ENVIRONMENTAL ASSESSMENT

Proposed Lift Station and Forcemain

Tunnel Mountain Campground
Banff National Park, Alberta

For

Parks Canada Agency

Public Works and Government Services Canada

March 2012

Revised May 2013

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Peggy Bainard Acheson
Environmental Services
Public Works and Government Services Canada
Winnipeg, Manitoba
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ENVIRONMENTAL ASSESSMENT REPORT

Under the *Canadian Environmental Assessment Act*

PART A: ENVIRONMENTAL ASSESSMENT SPECIFICATIONS

Project Title:	Proposed Lift Station	
Location:	Tunnel Mountain Campground, Banff National Park	
Project Type:	Undertaking in relation to a physical work?	Yes
	Physical activity not related to a physical work (If yes, refer to Inclusion List Regulations.)	No
EA Type:	Screening	
EA Start Date:	2011-12-05	
Prepared For:	Parks Canada Agency (PCA)	
Prepared By:	Public Works and Government Services Canada (PWGSC)	
Lead Responsible Authority (Lead RA):	Parks Canada Agency	
Lead RA Sect. 5 CEAA trigger:	[Proponent 5.(1)(a)]	
Other Responsible Authority(s) (RA(s)):	N/A	
Other RA Sect. 5 CEAA Trigger(s):	N/A	
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Regulatory Requirements

- Canadian Environmental Assessment Act (1995)
- Canada National Parks Act
- Banff National Park Management Plan (2010)
- Species at Risk Act

Canadian Environmental Assessment Act

The *Canadian Environmental Assessment Act* (CEAA) ensures that potential environmental effects of applicable projects are carefully reviewed prior to federal authorities taking any action in connection with them, so that projects do not cause significant adverse environmental effects (Canadian Environmental Assessment Agency).

The CEAA states responsibilities and procedures for the environmental assessment of projects and establishes a process for determining the environmental effects of projects. CEAA is applicable to any project where a federal authority performs one or more of the following CEAA triggers in respect of a project:

- is the proponent of a project *(Section 5.(1)(a))*;
- grants money or any other form of financial assistance to the project *(Section 5.(1)(b));*
- leases, sells or disposes of land to enable a project to be carried out *(Section 5.(1)(c));* or
- exercises a regulatory duty in relation to a project, such as issuing a permit or license, that is included in the Law List prescribed by the regulations to the Act *(Section 5.1(d))*.

The proposed undertaking is a project as defined under the CEAA. As proponent PCA is the Responsible Authority with a duty to ensure that an environmental assessment under the CEAA is completed and mitigation measures are implemented. The Banff National Park Management Plan (2010) committed to prioritizing the renewal and maintenance of front-line services and park assets. One of the goals was to improve wastewater treatment, energy and water conservation at public facilities such as campgrounds, washrooms and visitor centres.

Canada National Parks Act

The *National Parks Act* states that maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks.

Banff National Park Management Plan (BNPMP)

Key specific policy statements of the 2010 BNPMP regarding campgrounds were:

- Prioritize the renewal and maintenance of front-line services and park assets in locations accessible to the largest numbers of visitors by:
    - Improving wastewater treatment, energy and water conservation, . . . at visitor facilities such as campgrounds, washrooms and visitor centres and ensuring visitors are aware of the improvements and their benefits.

Species at Risk Act

Promulgated in 2003 the purpose of the *Species at Risk Act* (SARA) is to prevent wildlife species from being extirpated or becoming extinct, to provide for wildlife recovery, and to manage species of special concern. In addition, SARA has certain implications for environmental assessment under CEAA. Specifically, the definition of "environmental effect" in the CEAA has been amended as follows: ". . . any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species." SARA also requires notification of the competent minister if a proposed project is likely to affect a listed wildlife species or its critical habitat. An EA being carried out on a project that may affect a listed wildlife species or its critical habitat must identify potential adverse effects on the listed species, implement measures to avoid or lessen adverse effects, and must include monitoring of the effects on the listed species upon implementation of the project.

The SARA applies to federal lands, the internal waters of Canada and the territorial sea of Canada. The SARA recognizes that Canada's protected areas, especially national parks, are vital to the protection and recovery of species at risk.

PART B: PROJECT INFORMATION

Project Description

Background

The Tunnel Mountain Campground (TMC) is located within Banff National Park near the Town of Banff, Alberta (Figures 1 and 2, Appendix A). The TMC contains approximately 1000 camp sites consisting of approximately 600 un-serviced sites and approximately 400 serviced sites located in Village 1 and 2 and the Trailer Courts (A, B, and C) (Figure 3, Appendix A). At present all of the serviced campsites except Village 2 are connected through a system of

wastewater lines to the Peyto Sewage lagoons (Photo 1, Appendix A) located approximately 1.2 km east of TMC (Associated Engineering, 2008). Effluent from the lagoons is discharged to the sand filters where it seeps through groundwater to the Cascade River, a tributary of the Bow River. The effluent is discharged once annually (in spring). Flow from Village 2 is connected to the Town of Banff sanitary sewer system (Associated Engineering, 2008).

Parks Canada is considering decommissioning the sewage lagoons and is proposing to construct a lift station and forcemain system to connect to the Town of Banff's wastewater treatment system. According to Associated Engineering's Final Technical Memo (2008), the TMC wastewater would increase the current WWTP hydraulic load by approximately 3% and the flow could be accommodated without decreasing effluent quality in the short term. It appears that on an average flow basis the treatment plant has considerable excess hydraulic capacity. However, for peak flow days and hours the current and future flows may exceed the peak day design flow of 21,000 m^3/d. Nevertheless there is no evidence in the Annual report (2007) that peak flow events are influencing final effluent quality at present. There is potential that peak flow events may start to cause short term excursions in secondary effluent total suspended solids (TSS) before 2020. The report states that the design of the influent pumps and overall hydraulic system, including the outfall are capable of handling the additional flow from the TMC for many years. In addition, if extreme peak flows upset the secondary clarifiers such that there would be solids carry over from the secondary clarifiers, the plant has tertiary filters that would to some degree protect the final effluent from TSS excursions in the secondary clarifier effluent (Associated Engineering, 2008).

The report noted that during the summer months when TMC flows would be highest, the wastewater temperature would be relatively high, and its viscosity low, and the settling of solids would occur more readily. Thus the increase in short term peak flows due to the TMC is not likely to compromise the secondary effluent quality.

As for the impact of incremental nutrient loading the Associated Engineering report indicated that the sum of the predicted peak TMC loads and the peak Town of Banff loads for 2007 remain below the design values for the plant. For example, after the addition of the TMC loads it was predicted that Biological Oxygen Demand (BOD) would stand at 79% of design capacity. In addition, in the summer when peak loads from TMC are highest the biological process functions better, therefore reducing the potential for TMC peak loads to exceed the design capacity of the treatment plant.

The Associated Engineering report indicated that the sanitary mains have capacity for Peak Hourly Flows without any upgrades. Sanitary mains downstream to MH SH 92 also have sufficient capacity to handle the TMC flows.

The report mentioned that there may be increased costs associated with adding TMC's wastewater to the treatment plant. These may include increased service fees, increased consumption of utilities, increased operations costs, and additional costs related to composting. Parks Canada has made an agreement with the Town of Banff to pay standard effluent disposal fees which were negotiated and agreed to in a Memorandum of Understanding. PC will also pay a one time construction levy to the TOB.

Potential impacts on operations and maintenance addressed in the Associated Engineering report included a discussion regarding the concentrations of plastics and paper in the TMC. They would be similar to typical domestic wastewater except that it may contain chemicals used in storage tanks on recreational vehicles. It was also noted that since most chemicals used are biodegradable and unless present at greater than 25% of total flow, they are considered not to be a problematic contributor to wastewater treatment processes (Thomas, 1994). Although TMC wastewater is of higher strength than domestic wastewater, samples analyzed in 2007 for metals content did not indicate any issues.

A letter from the Town of Banff (TOB) confirms that the TOB is prepared to accept the flows from Village 1 and the Trailer Court at TMC. A copy of the letter is referenced in Appendix B.

A map showing the location of TMC, the existing sewage lagoons, the Town of Banff, and the Town's wastewater treatment plant is shown in Figure 2.

Project Details

Lift Station

The lift station design is based on a lift station package provided by Smith & Loveless. Sanitary lines from the Trailer Courts and Village 1 will be connected to the lift station (Figure 3). The proposed lift station will pump sewage into a new forcemain that will carry wastewater from the lift station and connect to a manhole (G14) in Village 2 (Figure 4). The manhole ties in to the Town of Banff infrastructure which will carry it to the wastewater treatment plant east of the town.

The lift station package will consist of a pre-cast concrete wet well and two pre-cast concrete storage tanks (Figure 5). The duplex pump station will consist of associated piping and electrical controls, weatherproof enclosure, and duplex pumps. The design calls for two 15 HP pumps each with a capacity to pump 13 lps to ensure that the PHF of 12.2 lps indicated in monitoring in the summer of 2009 can be delivered even if one pump should be out of service. For days when the PHF exceeds the design of the lift station and to regulate flow into the Town of Banff, two holding tanks with capacities of 25m^3 and 22m^3 respectively will be installed. The wet well will have a capacity of 26 m^3. All pipe material used inside the station will be steel pipe.

Instrumentation in the lift station will include wet well level control, ultrasonic level sensor and transducer, wet well levels flow meters, and pump control panel. Alarm monitoring will include heat, smoke, and carbon monoxide alarms, low temperature sensor, power failure, pump failure, and high effluent level, etc. The manufacturers monitoring and maintenance schedule will be followed. Parks Canada Trades will monitor the lift station on a minimum weekly basis during the operating season. A strobe light, visible from the road, will indicate if the lift station has any active alarms, and campground staff will be informed to call Trades if they see the strobe light activated.

Electrical service will include 600 VAC/3phase/60hz/4 wire service supplied by a three-phase pad mounted transformer dedicated to the station. A concrete valve and meter vault will be

connected from the power pole to the transformer vault (Figure 6). A forced air heater will maintain a temperature of 6°C in the bottom of the wet well. The lift station will include a trailer-mounted 75kVa portable generator for back up power. The portable genset will be stored offsite at the PC maintenance compound and will be pulled to the site only in the event of a power outage. The genset has an internal diesel tank which will be fuelled at the compound and therefore no onsite fuel storage is required. All buried sanitary piping 1.0m outside the lift station will be high density polyethylene (HDPE) DR11 pipe with a pressure class of 1100 kPa (160 psi) at 23°C.

Forcemain

The forcemain will consist of a 1,920m long 150mm high pressure HDPE sanitary pipe to a manhole (MH G5) at the west end of Village 2 where it will tie in to existing Town of Banff sanitary system infrastructure. The forcemain will be buried 1.5m below grade. About half of the forcemain will follow Tunnel Mountain Road in the Right of Way (ROW) and then cross over into Trailer Court "B". The forcemain will continue along the outside road of Trailer Courts B and A before crossing the main gate area into Village 2 and tying into manhole G14. The sewage will flow by gravity from the manhole to the Banff wastewater treatment plant located east of the town site (Figure 2). Approximately 10 compacted clay or lean mix concrete plugs spaced approximately 200m apart will be placed in the pipe surrounding the HDPE forcemain. The plugs are meant to prevent flow in the trench in the event of water infiltration or from groundwater. The plugs consist of clay or concrete and act as dams. The plugs will be placed based on the geotechnical inspection and soil conditions.

Refer to Figure 7 for construction details of the lift stain and forcemain.

Completion of Utilities Upgrade Project

In order to complete the previous Utilities Upgrade project, work will be carried out in Loops A and B of the trailer court. The work will consist of excavating and compacting most of the campground pull-out utility islands to address issues with trench settlement and the paving of the gravel lanes to complete the project to match similar work completed in Loop C. This work was previously identified under the Model Class Screening Report for Routine Projects Within the Town of Banff and Proximate Outlying Areas (CEAA Project #BCS-000007).

Associated Works

A gravel access road and parking area will be built at the lift station to accommodate vehicle access. The cleared area for the lift station components, parking lot and access road will be approximately 36m X 50m for an area of 1800 m^2. An access gate at the entrance to the lift station will exclude access except for authorized personnel.

The forcemain trench will contain conduit and wiring to bring electrical power to the lift station and Internet to the campground. This includes the installation of 1,920m of 50mm diameter fibre optic duct work complete with 11 pull boxes. The pull boxes are used as access to pull conduit through the pipe and will have a 25cm x 30.5cm plastic cover flush with the ground. The electrical and fibre optic lines will be buried 1.2m down from grade.

A staging area will be located at the north east corner of Trailer Court "C" (Figure 2) to store materials, tanks, construction equipment and vehicles. The area is previously disturbed.

The project design will avoid the removal of any large Douglas fir trees if at all possible; however vegetation will be removed in the vicinity of the proposed lift station and along the forcemain route and may include the removal of approximately 1700 trees. Any usable size trees will be hauled to Peyto Pit to be cut up for firewood. The disposal of any wood waste will be determined in consultation with Parks Canada fire/vegetation specialists. Options under consideration are hauling to the Peyto Pit Burn Pile, or chipping and spreading within the rehabilitated force main Right of Way (pers. comm., Jaison Van Tine, Parks Canada.)

The existing gravity sewage lines that carry wastewater from the Campground to the first primary sewage lagoon will be kept in place rather than decommissioning them. The sewage lagoon line will have a valve at the manhole directly upstream from the lift station and the primary sewage lagoon will be kept in place as an emergency overflow area for the future. Parks Canada intends to decommission the remaining three cells of the Peyto Sewage Lagoon system in a separate future project.

Timing

The project is proposed to be tendered in early spring 2012 with the tentative start time for the construction of the lift station and accessory projects in the spring of 2012. The lift station construction may be done during the summer tourist season. The forcemain construction will start before July 1st and continue after the summer tourist season. Since work will be conducted during the tourist season, the Contractor must therefore conduct the work so that public access is available and the work does not interfere with or disturb campground operations at all times. It is expected that the project will be commissioned in fall of 2012 and operational in the spring of 2013 in time for the start of the camping season.

Site History

Known and used by Aboriginal people for thousands of years, at the time of the construction of the Canadian Pacific railroad in 1883 thermal springs were discovered by three railway workers near the Town of Banff. In 1885, the government set aside the area to protect the springs for public use, thus giving rise to the birth of the national park system in Canada (Parks Canada).

Development of the park began in the late 1880s. The Banff town site, although active since the early 1900s, was incorporated in 1990.

Tunnel Mountain Campground is the largest and one of the oldest campgrounds in the country. The campground opened in 1927 and was in use until the 1960s when it was converted into a trailer court. The original trailer court was built in 1937 and rebuilt in 1955-1959. The village complex (I and II) were built between 1967 and 1969 to replace the original testing facility.

Project Rationale (s.16.(2)(a))

In preparation for the eventual decommissioning of the Peyto Sewage Lagoons, a lift station and sewage infrastructure will be constructed to facilitate the connection of Village I and the

Trailer Court sections of TMC to the Town of Banff wastewater treatment system. The Banff National Park Management Plan (2010) committed to prioritizing the renewal and maintenance of front-line services and park assets. Therefore, park managers have a mandate to improve environmental management, including initiatives to enhance water and energy requirements as well as the disposal of wastewater at campgrounds.

Site Description

The seasonal lift station will be constructed at the east end of Tunnel Mountain Road approximately 10-15 m from the edge of the road (Figure 3) in a natural area surrounded by Douglas-fir, and juniper and grasses (Photos 2 and 3). Geotechnical evaluations indicated that soil at the site is topsoil at the surface with underlying silt material. Depth of groundwater at the proposed lift station location was 13.15m (Associated Engineering 2008). The topography is relatively flat, but the site appears to drop approximately one meter from the height of the road.

About half of the length of the forcemain pipe will be in the ROW; the rest will cross into the trailer court and Village 2 (Photos 4 and 5) parallel to the southern boundary of the campground.

A previously disturbed area located at the north east corner of Trailer Court C (Photo 6) will be used as a staging area to store materials and equipment as well as provide space for the construction site office and staff parking.

Copies of maps, drawings and photos are attached in Appendix A.

Banff Wastewater Treatment Plant (WWTP)

The Town of Banff WWTP is an advanced Biological Nutrient Removal (BNR) system with focus on Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and nutrient removal as well as disinfection. The WWTP is located east of the town site (Figure 2) and receives wastewater from all residential and commercial facilities as well as Village 2 at TMC. Originally constructed in the 1970s using an aerated lagoon process the WWTP was upgraded to a mechanical secondary treatment plant using an activated sludge process in the late 1980s. It was upgraded and expanded to the present BNR system in 2003 (Associated Engineering, 2008).

Since 1993 four studies were conducted to assess the feasibility of connecting the remainder of TMC to Banff's WWTP. The studies were conducted by Reid Crowther (1993), UMA Engineering (1995), and Associated Engineering (2008). The Town of Banff Wastewater Master Plan (WWMP) (Associated Engineering, 2005) examined the capacities and general conditions of the existing wastewater collection system, forecasted the demands for the year 2020, and identified and prioritized capital and operational improvements. The system was analyzed to determine if Banff's wastewater collection system provides service in accordance with provincial guidelines and standards. Based on the modelling results, the WWMP recommended upgrading the sanitary sewers downstream of the siphon along Glen and Spray Avenues as well as upgrading or replacing the siphon under the Bow River. Since then the

Town of Banff investigated and addressed all issues associated with accepting the additional wastewater from TMC including ensuring that the existing sewer collection system is capable of handling it.

Conclusions of the most recent technical memorandum on the feasibility and impacts of connecting the TMC to the Banff Sanitary Sewage System (Associated Engineering, 2008) are summarized below:

1. Additional sewage flows from the seasonal areas of TMC are estimated at a design flow of 9.24 L/s including an infiltration factor.
2. The combined Banff plus TMC flows and loads have been assessed in relation to the design values for the plant. On an average day basis, there is available capacity within the plant to receive the relatively small flows and loads of the TMC wastewater. On a peak day basis the plant is already at “design” in terms of flows so the TMC flows would tend to slightly increase the short term peaks exceeding the design. However, these are not expected to affect effluent quality. There is adequate plant capacity to accept the increase in monthly loads of BOD5, TSS and nutrients.
3. Although the diversion of TMC flows and loads would tend to advance the date when the next expansion of the WWTP would be required, the quantity of those flows and loads is small enough that other more significant factors will be driving the date. An exception to this is the compost facility, which might require an expansion in the near future because it is already at or near capacity.
4. On an annual basis the estimated flow from the TMC (five summer months only) represents an increase of 1.1% beyond 2007 flows. Increases in BOD and TSS are expected to increase production of solids and compost by up to 6.6%. In general terms the TMC wastewater is not expected to generate unusual O&M concerns beyond requiring more power and consumables to operate the process at greater capacity.

The AE report recommended that the TMC be allowed to contribute additional sewage into the Banff sanitary sewer system with improvements to be made to the existing Town of Banff collection system. Since then the Town of Banff investigated and addressed all issues associated with accepting the additional wastewater from TMC and has confirmed that the TOB WWTP has the capacity to handle it.

Further, AE recommended that PC monitor and sample the sanitary flows from the TMC for the 2009 spring/summer season (May 1 to September 30) to verify the estimated peak flows and solids loading coming from the campground.

Alternatives (s. 16.(2)(b))

The campground managers cannot leave the issue as status quo, which is to continue to treat wastewater at the Petyo Lagoons. The lagoons are too small and likely do not meet current standards. Since the intent is to eventually decommission the Peyto Pit lagoons the decision to

connect the remainder of the TMC wastewater with the Town of Banff WWTP represents an opportunity to improve the system and ultimately the quality of the effluent ultimately discharged to the Bow River.

As described in this report there were a number of studies conducted to determine the capacity and condition of the Town of Banff wastewater treatment plant to accept wastewater from the TMC. Due to the small size and scope of this project, it was not considered necessary to explore other alternatives.

Project Scope (s. 15.)

The project is proposed to be tendered in March 2012 with the tentative start time for the construction of the lift station and accessory projects in the spring of 2012. The lift station is expected to be constructed during the summer tourist season. The forcemain construction will occur before July 1st and after the summer tourist season. The lift station and forcemain project is expected to be operational at the start of the 2013 camping season.

The project will require the use of vehicles and heavy machinery such as excavators/trenchers, backhoes, loaders, graders, and heavy trucks. Petroleum products such as gasoline, diesel fuel and lubricants will be required to operate vehicles and heavy machinery. The project will also require the use of quarried materials for backfilling and road repair. Other materials may include asphalt, topsoil, and approved seed and shrubs to rehabilitate the area affected by the construction.

Table 2 outlines the project components and activities associated with the project. Figures and drawings are provided in Appendix A.

The assessed project components are further described in Table 2 below.

TABLE 2 ASSESSED PROJECT COMPONENTS

Project Phase	Project Components	
	Principle Project	**Associated Physical Works**
Site Preparation		Mobilization to site and set up of staging area for construction office, sanitary facilities, materials and vehicles at Trailer Court C
		Clear trees and vegetation as directed in area of lift station, access road, and along forcemain route. Note: Salvageable trees will be hauled to Peyto Pit to be cut up for fire wood. Wood debris will be disposed of as directed by Parks Canada fire and vegetation specialists.

Project Phase	Project Components	
	Principle Project	**Associated Physical Works**
		Protect existing utilities from damage. Prior to start of project (96 hours prior) notify PWGSC and PC representatives and utility companies of - utility interruptions - excavation work
		Prepare for and manage traffic including use of flagging, barricades, and traffic controls
Construction	Construct lift station, access and parking lot (36m X 50m footprint)	Repair and replace asphalt at points where trench crosses perimeter road.
	Install transformer vault, valve and meter vault, wet well and storage tanks	Maintain existing sanitary lines to Peyto Pit Lagoons during construction and for one year of operation.
	Trench line for forcemain pipe in accordance with specifications	2nd year: Cap off existing sanitary lines and abandon in place
	Install forcemain pipe in accordance with specifications	Provide bridging over trenches which cross sidewalks or roads
	Install manhole at Ex MH G14 in accordance with specifications	Protect or re-locate existing active services.
Rehabilitation	Vegetate and rehabilitate site to match surrounding landscape	Demobilization of construction office, vehicles and surplus materials from site. Removal of waste and sanitary facilities from site.
		Repair or replace existing utilities and structures that are damaged or destroyed during construction.
Operation	Following commissioning and performance testing, monitor, maintain and operate sewage system in accordance with manufacturer's instructions and the O&M manual	

PART C: EXISTING ENVIRONMENT AND OTHER BACKGROUND INFORMATION

Biophysical

Description of Physical Environment

Terrestrial Setting

The Tunnel Mountain Campground is located in the Bow Valley within the montane ecoregion, the most biologically diverse and ecologically important area in BNP (Banff Bow Valley Study 1996). The Tunnel Mountain Campground is located at about 1400m asl.

The montane ecoregion occurs in elevations up to 1500 m above sea level (asl). The low elevation and open forests of the montane make it important wildlife habitat and a critical link for wildlife movement throughout the Park. Specifically, the campground is located in the Patricia (PT) Ecosection as described in the Ecological Land Classification (Holland and Coen 1982), specifically PT1. The PT ecosection occurs on valley floor benchlands and are rapidly to well-drained.

Dominant vegetation in the ecoregion consists of Douglas fir and white spruce, aspen/poplar, and grassland at dry sites. Assemblages of terrestrial fauna associated with the montane ecoregion in BNP include white-tailed deer, mule deer, elk, moose, and bighorn sheep. Carnivores include pine marten, fisher, coyote, wolf, cougar, black bear, grizzly bear, and wolverine (Highwood, 2010).

Geologic History

The mountains in the Banff area consist of long, southeast-to-northwest trending mountain ranges comprised of Paleozoic limestones and dolomites forming the ridges, with intervening valleys comprised of Mesozoic shales and siltstones. The Rocky Mountains were formed by a deformation event that ended around 50 million years ago (Grasby and Bednarski 2002).

Extensively glaciated during the last ice age, the Bow Valley was filled well up the mountainsides. The glaciers retreated from the Bow Valley near Banff as early as 11,000 years ago. As the glaciers retreated the Bow Valley was actively eroded by glacial meltwater through the valley bottom sediments and the slopes of the Bow Valley mountains were eventually left coated with layers of glacial till (Grasby and Bednarski 2002).

Surface Water

The nearest natural water body to the campground is the Bow River located approximately 460 m to the south east (Figure 2). The Peyto Pit Lagoons are discharged to two sand filters once annually in spring. The effluent infiltrates through the soil to the Cascade River, a tributary of the Bow River. The Town of Banff Wastewater Treatment Plant discharges final (tertiary) effluent into the Bow River on a continuous basis.

Parks Canada and Environment Canada have monitored water quality on a monthly basis in the Mountain Parks since 1973, including the Bow River watershed (Parks Canada). Improvements in concentrations of nutrients and bacteria were recorded at downstream sites, and were particularly evident in the lower Bow River below the town of Banff.

Significant improvements in the lower Bow, particularly in the last decade, are directly attributed to improvements to Banff's sewage treatment facility. The extreme coliform concentrations observed in the early years of the study period (1970s-1980s) have virtually disappeared. Increasing phosphorus trends, which began before 1989, have significantly dropped off and average concentrations have been reduced. Upgrades to full tertiary treatment

(including phosphorus removal) have contributed to the recovery of the Bow River. (Parks Canada

Climate and Air Quality

The climate in Banff is continental, with long cold winters and short summers that are cool with occasional hot spells. Mean daily temperatures at Banff range from –10.6°C in January to 14.4°C in July. The total annual precipitation for the area averages 476 mm, with 42% of that falling as snow. The wettest month is June, during which an average of 64 mm of precipitation falls. Substantial precipitation also occurs during the winter (November to February) with monthly rates ranging from 30 to 38 mm (or as snow, from 25.4 to 35.6 cm). The lowest precipitation occurs during the spring (March and April) and fall (September) transition seasons (Holland and Coen 1982).

Description of Biological Environment

Vegetation

The site is within the Montane Patricia 1 Ecosite (PT1) unit, which occurs on medium-textured till deposits over sloped or hummocky bedrock (Holland and Coen 1982). The PT1 ecosite tends to be ridged and hummocky with Lodgepole pine forest dominant and the calcareous glacial landforms are dominated by Brunisolic and Luvisolic soils. The PT1 ecosite is important to wildlife because it is located in the warmer Montane zone with low snow accumulation. Young white spruce, Douglas fir and common juniper are present in the open understory. The dominant groundcovers are hairy wild rye and feather mosses.

Wildlife

The location and existence of the Town of Banff provides a bottleneck for wildlife movement up and down the Bow Valley thus increasing the incidence of human-wildlife contact and conflict (Highland 2010). Wildlife corridors have been designated for wildlife movement on the north and south side of the valley with some restrictions on human use and development. Typical mammals using the Wildlife Corridors include elk, deer, sheep, coyote, wolf, cougar, grizzly and black bear, moose, lynx, and ground squirrels.

Ground squirrel colonies are known to inhabit the campground. In October 2010 Lori Rissling, Parks Canada walked the project site and found ground squirrels colonies all through the project footprint. The highest use was found in Village 2, around the campground kiosk and across from the Hoodoo viewpoint and Hoodoo trail trailhead.

The phenology or expected biological activity related to climatic conditions for Columbian ground squirrels is (times are approximate):

April 15: Adult ground squirrels emerge

August 15: Hibernation begins

August 15 – September 15: It is possible to encounter torpid (sleeping) squirrels

Fish and Fish Habitat

There are 26 species of fish (including five introduced) and eight species of minnows known to inhabit the Bow River. According to information accessed on the Bow River Basin Council website, the section of the Bow River from Banff to Calgary provides important spawning habitat for mountain whitefish and brown trout. Other fish spawn in tributaries of the Bow River. The most common fish species in the Bow River System is the mountain whitefish. Populations of native cutthroat and bull trout have been substantially reduced due to impacts from introduced rainbow, brown and brook trout that have largely replaced the native species (Bow River Basin Council).

Wastewaters and nutrients discharged to the river from the various communities, including Banff, increase biological production that augments sport fishery of rainbow and brown trout, both introduced species. However, during times of low flows, the warm, shallow, nutrient-rich waters can experience low dissolved oxygen concentrations and pH fluctuations leading to conditions that can stress the fish in the river (Bow River Basin Council).

Birds

Over 260 species of birds have been recorded in Banff National Park. Spring and early summer are the most productive seasons.

Species at Risk

Species with special conservation status occur in the project area and have the potential to be impacted by project activities. Wildlife with species at risk designations are listed below.

TABLE 3. SPECIES AT RISK WITH RANGES IN PROJECT AREA

Common Name	Scientific Name	COSEWIC	SARA Schedule 1 Designation	AB Wildlife Act Designation
Grizzly bear	*Ursus arctos*	Special Concern	N/A	Threatened
Canada lynx	*Lynx canadensis*	N/A	N/A	Sensitive
Cougars	*Puma concolor*	N/A	N/A	Special resource of BNP
Wolves	*Canis lupus*	N/A	N/A	Special resource of BNP
Wandering (Western) garter snake	*Thamnophis elegans*	N/A	N/A	Sensitive
Common nighthawk	*Chordeiles minor*	Threatened	Threatened	N/A
Olive-sided flycatcher	*Contopus cooperi*	Threatened	Threatened	N/A

Socio-Economic

As the birthplace of Canada's national park system, BNP was designated a UNESCO World Heritage Site in 1984 and is world-renowned for its natural beauty and rugged physical attributes. The Town of Banff is the main commercial centre in BNP and draws tourists from all over the world because of its location, and associated amenities including sports and culture.

According to the 2005 census the population of Banff was 8,352 of which approximately 7,000 were permanent residents.

Tourism

Tourism provides the major income in BNP. As the largest campground in the national park system, the Tunnel Mountain Campground provides a significant proportion of accommodation for visitors to Banff in the high tourist season of July and August. The TMC has a capacity of approximately 1000 camp sites consisting of approximately 600 un-serviced sites and approximately 400 serviced sites located in Villages 1 and 2 and the Trailer Courts (A, B, and C). The campgrounds and trailer court are generally open from early May to early October. Tunnel Mountain Village II is open year-round. Tourists visiting the Town of Banff are drawn to the campground for accommodation but also to use the surrounding hiking and biking trails and to visit the hoodoo geologic feature.

Cultural

As Canada's first national park BNP contains many cultural heritage resources that require protection through the implementation of federal heritage and cultural policies and programs. The heritage character of Tunnel Mountain Campground derives from its long standing position as the largest campground in the national park system.

The old TMC (now the trailer facility) contains several significant features, which are important examples of campground architecture. The 1927 caretaker's residence survives in good condition, but was moved from its original position beside the original entrance at the west end of the site. There are several kitchen shelters representing the 1952 Banff standard plan that were built in the 1950s. The old 1956 TM Trailer Court, now an annex to the main trailer facility, has been preserved. A standard plan washroom building dating from 1956 is also still in use. (Taylor, 2001)

Surrounding Area

The Tunnel Mountain campground occupies most of the bench west and north of the proposed lift station. To the south the bench falls off steeply into the Bow Valley. Located approximately 400m west of the site of the lift station and accessed via Tunnel Mountain Road there are a cluster of hoodoos; tall, thin columns of rock that protrude from the bottom of the drainage basin. Hoodoos are rock formations that consist of relatively soft, erodible rock topped by harder, less easily eroded stone that protects the column from the elements.

Tunnel Mountain Road forms a perimeter road around the campground on the north, east, and south side. The town of Banff is located approximately two kilometers west of the campground.

PART D: SCOPE OF THE ASSESSMENT *(S. 16.(3))*

The scope of the Screening is to assess the project as described in the Project Scope in accordance with Section 16 (1) of the CEAA.

Temporally this assessment includes the site preparation, the construction, and the operation of the sewage lift station and forcemain to be built at the Tunnel Mountain Campground. Construction of the lift station is tentatively scheduled to begin in the spring of 2012. The forcemain construction will start before July 1st and continue after the main summer tourist season (July and August). The project is expected to be complete and operational by the start of the 2013 camping season.

Spatially this assessment includes the local study area, which encompasses the campground and the staging area at Trailer Court C.

This screening considers changes to the biophysical environment caused by the project, as well as any resultant effects on the socio-economic environment by scoping for appropriate Valued Ecosystem Components (VECs) and Valued Social Components (VSCs). For this project VECs were selected based on ecological importance and/or value to the existing environment, the relative sensitivity of environmental components to project influences and their relative social, cultural, or economic importance. VSCs include components of the socio-economic environment that may be affected by a change in the environment as a result of the project. VECs and VSCs for this project were chosen using the Checklist below. Consideration was made for all aspects of the project life cycle identified in the Scope of Project.

TABLE 4. CHECKLIST FOR SCOPING VALUED ECOSYSTEM AND SOCIAL COMPONENTS

Valued Ecosystem Components (VECs)			Valued Social Components (VSCs)		
Physical and Biological Components - attributes to consider	Component is present in the [1]	Component/ Project interaction [2]	**Socio-Economic Components [3] -attributes to consider**	Component is present in the [1]	Component/
Air Quality - noise, dust, emissions	Y	Y	Aesthetics	Y	Y
Weather/Climate/Microclimate - wind, precipitation, temperature, inversion, fog	Y	Y	Land use – Official Plan, zoning		
Soil - erosion, compaction, settling, stability (slides, slumps)	Y	Y	Transportation Network		
			Navigation		
Geology/Geophysics - fractures, chemical reactions, subsidence			Recreation	Y	Y
			Tourism	Y	Y
Permafrost			Cultural Resources	Y	Y
Surface Water - quantity, quality, shore line/bottom alteration, flow variation, flood, drought, current, tides, wave action,	Y	Y	Aboriginal – traditional lands/resources		
			Agriculture		
Groundwater - quantity, quality, flow, water table			Aquaculture		
Renewable & Non-renewable resources	Y	Y	Human Health & Safety	Y	Y
Vegetation - quantity, type, quality, successional change	Y	Y	Noise	Y	Y
			Vibration		
Bio-Diversity			Potable well water		
Rare/Endangered Species (SARA)	Y	Y	Employment		
Mammals - population change, productive capacity, habitat modifications (i.e. nesting, breeding, feeding, etc.)	Y	Y	Economy/Taxes		
			Community/Social Services		
Fish/Fish Habitat - population change, productive capacity, habitat modifications (i.e. nesting, breeding, feeding, etc.)	Y	Y	Archaeology		
			Public concern	Y	Y
Amphibians & Reptiles - population change, productive capacity, habitat modifications (i.e. nesting, breeding, feeding, etc.)			Other		
Birds - population change, productive capacity, habitat modifications (i.e. nesting, breeding, feeding, etc.)	Y	Y			
Migratory Corridor/Buffer Zone					
Estuaries/Salt Marshes					
Wetlands/Bogs/Ponds - area changes, productive capacity, water quantity, water quality, aquatic vegetation					
Other					

[1] Yes = Y, Unknown = **?**, No = Blank

[2] Yes = Y, Unknown = ?, No = Blank

[3] The socio-economic impact assessment of this CEAA screening considers only socio-economic effects to the extent that these result from an effect on the *(biophysical)* environment. This is in accordance with the definitions of “environment” and “environmental effect” in the CEA Act.

The scope of this assessment includes the potential environmental effects on valued ecological and socio-economic components resulting from the proposed construction of the lift station, forcemain, and associated activities. Environmental effects considered are those that may impact air quality, weather, soil, surface water, renewable and non-renewable resources, vegetation, rare and endangered species, mammals, fish and fish habitat, birds, aesthetics, tourism, cultural resources, human health and safety, noise, and public concern.

PART E: CONSULTATION

Public Consultation (s. 16.(1)(c), s. 18.(3))

As part of this EA, various stakeholders were consulted.

In accordance with CEAA, PCA, as the Responsible Authority, has initiated a public registry for this project and will ensure that the screening report and associated records will be available for public viewing. The CEAR number is **12-01-66314**.

The potential for public concern is expected to be minimal for the execution of this project due to the small scope and nature of the project.

Federal Coordination (s. 12.(1)(3))

In accordance with the Federal Coordination Regulations established under the CEAA, Parks Canada considered whether any Federal Authorities should be contacted as part of this project and determined that due to the small scope and duration of this project that no Federal Authorities needed to be notified.

Consultation with Municipal Authorities

Parks Canada worked with the planning department of the Town of Banff to ensure that the existing TOB wastewater collection system has the capacity to accept the additional wastewater from the TMC. A letter from the Town of Banff indicating that the TOB is prepared to accept the flows from Village I and the Trailer Court at TMC is provided in Appendix B, Correspondence.

Consultation with Aboriginal Peoples (s. 16.1)

As the Responsible Authority PC has an obligation to consult with aboriginal peoples if the proposed project will have an impact on established, or potential aboriginal or treaty rights, settled or unsettled land claims, or self-government agreements[4]. Given the nature, scope and location of the proposed project, PC has determined that no aboriginal consultation is required; as it is unlikely the project will have any impacts on aboriginal rights.

[4] CEAA, Ministerial Guidelines on Assessing the Need for and Level of Public Participation in Screenings under the CEAA

PART F: ANALYSIS OF ENVIRONMENTAL EFFECTS

Potential Environmental Effects on Valued Ecosystem and Social Components

Potential environmental effects associated with project activities and identified VECs and VSCs from the Matrix Table 4 include the following:

Air Quality – emissions, dust, noise/vibration

Fumes and emissions from construction equipment and vehicles may affect human health especially workers. Burning fossil fuels produces pollutants such as nitrous oxides (NOx) and volatile organic compounds (VOCs) that can combine in sunlight and stagnant air to produce ground level ozone and smog. Winds can disperse and transport pollution over large distances. Health studies indicate that air pollution contributes to numerous adverse health impacts such as respiratory problems (chest pain, coughing, throat irritation, and congestion) and can aggravate bronchitis, emphysema, and asthma resulting in increased hospital admissions and emergency room visits (US EPA 2008).

Dust created during site preparation and construction can affect individual well-being and cause respiratory problems. PM_{25} (fine particulate matter) particles, are generally directly emitted, and are produced by emission sources (e.g. heavy equipment and vehicles) from construction sites, and roadways. Such particles, especially fine particles, contain microscopic solids or liquid droplets that are so small they can infiltrate deep into the lungs and cause serious health problems (US EPA 2008).

According to the EPA, in addition to health problems, particle pollution is the major cause of reduced visibility and ecosystem damage in many parts of the U.S., including national parks and wilderness areas (US EPA 2008). In the local study area, particulate matter may be deposited onto sensitive vegetation within and adjacent to the campground.

Noise from construction equipment and vehicles during site preparation and construction may affect individual well-being of workers, campers, and other bystanders. Intense sound greater than 75 decibels (dB) may cause damage to the inner ear and may occur through a single exposure or from chronic exposure. Long periods of exposure at 65 dB or more can cause both mental and bodily fatigue. Long-term exposure at 90 dBs causes permanent hearing loss. Excessive noise exposure may contribute to stress, related physiological effects, and safety concerns (CCOHS, 2011).

Weather/Climate/Microclimate - wind, precipitation, temperature, inversion, fog

Extreme weather events, such as excessive rain and wind storms, electrical storms, snow blizzards and extreme cold or heat, can impact the project causing a risk to worker safety and unscheduled delays.

Soil

Soil erosion may occur during project activities due to a fast snow melt or heavy rain events washing exposed soils and sediments into storm water drainage conduits that may eventually reach the Bow River.

Proper soil compaction and settling will need to be monitored to ensure that the trench areas are rehabilitated to match the surrounding landscape. Soil compaction caused by trucks accessing the lift station site may stress and kill riparian vegetation not affected by the project.

Accidental fuel spill or leaks from construction vehicles or equipment may impact soils.

Soil mixing may occur if topsoil and subsoils are not separated or replaced properly.

Renewal and Non-renewable Resources

Non-renewable resources required to execute the project include petroleum products such as gasoline, diesel fuel and lubricants to operate vehicles and machinery as well as aggregate used for backfill and road base, concrete for the vault and storage tanks, steel piping, and HDPE piping.

Vegetation – quantity, type, quality, successional change

Approximately 1700 trees and some shrubs are expected to be removed as a result of this project. Figure 8 illustrates the areas where trees are expected to be removed and the estimated number of trees to be removed. Douglas fir trees are considered special resources in BNP and their removal must be avoided if at all possible. Topsoil and trees and shrubs will be replaced as part of the rehabilitation of the site following construction. Salvageable trees will be brought to Peyto Pit to be cut for firewood for the campground. Parks Canada fire and vegetation specialists will determine how any debris will be disposed (e.g. burned at the Peyto Pit Burn Pile, or mulched to use for restoring the disturbed areas around the lift station and along the forcemain route.

Vegetation and tree/shrub removal may potentially expose soils contributing to soil erosion with risk of sediment-laden runoff to drainage conduits leading to the Bow River.

The project could result in damage to trees not slated for removal.

Soils left exposed following construction are vulnerable to the introduction of exotic and weedy plant species.

Removal of vegetation may reduce bird and small mammal habitat.

Destruction of ground cover may impact birds and small mammals that use the vegetation as cover. It may also contribute to drying out the soil as well as destroying important micro and mega fauna in the soil.

Rare and endangered species (SARA and AB Wildlife Act)

Based on the species at risk assessment above in Table 3, no species are likely to be affected by project activities or operations as a result of the construction associated with the lift station and force main.

Mammals

The project should not affect population changes or productive capacity of large or small mammals including ground squirrels. However, project activities such as grading, trenching and vegetation removal may cause habitat loss, fragmentation, and modifications for small mammals such as small rodents, rabbits, and ground squirrels, which are important food sources for birds, amphibians, reptiles and larger mammals. Site restoration will replace vegetation, but the habitat may not initially have the same quality as the original.

Sensory disturbance such as noise and vibration may cause displacement and habitat avoidance as well as disturb the mating, nesting and foraging activities of large and small mammals.

Since ground squirrel colonies are known to inhabit the campground and were found all through the project footprint, it is expected that they may be disturbed by project activities. The highest use was found in Village 2, around the campground kiosk and across from the Hoodoo viewpoint and Hoodoo trail trailhead. Trenching or digging should be avoided in those areas when the squirrels are in the outlined hibernation periods (see section on Description of Biological Environment, Wildlife). When they are active, they would be expected to escape interactions with heavy equipment.

Fish and Fish Habitat

Incremental nutrient loads from the TMC wastewater going to the existing WWTP may impact water quality and potentially impacting fish in the Bow River. However, the AE report (2008) indicated that nutrient loads from the TMC on the existing WWTP would increase BOD5, TSS, NH3-N and TP loads in the range of 8% to 15% for both years 2007 and 2020 based on operating day averages for the summer months when the TMC would be contributing flow.

Further, the sum of the predicted peak TMC loads and the peak Town of Banff loads for 2007 remain below the design values for the plant. For example, after the addition of the TMC loads it was predicted that Biological Oxygen Demand (BOD) would stand at 79%, TSS would stand at 89%, NH3-N would stand at 94%, and Total Phosphorous would stand at 68% of design capacity. In addition, in the summer when peak loads from TMC are highest the biological process functions better, therefore reducing the potential for TMC peak loads to exceed the design capacity of the treatment plant.

Birds

Noise and vibration during construction may disturb the foraging activities of birds.

Life processes of birds (breeding, nesting, rearing, and foraging) could be adversely affected if project activities such as vegetation removal are conducted during the breeding and rearing season between April 15 and July 31.

Removal of large trees and shrubs may represent the permanent loss of nesting habitat for some bird species.

Aesthetics

The project will likely be carried out during the camping season and therefore potential aesthetic impacts will be related to visitor experience. Aesthetic concerns with respect to visitors include potential unsightliness due to the presence of construction equipment in the campground, construction debris, or mud on roads during the construction phase.

Tourism

Campers and visitors to the Tunnel Mountain area may be affected by road access and traffic during construction activities close to and in the ROW of Tunnel Mountain Road. Issues such as disruption to visitor access to the campground and the hoodoo geologic feature, public safety hazards and inconvenience, as well as aesthetic impacts such as noise, dust and visuals may be of concern to park visitors.

Cultural Resources

The potential to disturb archaeological or heritage resources during excavations is considered low due to the location of the campground on the benchland. Except for the lift station the forcemain route will be situated in previous disturbed portions of the ROW or the campground.

However, as the proposed project is located within a national park, the work will be conducted in close association with PCA archaeologists in order to maintain the integrity of any artifacts discovered during the construction phase of the project. Further the proposed work will be carried out in accordance with the goals set out in the Parks Canada Management Plan for maintaining the commemorative integrity of historic sites and protection of resources. This plan was established with coordination between the PCA and Aboriginal Communities.

Human Health and Safety

There is the potential for accidents and injuries involving the operation of vehicles and equipment during project activities. There is a potential for accidents or spills involving the use of fuel and other hazardous materials (solvents, etc.) during construction. There is the potential to inadvertently cut utility lines potentially causing injury to workers, or causing a serious interruption of service (electricity, gas, communication) to operations.

There is also the potential for large carnivores such as bears, cougars, or lynx to be in the area during construction.

Potential impacts to workers due to noise are addressed under Air Quality.

Public Concern

The public may have concerns regarding public safety during construction, inconvenience due to traffic concerns, or concerns regarding the aesthetic impacts to the site. There may also be concerns regarding access to trails in the vicinity of the campground.

SIGNIFICANCE AND MITIGATION ***(s.16.(1); s. 20.(2))***

The potential for project interaction with VECs and VSCs was analyzed based on: information provided by the proponent; a review of project related activities; an appraisal of the environmental setting; temporal and/or spatial conflict; personal knowledge and professional judgment. Measures to mitigate the identified potential adverse interactions were then recommended. Significance [5] of any residual effect was ascertained based on an evaluation of the effect's magnitude, geographic extent, duration/frequency, irreversibility, and ecological context. The analysis also considers public concern, accidental and cumulative effects. Refer to the Checklist for Scoping Valued Ecosystem and Social Components & Environmental Issues above (Table 4).

The following table summarizes the foregoing, and in particular details the required mitigation measures to be implemented, the residual effects, their significance, and any monitoring or follow-up requirements.

[5] For clarification of this term, please see Reference Guide: Determining Whether A Project Is Likely To Cause Significant Adverse Environmental Effects. http://www.ceaa.gc.ca/013/0001/0008/guide3_e.htm#4.2

TABLE 7 ENVIRONMENTAL EFFECTS ANALYSIS & RECOMMENDED MITIGATION MEASURES

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
Air Quality	Fumes and emissions from heavy construction equipment and vehicles may affect human health especially workers	• Ensure all equipment is properly tuned, free of leaks, in good operating order, and fitted with standard air emission control devices. • Minimize idling engines at all times. • Minimize construction activities to a confined area. • Comply with provincial and federal labour codes and best practices.	Due to the short construction time, effects are expected to be of short duration; and no significant residual effects are anticipated.	-1	No
	Dust and particulate matter created during site preparation and construction can affect individual well-being, cause respiratory problems and affect sensitive ecosystems	• Provide an air pollution control plan as part of the Environmental Protection Plan to the Project Manger prior to the start of construction to address dust, debris, and materials during project activities • Schedule activities to minimize dust effects, (e.g. during normal working hours) • Contractor must employ non-toxic dust control measures, as required • Cover stockpiled soil or granular to prevent	Due to the short construction time, effects are expected to be of short duration; and no significant residual effects are anticipated.	-1	No

[6] Significance of Residual Impacts rated as follows:
0 = None, 1 = Not significant, 2 = Significant, 3 = Unknown, Positive (+) impact or Negative (-) impact on the VEC.

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
		wind erosion and airborne dust			
	Occupational exposure to noise effects includes both mental and bodily fatigue and potential hearing loss. Construction noise may disturb campers and contribute to a reduced visitor experience.	• Schedule work activities to minimize noise (adhere to local Noise Bylaw). For example, working hours should not exceed 8 hours during the tourist high season. • Contractors must employ equipment with noise control devices (mufflers) • Inform workers about the hazards of extended high noise level exposure and provide appropriate protective equipment • Avoid idling heavy equipment or other engines for extended periods of time • Identify and conform to regulations/bylaws/ codes of practice for noise control, which may apply to the project • Consider closing any campsites that are close to the construction site to reduce noise impacts	Due to the short construction time, effects are expected to be of short duration; and no significant residual effects are anticipated.	-1	No
	Noise may affect mating and nesting activities of mammals and birds if project occurs during breeding and nesting period.	• Conduct work during daylight hours (avoid dawn and dusk when animals are most active) • Ensure motorized vehicles and equipment are properly tuned and have sound mufflers • Minimize construction activities to a confined area	Due to the short construction time, effects are expected to be of short duration; and no significant residual effects are anticipated	-1	No
Weather	Extreme weather events (excessive rain and wind storms,	• In the event of extreme weather temporarily suspend excavations and ensure that site barriers are in place and that the site is	Weather effects are expected to be of short duration, and with	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
	electrical storms, blizzards, and extreme cold or heat) can be a risk to worker safety and unscheduled delays	secure. • Confine excavation activities to prescribed incremental segments each day. • Cover any stockpiled soil or granular with a tarp during extreme weather events.	implementation of the outlined mitigation measures; residual effects are anticipated to be insignificant.		
Soil	Soil erosion	• The contractor must develop a soil erosion plan as part of the Environmental Protection Plan that is to be provided to the project manager prior to the start of the project.	Residual effects from erosion are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No
	Soil compaction and settling may occur following backfilling of trenches	• Compact backfill material to required soil compaction density • Monitor the backfilled trench in case more backfill is needed to account for settling prior to the addition of topsoil and site restoration.	Residual effects from soil compaction and settling are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	Monitor backfilled trench for settling and backfill with as necessary.
	Accidental fuel spills or leaks from temporary storage tanks, refuelling, or vehicle accidents could result in soil contamination	• The Contractor must provide an environmental spill response plan to project managers as part of the Environmental Protection Plan prior to the start of the project to deal with accidental fuel spills and leaks. • Fuel must be handled and stored in accordance with The Banff National Park Directive 17, Guidelines for development	Residual effects to surface water from the impacts of hydrocarbons and other contaminants are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
		projects as applicable. • Ensure that fuel storage and refuelling operations are carried out in the designated staging areas, or off-site • Maintenance of vehicles is prohibited in the construction or staging area (except emergency repairs) • Spill response equipment must be available on-site and, in case of accidental fuel spills, promptly cleaned up • Environment Canada requires that all spills, of oil, fuel, or other deleterious materials, regardless of size, must be reported to the AB 24-hour Spill Line at (780) 422-4505 or 1-800-222-6514.			
	Mixing of top and subsoil	• Topsoil will be stripped and stockpiled separately from subsoil • Soil will be replaced back into the trench in the same order it was removed with topsoil on top	Residual effects from the mixing of top and subsoils are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No
Renewable and Non-renewable Resources	Non-renewable resources required to execute the project include petroleum products such as gasoline, diesel fuel and lubricants, as	• Tune up and maintain heavy machinery and vehicles in good condition to reduce the quantity of petroleum products consumed during the project. • Employ energy efficient equipment and processes where feasible • Granular aggregate must be obtained from	Residual effects from the impacts of using non-renewable resources are anticipated to be insignificant with implementation of the outlined mitigation	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
	well as aggregate used for backfill and road base, concrete for the vault and storage tanks, steel piping, and HDPE piping.	reputable sources approved by Parks Canada. • Recycle or reuse waste materials generated by the project where feasible.	measures.		
Vegetation	Approximately 1700 trees shrubs are expected to be removed as a result of this project. Vegetation and tree/ shrub removal exposes soils and contributes to soil erosion with risk of sediment-laden runoff to drainage conduits that may lead to the Bow or Cascade Rivers.	• The Contractor must provide a vegetation removal and protection plan to project managers as part of the Environmental Protection Plan prior to the start of the project to plan for and handle vegetation removal. • Follow the directives provided in the BNP Directive 17, Guidelines for Development Projects for disposing of trees. • Follow mitigation measures outlined under Soil to prevent soil erosion. • Stockpile topsoil for site rehabilitation such as planting trees and other appropriate native plants. • Consult with PC fire and vegetation specialists to determine disposal options for salvageable trees (e.g. firewood) and wood debris (burn pile or used as mulch)	Residual effects to vegetation are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	Conduct a visual inspection of the restored site to ensure that vegetation is growing and replace any dead items as necessary.
	Potential damage to trees not slated for removal.	• Clearly mark area to be excavated to minimize soil and vegetation disturbance. • Clearly mark the areas where trees and shrubs are to be removed.	Residual effects to vegetation are anticipated to be insignificant with	-1	Conduct a visual inspection of the site to

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
		• Protect trees not being removed by clearly marking area of disturbance and protecting any large trees from impacts of heavy machinery.	implementation of the outlined mitigation measures		determine extent of any damages to existing trees and replace as necessary.
	If soils are left exposed following construction there is the potential for the introduction of exotic, invasive plant species.	• To prevent re-introduction of invasive non-native plant species, re-vegetate with native seed stock as soon as possible following backfilling, grading and application of clean topsoil. • Retain topsoil layer and replace on top of reclaimed trench.	Residual effects to vegetation from the invasion of exotic species are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	Conduct a visual inspection of restored site to determine if action is necessary to remove any invasive species at the project sites.
	Removal of vegetation reduces bird and small mammal habitat. Destruction of ground cover may impact birds or small mammals that use the vegetation as cover. It may also contribute to drying out the soil as well as destroying important	• Clearly mark areas where groundcover is to be excavated to minimize area affected. • Clearly mark trees and shrubs to be removed to reduce habitat area affected. • Clearly mark construction access and ensure that vehicles and large construction equipment adhere to approved access roads	Residual effects to bird and small habitat are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
	micro and mega fauna in the soil.				
Rare and Endangered Species	None of the species with ranges in the project area are likely to be affected by project activities.	• Conduct project activities in accordance with the Migratory Bird Convention Act. • Design lift station and forcemain route to avoid removal of large trees, especially Douglas Fir	Residual effects to rare and endangered species are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No
Mammals	Project activities such as grading, trenching and vegetation removal may cause habitat loss, fragmentation, and modifications for small mammals such as small rodents, rabbits, etc. which are important food sources for birds, amphibians, reptiles and larger mammals.	• Clear only the minimum area required • Retain natural vegetation where possible, especially trees and shrubs • Re-vegetate area using native species where trees were removed as soon as possible	Residual effects on mammals due to loss of habitat or fragmentation are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No
	Sensory disturbance such as noise and vibration may cause displacement and habitat avoidance as well as disturb the	• When working adjacent to undisturbed areas, restrict construction activity to daylight hours (dusk and dawn are critical foraging times for wildlife) • Ensure motorized vehicles and equipment are properly tuned and have sound mufflers.	Residual effects on mammals due to sensory disturbance are anticipated to be insignificant with implementation of the	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
	foraging activities of small mammals	• Minimize construction activities to a confined area.	outlined mitigation measures.		
	Disturbance of Columbian ground squirrels; destruction of ground squirrel colonies	• Time excavations to avoid disturbance of hibernating ground squirrels (see section Description of Biological Environment, Wildlife for phenology of Columbian ground squirrels). • Avoid destroying colony habitat as much as possible when determining the route of the forcemain trenches.	Residual effects on ground squirrels are anticipated to be insignificant with implementation of the outlined mitigation measures	-1	No
Fish and Fish Habitat	Incremental nutrient loading on Banff's WWTP due to addition of TMC's waste water may cause increasing concentrations of key nutrients resulting in final effluent that does not meet existing criteria with impacts to water quality and fish.	• Monitor final effluent to ensure that Banff's WWTP is capable of handling the extra nutrient loading to the system to achieve and maintain the leadership targets outlined in the Banff National Park Management Plan (2007) and/or the CCME Canada Wide Strategy for the Management of Municipal Wastewater Effluent.	Residual effects on fish are anticipated to be insignificant with implementation of the outlined mitigation measures	-1	No
Birds	Noise and vibration during construction may disturb the foraging activities of birds. Unlawful disposal of	• When working adjacent to undisturbed areas, restrict remediation activity to daylight hours (dusk and dawn are critical times for wildlife). • Prohibit restoration machinery such as graders, seeders, etc. from accessing	Residual effects on birds are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
	hazardous wastes may impact birds.	undisturbed areas around the project site. • The deposit of oil, oil wastes, or any other substances that are harmful to migratory birds is prohibited.			
	Life processes of birds could be adversely affected if project activities such as vegetation clearing is conducted during the breeding and rearing season between April 15 and July 31.	• Conduct project activities in accordance with the Migratory Bird Convention Act. • Vegetation clearing in areas where migratory birds may be nesting should take place before April 15 or after July 31. • If clearing must take place within this timeframe, a person with qualified bird expertise should confirm that there are no active nests in the area within 7 days of clearing commencing.	Residual effects on life processes of birds are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No
	Removal of large trees and shrubs may destroy occupied nests and may represent the permanent loss of nesting habitat for some bird species.	• If construction is unavoidable during the window of prohibition for migratory birds (April 15 – July 31), then a Parks Canada biologist should be engaged to survey trees and shrubs for nests within one week prior to any vegetation removal. • A tree planting program should be included in the restoration plan at the site to replace removed trees.	Residual effects on occupied nests and loss of habitat are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No
Aesthetics	Temporary disturbance of aesthetics of the site during project activities	• The Contractor must provide a non-hazardous solid waste disposal plan to project managers as part of the Environmental Protection Plan prior to the start of the project to identify methods and locations for waste disposal.	Residual effects on aesthetics are anticipated to be insignificant with implementation of the outlined mitigation	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
	Aesthetic concerns with respect to visitors include potential unsightliness due to construction debris, or mud on roads, during the construction phase. Concerns regarding truck traffic and condition of the roads.	• Clean up and remove surface debris daily during construction (provide facilities for separating non-hazardous from hazardous waste). • Grade, landscape and restore site as close to original condition as possible. • Trucks must be leak proof and covered to prevent loss of contents during transport. • Access roads must be kept free of excess mud to prevent soiling of adjacent asphalt roads. • If necessary clean wheels of trucks to prevent soiling of local roadways. • Sweep roadways if necessary.	measures.		
Tourism	Construction noise may disturb campers and contribute to a reduced visitor experience. Concerns re trail access in the vicinity of the campground	• Identify and conform to regulations/bylaws/ codes of practice for noise control, which may apply to the project. • Consider closing any campsites that are close to the construction site to reduce noise impacts. • Provide information (signage, pamphlets, etc.) to campers before registering regarding the location of construction. • Set established working hours for construction such as during daylight hours. • Issues such as trail access, construction noise, construction traffic, aesthetics or other issues should be considered prior to the start of construction.	Residual effects on tourism are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
		• Concerns expressed by the public in regards to any of the above issues during construction should be resolved in consultation with PC staff and documented.			
Cultural and Archaeological Resources	Potential adverse effects from trenching and excavating	• Utilize previously disturbed areas as much as possible. • Consult with PC archaeologist to determine likelihood of encountering buried cultural resources and determine most suitable areas (if undisturbed). • Stop work if resources encountered and contact PC and project management to ensure resources are properly handled.	Residual effects on cultural and archaeological, resources are anticipated to be insignificant with implementation of the outlined mitigation measures.	-1	No
Human Health and Safety	The operation of vehicles and heavy equipment during earth works could present a risk of injury to workers and bystanders.	• The Contractor must provide a Health and Safety Plan to the project manager prior to the start of any site activities. • Control public access to the work site to prevent injury to bystanders. • Incorporate all safety items into contractor and sub-contractor contracts. • Comply with applicable federal, provincial, and municipal legislation. • Workers must wear protective gear in accordance with applicable provincial Occupational Health and Safety Act and Regulations.	Residual effects on human health and safety with respect to the operation of vehicles and heavy equipment are anticipated to be insignificant with implementation of the outlined mitigation measures	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
	Spills or leaks during the use or storage of fuel and other hazardous materials during construction could present risks to human health if not stored or handled properly.	• The Contractor must provide a spill control plan to project managers as part of the Environmental Protection Plan prior to the start of the project. • Handle and store all hazardous materials used at the work site according to WHMIS regulations. • Store vehicle fuel in accordance with provincial regulations preferably off-site. • For spills and leaks refer also to mitigation measures under Soil – contamination (above). • In the event of a spill contact PC and PWGSC project managers immediately.	Residual effects on human health and safety with respect to spills or leaks are anticipated to be insignificant with implementation of the outlined mitigation measures	-1	No
	Inadvertently striking or cutting underground utility lines has the potential to cause injury to workers, or cause a serious interruption of service to campground operations. Potential impacts to workers due to noise and vibration are addressed under Air Quality	• All buried and overhead utilities must be located (and moved if necessary) prior to the commencement of site activities. • Use only properly trained workers for excavation activities. • Restrict access to the site to authorized personnel only. • Limit movement of heavy equipment on-site.	Residual effects on human health and safety with respect to striking utility lines are anticipated to be insignificant with implementation of the outlined mitigation measures	-1	No

Valued Ecosystem / Social Component	Description of Potential Environmental Effects	Required Mitigation	Residual Effects	Significance of Residual effects [6]	Monitoring or Follow up
Public Concern	The public may have concerns regarding public safety, inconvenience due to traffic concerns, and aesthetic concerns.	• Employ adequate safety barriers (i.e. fencing) and signage to ensure public safety and prevent vandalism. • Lock down heavy equipment in off-hours. • Inform relevant stakeholders (e.g. campground managers, utility providers, tourist offices) of project plans. Explain reasons for the project and be available to answer questions from community members/stakeholders. • Refer any public concerns to park staff and project managers, and document outcome.	Residual effects public concern are anticipated to be insignificant with implementation of the outlined mitigation measures	-1	No

Accidents and Malfunctions

The potential for accidental effects include those normally associated with construction projects. Effects, such as vehicle collision, fuel spills, and physical harm, including loss of life to individuals, are possible during the construction, transport and restoration phases of this project. All these effects are considered mitigable to insignificant through normal compliance with established construction safety practices and standards of the Canada Labour Code and Occupational Health and Safety Regulations.

Mitigation measures to prevent accidental harm to local residents, visitors and workers during construction and transport activities include the following:

- Ensure that the site is well-marked and secured from the public,
- Set and monitor speed limits of haul trucks,
- Post appropriate signage for trucks turning onto public (or Academy) roads.

Mitigation measures to reduce impacts to soils or surface water from fuel leaks and spills include the following:

- Provide spill kits and outline spill response measures prior to start-up, including measures to limit movement of spilled material toward water bodies,
- Clean up spilled materials as soon as possible and dispose in an environmentally safe manner,
- Inform appropriate PWGSC and provincial authorities in the event of a spill,
- Ensure construction site is secure,
- Comply with applicable legislation.

Potential accidental effects identified as a result of the proposed project activities are unlikely to cause significant adverse effects with the implementation of the mitigation measures outlined.

Significance and Residual Effects (s. 16.(1)(b))

The analysis in the Environmental Effects, Analysis and Recommended Mitigation Measures Table addresses significance of residual effect/impacts on different VECs / VSCs. The determination of significance of an impact included considerations of magnitude, frequency, and duration. For all components, it is anticipated that environmental impacts can be mitigated. Accordingly, based on the documentation review and taking into account the specific mitigation measures mentioned above, it is also anticipated that the project is not likely to cause any residual significant adverse environmental effects.

Cumulative Effects (s. 16.(1)(a))

In assessing the potential environmental impacts of the proposed project described in this Screening Report, it is necessary to consider the potential for, and significance of, any cumulative effects. Cumulative effects are changes to the environment that may be caused by

the proposed project in combination with other past, present, and future human actions and activities in the local area.

Past and existing projects in the area of the campground include the existence of the campground itself. The presence of the campground has undoubtedly had some adverse impacts on the Tunnel Mountain benchland possibly affecting wildlife passage in the montane region of Banff. However, there were no significant residual effects expected from the proposed lift station project that would interact with potential impacts from past projects at the campground that would result in cumulative effects. All potential impacts would be localized in nature. Therefore no off site impacts are anticipated.

Follow-up *(s. 14.(c); s. 16.(2)(c); s. 38)*

No formal follow-up requirements were identified for this project. Monitoring requirements for the proposed project activities are outlined in the impact mitigation summary (Table 7). Monitoring will include inspections of settling along forcemain trenches after backfilling, inspections of the restored site to ensure planted vegetation is growing and to determine the need to replace any items, and inspections to determine if action is necessary to remove any invasive species.

PART G: SIGNATURES

Prepared by: _____ Date: _____

Peggy Bainard Acheson, Senior Environmental Specialist,
Environmental Services, PWGSC

The above has completed this environmental assessment screening report to the best of their ability or knowledge.

Reviewed by: _____ Date: _____

Jamie Fennell, Environmental Assessment Coordinator
Parks Canada Agency

The above has reviewed the environmental assessment screening report and agrees that it meets the requirement of the Canadian Environmental Assessment Act.

Accepted by: _____ Date: _____

Steve King, Project Officer
Project Management, PWGSC

The above has read and understood this environmental assessment screening report and accepts responsibility for ensuring the implementation of mitigative measures and for ensuring the design and implementation of follow-up programs, if any, identified in this report.

PART H: CEAA DETERMINATION

The project has been screened in accordance with CEAA requirements. In accordance with Section 20(1) of CEAA, on the basis of this report, it has been determined that the responsible authority (RA), PCA[7], shall take one of the following courses of action in respect of the project:

[X] The project is not likely to cause significant adverse environmental effects: the project may proceed provided the RA ensures the implementation of appropriate mitigation measures identified in this report. *Section 20.1(a)*

[ ] The project is likely to cause significant adverse environmental effects that cannot be justified. The project will not proceed. *Section 20.1(b)*

[ ] Refer the project to the Minister of the Environment for referral to a mediator or a review panel for the following reason:

- [ ] it is uncertain as to whether the project, taking into account the implementation of any mitigation measures that the RA considers appropriate, is likely to cause significant adverse environmental effects, *Section 20.1(c)(i)*;
- [ ] the project, taking into account the implementation of any mitigation measures that the RA considers appropriate, is likely to cause significant adverse environmental effects and *Section 20.1(b)* does not apply, *Section 20.1(c)(ii)*;
- [ ] public concern warrants a reference to a mediator or review panel *Section 20.1(c)(iii)*.

Approved on behalf of PCA by: _____

Pamela L. Veinotte , Superintendent
Banff National Park, Parks Canada Agency

_____

Date

The above has read and understood this environmental assessment screening report and on behalf of Parks Canada has the authority to approve the foregoing CEAA determination.

[7] As the responsible authority, PCA is also responsible for ensuring the project is listed on the Canadian Environmental Assessment Registry as per Section 55(3)(1) of CEAA.

PART I: REFERENCES

Bow River Basin Council. Fish in the Bow River Basin. Available at [http://wsow.brbc.ab.ca/index.php?option=com_content&view=article&id=254&Itemid=186]

Canadian Centre for Occupational Health & Safety. 1997-2011. Noise – Auditory Effects. Available at [http://www.ccohs.ca/oshanswers/phys_agents/noise_auditory.html].

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National Parks Act.

Parks Canada Agency. 2010. Banff National Park Management Plan.

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Parks Canada Agency. 2004. Banff National Park Directive 17, Guidelines for Development Projects.

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Taylor, C.J. 2001. Excerpt from *"A History of Automobile Campgrounds in the Mountain National Parks of Canada: Built Heritage Resource Description and Analysis".* Western Canada Service Centre, Parks Canada, Calgary.

US Environmental Protection Agency (EPA). 2008. Latest Findings on National Air Quality. EPA-454/R-07-007.

Appendices

Appendix A: Figures, Drawings and Site Photographs
Appendix B: Correspondence

ENVIRONMENTAL ASSESSMENT

Proposed Lift Station and Forcemain

Tunnel Mountain Campground
Banff National Park, Alberta

APPENDIX A

Figures, Drawings and Site Photographs

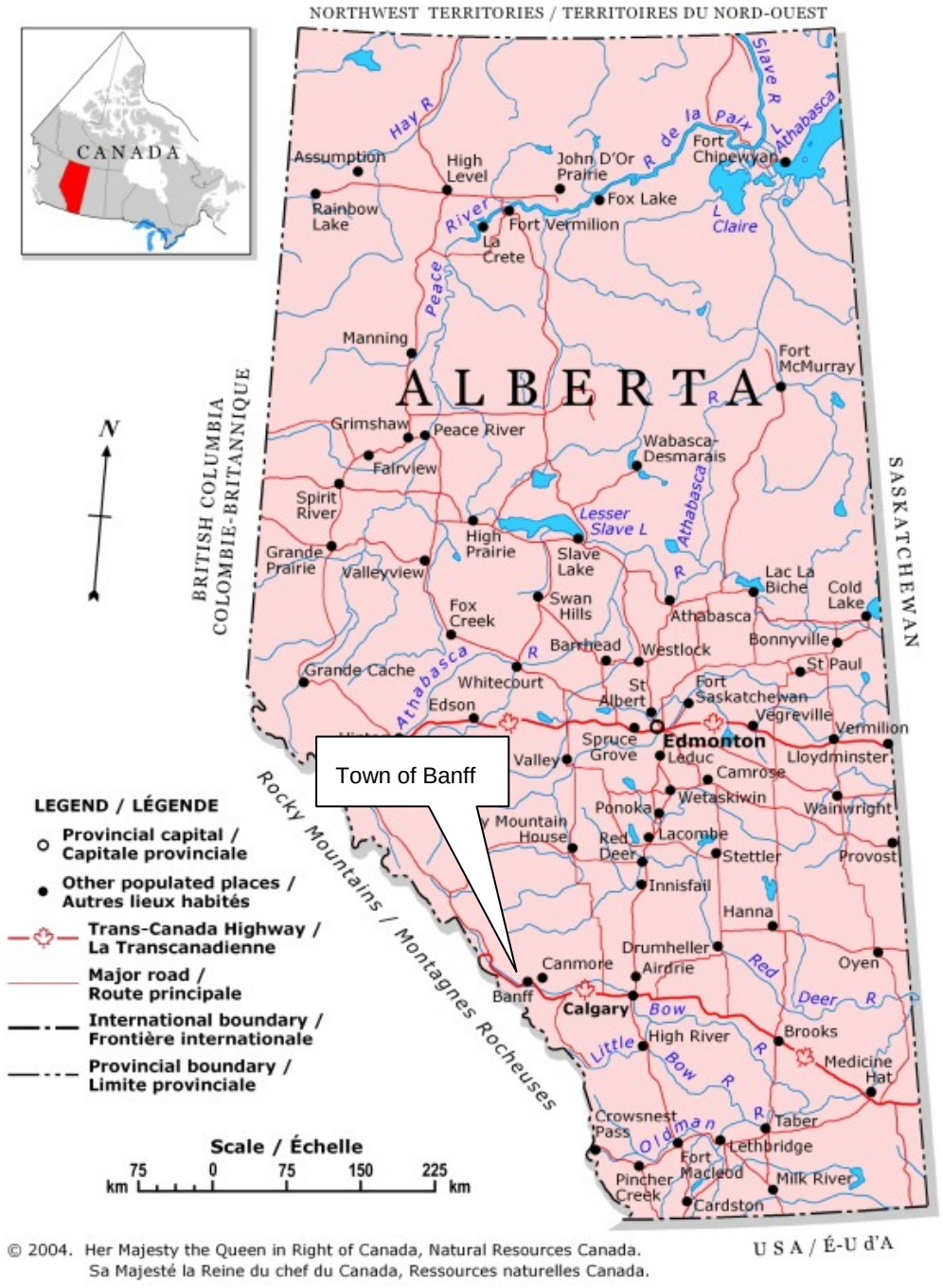

Figure 1: Map of Alberta showing location of Banff.

Figure 2. Site Plan of Banff showing location of Tunnel Mountain Campground and the Banff Wastewater Treatment Plant (Google Maps).

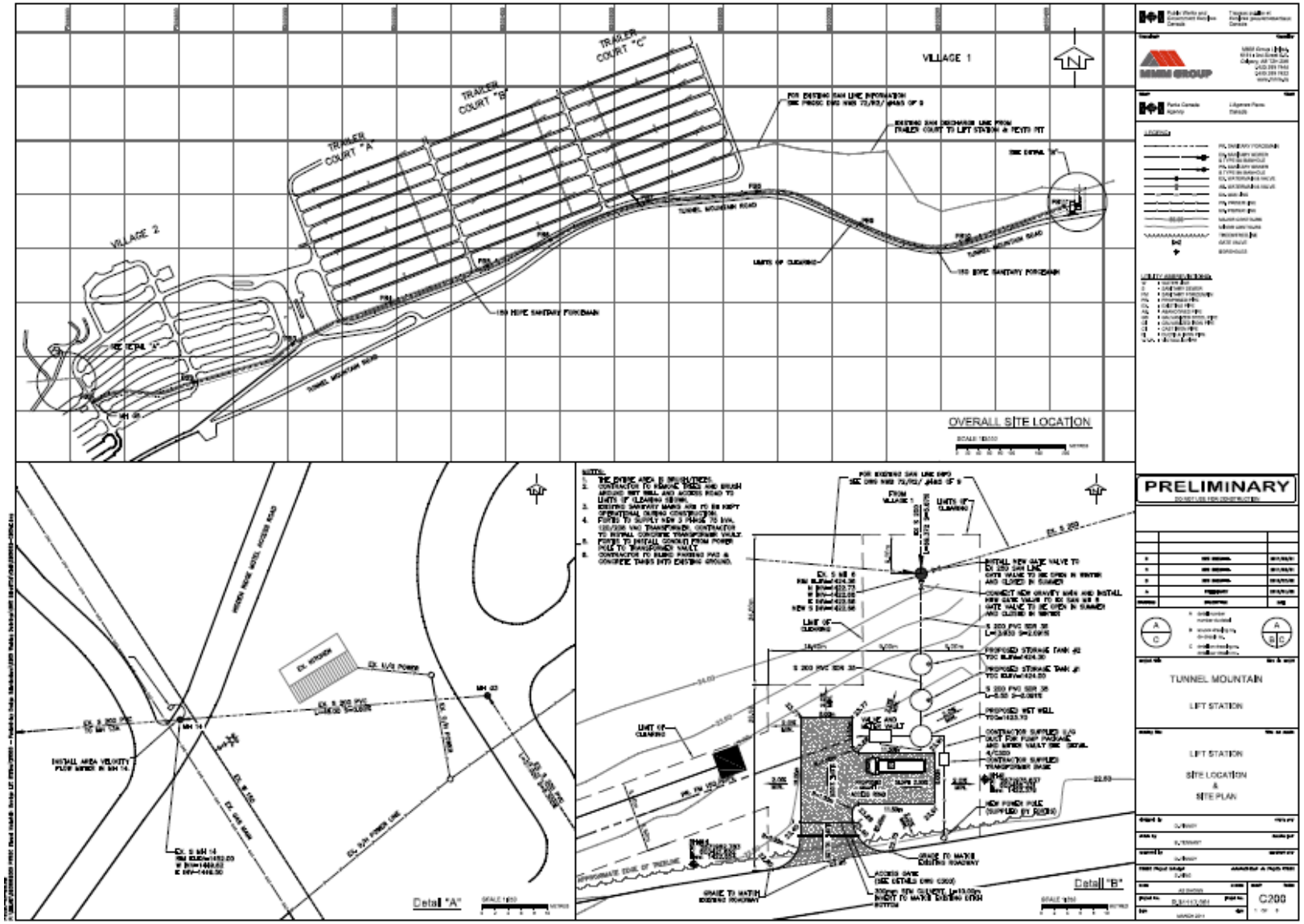

Figure 3.Overview of Lift Station site location, and site plan.

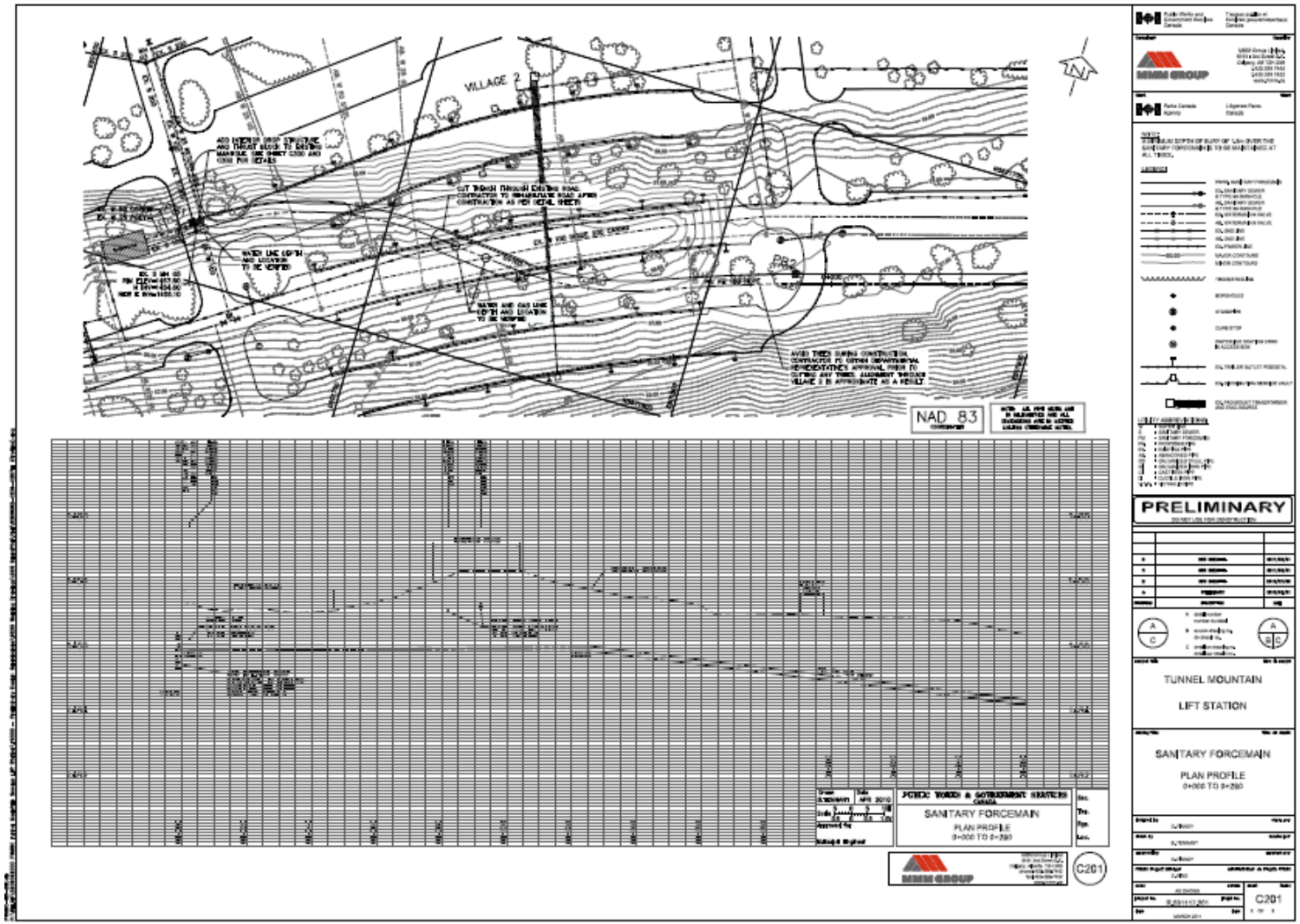

Figure 4. Example of Plan Profile for one portion of the sanitary forcemain.

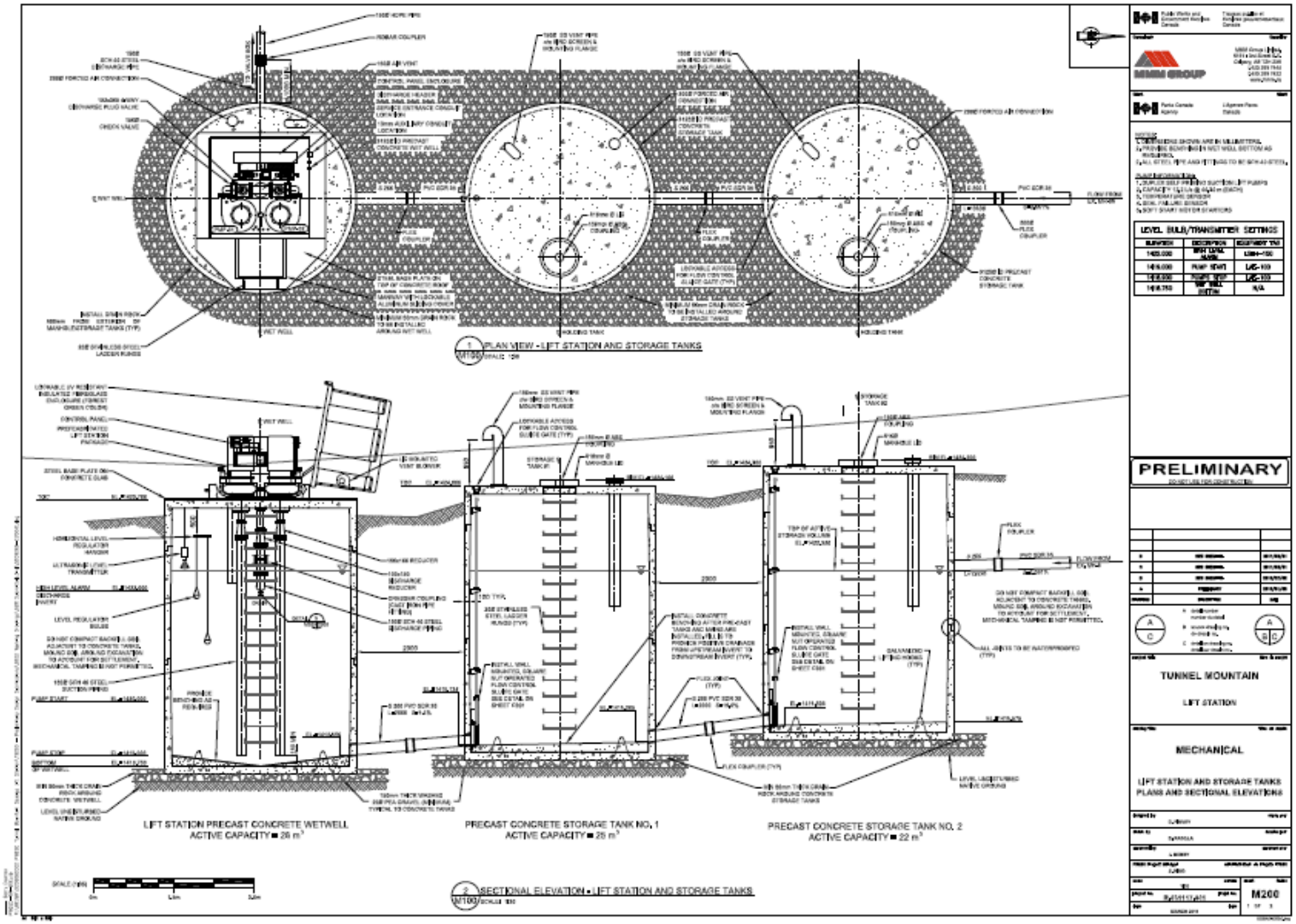

Figure 5. Lift Station and Storage Tank Plans.

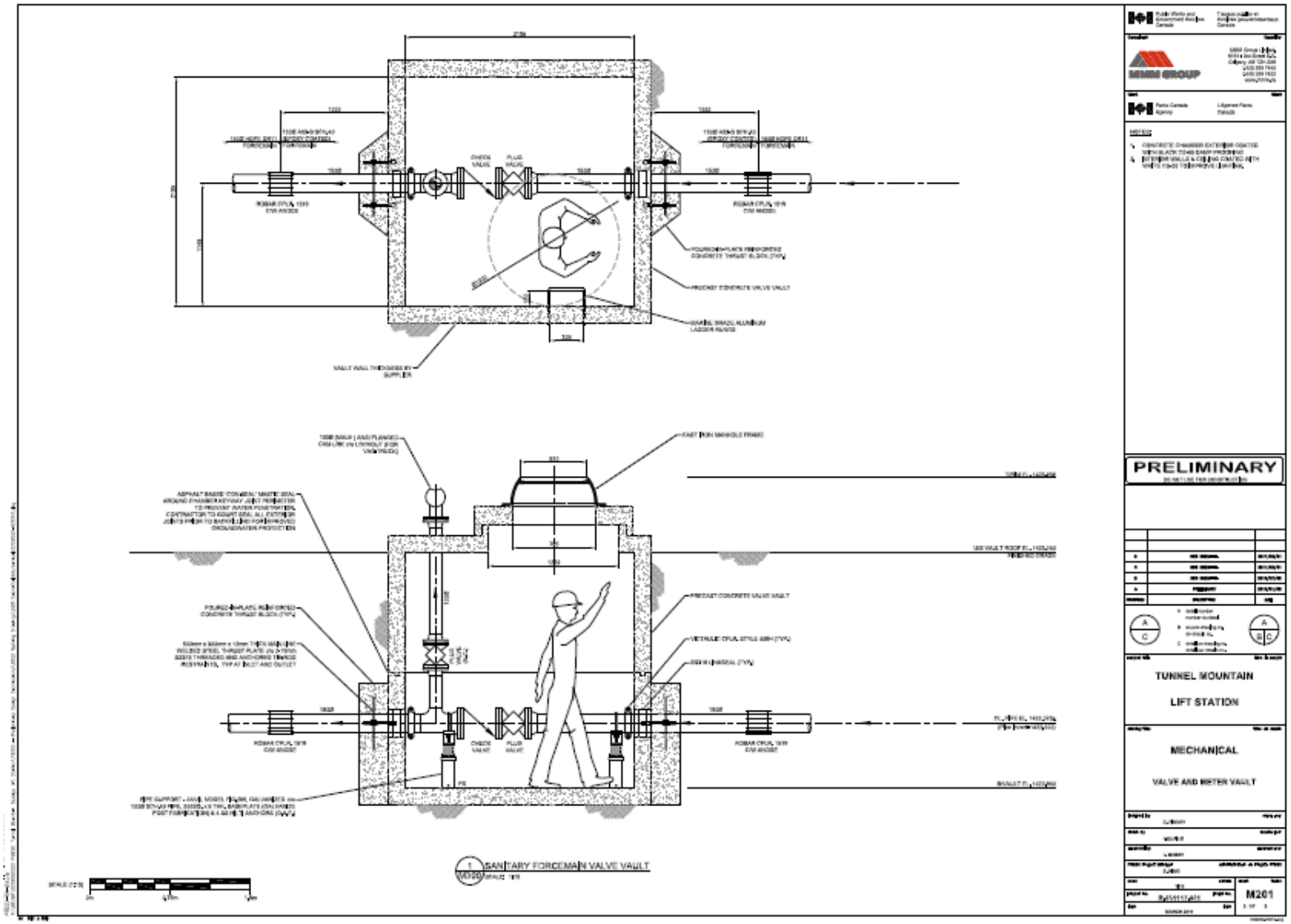

Figure 6. Lift Station Mechanical – Valve and Meter Vault.

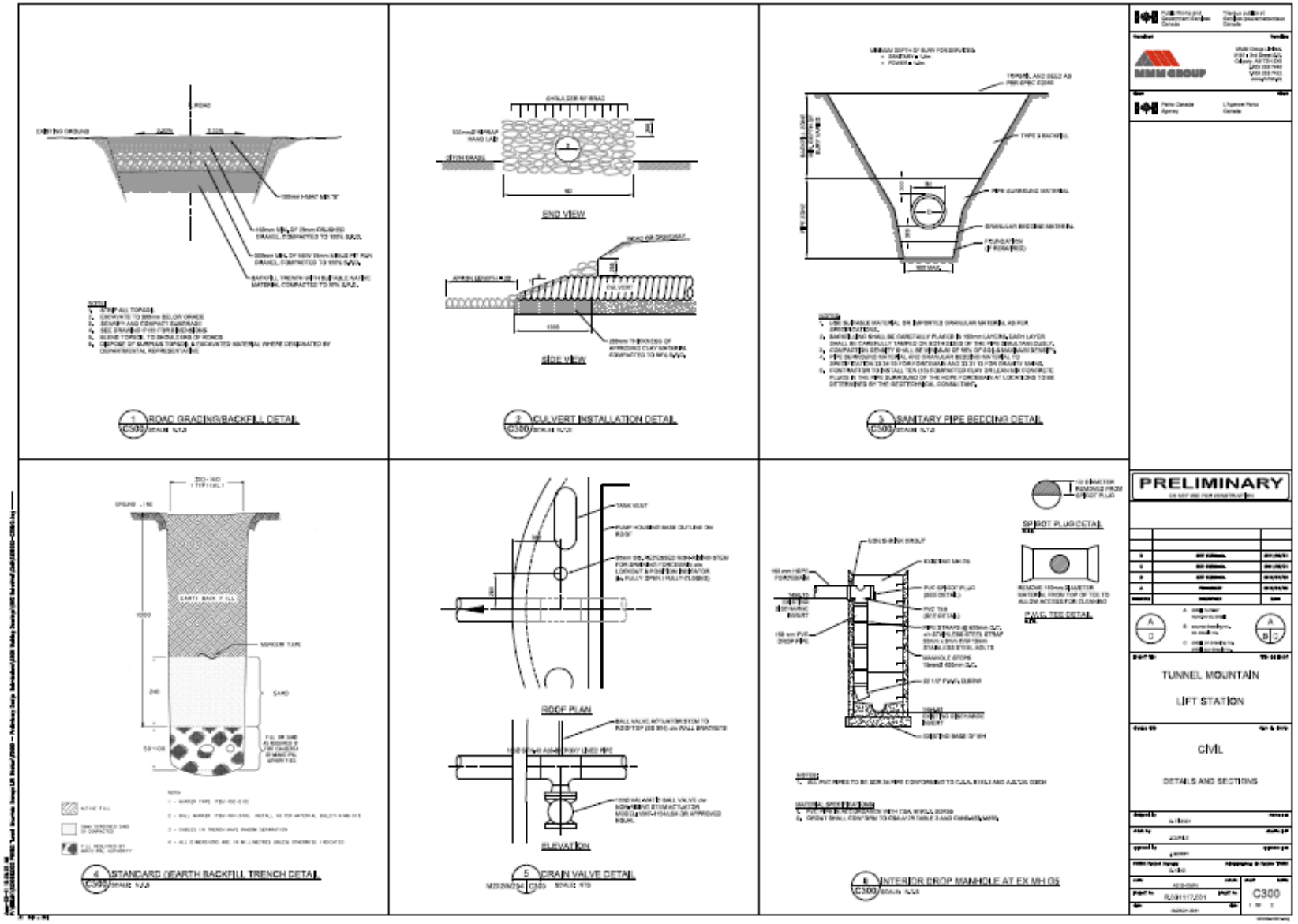

Figure 7. Construction details of forcemain.

A_1: 2578 m^2 * 0.32 trees/m^2 = ~830 trees

A_2: 1820 m^2 * 0.16 trees/m^2 = ~290 trees

A_3: 1393 m^2 * 0.32 trees/m^2 = ~450 trees

A_4: Trailer Court = count of trees from Google = ~30 trees

A_5: Village II = count of trees from Google = ~100 trees

- Total Estimated Trees to be cleared during construction of Lift Station and Force Main is estimated at **1700 trees**. This estimate is most likely high.
- Tree densities for A_1 and A_3 were determined in the field by measuring a 10 m x 10 m area. 32 trees were counted within the 100 m^2 are therefore, giving a density of 0.32 trees/m^2. A_2 was observed to be half as dense as A_1 and A_3 Therefore 0.16 trees/m^2 was used.

Figure 8. Illustration of areas where trees will be removed and estimated numbers.

Photo 1. Existing Peyto Sewage Lagoons.

Photo 2. Proposed location of lift station (centre of photo). White standpipe is from geotechnical investigation.

Photo 3. Proposed location of lift station.

Photo 4. Manhole MH G5 in Village 2.

Photo 5. Village 2 camping area.

Photo 6. Proposed material and equipment staging area at north east corner of Trailer Court C.

ENVIRONMENTAL ASSESSMENT

Proposed Lift Station and Forcemain

Tunnel Mountain Campground
Banff National Park, Alberta

APPENDIX B

CORRESPONDENCE

Letter from Town of Banff dated June 13, 2011:

110 Bear Street
Box 1260 Banff, Alberta, Canada T1L 1A1
T 403.762.1200 F 403.762.1260

June 13, 2011

John Rose
Parks Canada
Box 900
Banff AB T1L 1K2

RE: Tunnel Mountain Campground Sanitary Connection

Dear Mr Rose,

Further to our correspondence over the past months the Town of Banff is prepared to accept the flows from Village 1 and the Trailer Court at Tunnel Mountain campground.

Parks has engaged consultants to review the current and projected flows in the system and the results from these studies show that the sanitary system will be able to handle the flows from the campground and that the effect on the Waste Water Treatment Plant will be minimal.

[redacted]

[redacted]

We wish to thank you for your commitment to this project which is a great example of co-operation with parks and the Town of Banff being a benefit to both parties.

Yours Sincerely,

Adrian Field
Manager of Engineering

John D. Rose
Asset Manager
Banff Field Unit

TOWN OF Banff

www.banff.ca