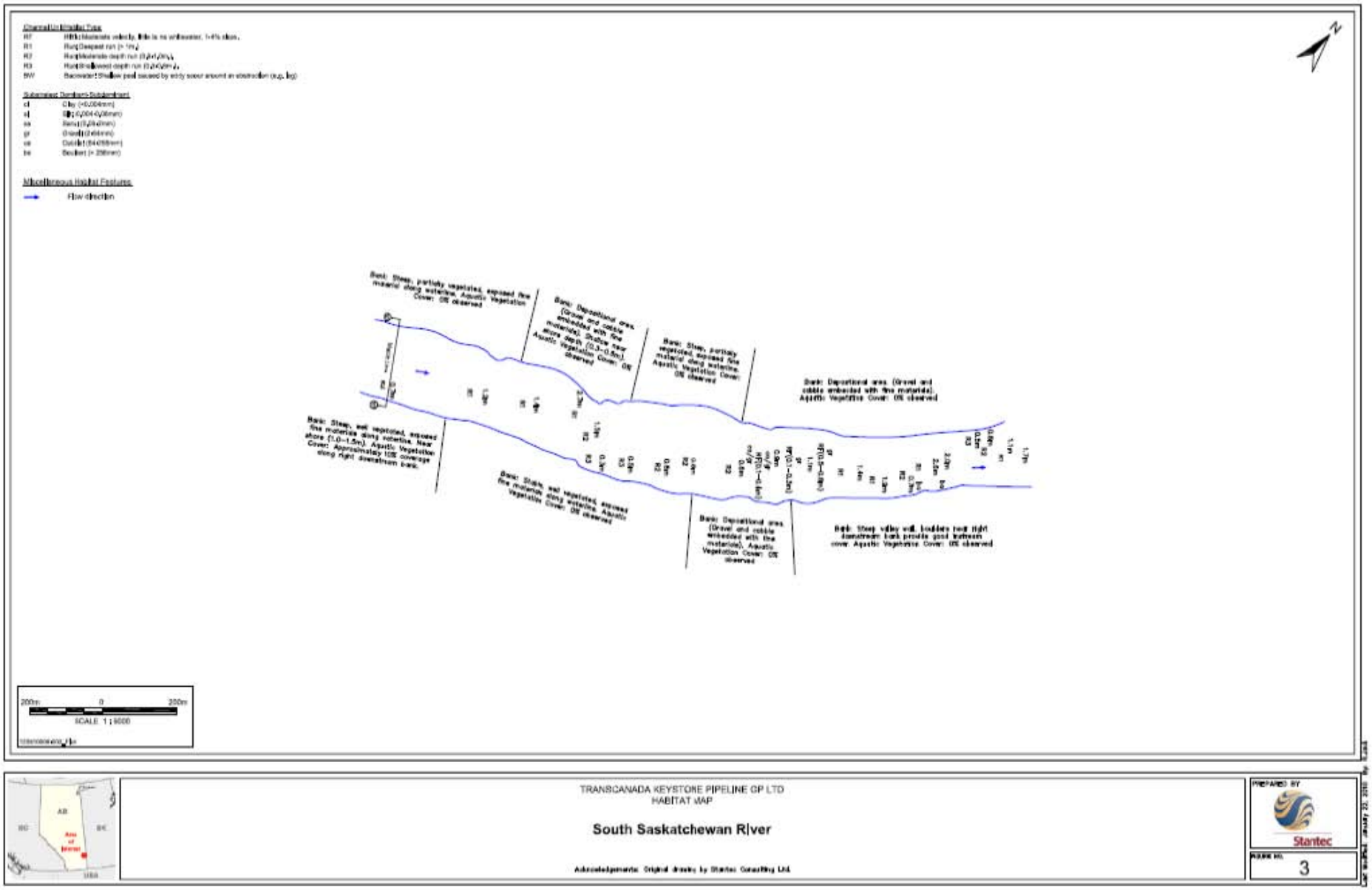

Channel Unit Morphology Type
Substrate Constituent Subdominant
Miscellaneous Habitat Features
Flow direction
Bank: Steep, partially vegetated, exposed fine material along waterline. Aquatic Vegetation Cover: 0% observed
Bank: Depositional area (Gravel and cobble embedded with fine material). Shallow near shore depth (0.3-0.4m). Aquatic Vegetation Cover: 0% observed
Bank: Steep, partially vegetated, exposed fine material along waterline. Aquatic Vegetation Cover: 0% observed
Bank: Depositional area. (Gravel and cobble embedded with fine materials). Aquatic Vegetation Cover: 0% observed
Bank: Steep, well vegetated, exposed fine materials along waterline. Near shore (1.0-1.5m). Aquatic Vegetation Cover: Approximately 10% coverage along right downstream bank.
Bank: Stable, well vegetated, exposed fine materials along waterline. Aquatic Vegetation Cover: 0% observed
Bank: Depositional area (Gravel and cobble embedded with the materials). Aquatic Vegetation Cover: 0% observed
Right: Steep valley wall. Boulders near right downstream bank provide good bathroom cover. Aquatic Vegetation Cover: 0% observed
200m 0 200m
SCALE 1:1000
TRANSCANADA KEYSTONE PIPELINE GP LTD
HABITAT MAP
South Saskatchewan River
Acknowledgements: Original drawing by Stantec Consulting Ltd.
PREPARED BY
Stantec
3

Photo 1 – Site 47 South Saskatchewan River: View of right downstream bank at proposed HDD location. July 29, 2009.

Photo 2 – Site 47 South Saskatchewan River: View looking downstream along left downstream bank at HDD location. July 29, 2009.

Photo 3 – Site 47 South Saskatchewan River: Typical boulder/bedrock banks adjacent to high valley walls. July 29, 2009.

Photo 4 – Site 47 South Saskatchewan River: Typical gently sloping, gravel and sand bank habitat. July 29, 2009.

Photo 5 – Site 47 South Saskatchewan River: Typical steep, well vegetated bank with fine material. July 29, 2009.

Geographical Data

UTM Location: 12U 0538502 5636698
Datum: NAD 83
Province: AB
Survey Date: July 30, 2008
Crew Initials: RS, BN

Management Information

Class: Mapped Class C
Restricted Activity Period: April 16 to August 15.
Management Area: Brooks

Fish Sampling Data

Methods: None
Fish species captured: None
Historical Data: BKTR, BLTR, BNTR, BKST, BURB, CTTR, EMSH, FLCH, GOLD, LKCH, LKWH, LNDC, LNSC, MNSC, MNWH, MOON, NRPK, QUIL, RNTR, RVSH, SAUG, SHRD, SPSH, TRPR, WALL, WHSC, YLPR

Habitat rating: Important
Level of protection: Moderate

Physical Channel Data

Transect	1	2	3	4	5
Channel and Flow					
Channel Width (m)	N/A	N/A	200	N/A	N/A
Wetted Width (m)	N/A	N/A	185	N/A	N/A
Depth at 25% (m)	N/A	N/A	1.20	N/A	N/A
Vel. at 25% (m/s)	N/A	N/A	0.30	N/A	N/A
Depth at 50% (m)	N/A	N/A	0.58	N/A	N/A
Vel. at 50% (m/s)	N/A	N/A	N/A	N/A	N/A
Depth at 75% (m)	N/A	N/A	N/A	N/A	N/A
Vel. at 75% (m/s)	N/A	N/A	N/A	N/A	N/A
Banks					
Left Bank Ht (m)	N/A	N/A	2.0	N/A	N/A
Right Bank Ht (m)	N/A	N/A	2.0	N/A	N/A
Bank Stability	N/A	N/A	L	N/A	N/A
Substrate Type and Distribution (%)					
Fines	N/A	N/A	100	N/A	N/A
Gravel	N/A	N/A	-	N/A	N/A
Cobble	N/A	N/A	-	N/A	N/A
Boulder	N/A	N/A	-	N/A	N/A
Instream Cover (%)	N/A	N/A	80	N/A	N/A
Overhead Cover (%)	N/A	N/A	1	N/A	N/A

Habitat Assessment Summary

	Forage Fish	Coarse Fish	Sport Fish
Rearing Habitat:	Good	Good	Good
Overwintering Habitat:	Good	Good	Good
Spawning Habitat:	Moderate	Moderate	Moderate
Migration:	Good	Good	Good

Comments: **The Red Deer River crossing is located within a large valley of** rolling prairie and pasturelands. At the time of assessment, the river was wide and very turbid, with large sandbars throughout the channel near the crossing. Bank habitat was unstable with steep, heavily eroded slopes. Abundant shoreline cover is present due to the bank slumping of vegetation into the channel creating potential rearing habitat. The turbidity of the river provides additional cover that could enhance potential rearing habitat. The substrate consists of a soft, silty bottom that drops off abruptly along the shoreline. The depth of the river could enhance potential rearing and overwintering habitat. The ability to assess spawning habitat was impaired by the turbidity of the river; the extent of instream vegetation was indeterminate and the high silt content of the substrate limits the diversity of fish species able to spawn within the watercourse. There does not appear to be any obstacles within the watercourse to impair fish migration. Fish capture was not conducted on **the Red Deer River due to abundant available fish data.**

Water Quality Data

Date	30/07/08
Time of Day	11:45 AM
Water Temperature (°C)	21.1
pH	9.08
Dissolved Oxygen (mg/L)	9.36
Conductivity (μscm^{-1})	419.8
Turbidity (NTU)	64.6

Proposed Crossing Methods

Pipeline: HDD is preferred method; contingency is two stage coffer dam outside of RAP

Vehicle Access: Existing permanent bridge

Data Summary Sheet

Site 43: Red Deer River

Keystone XL Pipeline Project

Jacques Whitford AXYS

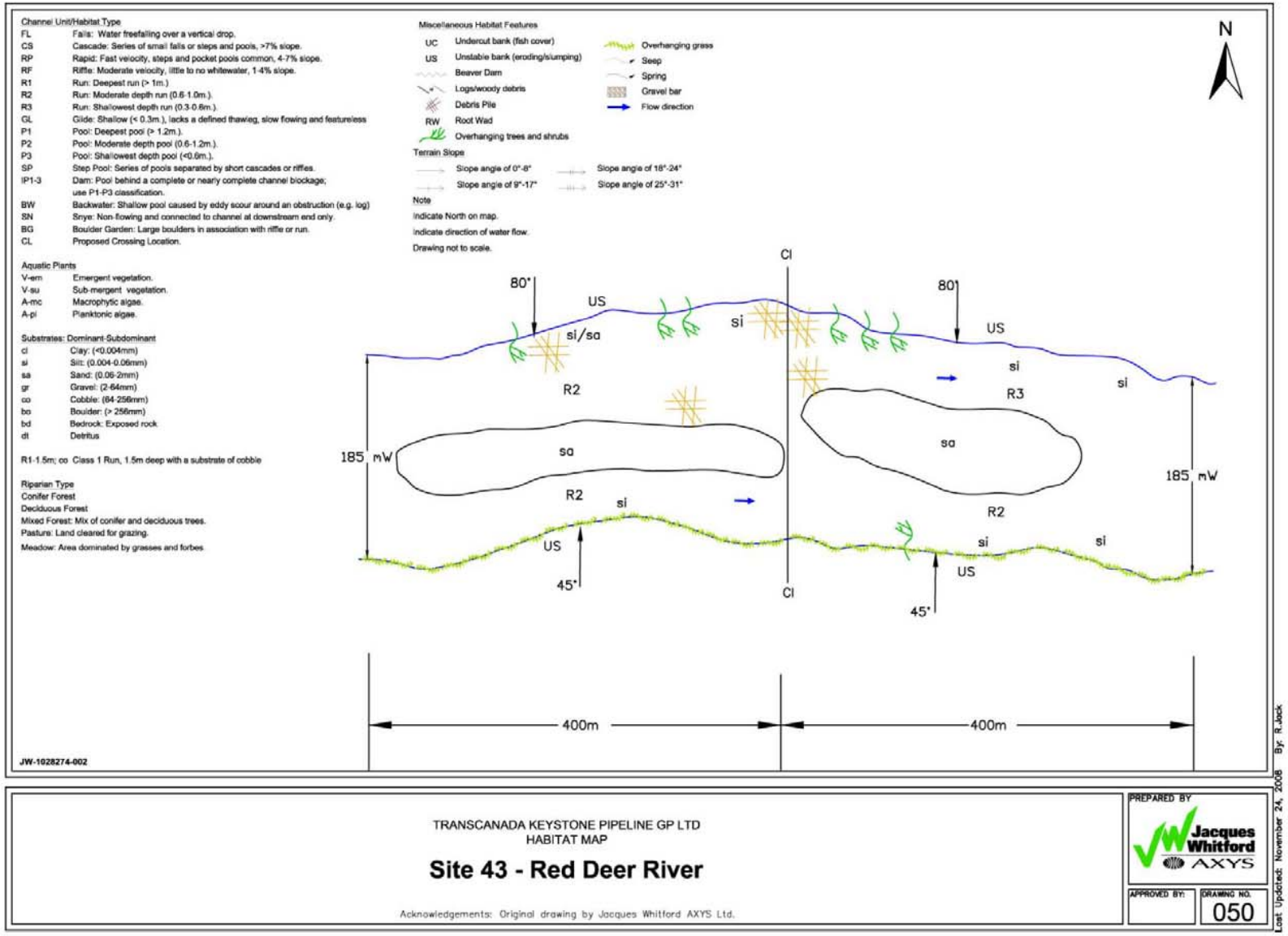

Channel Unit/Habitat Type
FL Falls: Water freefalling over a vertical drop.
CS Cascade: Series of small falls or steps and pools, >7% slope.
RP Rapid: Fast velocity, steps and pocket pools common, 4-7% slope.
RF Riffle: Moderate velocity, little to no whitewater, 1-4% slope.
R1 Run: Deepest run (> 1m.)
R2 Run: Moderate depth run (0.6-1.0m.).
R3 Run: Shallowest depth run (0.3-0.6m.).
GL Glide: Shallow (< 0.3m.), lacks a defined thawleg, slow flowing and featureless
P1 Pool: Deepest pool (> 1.2m.).
P2 Pool: Moderate depth pool (0.6-1.2m.).
P3 Pool: Shallowest depth pool (<0.6m.).
SP Step Pool: Series of pools separated by short cascades or riffles.
IP1-3 Dam: Pool behind a complete or nearly complete channel blockage; use P1-P3 classification.
BW Backwater: Shallow pool caused by eddy scour around an obstruction (e.g. log)
SN Snye: Non-flowing and connected to channel at downstream end only.
BG Boulder Garden: Large boulders in association with riffle or run.
CL Proposed Crossing Location.
Aquatic Plants
V-em Emergent vegetation.
V-su Sub-mergent vegetation.
A-mc Macrophytic algae.
A-pl Planktonic algae.
Substrates: Dominant-Subdominant
cl Clay: (<0.004mm)
si Silt: (0.004-0.06mm)
sa Sand: (0.06-2mm)
gr Gravel: (2-64mm)
co Cobble: (64-256mm)
bo Boulder: (> 256mm)
bd Bedrock: Exposed rock
dt Detritus
R1-1.5m; co Class 1 Run, 1.5m deep with a substrate of cobble
Riparian Type
Conifer Forest
Deciduous Forest
Mixed Forest: Mix of conifer and deciduous trees.
Pasture: Land cleared for grazing.
Meadow: Area dominated by grasses and forbes.
Miscellaneous Habitat Features
UC Undercut bank (fish cover)
US Unstable bank (eroding/slumping)
Beaver Dam
Logs/woody debris
Debris Pile
RW Root Wad
Overhanging trees and shrubs
Overhanging grass
Seep
Spring
Gravel bar
Flow direction
Terrain Slope
Slope angle of 0°-8°
Slope angle of 9°-17°
Slope angle of 18°-24°
Slope angle of 25°-31°
Note
Indicate North on map.
Indicate direction of water flow.
Drawing not to scale.
N
CL
80°
US
si/sa
si
80
US
si
si
R2
R3
185 mW
sa
sa
185 mW
R2
R2
si
US
45°
CL
si
si
US
45°
400m
400m
JW-1028274-002
TRANSCANADA KEYSTONE PIPELINE GP LTD
HABITAT MAP
Site 43 - Red Deer River
Acknowledgements: Original drawing by Jacques Whitford AXYS Ltd.
PREPARED BY
Jacques Whitford AXYS
APPROVED BY:
DRAWING NO.
050
Last Updated: November 24, 2008 By: R.Jack

Photo 1 **Site 43 Red Deer River: View Upstream of Proposed Crossing Location. July 30, 2008.**

Photo 2 **Site 43 Red Deer River: View Downstream of Proposed Crossing Location. July 30, 2008.**

Photo 3 **Site 43 Red Deer River: View of Left Downstream Bank at Proposed Crossing Location. July 30, 2008.**

Photo 4 **Site 43 Red Deer River: View of Right Downstream Bank at Proposed Crossing Location. July 30, 2008.**

Appendix K: Watercourse Crossing List

Table K-1 Watercourse Crossing List

#	Watercourse Name	Assessment Location (Northing Easting)	AENV Class	RAP	Channel Width (m)	Wetted Width (m)	Depth at 50% (m)	Habitat Rating	Watercourse Type	Pipeline Crossing Method	Equipment Crossing Method
43	Red Deer River	5636659.440 538634.9095	C	April 16 to August 15	200	185	0.58	Important	Perennial	Primary method is HDD, Contingency method is a two stage coffer dam	Existing permanent bridge (Hwy 41 and near Bindloss)
47	South Saskatchewan River	5620040.962 561712.7029	C	April 1 to July 31	206	199	2.3	Critical	Perennial	Primary method is HDD, Contingency method is hybrid isolation.	Existing permanent bridge (Hwy 41)

Appendix L: Water Minimal Disturbance Zone

Table L-1 Watercourse MDZ Setback Criteria

Standard: Maintain the MDZ setback (minimum 3 m) established during clearing and access installation (work side) and until just prior to pipeline installation (spoil or trench side).
Change in MDZ size: MDZ might be shortened during grubbing or grading activities or for vehicle crossing installation as approved by Keystone provided the criteria listed below are present and the Additional Mitigative Measures are implemented.
Rational: Grade cut required inside the MDZ to facilitate vehicle crossing installation (bridge, culvert). Alternative protection measures provide the same or better level of protection of the watercourse from sedimentation.
Criteria: Keystone must approve any changes in the MDZ size on a site specific basis, prior to implementation. The change to the MDZ might be implemented provided the following criteria are present at the specific watercourse: Steep slope approach extends into the MDZ however the final grade results in a negative slope of a height differential between the MDZ and the approach slope; or No potential for sediment to enter watercourse due to negative or flat grade; or There are no erodible soils adjacent to the watercourse (i.e. material on approaches is gravel, cobbles, boulders, bedrock, or other material deemed stable by Keystone).
Additional Mitigative Measures: The following mitigative measures will be implemented for resource protection both during and after construction to accommodate variance. The contractor is responsible for implementing and maintaining all mitigative measures unless otherwise specified: Maintain minimum set back of 3 m from the waters edge. Bridge ramps and abutments or fully contained with stable structures, including a geotextile wrap. Silt fencing, berm, clean straw bale or other barrier implemented, plus additional erosion and sediment control measures as specified by Keystone.

Appendix M: Migratory Bird Survey Protocol

Current as of June 1, 2010. To be updated and filed with the National Energy Board consistent with OC-56 Conditions 13 (b), and 17.

Keystone XL Pipeline Project Guidelines to Protecting Nesting Migratory Birds and Raptors

Revision 2

May 2010

Prepared for:
TransCanada Keystone Pipeline GP Ltd.
Calgary, Alberta

Prepared by:
Stantec Consulting Ltd.
Calgary, Alberta

Project Number: 1028274

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Appendices

1.0 INTRODUCTION

1.1 Regulatory Context

Environment Canada administers the *Migratory Birds Convention Act* (1994) (the Act) and the Migratory Birds Regulations (1994), through the regional Canadian Wildlife Service (CWS) office.

Migratory birds covered under the *Act* include all migratory birds in Canada, including:

- Waterfowl (e.g., ducks and geese)
- Cranes (e.g., sandhill cranes)
- Shorebirds (e.g., plovers and sandpipers)
- Songbirds (e.g., robins)

Other bird species, such as raptors (e.g., peregrine falcons) are not protected federally, but the *Species at Risk Act* (2002; SARA) applies to those listed on Schedule 1.

The *Act* protects migratory birds and their nests within Canada. The *Act* also allows for regulations to be made that prohibit 'the killing, capturing, injuring, taking or disturbing of migratory birds or the damaging, destroying, removing or disturbing of nests', as well as for prescribing protection for areas for migratory birds and nests and for the control and management of those areas.

Section 6 (a) of the Migratory Birds Regulations states that no person shall 'disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird'. In addition, Section 35 (1) has been repealed and replaced with Section 5(1) of the *Act* which prohibits the deposition of substances harmful to migratory birds in waters or areas frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

As there are no Authorizations to allow construction-related effects on migratory birds and their nests, best management practices must be followed to prevent contravention of the *Act*.

The SARA provides additional protection to species listed under the authority of SARA and includes many migratory bird species.

1.2 Purpose of This Document

In accordance with Condition 17 of the National Energy Board's *Reasons for Decision* OH-1-2009, Keystone has prepared these guidelines for the protection of nesting migratory birds. The scope also includes for the protection of raptors.

This document is based on the version utilized by the existing Keystone pipeline project; this document has been reviewed by Environment Canada and revised accordingly.

These guidelines apply to both vegetation clearing and construction activities. As committed in the responses to Information Request NEB 2.12, Keystone will avoid undertaking these activities during the breeding window[1] for migratory birds, where feasible. Where activities must be undertaken within this period, this protocol will be implemented.

[1] The breeding window is an estimate. The exact date would vary on the geographic location and would need to be confirmed with wildlife biologists and the Canadian Wildlife Service (CWS).

2.0 GUIDELINES

2.1 Rationale for Use of Nest surveys

In order to meet regulatory mandates for migratory birds, including SARA-listed species and species of concern, prairie/parkland bird nest searches are used to determine nesting activity within proposed development areas. In this way, nest sites can be documented and suitable avoidance buffers and/or restrictive timelines imposed during relevant development phases, where applicable. In areas where there is high likelihood of encountering SARA-listed bird species, surveys for such species will be extended out to an appropriate setback distance. Surveys are contingent upon the presence of suitable habitat and land access being granted to complete surveys. If access is not granted then the site will be surveyed with binoculars from the property line.

2.2 Objective of Nest Surveys

The specific objective of a prairie/parkland bird nest survey are to identify nest sites within or in close proximity to potential development areas (e.g., within 30 m of the disturbance footprint[2] for migratory birds [passerines] and 100 m for most raptors and waterfowl/waterbirds).

2.3 Overview

Whenever vegetation clearing or topsoil stripping and grading) is undertaken within the timing window of April 15 – July 31[3] for the Grassland Natural Region and May 1 – July 31 for the Parkland Natural Region, there is the possibility that migratory birds might be affected. Typically, the only vegetation that is not considered "habitat" for migratory birds is cultivated/agricultural fields[4]. When potential breeding habitat needs to be cleared and the date falls in the breeding bird window, qualified avian biologists should confirm there are no possibilities of affecting migratory birds (i.e., through destruction of a nest). Refer to Figures 2-1 and 2-2 for flow charts indicating the process of undertaking migratory bird nest surveys for both passerines and waterfowl/waterbirds.

As shown in Figure 2-2, nest surveys for waterfowl and waterbirds will be dependent on the presence of semi-permanent and permanent wetlands. For most waterbird species, except for example long-billed Curlews and upland sandpipers, birds generally nest in or adjacent to semi-permanent and permanent wetlands or waterbodies (e.g., creeks). As such, all semi-permanent and permanent wetlands and waterbodies within 100 m of the disturbance footprint will be searched for breeding waterbirds.

For some species of waterfowl, nesting occurs on upland, away from wetlands. In order to survey for upland nesting waterfowl, aerial photographs will be reviewed for the presence of semi-permanent and

[2] Disturbance footprint includes standard construction ROW plus additional temporary workspace.
[3] Beyond July 31, the timing window for Sprague's Pipits extends to August 31.
[4] For the purposes of this document, tame pasture is not considered to be cultivated or agricultural land.

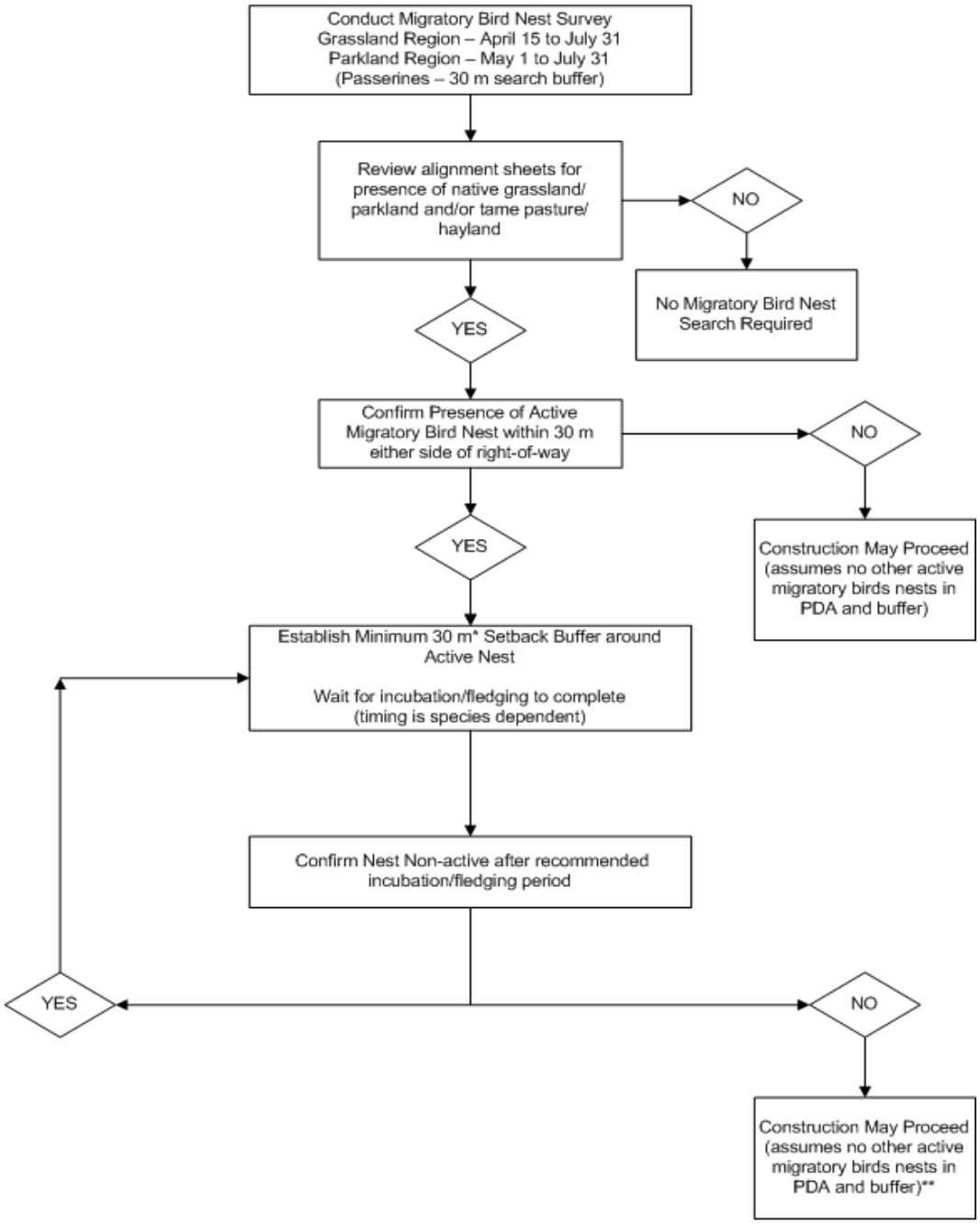
permanent wetlands within 200 m of the disturbance footprint. Where these wetlands occur, a 100 m search buffer beyond the disturbance footprint will be established; the length of the 100 m search buffer along the disturbance footprint will depend on how close the wetland is to the footprint. As with waterbirds, all semi-permanent and permanent wetlands and waterbodies within 100 m of the disturbance footprint will be searched for breeding waterfowl.

If vegetation clearing, topsoil stripping and grading has occurred but pipeline installation is planned during the breeding season, no further migratory bird nest surveys will be undertaken.

If reclamation occurs during the breeding bird window, the soil piles and direct area of disturbance will be specifically checked by site environmental inspectors and any active nests that are found will be demarcated and the appropriate buffers established to ensure against disturbance to the nest. No searches will be done in the surrounding undisturbed areas during reclamation as reclamation practices are not expected to cause significant disturbance to birds nesting adjacent to the disturbance footprint, as the reclamation process from soil replacement to seeding is of short duration and is a low magnitude disturbance.

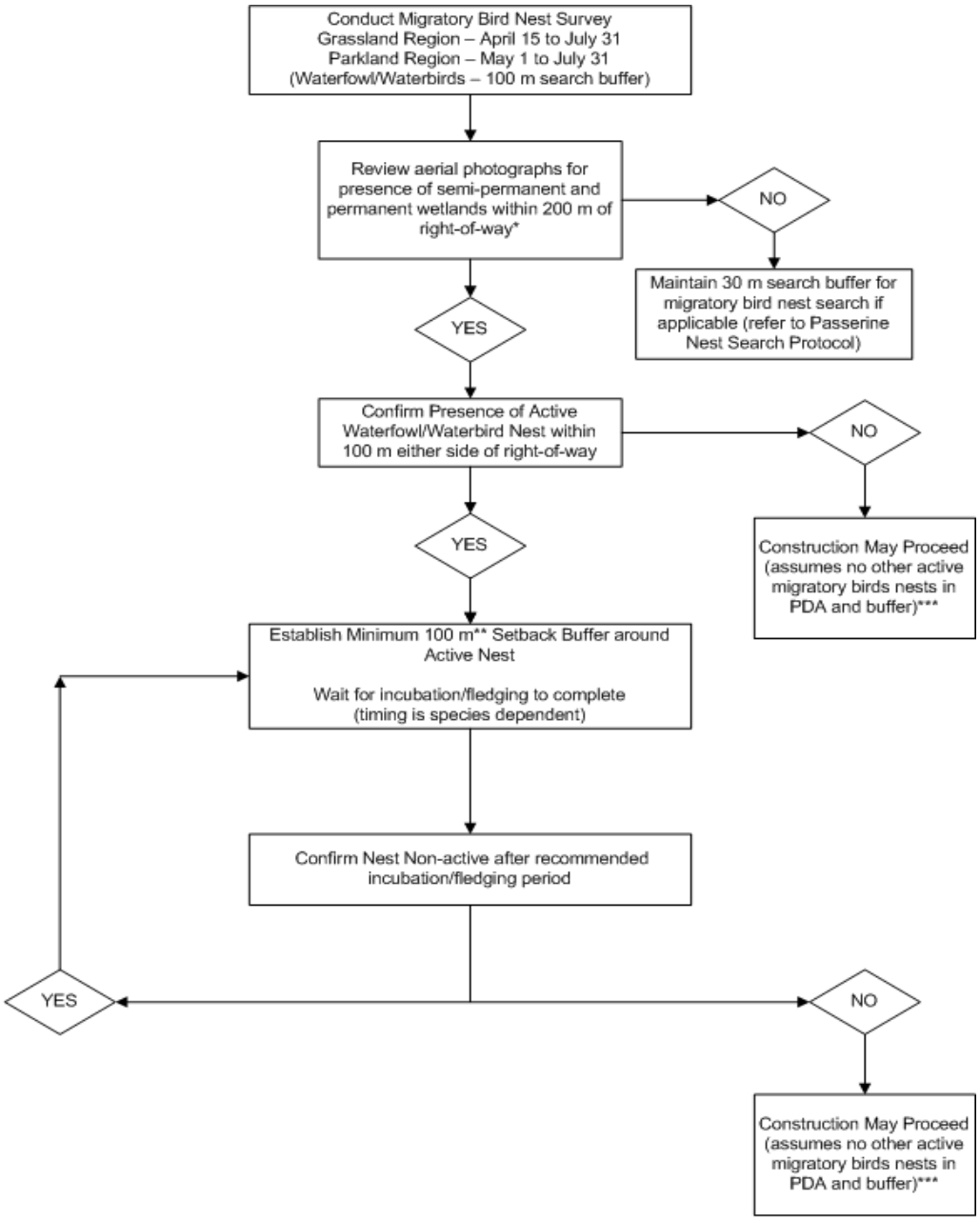
Nesting raptors, particularly hawks, can be found nesting in all habitat types, so long as a suitable nesting structure (e.g., tree) is present. The breeding window for raptors in Alberta and Saskatchewan extends from approximately March 15 to September 15, depending on the species. In order to determine if a nesting raptor survey is necessary, the environmental alignment sheets will be reviewed for suitable nesting structures (as well as previously observed raptor nests). Appropriate provincial wildlife databases (e.g., the Alberta Fisheries and Wildlife Management Information System [FWMIS] or the Saskatchewan Conservation Data Centre [SK CDC]) will also be reviewed for historical raptor nests. If either of these information sources indicates the potential for nesting raptors, a qualified avian biologist will undertake a nesting raptor survey. Biologists will search for active nests of raptor species of management concern (i.e., those listed in Alberta Sustainable Resource Development 2008, Arsenault 2009 and/or Environment Canada 2009) within 1000 m of the disturbance footprint and all other raptor species within 200 m of the disturbance footprint. Refer to Figure 2-3 for a flow chart describing this process.

As mentioned in Figure 2-3, a separate monitoring protocol has been developed for active non-listed raptor nests between 100 – 200 m from the disturbance footprint (Appendix A).



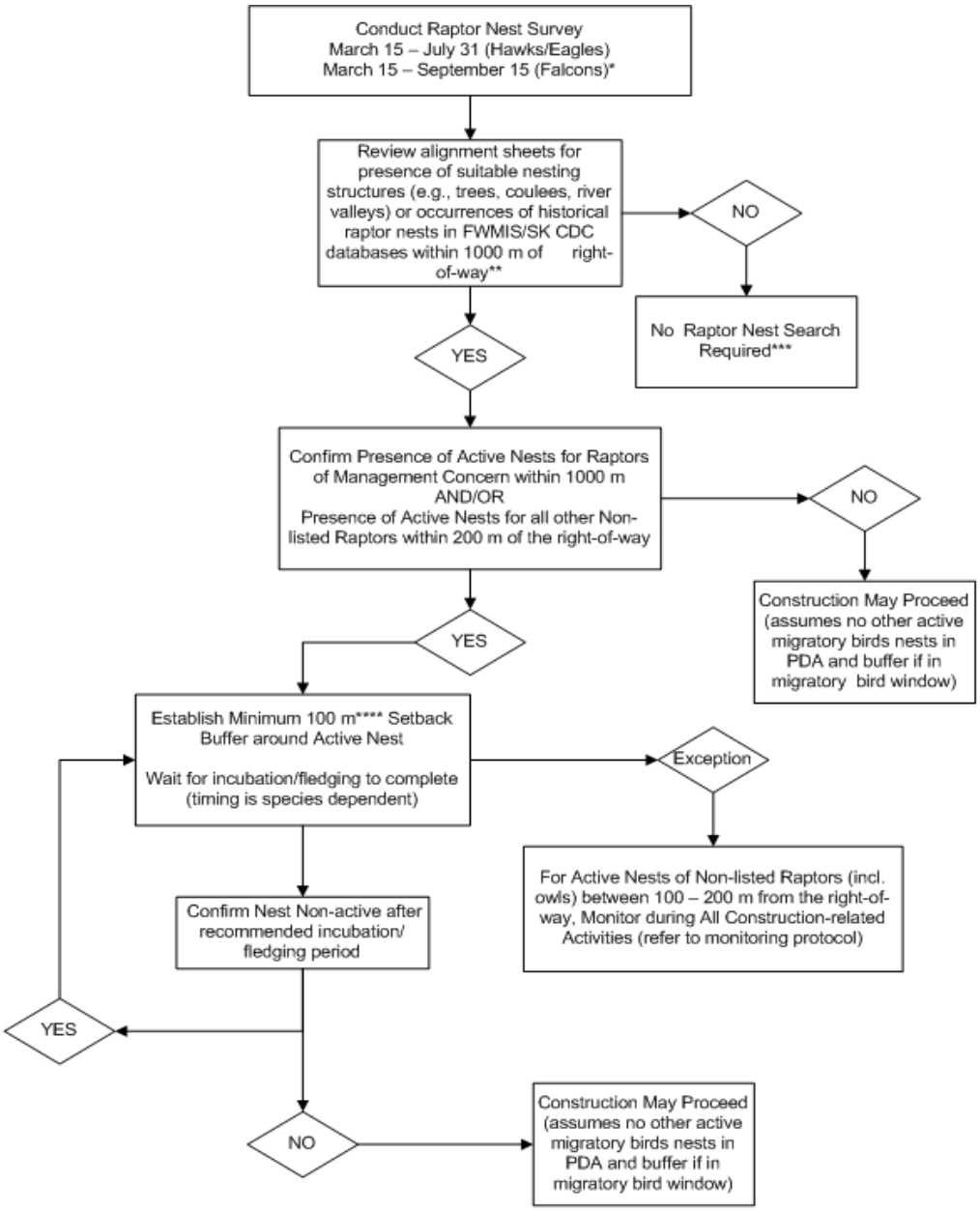
NOTES:
*Minimum 30 m setback buffer; setback buffers for species of management concern will be higher.
**Nest searches will still need to be conducted for all other migratory birds in the PDA and surrounding recommended setback buffers if still in the breeding bird window (e.g., grasslands – April 15 to July 31; parkland – May 1 to July 31)

Figure 2-1 Migratory Bird Nest Survey Flow Chart - Passerines



NOTES:
*Assumes upland nesting waterfowl/waterbirds will be within 100 m of a semi-permanent/permanent wetland.
**Minimum 100 m setback buffer; setback buffers for species of management concern will be higher.
***Nest searches will still need to be conducted for all other migratory birds in the PDA and surrounding recommended setback buffers if still in the breeding bird window (e.g., grasslands – April 15 to July 31; parkland – May 1 to July 31)

Figure 2-2 Migratory Bird Nest Survey Flow Chart – Waterfowl/Waterbirds



NOTES:
*Potential habitat for both Prairie and Peregrine Falcons limited to major river valleys (Red Deer, South Saskatchewan and Frenchman).
**Initial desktop screening to assess potential for nesting raptors. 1000 m review area for historical data based on setback buffer for certain species (e.g., Ferruginous Hawks). When migratory bird nest surveys are occurring, biologists will also be looking for active raptor nests in the vicinity of the right-of-way. FWMIS – Alberta Fisheries and Wildlife Management Information System; SK CDC – Saskatchewan Conservation Data Centre.
***Search for migratory bird nests may still need to occur if suitable habitat is present and within migratory breeding bird window. If outside migratory breeding bird window, construction may proceed.
****Minimum 100 m setback buffer; setback buffers for raptor species of management concern will be higher.

Figure 2-3 Raptor Nest Survey Flow Chart

2.4 Identification and Protection of Active Nests

The disturbance footprint will include potential nesting habitat for many migratory bird species (both ground and tree/shrub nesters). The presence of natural upland and wetland habitat within the disturbance footprint increases the chances of having nesting migratory bird species onsite.

Nests could be located in trees/shrubs or on the ground. An active nest can be identified by the following:

- the presence of birds or eggs in a nest
- adult birds carrying food or nesting materials to a specific location
- adult birds defending territory, through singing, screeching or diving (i.e., Sprague's pipit territorial display)

When one or more of the aforementioned indicators are noted, measures should be undertaken to identify if the potential location of the nest is within the disturbance footprint and disturbance buffer (e.g., 30 m of for migratory birds [passerines] and 100 m for raptors and waterfowl/waterbirds). (Identification of SARA-listed bird nests is discussed further in Section 2.5.)

If a potentially active nest has been identified during pre-construction surveys, a buffer needs to be established around the nest site, to ensure no further disturbance of the nesting migratory species. The size of the buffer will be based on the nest location, the sensitivity of the bird species to disturbances during nesting, and the status of the bird species (i.e., rare or protected under provincial/state or federal legislation). The buffer will be flagged with a suitably coloured survey ribbon to differentiate it from other survey markings. Buffers will be established based on the magnitude, intensity, and duration of the activity. For instance, the recommended buffer for most passerines will be 30 m but may be shortened to 10-15 m for species that are known to be less sensitive. However, this would only be allowed for construction-related activities that are less intensive (i.e., no heavy equipment). Buffers of less than 10 m have not been found to be large enough to protect the nest's viability.

Setback buffers for raptors and waterfowl/waterbird nests will be 100 m; any reduction in the 100 m setback will need to be assessed on a case-by-case basis by the qualified biologist and Keystone, and would have to include nest monitoring during any activities.

In addition to a minimum 100 m setback buffer around active nests for raptors (depending on species), monitoring of active nests of non-listed raptors (e.g., red-tailed hawk, Swainson's hawk) between 100-200 m from the disturbance footprint will also be done. As noted in Figure 2-3, a separate monitoring protocol has been developed for non-listed raptors (Appendix A).

Setback buffers for provincially- and SARA-listed bird species is discussed further in Section 2.5.

2.5 Nest Survey Protocol

The following describes the procedures in conducting a migratory bird and raptor nest survey in the Prairie and Parkland regions, the required site information, the detail of information expected and the rationale for specific methods where applicable.

- Nest surveys are generally conducted just prior to start of construction (within seven to 10 days).
- Prairie/parkland migratory bird nest surveys are conducted from mid April to late July. This timeframe takes into account the laying, incubation, hatchling and fledgling stages of several bird guilds including passerines, upland nesting shorebirds and waterfowl, upland gamebirds, and to a lesser extent, ground nesting raptors.
- In areas of suitable habitat during the migratory bird breeding window, nest searches (using light rope drags, which are not anticipated to have any negative effect on nesting activities) within the disturbance footprint and a 30 m buffer surrounding the footprint, in addition to point count surveys (for SARA-listed migratory birds), will be conducted (refer to Figure 2-4). The nest search buffer will extend out to 100 m where there is potential for breeding waterfowl/waterbirds. For the purposes of this protocol, suitable habitat is native prairie and parkland and tame pasture (non-cultivated lands).
- Biologists completing the migratory bird nest surveys must be aware of both provincially- and SARA-listed species at risk that may be found in the project area (on and off the disturbance footprint).
- As part of regulatory compliance, avoidance buffers are recommended for nest sites of provincially- and SARA-listed bird species (buffers vary in size). If, during nest surveys, an observation is made for an active, or potential, nest site (i.e., a bird calling, attending a nest, displaying aggressive behavior) inside or outside of the disturbance footprint for a particular at risk bird species, a GPS waypoint will be obtained to delineate an avoidance buffer for the potential nest site (for federally-listed refer to Environment Canada 2009; provincially-listed refer to Alberta Sustainable Resource Development 2008 or Arsenault 2009). In some instances, a site specific mitigation plan may be developed and discussed with regulators that may or may not include the use of setback buffers.
- Surveys for SARA-listed bird species such as ferruginous hawk and burrowing owl have previously been undertaken along the entire disturbance footprint. If construction activities are occurring during the migratory breeding bird window, visual detection of nesting activity of SARA-listed bird species (e.g., Ferruginous Hawk), or in instances where there have been historical occurrences (i.e., recent FWMIS or SK CDC observations), call playback surveys for Burrowing Owls, will be performed during the migratory bird nest surveys.
- If no construction work is allowed within a setback buffer, it should be noted that larger equipment (e.g., cats, graders and side booms) would likely have to be marshaled through the buffer along the right-of-way; more mobile equipment could go around if necessary. If this is to occur, monitoring may be required.

- If vehicles are using existing trails to travel to and from the right-of-way during construction, migratory bird nest surveys will only be required on and adjacent to trails that are low use (i.e., not maintained). If a nest is found adjacent to a trail, vehicles will be allowed to continue using the trail but will be prohibited from stopping within the recommended setback.
- Keystone recognizes that raptor species are provincially mandated species and surveys are based on published provincial guidelines of setback distances.
- Migratory bird surveys are required by NEB *Reasons for Decision* Condition 17. Additional survey requirements, determined in consultation with Environment Canada, include the conduct of migratory bird surveys within 7-10 days prior to construction.
- Results of surveys would be provided to the NEB.

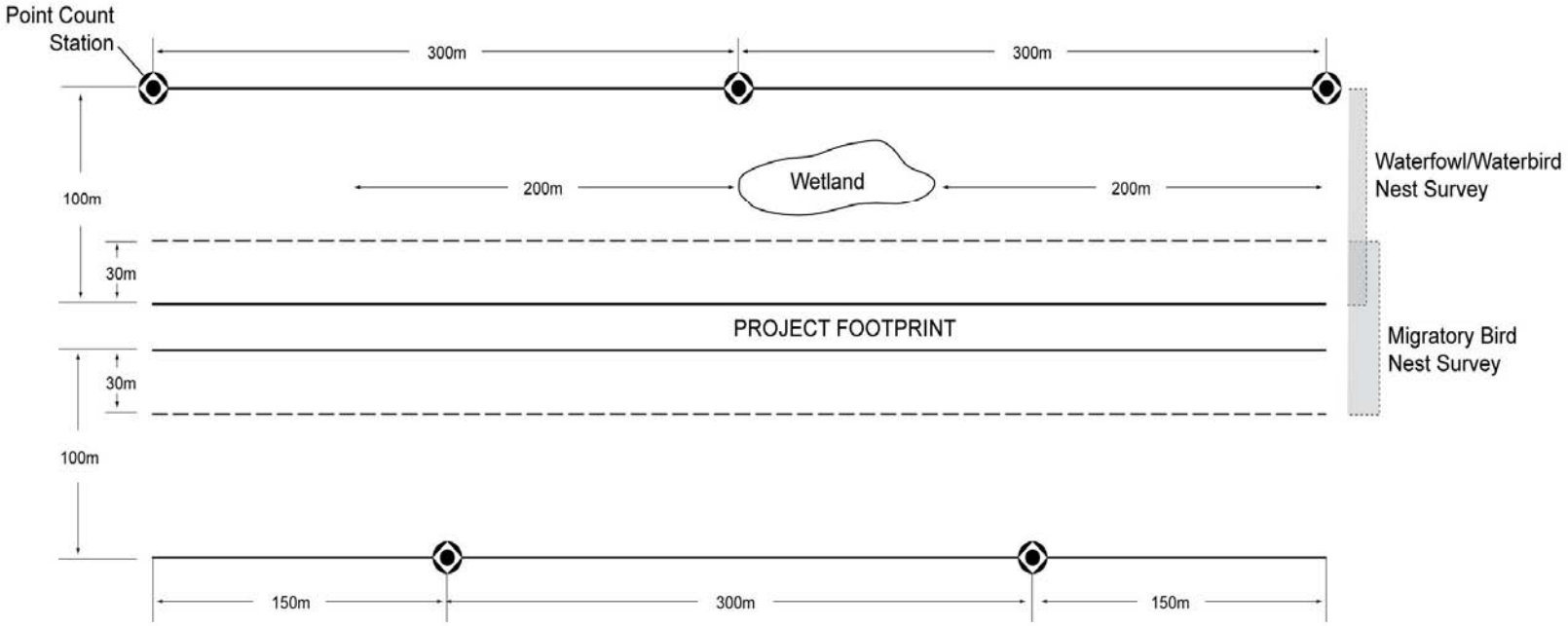


Figure 2-4 Nest Search and Point Count Survey Design – Example

2.5.1 Nest Searches

- Nest searches will be completed from sunrise until 1800 hours and should be discontinued during high winds or any precipitation. Searches can be continued until approximately 1800 hours as most nesting birds can still be flushed off their nests throughout the day. For Sprague's Pipits in particular, nest searches (generally undertaken after a territorial display has been observed) should be done between sunrise and 1000 hours or from 1700 hours until dusk.
- Nest searches for waterfowl/waterbirds will be dependent on the presence of semi-permanent and permanent wetlands.
    - All semi-permanent and permanent wetlands and waterbodies within 100 m of the disturbance footprint will be searched for breeding waterfowl and waterbirds.
    - For some species of waterfowl and waterbirds, nesting can occur upland away from wetlands. Aerial photographs will be reviewed for the presence of semi-permanent and permanent wetlands within 200 m of the disturbance footprint. Where these wetlands occur, a 100 m search buffer beyond footprint will be established; the length of the 100 m search buffer along the footprint will depend on how close the wetland(s) are to the footprint (up to 200 m) (refer to Figure 2-4).
- For tree/shrub nesting migratory birds, biologists will walk transects through treed areas and areas with heavy shrubs looking for nests and confirm if any nests found are active or not. The number of biologists will depend on the amount of cover present; for example, shelterbelts and small riparian area will require only one biologist.

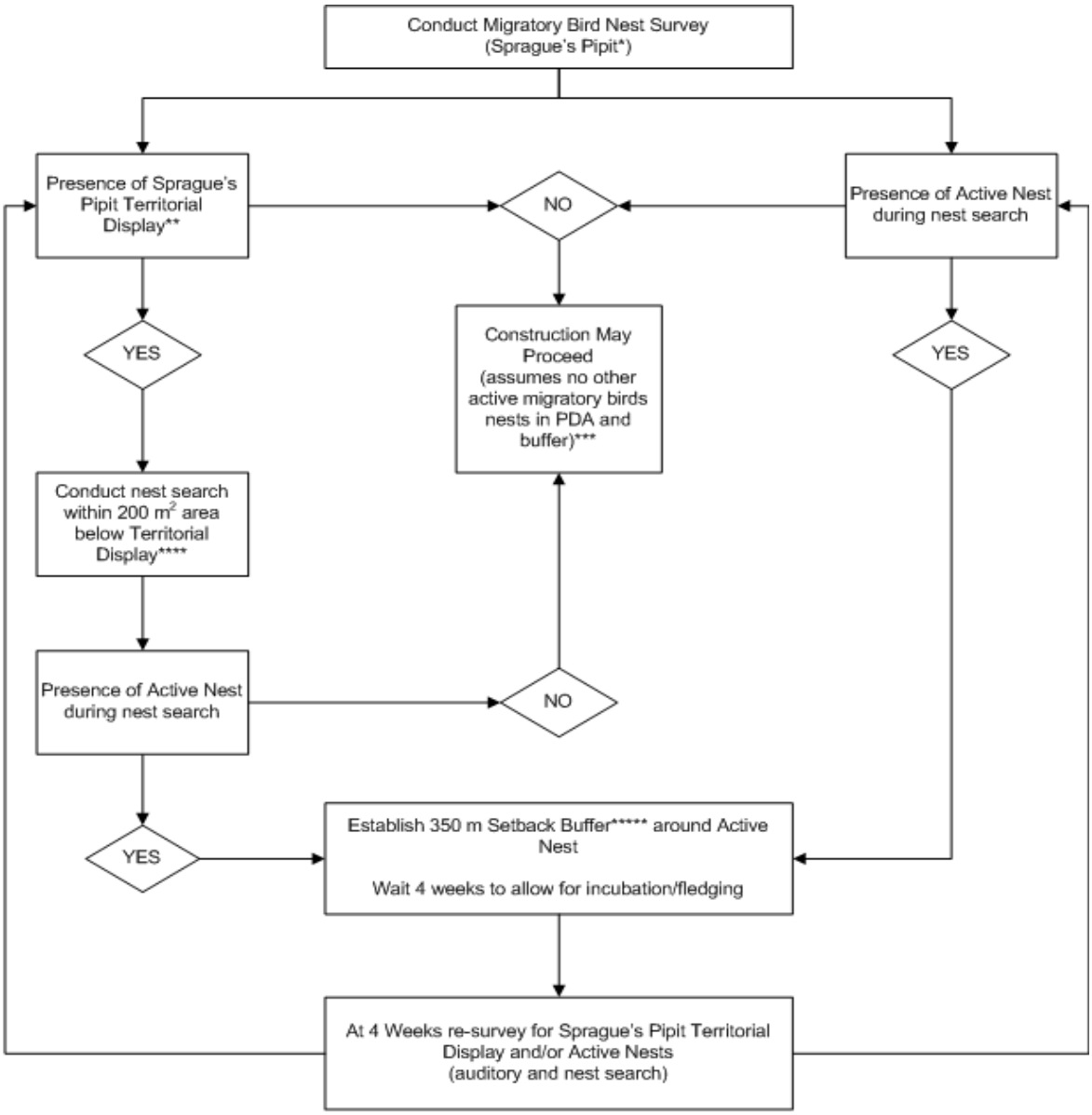
The following measures apply specifically to ground nesting birds:

- The entire length of the disturbance footprint and buffers through suitable habitat will be surveyed for active migratory bird nests using a line transect method. If the disturbance footprint is greater than 30 m in width, the boundary of the disturbance footprint can be marked to facilitate transects.
- Rope drags using a light cord with cans attached will be used to conduct the nest search. Two biologists will stand on either end of the rope (approx. 10-20 m apart, depending on habitat) and walk transects that are perpendicular to the disturbance footprint and buffers.
- When a bird is flushed, attempt to identify the bird species, then begin searching for the nest. Watch for identifying behavior and distinguishing characteristics (tail shape, tail bars, colors, etc.) and, if necessary, follow the flushed bird to obtain a better observation point.
- Visually mark the location of a flushing bird (using changes in vegetation, presence of sagebrush or other shrubs, micro-relief, etc.). This is especially important when searching for birds that flush at greater distances. A bird with a nest will generally fly only a few meters.
- When searching for the nest, attempt to minimize effects by limiting search effort to 5 minute, taking care to study the ground surface/vegetation before each step to prevent stepping on the nest. If the nest is not located, assume a nest location from the approximate location the bird flushed from as well as the species and behavior of the flushed bird.

- Some shorebirds (killdeer, American avocet, yellowlegs) secretly leave their nests and may display a "broken wing" behavior in an attempt to lure intruders from the nest area. To confirm the location of the nest, observers can move away 50-100 m to sit and wait until the bird returns to its nest.
- If a nest is discovered, obtain a GPS waypoint for future reference. Record the type of nest and number of eggs or young and take a photograph of the nest. If applicable for mitigation measures, record the distance and bearing to the disturbance footprint and applicable buffer.
- If a previously identified active nest of any migratory bird is determined to be to not be currently active (i.e., fledging has occurred), compliance with the Act is still required; therefore a resurvey for other migratory birds may or may not be required depending if the date since the last nest search was greater than 10 days and activities are still planned within the migratory bird breeding window.

2.5.2 Point Counts for SARA-listed Migratory Birds

- For SARA-listed bird species, such as Sprague's pipit and McCown's longspur, that have setback buffers greater than 30 m, point count surveys will be conducted in areas of suitable habitat from sunrise to 1000 hours and should be discontinued during high winds or any precipitation (refer to Figure 2-5). Point count surveys should be done prior to beginning nest searches (due to the limited time window to complete).
    - Staggered point count stations will be placed 100 m on either side of the disturbance footprint, spaced 300 m apart (refer to Figure 2-4) in areas of suitable habitat in order to determine if any SARA-listed bird species are present within their recommended setback.
    - If a SARA-listed bird species exhibiting potential breeding/nesting behavior is observed during the point count survey, and is within the recommended setback, a nest search would be conducted in the vicinity of the observation (e.g., up to 2 hectares [approximately 140 m^2] for Sprague's pipit) that falls within the portion of the setback buffer affected by the footprint.
- In order to minimize disturbance to SARA-listed bird species, if an active nest is found of any SARA-listed nesting bird species, wait the maximum incubation and fledging period (based on available literature), depending on whether eggs or chicks are present, before returning to confirm if nest is still active. If nest is found with chicks, then waiting time would be the reported fledging period length. For example, if an active Sprague's pipit nest (with eggs) is observed, wait four weeks from the observation date before returning to confirm completion of fledging.



NOTES:
*Applies to other SARA listed birds as well that may be detected during point count survey or during nest search (e.g., McCown's Longspur, Long-billed Curlew).
**For other SARA listed birds, visual or auditory detection (behavior specifically indicating breeding/nesting; flyovers not included) during point count survey would be the same.
***Nest searches will still need to be conducted for all other migratory birds in the PDA and surrounding recommended setback buffers if still in the breeding bird window (e.g., grasslands – April 15 to July 31; parkland – May 1 to July 31)
****Search area for nests of other SARA listed birds may be smaller depending on species and behavior observed.
*****Setback buffer will vary for other SARA listed birds.

Figure 2-5 Migratory Bird Nest Survey Flowchart – Sprague's Pipit

3.0 REGULATORY CONSULTATION

Regulatory consultations are outlined in Table 3-1. Documentation is included in Appendix B.

Table 3-1 Summary of Regulatory Consultation

Date	Agency	Comments	Response
January 28, 2010	Environment Canada	Keystone advised that it is revising the Migratory Bird Survey Protocol based on lessons learned from the base Keystone project and would provide EC with the revised protocol	N/A
March 3, 2010	Environment Canada	Discussed revisions to the protocol. Environment Canada advised Keystone to consult with provincial regulators regarding raptors and Canadian Wildlife Service regarding Sprague's pipit. Keystone to provide EC with the revised protocol.	N/A
March 4, 2010	Saskatchewan Environment	A 100m activity buffer for the raptor species not specifically listed in Arsenault 2009 is adequate...there were no specific setbacks in the old guidelines either, other than for Cooper's Hawk (200m for low impact activities and 400m for medium and high impact activities). However, Cooper's Hawk is very tolerant of human activity including in urban settings, so the old guideline is excessive. The most disturbance-sensitive period for hawks is prior to incubation and during early incubation. So if there are active nests for these species within 100-200m of the RoW, you may consider use of a construction timing restriction to mitigate impact. Most hawk species rarely abandon the nest late in incubation or post-hatch. Protecting the nesting habitat and important habitat features would be higher priority than buffering from short-term disturbance of construction activity... a 100-200m habitat protection buffer would be sufficient depending on site circumstance.	For all active non-listed raptor nests (the species not included in either Arsenault (2009) or Environment Canada's new guidelines), keystone will establish a 100 m setback while the nest is active (until fledging is completed). In addition, for those active nests between 100 – 200 m from the ROW, Keystone will monitor the nests during construction and record behavior while construction occurs. Keystone has developed a draft monitoring protocol which will be provided to SENV that addresses the need for potential additional mitigation (e.g., construction activities being limited if flushing occurs for an extended period of time).

Date	Agency	Comments	Response
May 4, 2010	Environment Canada	1. If swans are shorebirds then that's news to me. Gulls aren't shorebirds either. 2. *" In areas where there is high likelihood of encountering SARA-listed bird species, surveys for such species will be extended out to an appropriate setback distance. Surveys are contingent upon the presence of suitable habitat and land access being granted to complete surveys."* If access is not granted then the site should be surveyed with binoculars from the property line. 3. "*For instance, the recommended buffer for most passerines will be 30 m but may be shortened to 10-15 m for species that are known to be less sensitive."* This would be pushing it. I would rather recommend in cases where the disturbance is less intensive, e.g. no heavy equipment) 4. *"Additional survey requirements, determined in consultation with Environment Canada, include the conduct of migratory bird surveys 7-10 days prior to construction."* That should read "within" 7 or 10 days of construction (i.e. 1 to 10 days). 5. Table A-1 Raptor Monitoring and Mitigation Protocol. I'm not sure I understand the "Start 2 hour time limit". Does this mean you will vacate the site for two hours, or you will work on the site for two hours? If a hawk flushes from the nest upon arrival or due to some unusually large noise, I do not advise continuing for two hours before the bird returns. If the bird doesn't return after 15 minutes there is risk of exposure.	1. This error was corrected in the document. 2. This change has been made in Section 2.1. 3. This change has been made in Section 2.4. 4. This change has been made in Section 2.5. 5. Alberta Sustainable Resource Development and Saskatchewan Environment were contacted for feedback as this is within provincial jurisdiction. No comments were provided by ASRD; see SENV comments below.

Date	Agency	Comments	Response
May 6, 2010	Saskatchewan Environment	Keystone provided the monitoring protocol for non-listed active raptor nests between 100 and 200 m from the ROW. Saskatchewan Environment has no concerns.	N/A
May 12, 2010	Saskatchewan Environment	Protocol should minimize any potential disturbances with non listed nesting raptors. No concerns.	N/A

4.0 REFERENCES

Alberta Sustainable Resource Development. 2008. Restricted Activity Periods and Setback Distances by Land Use Activity for Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions in Alberta. Fish and Wildlife Branch, Sustainable Resource Development, Government of Alberta.

Arsenault, A.A. 2009. Disturbance impact thresholds: Recommended land use guidelines for protection of vertebrate species of concern in Saskatchewan. Saskatchewan Ministry of Environment. Lands Branch – Fish and Wildlife Branch Technical Report 2009-06.

Environment Canada. 2009. Petroleum Industry Activity Guidelines for Wildlife Species at Risk in the Prairie and Northern Region. Canadian Wildlife Service, Environment Canada, Prairie and Northern Region, Edmonton Alberta.

APPENDIX A

Recommended Mitigation Measures for Monitoring Active Raptor Nests

The purpose of this monitoring protocol is to minimize potential disturbance effects to non-listed raptor species that are actively nesting in the vicinity of the development footprint (between 100 to 200 m away). Minimizing disturbance is important as human activities around nesting raptors can result in complete desertion of nests, eggs, or young (Suter and Joness 1981). In addition, temporary departure by adults can cause overheating, chilling, or desiccation of eggs or young, predation on eggs or young, or missed feedings.

The use of temporal buffers (i.e., when a nest is considered active) should include all nesting activities and in most cases extend from the time of arrival of the adult birds in the nesting area through the first few weeks of nestling development (Suter and Joness 1981). Delaying development within the flushing distance (i.e., setback distance) during the few weeks of development is highly recommended as after this period young are able to thermoregulate and adults are reluctant to abandon them, and fledglings are typically independent of the nest area.

The determination of whether a particular nest is active or not will be determined by the qualified biologist in consultation with Keystone.

REFERENCE:

Suter, G. W., and J. L. Jones. 1981. Criteria for Golden Eagle, Ferruginous Hawk, and Prairie Falcon nest site protection. J. Raptor Res. 15:12-18.

Table A-1 Raptor Monitoring and Mitigation Protocol

Status*	Raptors (Hawks, Accipiters, Eagles, Falcons, Owls and Turkey Vulture) (Activity within 100 - 200 m buffer)		
	Temperature		
	≤ 10°C	≥25°C	11-24°C
Upon site arrival, adult **bird is on nest**	No action required**	No action required**	No action required**
Upon site arrival, adult **bird is not on nest**	Start 2-hour time limit for construction-related activities	Start 2-hour time limit for construction-related activities	Start 4-hour time limit for construction-related activities
During site activity, adult bird returns to nest and sits in incubation or brooding position OR is already on nest**	Bird must remain in position for at least 15 minutes. a) if bird leaves before 15 minutes, continue with initial 2-hour time limit b) if bird leaves after 15 minutes, restart 2-hour time limit	Bird must remain in position for at least 15 minutes. a) if bird leaves before 15 minutes, continue with initial 2-hour time limit b) if bird leaves after 15 minutes, restart 2-hour time limit	Bird must remain in position for at least 15 minutes. a) if bird leaves before 15 minutes, continue with initial 4-hour time limit b) if bird leaves after 15 minutes, restart 4-hour time limit

NOTES:

* Activity can only occur for a maximum of 2 OR 4 continuous hours before having to cease activity and leave the site for approximately 2 hours (to allow the birds to return the nests and reduce any stress associated with construction activities). After 2 hours, crews can return to the site and continue activity again for a maximum of 2 OR 4 continuous hours before having to take a break again.

** If bird is on nest when arriving at site and leaves at any point during construction activities – time limit (2 or 4 hours depending on temperature) is invoked.

APPENDIX B

Regulatory Consultation Documentation

TransCanada – Keystone XL Pipeline
Meeting Minutes

Meeting Location: Environment Canada (EC), Edmonton

Date & Time: January 28, 2010 1:00 - 4:30 pm

Attendees:

Name	Organization	Title	E-mail address
Paul Gregoire	Canadian Wildlife Service, Environment Canada	Wildlife Biologist	Paul.gregoire@ec.gc.ca
Lorenzo Fontana	TransCanada PipeLines (TCPL)	Environmental Advisor	lorenzo_fontana@transcanada.com
Randy Wight	TCPL	Project Manager, South Spread	Randy_wight@transcanada.com
Christine Nicholls	Stantec	Senior Environmental Planner	Christine.nicholls@stantec.com

Copies:

Name	Organization	Title	E-mail address
Rej Ejeckam	Environment Canada	Environmental Assessment Coordinator	reg.ejeckam@ec.gc.ca

Meeting Purpose:

- Update on project
- Provide follow up on IR and hearing commitments
- Progress consultations required by NEB under draft CPCN conditions

Agenda:

Item	Reference document*	Action Item
1. Recap of Activities and Reporting Since Summer 2009 Meetings • Response to EC Letter of Comment • August 2009 Supplemental Report • NEB hearing • NEB Draft Environmental Screening Report (ESR) • EC response to Draft ESR • Reasons for Decision expected by end of Q1 2010	 Attachment 1 Attachment 2 Attachment 3 Attachment 4	

Item	Reference document*	Action Item
2. Update of Any Regulatory or Policy Changes from Environment Canada • An implementation guide for federal land managers and RAs is being developed. It is not known when this document will be made public. The document will outline what is considered temporary versus permanent disturbance, what is considered impact on function, and what is compensation. • Work is underway on proposed critical habitat: o Sage grouse – proposed critical habitat on and off federal lands o Piping plover - proposed critical habitat on and off federal lands o Swift fox – preliminary critical habitat in Masefield PFRA o Black tailed prairie dog – colony in Masefield is declared critical habitat for prairie dog and ferret and is preliminary critical habitat for burrowing owl. The critical habitat is the boundary of the colony (no setback). • PFRA lawyers indicate legal protection lies with province on provincial lands in Masefield PFRA • Unless there is an Order in Council, SARA prohibitions do not apply on provincial or freehold land – it falls to the province to provide effective protection • On federal lands, if critical habitat is declared prior to construction, a SARA permit would be required for construction.		Paul to provide Keystone with any current info on critical habitat locations and requirements for: • Sage grouse • Swift fox • Burrowing owl • Sprague's pipit

Item	Reference document*	Action Item
3. Requirements of NEB Draft Conditions • **2009 surveys** – present methods, results, mitigation; document consultation o Wetland survey - crossing method determination	Attachment 8 (Figures) Attachment 5	
4. Tasks for Coming Months **Requirements of NEB Certificate Conditions** • **2009 surveys** – review methods, results, mitigation o Wetland survey (Condition I) o 2009 SARA plant survey results (Condition I) ▪ Keystone is aware of Alkali wing Nerve Moss, a threatened species found in saline wetlands. ▪ 2009 SARA plant report will outline pipeline route relative to populations and mitigative measures agreed to by ASRD species at risk biologist. • **2010 surveys** –priority is to review methods; can review mitigation upon completion of surveys. Discuss timeline (reference document) **2010 Surveys in PFRA Pastures** o Rare plant/rec delineation survey (Condition D, F) o Pre-construction weed survey (Condition J) o Amphibian acoustic survey (Bigstick) (Condition I) o Wildlife confirmatory surveys (Condition E,I) ▪ Although EC jointly developed 2009 Assessment Guidelines with PFRA, EC will need to review survey protocols **Other 2010 Surveys outside PFRA Pastures** o Spring SARA Survey of South Saskatchewan River Contingency (Condition D, F,I) o Wildlife Surveys at South Saskatchewan River (Condition I) o (If necessary) Wildlife, Vegetation and Archaeology Surveys of Re-routes within 1 km Corridor (Condition I) • Traffic management plan (Condition K)	Attachment 6	Keystone will submit documents to EC for review in accordance with schedule (attachment 6)

Item	Reference document*	Action Item
2009 Letter of Comment – reviewed Keystone's responses to EC letter of Comment • EC-1: Keystone advised that it is revising the Migratory Bird Survey Protocol based on lessons learned from the base Keystone project. • EC-2: SARA plants – focus of proposed critical habitat is on federal lands. • EC-3: EC has no further comment • EC-4: EC has no further comment • EC-5: EC has no further comment • EC-6: EC has no further comment • EC-7: EC has no further comment • EC-8: Keystone indicated some reclamation implements are similar in size to what farmers would use and asked if exceptions could be made to this restriction. EC indicated that if were to become necessary to conduct reclamation within a restricted period a due diligence plan could be prepared and submitted to EC, outlining what activities would be proposed to occur during the RAP and what measures would be in place to monitor and mitigate • EC-9: EC has no further comment • EC-10: EC has no further comment • EC-11: EC has no further comment • EC-12: EC has no further comment • EC-13: EC has no further comment • EC-14: EC has no further comment • EC-15: the burrowing owl nest was assessed in 2009. • EC-16,17,18: EC acknowledges the NEB is the regulator, Sask Env. and AAFC are in support of the current pipeline route through the Masefield. EC has not changed its position and would still prefer a re-route around Masefield because of the preliminary and declared critical habitat. EC reiterated there are active Burrowing Owls burrows in the colony and recommended a 500m buffer for these. EC's stance is a position statement. • EC-19: EC has no further comment • EC-20: EC has no further comment • EC-21: EC has no further comment • EC-22: EC has no further comment • EC-23: Keystone indicated this information will be contained in the 2009 SARA Report, scheduled to be provided to EC on March 15. • EC-24: EC has no further comment		Keystone will provide EC with the revised protocol on March 15, 2010 Keystone will undertake preparation of the plan and will provide it to EC for review Keystone will provide EC with the distance from the RoW and the mitigation measures for the owls in the colony EC asked for survey results, distance from RoW and mitigation measures

• EC-25: EC supports Keystone's judgment that three species are not of concern to the project due to lack of suitable habitat. EC notes Verna's flower moth is active during the day and the presence of adults coincides with blooming of pussytoes (*Antennaria* spp.). • EC-26: EC indicated SARA amended (clarified) the definition of "environmental effect" under Section 16 CEAA by specifying "listed wildlife species". EC indicated Keystone's application sufficiently covered the bases but noted that future assessments should include species at risk as VECs to facilitate cumulative effects assessments.		Keystone will schedule a technical discussion with EC to discuss feasible methodology
• EC-27: EC requests receipt of post-construction reclamation reporting. Keystone indicated reporting to the NEB is required annually, as a condition and that is assumed RAs and FAs have access to the reporting. EC reiterated the request to see areas impacted and indicated it would be sufficient to see this for Class 3 wetlands and higher. • EC-28: Keystone discussed the reassessment of valve placement. EC has no further comment. • EC-29: EC has no further comment	Attachment 7	Keystone indicated Wetland Survey report (to be issued March 15) will include areas impacted

2010 Planning and Consultation
• Items for technical meeting (date TBD)
  ○ Response to Draft ESR
  ▪ SARA surveys (item 2)
  ▪ Non-SARA migratory birds (item 3)
  ○ Prairie dog colony monitoring plan (SE-40)
  ○ Migratory bird survey protocol
  ○ Verna's flower moth survey methods
	Attachment 4	

*Click on FTP link below to download the reference documents. Please allow time for these documents to download; time will be a function of file size.

ftp://s0129095508:8798886@ftptmp.stantec.com

TransCanada – Keystone XL Pipeline
Meeting Minutes

Meeting Location: Environment Canada (EC), Edmonton / TransCanada, Calgary (teleconference)

Date & Time: March 3, 2010; 2:00 - 3:30 pm

Attendees:

Name	Organization	Title	E-mail address
Paul Gregoire	Canadian Wildlife Service, Environment Canada	Wildlife Biologist	Paul.gregoire@ec.gc.ca
Lorenzo Fontana	TransCanada PipeLines (TCPL)	Environmental Advisor	lorenzo_fontana@transcanada.com
Derek Ebner	Stantec	Senior Wildlife Biologist	derek.ebner@stantec.com

Copies:

Name	Organization	Title	E-mail address
Rej Ejeckam	Environment Canada	Environmental Assessment Coordinator	reg.ejeckam@ec.gc.ca

Meeting Purpose:

- Discuss specific wildlife survey and monitoring protocols.

Agenda:

Item	Reference document*	Action Item
1. Discussed Draft Guidelines for Protecting Nesting Migratory Birds and Raptors • Focused on modifications to guidelines from March 2009 for Keystone Project • Additions made for nest surveys for waterfowl/waterbirds which included a desktop review and nest surveys out to 100 m from the right-of-way were deemed sufficient. • Discussed plan for reclamation to likely occur during the breeding migratory bird window; surveys would be conducted for the targeted reclamation area and soil salvage piles only (not adjacent buffers). This plan was deemed sufficient.		Keystone to consult with ASRD and SENV regarding setbacks for raptors. Keystone to consult with Stephen Davis (CWS) regarding protocols for Sprague's Pipits. Keystone to complete Guidelines document

Item	Reference document*	Action Item
• Environment Canada asked Keystone to consult with Alberta Sustainable Resource Development and Saskatchewan Environment on the setback buffers for raptors excluded from existing setback guidelines. • The migratory bird nest survey would be modified to incorporate point counts in suitable habitat so that species such as Sprague's Pipits and McCown's Longspur could be detected within their specified setbacks. • Discussed the need for additional surveys for SARA species if construction or clearing occurred within restricted activity periods. The following was discussed and agreed upon: o No specific SARA species surveys are necessary as surveys occurred along the right-of-way during preparation of the ESA (except where noted below). o When biologists are conducting migratory bird nest surveys they would record observations of SARA species and mitigations would be enacted where necessary. o Call playback surveys for Burrowing Owls would be conducted in areas where historical burrows have been observed (within a suitable timeframe) if construction occurs during the owl's restricted activity period. • Any new observations of SARA species nests or burrows within their specified setbacks that are observed during the migratory bird nest surveys would have a site specific mitigation/monitoring plan developed which will be discussed with Environment Canada prior to construction occurring. • Rope drags can be used for migratory bird nest surveys using a light cord and cans with biologists on foot and continuously moving. • Environment Canada asked Keystone to discuss nest search protocols for Sprague's Pipits specifically with Stephen Davis (CWS).		and send to Environment Canada for review.
2. Discussed Black-tailed Prairie Dog Monitoring Protocol • Provided an overview of protocol for monitoring Black-tailed Prairie Dog behavior during construction activities in the vicinity of the Masefield PFRA colony.		Keystone to complete Black-tailed Prairie Dog protocol and provide to Environment Canada for review.
3. Discussed Survey Requirements for Verna's Flower Moth • Based on both the COSEWIC and ASRD status reports, surveys for Verna's Flower Moth (adults) will be performed along the right-of-way adjacent to the Red Deer, South Saskatchewan and Frenchman River Valleys in areas of suitable habitat (e.g., *Antennaria* sp. present; heavily grazed prairie). • Surveys need to occur during the two week window when adults emerge (this is timed with the flowering of *Antennaria* sp.). Two survey visits would be conducted during this window.		Keystone to complete survey protocol for Verna's Flower Moth and provide to Environment Canada for review.

Item	Reference document*	Action Item

Nicholls, Christine

From: Ebner, Derek
Sent: Tuesday, April 06, 2010 2:56 PM
To: Nicholls, Christine
Subject: FW: KXL Wildlife - Raptor Nest Setbacks

FYI

Derek Ebner, M.Sc., P.Biol.
Senior Wildlife Biologist
Stantec
805 - 8th Avenue SW Suite 300
Calgary AB T2P 1H7
Ph: (403) 750-2441
Fx: (403) 269-5245
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derek.ebner@stantec.com
stantec.com

From: Arsenault, Al ENV [mailto:Al.Arsenault@gov.sk.ca]
Sent: Monday, April 05, 2010 1:37 PM
To: Ebner, Derek
Subject: RE: KXL Wildlife - Raptor Nest Setbacks

Thanks Derek

-----Original Message-----
From: Ebner, Derek [mailto:Derek.Ebner@stantec.com]
Sent: Monday, April 05, 2010 1:29 PM
To: Arsenault, Al ENV; Dillabaugh, Ken ENV
Cc: Stilling, Rick ENV
Subject: RE: KXL Wildlife - Raptor Nest Setbacks

Hi Al,

After some additional discussion, here is what we're proposing for our non-listed raptor setback (the species not included in either your document or Environment Canada's new guidelines). For all active non-listed raptor nests, we will establish a 100 m setback while the nest is active (until fledging is completed). In addition, for those active nests between 100 – 200 m from the right-of-way we will monitor the nests during construction and record behavior while construction occurs. We have developed a draft monitoring protocol which we will review with you at a later date that addresses the need for potential additional mitigation (e.g., construction activities being limited if flushing occurs for an extended period of time).

Any questions please feel free to let me know.

Thank you for your assistance with this.

Cheers,
Derek

Derek Ebner, M.Sc., P.Biol.
Senior Wildlife Biologist
Stantec

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From: Arsenault, Al ENV [mailto:Al.Arsenault@gov.sk.ca]
Sent: Thursday, March 04, 2010 2:03 PM
To: Ebner, Derek; Dillabaugh, Ken ENV
Cc: Stilling, Rick ENV
Subject: RE: KXL Wildlife - Verna's Flower Moth & Raptor Nest Setbacks

Hi Derek

A 100m activity buffer for the raptor species not specifically listed in Arsenault 2009 is adequate...there were no specific setbacks in the old guidelines either, other than for Cooper's Hawk (200m for low impact activities and 400m for medium and high impact activities). However, Cooper's Hawk is very tolerant of human activity including in urban settings, so the old guideline is excessive. The most disturbance-sensitive period for hawks is prior to incubation and during early incubation. So if there are active nests for these species within 100-200m of the RoW, you may consider use of a construction timing restriction to mitigate impact. Most hawk species rarely abandon the nest late in incubation or post-hatch. Protecting the nesting habitat and important habitat features would be higher priority than buffering from short-term disturbance of construction activity... a 100-200m habitat protection buffer would be sufficient depending on site circumstance.

Regarding permits for moth work, I am not sure. Ken may know if a collection permit is required under The Wildlife Act.

Al Arsenault *(M.Sc., R.P.Biol.)*
Senior Environmental Scientist / Ecologist
Saskatchewan Ministry of Environment
Lands Branch
Ecological Land Protection Section
112 Research Drive
Saskatoon, SK S7K 2H6

Phone 306-933-5797

-----Original Message-----
From: Ebner, Derek [mailto:Derek.Ebner@stantec.com]
Sent: Thursday, March 04, 2010 11:01 AM
To: Arsenault, Al ENV; Dillabaugh, Ken ENV
Subject: KXL Wildlife - Verna's Flower Moth & Raptor Nest Setbacks

Hi Gentlemen,

As part of our 2010 wildlife field program for KXL and for our planning for construction in 2011, I have two questions for you.

First, we have been requested by Environment Canada to do surveys for Verna's Flower Moth adjacent to the Frenchman River (in areas of suitable habitat). Would we need a provincial permit for handling moths? We will be using butterfly nets to capture and aid in the identification of the moths.

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Thanks for your assistance on this.

Cheers,
Derek

Derek Ebner, M.Sc., P.Biol.
Senior Wildlife Biologist
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derek.ebner@stantec.com
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Nicholls, Christine

From: Lorenzo Fontana [lorenzo_fontana@transcanada.com]
Sent: Tuesday, May 04, 2010 4:23 PM
To: Ebner, Derek
Cc: Nicholls, Christine
Subject: FW: Final KXL Migratory Bird Protocol

See below…comments

From: Gregoire,Paul [Edm] [mailto:Paul.Gregoire@EC.gc.ca]
Sent: Tuesday, May 04, 2010 4:15 PM
To: Lorenzo Fontana
Cc: Yasul,Leslie [Edm]
Subject: RE: Final KXL Migratory Bird Protocol

I have reviewed the protocols and have a few comments.

1. If swans are shorebirds then that's news to me. Gulls aren't shorebirds either.

2. " In areas where there is high likelihood of encountering SARA-listed bird species, surveys for such species will be extended out to an appropriate setback distance. Surveys are contingent upon the presence of suitable habitat and land access being granted to complete surveys." If access is not granted then the site should be surveyed with binoculars from the property line.

3. "For instance, the recommended buffer for most passerines will be 30 m but may be shortened to 10-15 m for species that are known to be less sensitive." This would be pushing it. I would rather recommend in cases where the disturbance is less intensive, e.g. no heavy equipment)

4. "Additional survey requirements, determined in consultation with Environment Canada, include the conduct of migratory bird surveys 7-10 days prior to construction." That should read "within" 7 or 10 days of construction (i.e. 1 to 10 days).

5. Table A-1 Raptor Monitoring and Mitigation Protocol. I'm not sure I understand the "Start 2 hour time limit". Does this mean you will vacate the site for two hours, or you will work on the site for two hours? If a hawk flushes from the nest upon arrival or due to some unusually large noise, I do not advise continuing for two hours before the bird returns. If the bird doesn't return after 15 minutes there is risk of exposure.

Regards,

Paul

Paul Gregoire, MSc.
Wildlife Biologist
Senior Environmental Assessment Officer
Canadian Wildlife Service | Service canadien de la faune
Environmental Stewardship Branch | Direction générale de l'intendance environnementale
Prairie & Northern Region | Région des Prairies et du Nord
Environment Canada | Environnement Canada
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Telephone | Téléphone 780-951-8695
Facsimile | Télécopieur 780-495-2615

From: Lorenzo Fontana [mailto:lorenzo_fontana@transcanada.com]
Sent: Tuesday, May 04, 2010 11:42 AM
To: Gregoire,Paul [Edm]
Cc: Nicholls, Christine; Ebner, Derek
Subject: Final KXL Migratory Bird Protocol

Hi Paul,
Please see attached the final draft of the KXL migratory bird protocol, also attached in the document itself is the feedback from the Provincial regulators. Please have a look and let us know if you have any concerns…thanks again.

Enjoy
Lorenzo

This electronic message and any attached documents are intended only for the named addressee(s). This communication from TransCanada may contain information that is privileged, confidential or otherwise protected from disclosure and it must not be disclosed, copied, forwarded or distributed without authorization. If you have received this message in error, please notify the sender immediately and delete the original message. Thank you.

Ebner, Derek

From: Arsenault, Al ENV [Al.Arsenault@gov.sk.ca]
Sent: Thursday, May 06, 2010 8:39 AM
To: Ebner, Derek; Dillabaugh, Ken ENV
Cc: Stilling, Rick ENV; Lorenzo Fontana
Subject: RE: KXL Wildlife - Raptor Nest Monitoring/Mitigation

Hi Derek. Excellent protocol, no concerns.

Al

-----Original Message-----
From: Ebner, Derek [mailto:Derek.Ebner@stantec.com]
Sent: Wednesday, May 05, 2010 1:09 PM
To: Arsenault, Al ENV; Dillabaugh, Ken ENV
Cc: Stilling, Rick ENV; Lorenzo Fontana
Subject: RE: KXL Wildlife - Raptor Nest Monitoring/Mitigation

Hi gentlemen,

Below is the monitoring/mitigation protocol we have devised for non-listed active raptor nests between 100-200 m from the right-of-way. While we feel the 100 m setback will be sufficient for most species, the following monitoring and mitigation protocol will aid in lessening impacts on those individuals between 100-200 m (particularly when risk of exposure is highest). The purpose is to limit construction activities within the vicinity of active nests between 100-200 m but to still allow some construction activities to occur.

A.1 Recommended Mitigation Measures for Monitoring Active Raptor Nests

The purpose of this monitoring protocol is to minimize potential disturbance effects to non-listed raptor species that are actively nesting in the vicinity of the development footprint (between 100 to 200 m away). Minimizing disturbance is important as human activities around nesting raptors can result in complete desertion of nests, eggs, or young (Suter and Joness 1981). In addition, temporary departure by adults can cause overheating, chilling, or desiccation of eggs or young, predation on eggs or young, or missed feedings.

The use of temporal buffers (i.e., when a nest is considered active) should include all nesting activities and in most cases extend from the time of arrival of the adult birds in the nesting area through the first few weeks of nestling development (Suter and Joness 1981). Delaying development within the flushing distance (i.e., setback distance) during the few weeks of development is highly recommended as after this period young are able to thermoregulate and adults are reluctant to abandon them, and fledglings are typically independent of the nest area.

The determination of whether a particular nest is active or not will be determined by the qualified biologist in consultation with Keystone.

REFERENCE:

Suter, G. W., and J. L. Jones. 1981. Criteria for Golden Eagle, Ferruginous Hawk, and Prairie Falcon nest site protection. J. Raptor Res. 15:12-18.

Table A.1 Raptor Monitoring and Mitigation Protocol

	Raptors (Hawks, Accipiters, Eagles, Falcons, Owls and Turkey Vulture) (Activity between 100 - 200 m buffer)

	Temperature		
Status*	**≤ 10°C**	**≥25°C**	**11-24°C**
Upon site arrival, adult **bird is on nest**	No action required**	No action required**	No action required**
Upon site arrival, adult **bird is not on nest**	Start 2-hour time limit	Start 2-hour time limit	Start 4-hour time limit
During site activity, adult bird returns to nest and sits in incubation or brooding position OR is already on nest**	Bird must remain in position for at least 15 minutes. a) if bird leaves before 15 minutes, continue with initial 2-hour time limit b) if bird leaves after 15 minutes, restart 2-hour time limit	Bird must remain in position for at least 15 minutes. a) if bird leaves before 15 minutes, continue with initial 2-hour time limit b) if bird leaves after 15 minutes, restart 2-hour time limit	Bird must remain in position for at least 15 minutes. a) if bird leaves before 15 minutes, continue with initial 4-hour time limit b) if bird leaves after 15 minutes, restart 4-hour time limit

*Activity can only occur for a maximum of 2 OR 4 continuous hours before having to cease activity and leave the site for approximately 2 hours (to allow the birds to return the nests and reduce any stress associated with construction activities). After 2 hours, crews can return to the site and continue activity again for a maximum of 2 OR 4 continuous hours before having to take a break again.
**If bird is on nest when arriving at site and leaves at any point during construction activities – time limit (2 or 4 hours depending on temperature) is invoked.

If you have any questions or comments please let us know. If the protocol is suitable please let us know at your earliest convenience.

Cheers,
Derek

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From: Ebner, Derek
Sent: Monday, April 05, 2010 1:29 PM
To: 'Arsenault, Al ENV'; Dillabaugh, Ken ENV
Cc: Stilling, Rick ENV
Subject: RE: KXL Wildlife - Raptor Nest Setbacks

Hi Al,

After some additional discussion, here is what we're proposing for our non-listed raptor setback (the species not included in either your document or Environment Canada's new guidelines). For all active non-listed raptor nests, we will establish a 100 m setback while the nest is active (until fledging is completed). In addition, for those active nests between 100 – 200 m from the right-of-way we will monitor the nests during construction and record behavior while construction occurs. We have developed a draft monitoring protocol which we will review with you at a later date that addresses the need for potential additional mitigation (e.g., construction activities being limited if flushing occurs for an extended period of time).

Any questions please feel free to let me know.

Thank you for your assistance with this.

Cheers,
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From: Arsenault, Al ENV [mailto:Al.Arsenault@gov.sk.ca]
Sent: Thursday, March 04, 2010 2:03 PM
To: Ebner, Derek; Dillabaugh, Ken ENV
Cc: Stilling, Rick ENV
Subject: RE: KXL Wildlife - Verna's Flower Moth & Raptor Nest Setbacks

Hi Derek

A 100m activity buffer for the raptor species not specifically listed in Arsenault 2009 is adequate...there were no specific setbacks in the old guidelines either, other than for Cooper's Hawk (200m for low impact activities and 400m for medium and high impact activities). However, Cooper's Hawk is very tolerant of human activity including in urban settings, so the old guideline is excessive. The most disturbance-sensitive period for hawks is prior to incubation and during early incubation. So if there are active nests for these species within 100-200m of the RoW, you may consider use of a construction timing restriction to mitigate impact. Most hawk species rarely abandon the nest late in incubation or post-hatch. Protecting the nesting habitat and important habitat features would be higher priority than buffering from short-term disturbance of construction activity... a 100-200m habitat protection buffer would be sufficient depending on site circumstance.

Regarding permits for moth work, I am not sure. Ken may know if a collection permit is required under The Wildlife Act.

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Senior Environmental Scientist / Ecologist
Saskatchewan Ministry of Environment
Lands Branch
Ecological Land Protection Section
112 Research Drive
Saskatoon, SK S7K 2H6

Phone 306-933-5797

-----Original Message-----
From: Ebner, Derek [mailto:Derek.Ebner@stantec.com]
Sent: Thursday, March 04, 2010 11:01 AM
To: Arsenault, Al ENV; Dillabaugh, Ken ENV
Subject: KXL Wildlife - Verna's Flower Moth & Raptor Nest Setbacks

Hi Gentlemen,

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Ebner, Derek

From: Dillabaugh, Ken ENV [Ken.Dillabaugh@gov.sk.ca]
Sent: Wednesday, May 12, 2010 1:12 PM
To: Ebner, Derek
Subject: RE: [Possible Spam] RE: KXL Wildlife - Raptor Nest Monitoring/Mitigation

Derek, your protocol should minimize any potential disturbances with the non listed nesting raptors. No concerns

Thanks

Ken D

From: Ebner, Derek [mailto:Derek.Ebner@stantec.com]
Sent: Wednesday, May 05, 2010 1:09 PM
To: Arsenault, Al ENV; Dillabaugh, Ken ENV
Cc: Stilling, Rick ENV; Lorenzo Fontana
Subject: [Possible Spam] RE: KXL Wildlife - Raptor Nest Monitoring/Mitigation
Importance: Low

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112 Research Drive
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Phone 306-933-5797

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Sent: Thursday, March 04, 2010 11:01 AM
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