

APPENDIX H

H.1

MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT

FUNDY GYPSUM

MILLER'S CREEK QUARRY CONTINUATION

ARCHAEOLOGICAL ASSESSMENT

WEST HANTS, NOVA SCOTIA

ARCHAEOLOGICAL ASSESSMENT REPORT

Submitted to:

Fundy Gypsum

And the

Special Places Program - Heritage Division

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Heritage Research Permit Numbers A2006NS14 & A2006NS35

CRM Group Project Number: 2004-0007-02 & 2004-0007-03

AUGUST 2006

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MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT

1.0 INTRODUCTION

In 2004, Cultural Resource Management (CRM) Group was retained by MGI Limited, now Conestoga Rovers & Associates (CRA), to undertake archaeological screening in conjunction with the proposed continuation of Fundy Gypsum Company's Miller's Creek Quarry located in the Avondale area of West Hants. The screening report identified areas of interest within the proposed quarry continuation and recommended that the study area be subjected to an archaeological assessment. The goals of the assessment were two fold: to locate and identify archaeological resources within the proposed impact area; and, to offer resource management recommendations.

The archaeological assessment was conducted according to the terms of Heritage Research Permits A2006NS14 (Category "C") and A2006NS35 (Category "C"), issued by the Special Places Program - Heritage Division (SPP-HD) to W. Bruce Stewart, CRM Group President and Senior Consultant. This report describes the assessment, presents its results and offers resource management recommendations.

2.0 STUDY AREA

Fundy Gypsum's proposed development area is intended to occupy the central portion of the peninsula formed by the St. Croix River to the south, the Avon River to the west and the Kennetcook River to the north. The proposed quarry will skip over Ferry Road and extend west toward Belmont Road (*Figure 1*).

Fundy Gypsum already operates a quarry known as the Bailey Quarry, east of Ferry Road. The Bailey site is expected to decline over the next 10 to 12 years, while the expansion area, known as the Avondale site, has an estimated life of more than 25 years. The Avondale property, consisting of approximately 1027 hectares, comprises the west half of Mining Permit No. 0024. The area consists of forested land in varying stages of regrowth due to extensive logging, farmland and relict farmland. There is limited residential development along the Avondale, Belmont and Ferry roads, which completely encircle the site. Access to the expansion area will be gained via a road to be constructed across Ferry Road from the existing Bailey Quarry area (*Figure 2*).

A later addition to the study area was a small portion of the Bailey Quarry property located on the east side of Ferry Road (*Figure 2*). The area is bounded by the quarry road to the north, a large mound of overburden to the east, a private field to the south and by Ferry Road to the west. The area measures approximately 70 metres by 77 metres. This area will be impacted by the construction of the access road discussed above.

CRM Group also investigated two reported archaeological features, a cellar and associated well, located on Fundy Gypsum Company property adjacent to Belmont Road near the "Construction Site Entrance" (*Figure 1*).



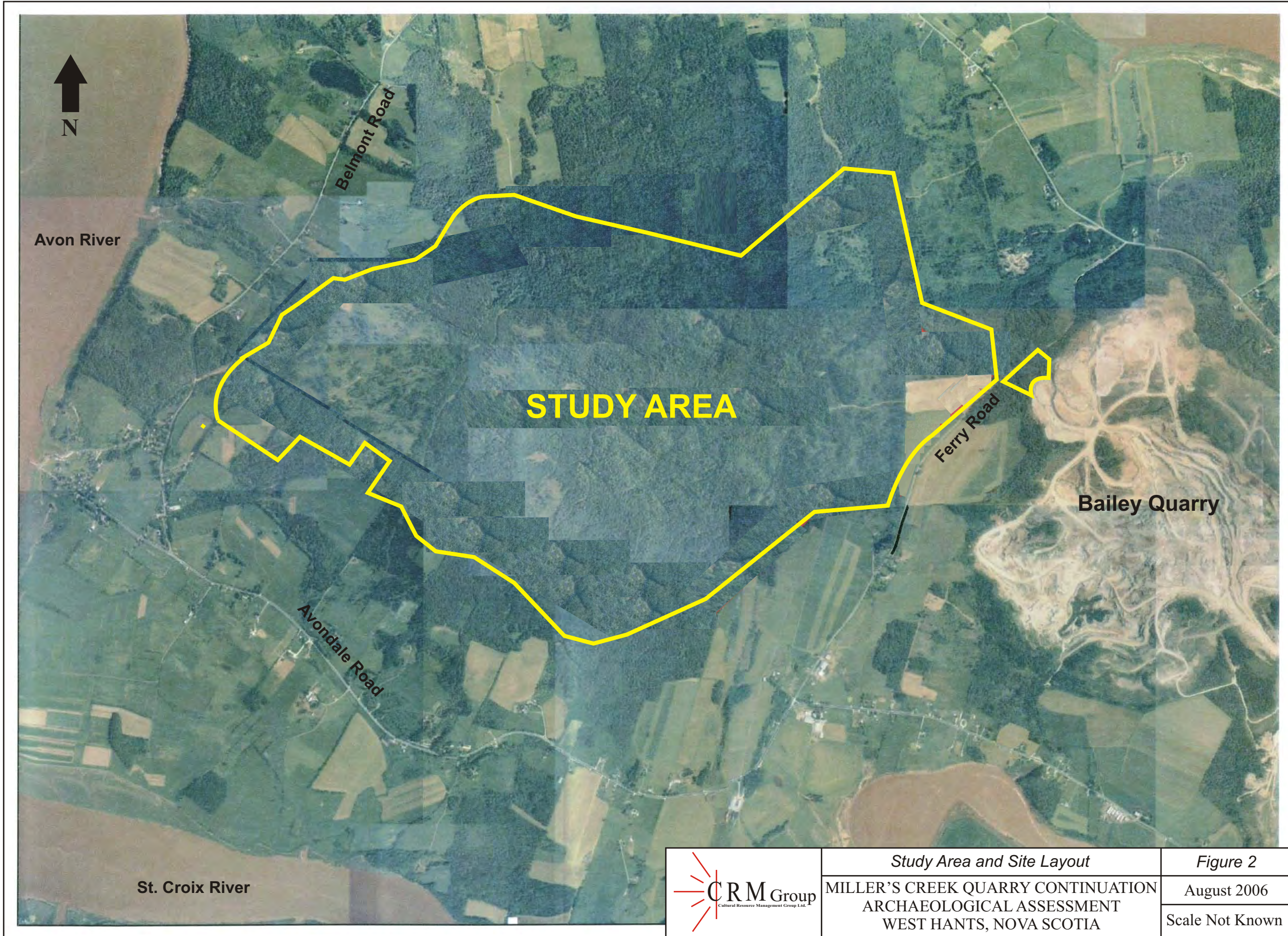
Location of Study Area

MILLER'S CREEK QUARRY CONTINUATION
ARCHAEOLOGICAL ASSESSMENT
AVONDALE, HANTS COUNTY

Figure 1

August 2006

Scale 1:50 000



Study Area and Site Layout
 MILLER'S CREEK QUARRY CONTINUATION
 ARCHAEOLOGICAL ASSESSMENT
 WEST HANTS, NOVA SCOTIA

Figure 2
 August 2006
 Scale Not Known

3.0 METHODOLOGY

3.1 Background Review

CRM Group had previously gathered background information pertaining to the study area. The archival research component of the archaeological screening was designed to explore the land use history of the study area and its environs, providing the information necessary to evaluate the property's archaeological potential. To achieve this goal, CRM Group utilized the resources of several provincial facilities in Halifax. Copies of historic maps were obtained from the Provincial Crown Lands Records Centre (PCLRC) and Nova Scotia Archives and Records Management (NSARM). Historic documents and written histories examined at NSARM also proved to be useful. Records of previous archaeological discoveries in the Avondale peninsula area were noted using Maritime Archaeological Resource Inventory information provided by the SPP-HD. Modern maps (1:10 000 and 1:50 000 topographic) and aerial photographs (2003) were obtained at the Nova Scotia Land Registration Office (Halifax County). Earlier aerial photographs were examined at the Department of Natural Resources Library.

Building upon the results of the screening, CRM Group conducted further, more property specific research. Research was also conducted to target specific features identified during the reconnaissance. The more detailed research included visits to the Hants West Historical Society Museum, the Avon River Heritage Society Museum, the Registry of Deeds (Hants County), an examination of Fundy Gypsum's own historical collections and interviews with local residents. The resulting historical overviews were used in the interpretation of archaeological testing results.

3.2 Fieldwork

The field component of the archaeological assessment was conducted between March and June of 2006 by CRM Group archaeologists. The goal was to locate and identify any archaeological resources within the study area as recommended in the archaeological screening report (Kelman & Stewart 2006 – report for Heritage Research Permit A2005NS75). Any potential archaeological resources identified during the reconnaissance would then be subjected to a program of shovel testing to help confirm or deny the presence of archaeological resources. The testing program is also designed to investigate the age, function and integrity of identified archaeological resources.

All field activities were recorded, generating field notes, photographs and sketches that will be maintained for future interpretation.

4.0 RESULTS

4.1 Background Research

The land within the Miller's Creek Quarry Continuation study area was once part of the greater Mi'kmaq territory known as Pisiquid. Indicative of Native heritage, the name Pisiquid has been assigned a variety of spellings (Piziquit, Pizaquid, Pipiquit, Pigiguit) and meanings ('to flow split wise', 'flowing square into the sea', 'the meeting of the waters'). In any case, historical maps, such as Bellin's "*Carte de L'Accadie*" of 1744, situate the principal Mi'kmaq settlement at the confluence of the Pigiguit (Avon) and St. Croix rivers - today the location of the town of Windsor, approximately 2 kilometres from the southern edge of the study area (Bellin 1744). Little is known of those who first inhabited the area, although some historical information, such as Isaac Deschamps' description of the Mi'kmaq tribe of Nocoot, who hunted on the Kennetcook River and established a summer residence near by, has been preserved from the colonial period (Hind 1889: 31-32).

Although the traditional boundaries of Pisiquid are unknown, the rivers surrounding the settlement and the study area would have been important transportation routes and a resource base for the Mi'kmaq and their ancestors for millennia prior to the arrival of European settlers. The closest registered Native archaeological site is located 5.5 kilometres southeast of the study area, along the southeastern bank of the St. Croix River (BfDa-1). The site extends at least 60 metres inland and appears to have been a substantial campsite or village (Deal and Butt 1990: 2). Despite the proximity of this known Mi'kmaq archaeological site, the study area, which is set back from the Kennetcook, Avon, and St. Croix rivers by a distance of at least 1 kilometre, is considered to have relatively low potential for Native archaeological resources, either Precontact or Historic. This is in large part because the study area is relatively far removed from the rivers and therefore would have been unappealing as a location for settlement. However, local informants have reported the existence of a portage route across the southwest corner of the study area. During their interviews, area residents suggested that the portage route began at what is commonly referred to as Withrow's Crick and ran eastward to a supposed Native burying ground located on the south side of the Avondale Road, less than 1 kilometre outside the study area (Clarke 2006; Knowles 2006).

French settlers began to arrive in the area in the late seventeenth century (Duncanson 1985: 1). Pisiquid quickly became a principal centre of Acadian settlement and agriculture. By the mid-eighteenth century, the population had expanded to approximately 1,500 people (Dunn 1990: 22). Attracted to the rich salt marshlands of the Minas Basin and its tributaries, the Acadians generally settled along the rivers, where they built dykes and cultivated the reclaimed marshland. Homes were typically constructed on the wooded uplands overlooking the marshlands. Given its distance from the marshlands, it is unlikely that any Acadian domestic feature would be found inside the study area. The inland areas, however, may have been used for hunting, planting

orchards and grazing livestock.

Historical maps indicate the presence of a number of Acadian villages on the St. Croix and Kennetcook rivers. By the mid-eighteenth century, there was extensive Acadian settlement around the perimeter of the study area (Anon 1754). The closest settlement to the study area was Thibodeau Village, located south of the intersection of the Avondale and Ferry roads (Fowler 2005). Another unidentified settlement was situated at the present site of Avondale, as illustrated in the watercolor painted by Capt. John Hamilton in 1753, entitled, "View of Fort Edward in Pisiquid River". Several Acadian houses are depicted in the Avondale area, and although it has not been confirmed, this settlement may have been an extension of Thibodeau Village.

The closest registered archaeological site is the Old Stone House (BgDa-2), located on a high point of land overlooking the St. Croix River on the north side of the Avondale Road, in the village of Poplar Grove. The origin of the structure has long been the subject of historical debate. Although the current owner believes it to be of French origin, there is no firm base on which to date the structure. A local resident, whose grandmother had grown up in the Old Stone House, made reference to an old graveyard reportedly situated somewhere behind the house, however, no evidence of this was found during the archaeological survey (MacLean 2006).

The establishment of Halifax in 1749 marked a significant turning point in the history of Pisiquid. Fort Edward was erected in 1750 as part of a chain of communication posts between Annapolis Royal and Halifax and to ensure that a British military presence was felt in the area. Unwilling to swear unqualified allegiance to Great Britain, the Acadians were seen as a liability during wartime. The British solution was to deport the Acadian population *en masse*, starting in 1755. Following the Acadian removal, the British colonial government wasted no time initiating new settlement in the area. Beginning in 1758, large tracts of the most productive land were granted to influential politicians and members of the Militia, and by 1760 several new townships were created and British settlers were recruited to farm the recently vacated Acadian lands. These new colonists, known as "Planters", were primarily from New England and their migration to Nova Scotia, which lasted from 1760 to 1768, constitutes the first sizable English population to arrive in the colony following the deportation (Ross 1932: 1).

The Avondale area was quickly resettled by Planter families, the first of whom arrived from Rhode Island in the spring of 1760. Simpson's Creek, in Newport Landing (Avondale), is thought to be a point of debarkation for the new settlers (Duncanson 1985: 16). The peninsula including the study area was subdivided and received the formal designation of Newport Township in 1761. Duncanson's plan of Newport Township, based on G. Hallyburton's grant map of 1775, shows that all of the study area was granted to New England Planters (Duncanson 1985). The properties consisted of long narrow strips of land that ran north from the St. Croix River or south from the Kennetcook River, to a common baseline oriented east-west through the

centre of the study area. The western wooded upland of the peninsula was traditionally known as the “Commons”. Although owned by individual residents, the Commons was once managed collectively by local farmers and used for grazing cattle, collecting firewood and harvesting lumber. It was proposed that Newport Landing be set aside for a compact village. However, the town never came into being, since Windsor, established a few years earlier, had become the major centre on the Avon River (Webb 2005: 12-13). In 1763, there were 47 families, consisting of approximately 250 persons living in Newport Township, chiefly settled at or near Avondale (Hind 1889: 8, 57).

According to historical records, some Acadians eluded deportation and escaped to the nearby woods where they joined forces with their Mi'kmaq allies (Hind 1889: 40-41). Subsequently, several skirmishes took place in the Piziquid district. This caused tension for almost a decade after the deportation. Consequently, a considerable British military force was maintained at Fort Edward, where Acadian prisoners were held as they surrendered or were taken into custody. A palisaded fort, erected in Avondale on the hillside facing Fort Edward, was intended to receive all Newport settlers in the event of an attack (Duncanson 1985: 18). One local resident mentioned that his father had told him of a fort located behind the Old Stone House where “pig iron” balls were discovered measuring between 3-5 inches in diameter (Clarke 2006). However, no feature matching this description was identified in the subsequent archaeological survey of the study area.

Although the gypsum deposits in Nova Scotia were recognized as early as the seventeenth century, there appear to be no historical accounts of mining operations prior to 1779 (Jennison 1911: 16; Shand 1979: 82). While it is possible that the Acadians mined and utilized local gypsum, there is no historical evidence to substantiate this. The gypsum industry in the Avondale area evidently began soon after the arrival of the Planters, who commonly used gypsum as fertilizer (Shand 1979: 83). The first quarries would have been small-scale operations, privately owned by local farmers or leased to others as a source of extra income. Extracted material was sorted in the quarries and hauled to the river by horse and cart in the summer or by sled in the winter. The gypsum was sold to local traders or shipped to various points along the Eastern Seaboard and became a standard item of commerce between Nova Scotia and the United States (Jennison 1911: 16; Shand 1979: 85-87; Adams 1991: 9-10). The first vessel built in Newport Landing (Avondale) to transport gypsum from Hants County was constructed in 1807 by Nicholas Mosher (Shand 1979: 87). By the beginning of the nineteenth century, these small quarries began to expand, providing employment for local residents (Mosher 1979: 9). By the late nineteenth century, the gypsum quarries began to consolidate into the hands of a small group of companies (Adams 1991: 10).

In the 1830s, Newport Landing (Avondale) emerged as the scene of large-scale wooden shipbuilding enterprise, which rivaled the economic importance of gypsum mining in the area.

Both industries were influential in the community and developed side by side until 1892, which marked the end of the shipbuilding activity in the area (Shand 1979: 93). Technological advances in mining led to increased productivity and the gypsum industry continued to flourish, particularly with the establishment of the Newport Plaster Mining and Manufacturing Company (NPMMC) (*Plates 1 & 2*). One of the principal owners was Jerome Berre King, a pioneer in the gypsum industry in New York and Nova Scotia, who soon controlled the Hants County gypsum industry - quarries, vessels, and railroads - from his headquarters at Staten Island, New York (Mosher 1979: 12).

J.B. King established the NPMMC around the turn of the century and by 1906 had begun purchasing gypsum in Avondale. In 1907, King acquired the shipyard in Newport Landing and in 1908 purchased a 5 acre lot in Avondale from George Mounce, the site of the first NPMMC quarry (*Figure 3*). The 1909 Faribault and Fletcher map identifies this quarry, also known as the “tunnel quarry”, just east of the Belmont Road (1909). In his 1911 report on gypsum deposits in the Maritimes, Jennison reported that the “old quarry, which was operated here some years ago, has been reopened at a lower level, by driving a tunnel large enough for drainage and railway track” (Jennison 1911: 81). It is not known how long this quarry was in operation, but it is not mentioned in the 1913 description of the active NPMMC quarries (Cole 1913: 38). The NPMMC ceased operations at Avondale in 1920 (Mines Report 1921), when the company was hit by a general strike and the business was transferred to the Wentworth facilities on the St. Croix River. When King died in 1924, his Staten Island Plant became part of the United States Gypsum Company and his quarry operations in Nova Scotia became part of the Canadian Gypsum Company, while his ships became part of the Panama Gypsum Company (Foley 1995: 36).

‘W.K.’

During the archaeological screening of the study area, the notation ‘W.K.’ was identified on the 1871 “Topographical Township Map of Hants County, Nova Scotia”, published by Ambrose Church (*Figure 4*). Based on the historic map, the feature was located in the southwestern portion of the study area, situated adjacent to a north-south oriented road into the study area from the Avondale Road. The W.K. initials have been tentatively identified as W. Knowles, who also owned property on the southern side of the Avondale Road. From an examination of other map sections, it appears that Church used initials to indicate when a landowner had additional property in the same general area. The ‘W.K.’ feature was not identified during field reconnaissance. Further descriptions of specific features are included in the following section where each are discussed independently.



PLATE 1: Newport Plaster Mining and Manufacturing Company Quarry

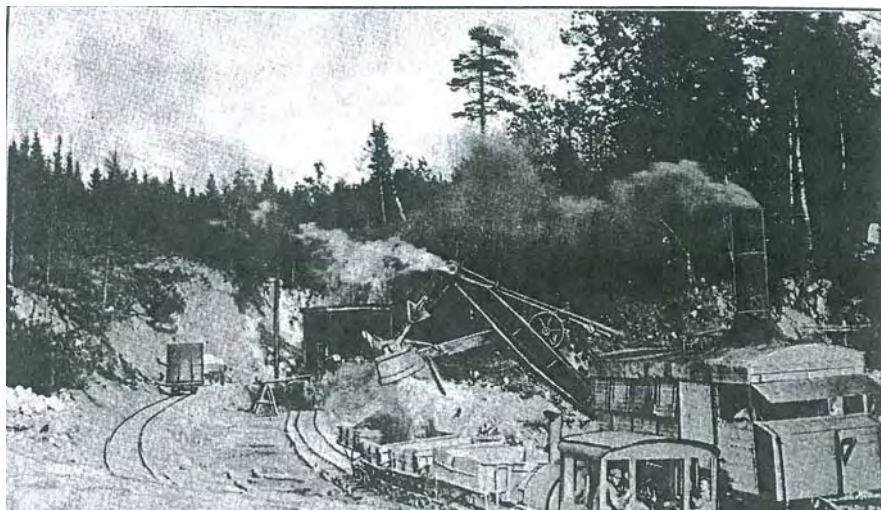
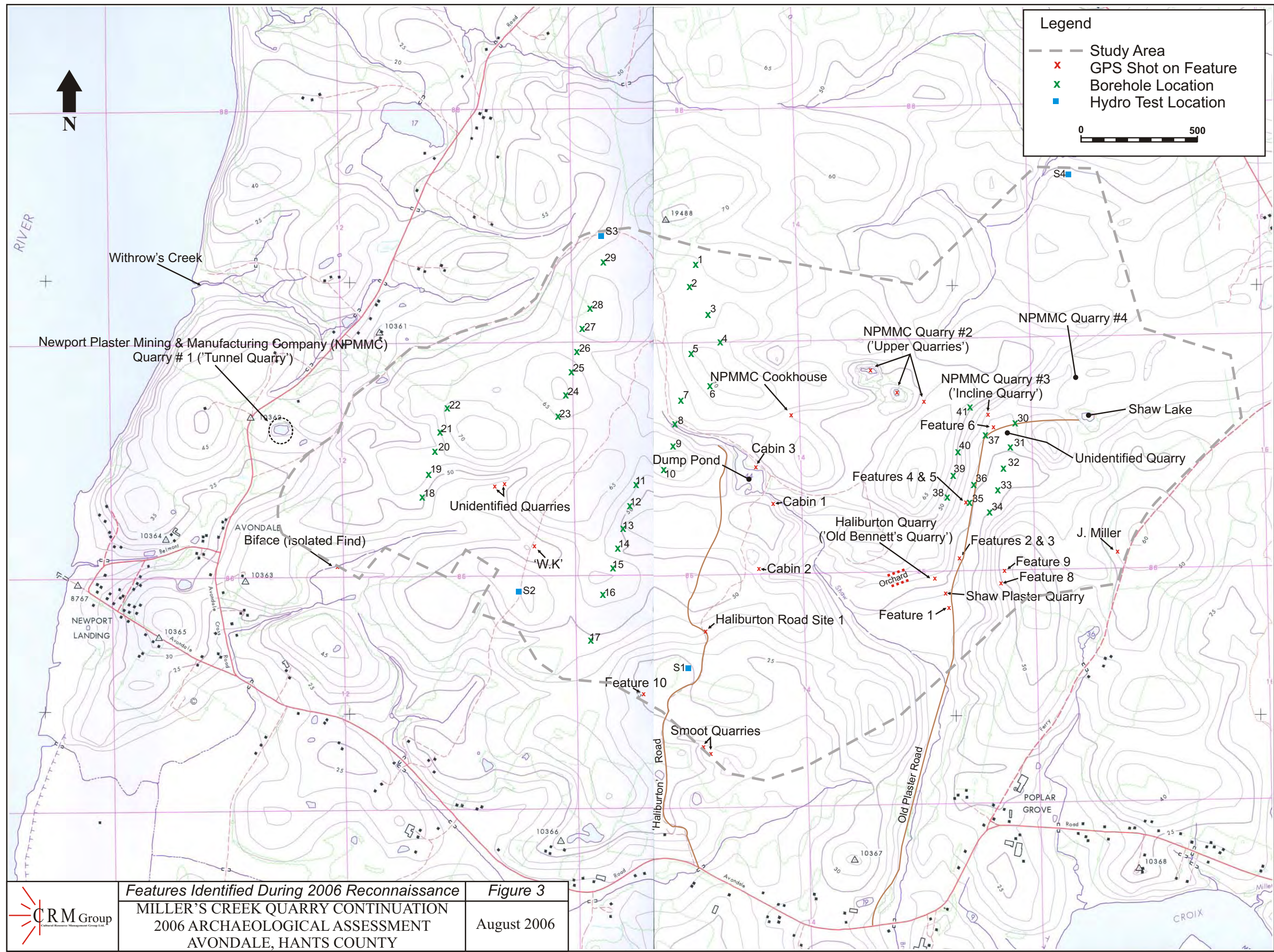



PLATE 2: Newport Plaster Mining and Manufacturing Company quarrying activities at Avondale



Features Identified During 2006 Reconnaissance
MILLER'S CREEK QUARRY CONTINUATION
 2006 ARCHAEOLOGICAL ASSESSMENT
 AVONDALE, HANTS COUNTY

Figure 3
 August 2006



	1871 Church Map	Figure 4
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT WEST HANTS, NOVA SCOTIA	
		August 2006
		Scale Not Known

4.2 Field Investigations

Field reconnaissance and archaeological testing of the study area was conducted during May and June of 2006. The field team walked specific areas within the proposed impact zone. The team altered spacing of their transects to compensate for density of ground cover, ensuring that the inspection was both effective and efficient. Careful attention was paid to topographic or vegetative anomalies which might indicate the presence of buried archaeological resources.

A further component of the reconnaissance was the evaluation of archaeological potential in the immediate vicinity of forty-one resource related borehole test locations, five proposed hydrogeological testing locations and proposed access routes. Testing locations had been flagged in the field by Fundy Gypsum staff prior to reconnaissance to facilitate efficient investigation.

4.2.1 Field Reconnaissance

Field reconnaissance identified a significant number of cultural features including rail beds, roads, old quarry sites and potential house cellars. The study area has a long history of industrial use and many of the features identified by the field team represent that history. Of particular note are the numerous features that represent the extensive quarrying activities within the study area. Each of these features is described independently below.

Shaw Plaster Quarry

The Shaw Plaster Quarry, located in the southeast portion of the study area (*Figure 3*), was owned and operated by the Shaw family. The Shaw's arrived in Newport in 1760 and were among the first wave of New England Planters to settle in the area, receiving Newport Township Lot B4 (1st Division). While the age of the Shaw Quarry has not been established, it certainly represents one of the oldest quarries in the study area. In a conveyance between Archibald Smith and Thomas Haliburton, dated December 1818, references to "Mr. Shaw's Quarry", an existing "Plaster Road", and "shipping" facilities, clearly indicate that the quarry was already in operation by that time (Deed Book 13: 10-11). The Old Plaster Road is mentioned in numerous Shaw family deeds and legal documents, including the will of Charles A. Shaw (1920) which includes a description of the property dated 1879, noting that the Old Plaster Road led directly to Shaw's Plaster Quarries (Deed Book 129: 764). Of particular interest is the reference to "quarries", suggesting that the Shaw's had multiple operations. This may account for the other small quarries associated with the Old Plaster Road (*Plate 3*). The Old Plaster Road, only a portion of which still exists, originally ran from a wharf on the St. Croix River, north through a small valley known as "Shaw's Hollow", past the quarries, to a small lake, known as Shaw's Lake. Local residents recall that ice was cut from this lake in the winter and hauled back to the community by horse and sleigh (Huntley 2006; B. Shaw 2006).



PLATE 3: Old Plaster Road; looking north.



PLATE 4: Shaw Plaster Quarry.

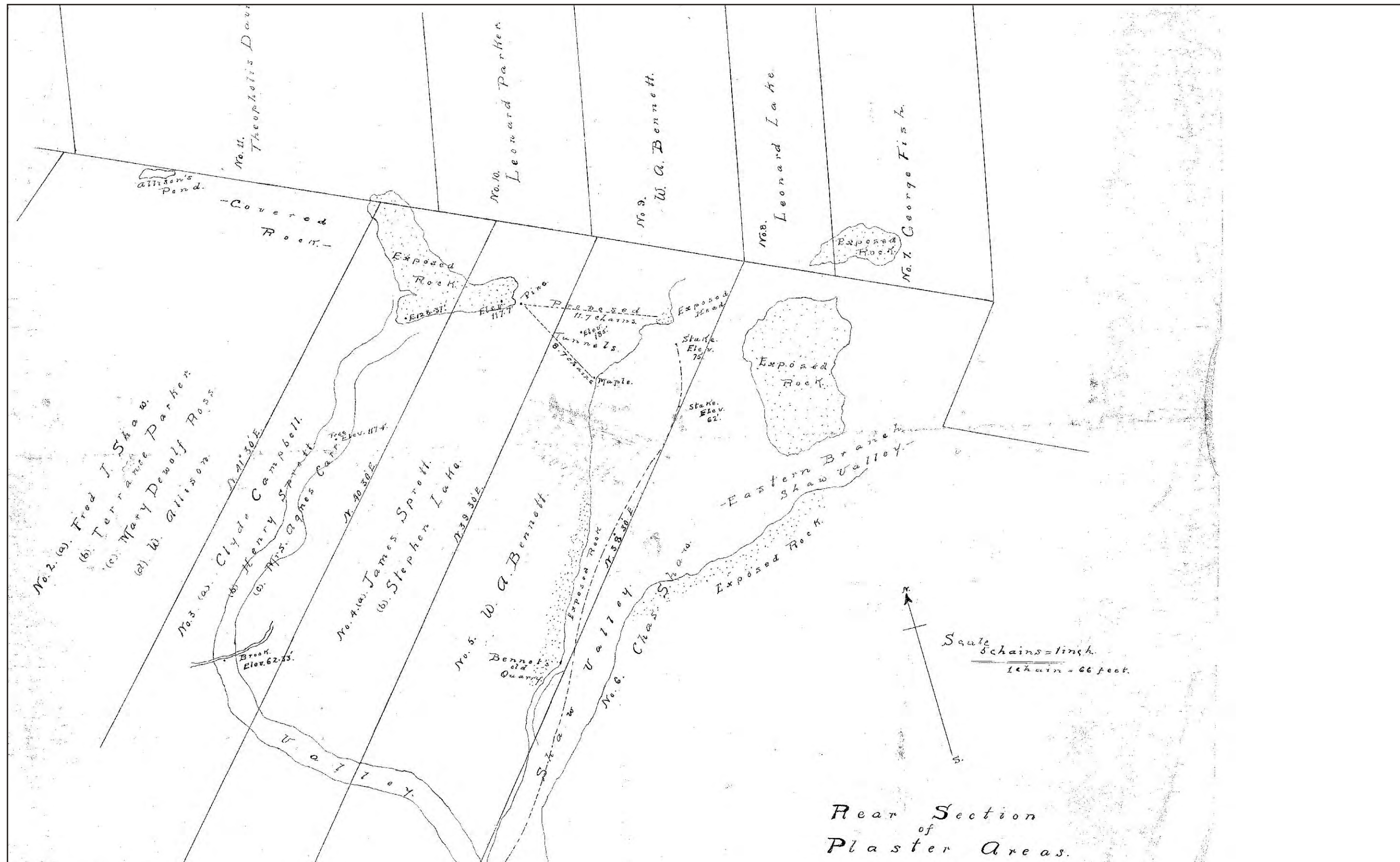
Evidently, the Shaw Quarry played an important role in the community. In an interview with local resident, Allan Shaw, it was reported that many of the older homes in the area, including his own, were plastered with Plaster of Paris which was extracted from this quarry (**Plate 4**) (A. Shaw 2006). It is also very likely that local men were employed in the Shaw operations and there may have been facilities, such as a cook shanty and temporary housing for the workers, constructed near the quarry.

Charles Shaw sold the mineral rights to the northern portion of the property, beginning at the boundary line between the Bennet and Shaw lands, including the quarry, to the J.B. King Company in 1906 (Deed Book 101: 244) and signed a 15 year land and timber lease to King in 1907 (Deed Book 113: 491). It is not known if the J.B. King Company ever actively mined this portion of the study area.


Haliburton/Bennet Quarry

The Haliburton/Bennet Quarry is located just northwest of the Shaw Plaster Quarry (**Figure 3**). Thomas Chandler Haliburton, perhaps best known for his contribution to Canadian literature, was also actively involved in the early development of the gypsum industry in Nova Scotia. He owned, leased and operated several gypsum quarries in Hants County (Shand 1979: 95-97). Haliburton arrived in Newport in 1818 and occupied Newport Township Lot B1 (1st Division) which he named Henley Farm, now known as the Old Stone House.

Haliburton acquired the mining rights to the property of Archibald Smith in December of 1818. Of particular interest is the following passage included in the rights of sale: "Also the right of carting, drawing and sledging fire wood from the said Thomas Chandler Haliburton's farm or Elsewere to the said hutts, Sheds or houses & depositing the same contiguous thereto for the use of the families inhabiting the same" (Deed Book 13: 10). This suggests the presence of buildings associated with, and in the vicinity of, the Haliburton Quarry. Furthermore, it suggests that Haliburton recruited not local men from the community, but outside workers who required housing for themselves and their families. In his 1829 publication, *An Historical and Statistical Account of Nova Scotia*, Haliburton described the contemporary method of extracting gypsum: "It is quarried by the aid of gunpowder, and broken into suitable sizes for exportation, by a pick-axe. As it enters so largely into the composition of the soil, its utility as a manure, in Nova-Scotia, has been assumed by practical farmers, although no regular experiments have ever been instituted to ascertain its effects" (Haliburton 1829: 100-110). Haliburton released his rights to the quarries and roads to William Bennet in 1830 (Deed Book 19: 328). On a King Company map entitled "Rear Section of Plaster Areas, Avondale" the quarry is referred to as 'Bennet's Old Quarry', suggesting that William Bennet continued to mine the quarry (**Figure 5**). The remnants of what is locally referred to as 'Bennet's Apple Orchard' were identified just west of the quarry (**Figure 3**) and older residents of the area recall Bennet's claim that the underlying gypsum facilitated the growth and quality of the apples (Huntley 2006; Knowles 2006).



Rear Section
of
Plaster Areas.
Arundale N.S.
-Owned by-
J.B. King & Co.

	'Rear Section of Plaster Areas' - 1908	Figure 5
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT	August 2006
	WEST HANTS, NOVA SCOTIA	Scale ~ 1:4000

Smoot Quarries

The Smoot Quarries, located less than 1 kilometre north of the Old Stone House (*Figure 3*), were originally known as the Haliburton 'back quarries' and were mined privately by Haliburton between 1818 and 1834, when he occupied the property (*Plates 5 & 6*). In September 1818, Haliburton received from Thomas Smith the "Plaster of Paris" with a right of entry, in order to lay a road from "such quarries of T.C. Haliburton to the highway" (Deed Book 12). In another conveyance, also dated September 1818, Haliburton acquired the right to build "A sufficient Road of two Rods wide and commencing on the western boundary line of Archibald Smith's Farm in Newport County at a road leading from the quarries of Plaster of Paris on Said farm where it strikes said boundary line thence to run until it intersects a road on farm of said Thomas Smith, running from back quarries of said Thomas C. Haliburton" (Deed Book 12: 416). In another document, dated November 1818, further mention is made of Haliburton's "back quarries" near the east line of his farm (Deed Book 12: 448). Local resident, Gordon Knowles, suggested that Haliburton had laid a small rail line to facilitate transportation of the product from the quarries to the St. Croix River (Knowles 2006). While this has not been confirmed, it is interesting to note that Haliburton later built "a crude though labour-saving tramway upon which horse-drawn cars were operated" in Windsor (Shand 1979: 96).

Haliburton sold the property known as Henley Farm and all mining rights to James Sprott in 1834 (Deed Book 22: 176) and moved to Windsor where he continued gypsum mining operations at his new home known as Clifton.

It is not known if Sprott mined the quarries. He sold the mineral rights to William Smoot in 1880 (Deed Book 68: 715) and the Avondale Plaster Company (APC) was incorporated that same year. The original share holders of the company included Smoot and Edward L. Allison (Shand 1979: 105). The APC quarries were in operation by 1883 (Deed Book 71: 392), the same year in which Sprott sold the gypsum and other rights to the land on which a small branch railway track was built (Deed Book 71: 392). The track ran from the eastern quarry across the Avondale Road to the St. Croix River (Faribault and Fletcher 1909). This tramway, the remains of which are still visible, utilized horse-drawn carts to transport the gypsum from the quarry to the wharf, where it was loaded onto towing barges. Prior to the introduction of mechanical quarrying techniques in the early twentieth century, all quarrying was done by hand with "turn augers" used to drill holes for explosives (Mosher 1979: 14). The NPMMC purchased the APC in 1908.

Newport Plaster Mining and Manufacturing Company Quarry 2

By 1912, the NPMMC had expanded both its holdings and operations. The property included 4000 acres and two large quarries (NPMMC Quarries 2 and 3), located in the northeastern portion of the study area (*Figure 3*), and employed approximately 125 men, year round (Jennison 1911: 226; Mines Report 1912; Cole 1913: 38). As illustrated on a 1912 Company map, the



PLATE 5: Smoot Quarry.



PLATE 6: Smoot Quarry.

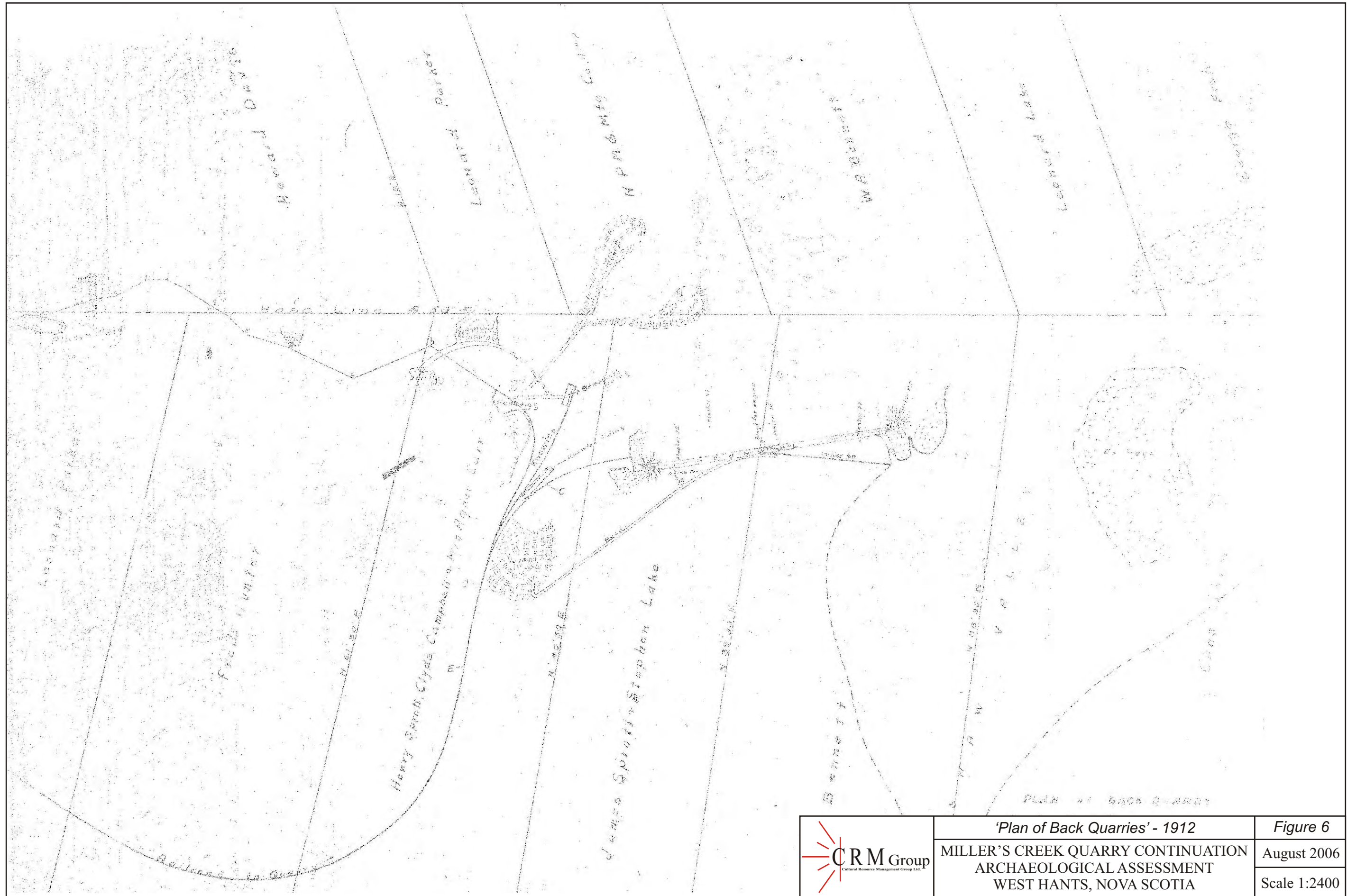
construction of a large wharf and narrow gauge railway system increased the productivity and facilitated the expansion of the NPMMC operations (Plan of Back Quarries 1912; Webb 2005: 31) (**Figure 6**). The large quarry, commonly referred to as the “Upper Quarry”, represents the main NPMMC operations. Field reconnaissance identified substantial quarrying activities in the area (**Plates 7 & 8**). Quarry 2 was initially interpreted by the field team as three separate quarries which speaks to the size of the operation. The Upper Quarry was connected to the railway line, which ran southwest from the quarry to the former Kings Wharf in Avondale, a shipping pier approximately 274 metres long. The actual straight line distance from wharf to quarry was just over 3.2 kilometres, although it required approximately 5.6 kilometres of meandering railway to negotiate the uneven terrain (Mines Report 1912: 200). The floor of Quarry 2 was slightly below the level of groundwater. To prevent flooding, a large tunnel was driven down on a slope of 15° in a northeasterly direction towards Quarry 3 as an outlet for surplus water. This also enabled easy access to Quarry 3.

The overburden of Quarry 2, which ranged between 10 and 15 feet (3-4.5 metres) of clay and loam, was stripped by steam shovel, first introduced to the Nova Scotia industry in 1909 (Jennison 1911:17). The gypsum was shovelled into single horse Scotch carts and transported from the different working faces to a loading platform beside the 36 inch (91 centimetre) gauge railway track, which ran directly into the quarry. Three locomotives and 75 side dump cars of 5 ton (approximately 4.5 metric tons) capacity were employed in transporting gypsum to the shipping pier. At high tide, the material was loaded directly by elevator onto barges of 2,200 tons (approximately 1,995 metric tons) capacity and shipped from Avondale to the J.B. King Co., in New York City (Cole 1913: 38; Mines Report 1912: 200).

The Dump Pond, as it is commonly identified, is situated at the northern most point of Hemlock Brook (Shaw Brook on current maps), less than 1 kilometre west of Quarry 2 (**Figure 3**). It was used to dump waste from the NPMMC mining operations (**Plate 9**). Several other small quarries are situated between the railroad line and the Dump Pond and, given their vicinity to the railroad, may have been associated with the NPMMC. Although the remains of the narrow gauge railroad are still visible, local residents recall that the rails were removed during World War II, at a time when steel was at a premium (Huntley 2006; Knowles 2006).

Newport Plaster Mining and Manufacturing Company Cookhouse

In conversation with a former local resident, Fred Huntley, mention was made of a cook shanty associated with the NPMMC located between Quarry 2 and the Dump Pond (Huntley 2006). The field team identified a feature, situated on a road leading directly to Quarry 2, in this general area (**Figure 3**). The feature is a rectangular alignment of field stones situated on high land next to the road (**Plate 10**). The immediate area is relatively flat and there is an apple tree on the opposite side of the road. The feature could be the remains of the reported structure. This feature was



'Plan of Back Quarries' - 1912
 MILLER'S CREEK QUARRY CONTINUATION
 ARCHAEOLOGICAL ASSESSMENT
 WEST HANTS, NOVA SCOTIA

Figure 6
 August 2006
 Scale 1:2400



PLATE 7: Newport Plaster Mining and Manufacturing Company Upper Quarries; looking east.



PLATE 8: Newport Plaster Mining and Manufacturing Company Upper Quarries; looking east.



PLATE 9: Dump Pond; looking west.



PLATE 10: Feature in vicinity of reported NPMCM Cookhouse.

identified during borehole reconnaissance and as such has not yet been subjected to subsurface testing.

Newport Plaster Mining and Manufacturing Company Quarry 3

NPMMC Quarry 3, also known as the “Incline Quarry”, was located less than 1 kilometre north of the Haliburton Quarry and approximately 274 metres east of NPMMC Quarry 2 (*Figure 3*). It is situated at the base of a significant slope up to the west, adjacent to the Old Plaster Road. Although the reports for the Department of Mines are somewhat difficult to interpret, it appears the large tunnel from Quarry 2 was driven through to Quarry 3 in 1911, “to regain the old quarry, a large deposit, to the south” (Mines Report 1912: 200). Work on this tunnel was completed in 1914, at which time 2400 feet (731.5 metres) of narrow gauge railroad was added to connect the two quarries (Mines Report 1913: 179). If Quarry 3 was indeed an “old quarry”, it may have been related to the Shaw/Haliburton/Bennet operations, given its association with the Old Plaster Road.

A small loading platform enabled the carts to dump directly into a small tramcar, which was hauled up an incline track. As the incline was too steep for the locomotives, the cars were pulled by a stationary steam-powered Donkey Winch, to the top of the hill behind Quarry 2 where the gypsum was again loaded into carts and hauled to the nearest loading platform on the existing railway (Cole 1913: 38).

Newport Plaster Mining and Manufacturing Company Quarry 4

Located north east of NPMMC Quarries 2 and 3, Quarry 4 was the last of the NPMMC quarries to be mined (*Figure 3*). The rail line was extended to Quarry 4 and connected this quarry with the main NPMMC rail line and the King’s wharf. Aerial photographs suggest that another quarry was situated just south of Quarry 4.

Potential features identified by field reconnaissance in the area are discussed in detail below.

Unidentified Quarries

Additional quarries were located in the southwestern portion of the study area (*Figure 3*). They were not connected to the rail line and do not appear to be associated with the NPMMC (*Plate II*). It is not known when, or by whom, these quarries were operated. Field reconnaissance did not identify any potential features within the vicinity of these unidentified quarries.

Another small quarry is located south east of Feature 6, approximately 50 metres east of the Old Plaster Road. This quarry is not connected to the rail line and does not appear to be associated with the NPMMC. Given its proximity to the Old Plaster Road, it may represent an earlier privately owned quarry.



PLATE 11: Unidentified quarry; looking north.

Cabin 1

The remains of Cabin 1 are located southeast of the Dump Pond and east of the existing road which runs north-south through the study area from the Old Stone House to the Dump Pond (*Figure 3*). The feature is likely a mid-twentieth century hunting camp. The lumber was a full inch thick, but held together with wire nails. There was also tarpaper, a salvaged house door and a plastic cup in the vicinity (*Plate 12*). Local residents suggest it was built as a hunting or snowmobiling cabin, later renovated by local teenagers.

Cabin 2

Cabin 2 is located just east of the existing road leading to the Dump Pond from the Old Stone House (*Figure 3*). The cabin is constructed with galvanized sheet siding and is likely a twentieth century abandoned hunting or logging camp (*Plate 13*).



PLATE 12: Remains of Cabin 1.



PLATE 13: Remains of Cabin 2.

Cabin 3

The remains of Cabin 3 are located in between the Dump Pond and the railroad line (*Figure 3*). The presence of tarpaper, wire nails and stove parts suggest that the cabin is likely no earlier than the mid-twentieth century. A recent camp platform has been built over the remains (*Plate 14*).

Isolated Find

Reconnaissance in the western portion of the study area recovered a quartz biface in the gravel bed of the brook (*Plate 15*). The findspot was located approximately 30 metres upstream from a vineyard on the north side of an unnamed brook. A thorough visual reconnaissance of the surrounding area up and down stream failed to locate any further artifacts or any topographic features that were considered to have high archaeological potential. The isolated find indicates a Native presence within the study area and may relate to the portage route discussed above.

Other Reported Features

During the course of the historical background research, local area residents suggested that several additional features were located in the study area. These reported features included a cemetery located north of the Old Stone House and a fort also located north of the Old Stone House. The field reconnaissance did not identify any evidence of the reported cemetery or fort.

4.2.2 Belmont Road Site

In the spring of 2006, CRM Group was asked to investigate a well and cellar located on Fundy Gypsum property along the Belmont Road, near the "Construction Site Entrance" (*Figure 7*). The features, consisting of a well and cellar, were located, inspected and recorded.

The well is situated 35 metres south of Belmont Road, 40 metres west of the Construction Site Entrance Road and approximately 800 metres west of the junction with Highway 215. Located in a small swale running parallel to Belmont Road, the well area is slightly elevated from the surrounding marshy land. The feature, being approximately 1.80 metres in diameter and approximately 1.70 metres deep, is constructed of field stones (*Plate 16*). The area of abandoned fields to the south and west of the well was checked for any associated features, but no additional features were discovered in the marshy brush.

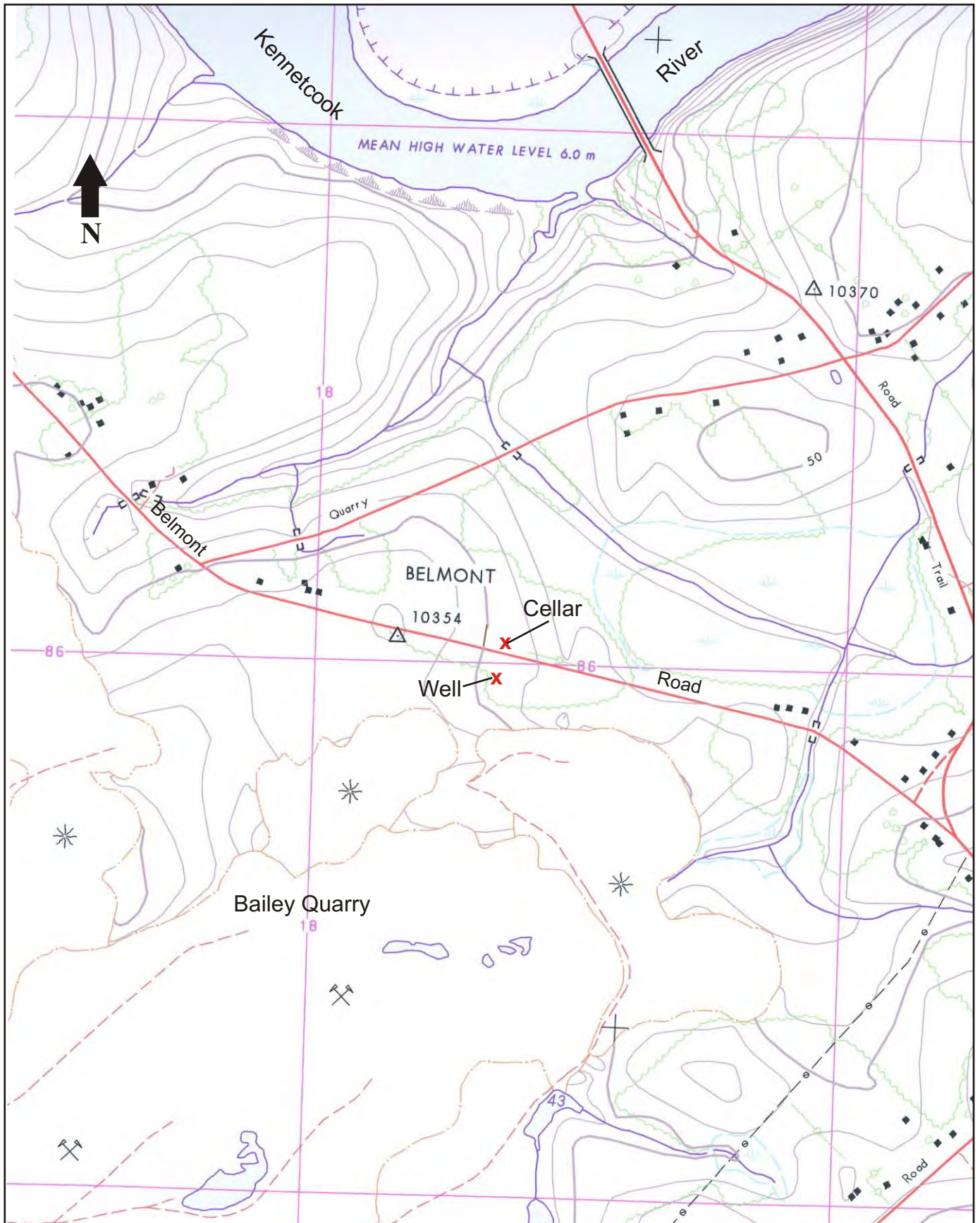
Inspection of the fields immediately north of Belmont Road identified the remains of a masonry cellar foundation (*Plate 17*). The cellar is located approximately 53 metres north of the well and 11 metres north of Belmont Road and approximately 4 metres west of a culverted laneway leading from Belmont Road to the surrounding field. The size of the cellar was difficult to determine as it has been completely in-filled. Stone piles from field clearing were also evident in the immediate area of the feature. There was no evidence of any concrete facing on the foundation, nor any visible concrete foundation extensions or additions. The absence of concrete



PLATE 14: Remains of Cabin 3.



PLATE 15: Isolated Find – location of findspot.



	<i>Belmont Road Features</i>	<i>Figure 7</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT AVONDALE, WEST HANTS	
	August 2006 Scale 1:10 000	



PLATE 16: Belmont Road stone well.



PLATE 17: Belmont Road masonry cellar

suggests that the feature was not modified significantly in the twentieth century. The cellar is located on a small plateau at the foot of slope to west and overlooking a marsh to the east.

A brief title search was conducted at the Registry of Deeds (Hants County) in Windsor. It appears that the property, Newport Township Lot D1 (2nd Division), was first granted to Joseph Bailey in 1766. Bailey acquired half of the adjoining property, Lot D2, from John Wilson, also in 1766. John Woodman sold the other half of the adjoining property to Bailey in 1768. Although it was unclear when H. Knowles acquired the property from Bailey, Knowles sold it to William Fish in 1788, who in turn sold it to Terrance Blackburn in 1826. Blackburn mortgaged the property to Mrs. Praul in 1829. It was not possible to determine from the records when the aforementioned features were initially constructed, but it is likely that there was a structure on the property by 1829 when the land was mortgaged and certainly by 1871, as the A.F. Church map indicates a building owned by T. Blackburn.

As these features lie outside of the proposed impact area for the Quarry Continuation Project, they were not subjected to any subsurface testing.

4.2.3 Borehole Reconnaissance

During the course of the assessment, CRM Group was also asked to evaluate the potential for archaeological resources in the immediate vicinity of 41 resource related borehole test locations and proposed access routes. Five proposed hydro-geological testing locations were also assessed.

CRM Group staff surveyed borehole numbers 1-7 and hydro-geological site S1 on June 8, 2006, borehole numbers 8-17 on June 14, and borehole numbers 18-29 on June 20, as well as hydro-geological locations S2 and S3 (*Figure 3*). Borehole numbers 30-34 and hydro-geological sites S4 and S5 were surveyed on August 15 and borehole numbers 35-41 on September 15. The test locations and proposed access routes were carefully examined for archaeological features and for the existence of any topographical or vegetative anomalies that might indicate buried archaeological resources. All screened test locations were clear of any previously identified archaeological features and were determined to exhibit low archaeological potential. However, the proposed access route to borehole location numbers 35-41 will impact the existing Old Plaster Road, an important cultural feature which helps to identify and contextualize associated archaeological features. It is, therefore, recommended that care and caution be used when access routes utilize, or even cross, the Old Plaster Road, so as to ensure that impact is minimal.

Further features identified during the reconnaissance are discussed below.

4.2.4 Archaeological Testing

During the initial site reconnaissance, conducted in August of 2005, in conjunction with the archaeological screening, six potential features were identified. These six features were subjected to archaeological testing in the summer of 2006. The results are described below. The six features were recorded at the following locations using a hand-held GPS unit:

Table 1: Feature identified during screening

Feature #	Easting	Northing	Dimensions (metres)
1.	20 414 618	4 985 858	Undetermined
2. & 3.	20 414 616	4 986 070	6 x 8 & 4 x 5
4. & 5.	20 414 705	4 986 231	5 x 7 & Undetermined
6.	20 414 831	4 986 635	4 x 4

Field reconnaissance of the study area conducted during the 2006 archaeological assessment identified a further seven potential features, the locations of which were also recorded using a hand-held GPS unit:

Table 2: Features identified during assessment

Feature #	Easting	Northing	Dimensions (metres)
7.	20 414 616	4 986 070	Undetermined
8.	20 414 846	4 985 959	Undetermined
9.	20 414 858	4 986 031	5 x 5
10.	20 413 271	4 985 492	Undetermined
Haliburton Road Site 1	20 413 565	4 985 769	Undetermined
J. Miller	20 415 374	4 986 055	Undetermined
Cookhouse	20 413 776	4 986 712	8 x 6.5

Shovel testing was conducted on all features or areas considered on the basis of background research and/or visual reconnaissance to exhibit high archaeological potential. Shovel tests were excavated at 5 metre intervals, with larger test units or trenches placed at strategic locations on several of the features. Shovel tests penetrated the topsoil and were excavated to subsoil. All material removed from the pits was screened through 6 millimetre mesh hardware cloth to standardize artifact recovery. The program of subsurface testing is described below for each feature or area of high archaeological potential.

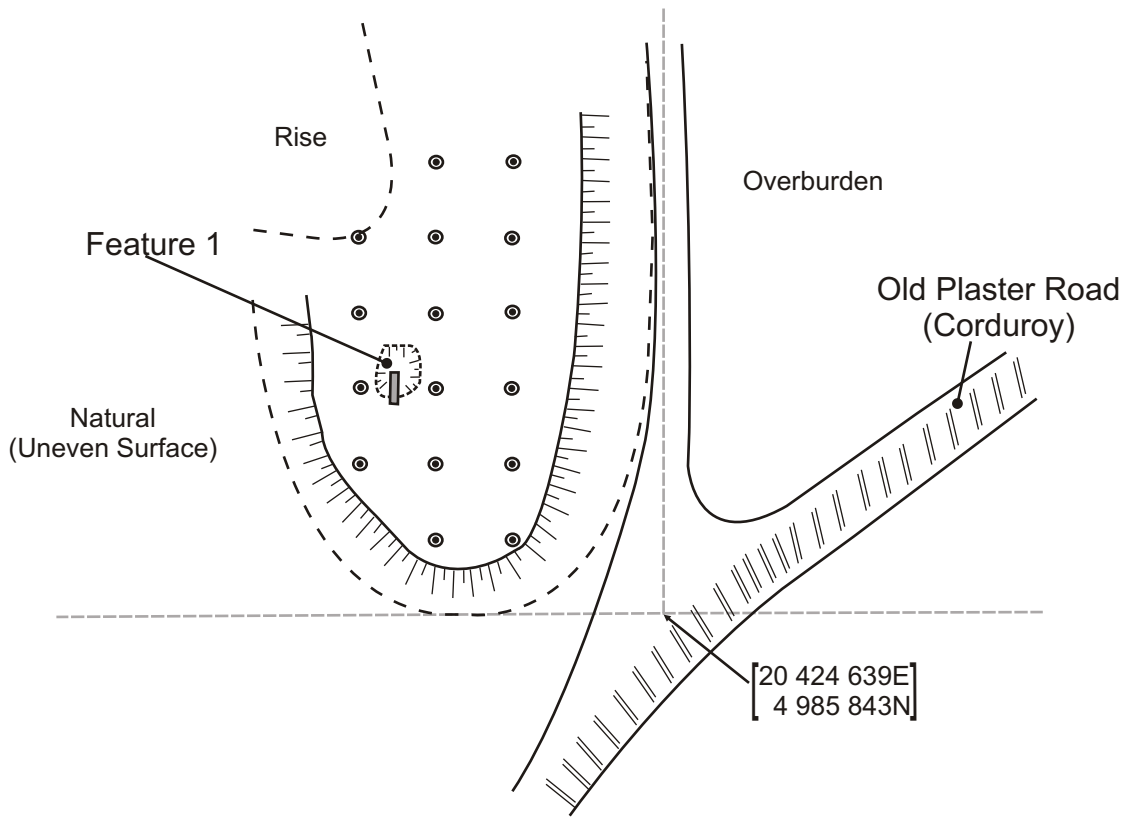
Feature 1


Feature 1 was a depression located on an elevated terrace surrounded by areas of low archaeological potential (*Figure 3*). The low potential areas consisted of a steep rise to the north
Figure 8



Legend

- ⊙ Negative Shovel Test
- Positive Shovel Test
- ▬ Test Trench
- - - Baseline



 <p>CRM Group Cultural Resource Management Group Ltd.</p>	<i>Test Excavation at Feature 1</i>	<i>Figure 8</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT AVONDALE, HANTS COUNTY	August 2006
		Scale 1:500

of Feature 1 and low wetland to the south and west. A grid was established using the existing road to the east as a baseline. Testing included shovel test pits excavated at 5 metre intervals and a 50 centimetre by 2 metre test trench excavated through the potential feature with the intent of identifying structural remains (**Figure 8**). However, neither the test pits nor the trench revealed any evidence of a structure. Instead, testing revealed that the elevated terrace was composed entirely of overburden, likely generated by nearby quarrying operations (**Plates 18 & 19**). The overburden consisted of loose mixed soils with an abundance of gypsum fragments. No artifacts were recovered or structural remains identified during the testing.

Features 2, 3 and 7

Feature 2 was a rectangular depression surrounded by a mound approximately 10 metres west of the Old Plaster Road (**Figure 3**). Feature 2 was located in close proximity to Features 3 and 7, and as such, the three were tested using the same baseline. The removal of obscuring brush and small trees using hand saws and clippers was necessary prior to the commencement of subsurface testing (**Plate 20**). The baseline was established along the centreline of the Old Plaster Road. Testing included shovel tests excavated at 5 metre intervals on all dry ground between and around Features 2, 3 and 7 (**Figure 9**). Testing also included a 50 centimetre by 3 metre trench excavated through the centre of Feature 2 and through the surrounding mound with the intent of identifying structural remains (**Plate 21**).

Artifacts were recovered from 4 of the 50 test pits and from the test unit within the feature. The artifacts reflect a post-1820 domestic context. The majority of recovered artifacts were ceramic sherds (36%) consisting primarily of refined white earthenwares or pearlwares. All ceramic types recovered from the area of Feature 2 were in manufacture by 1820 (Miller 2000). Other domestic items such as bottle glass, clay pipe stems and bowls, an unreadable coin and a pewter button made up a further 27% of the assemblage.

Within the feature, test excavation revealed a dark brown to black silty-loam (Lot 1) underlying the moss and grass of the forest floor. Lot 1 was between 10 and 25 centimetres thick and overlay a dark brown sandy-silt (Lot 2) which contained a small number of pebbles and cobbles. Lot 2 was limited to within the depression itself and contained an abundance of artifacts. Outside of the depression, Lot 1 overlay a light brown clay (Lot 3) identified as subsoil.

Feature 2 may be a structure associated with the Haliburton/Bennet Quarry as it is located just northeast of the quarry, on the western side of the Old Plaster Road (**Figure 3**). The feature may relate to the above referenced "hutts, Sheds or houses" located within the vicinity of Haliburton's quarries. Although no structural remains were encountered in the testing, 22% of the artifact assemblage consisted of architectural remnants, such as nails and shards of window glass, indicating that there was likely a structure in the area.



PLATE 18: Shovel test excavation around Feature 1.



PLATE 19: Test trench through Feature 1.



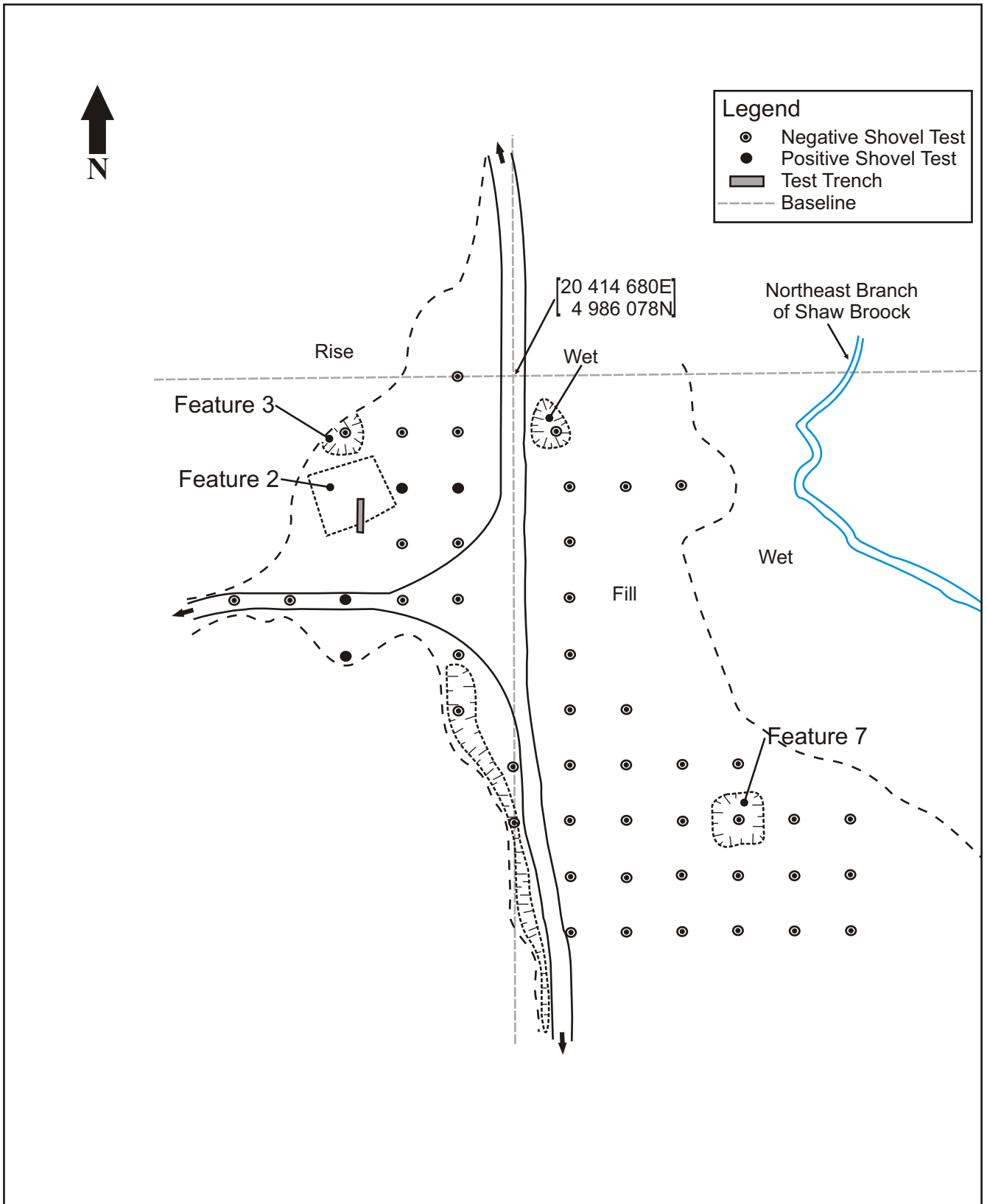
PLATE 20: Feature 2 prior to testing.

Feature 3 was a depression immediately north of Feature 2 (*Figure 9*). A single test pit was excavated in the centre of the depression as it fell within the 5 metre interval grid established for the area (*Plate 22*). The test pit revealed that the depression was natural. Natural depressions are common throughout the study area and are the result of a gypsum rich topography. Despite the proximity to Feature 2, no artifacts were recovered.

Feature 7 was a square depression located south of Features 2 and 3 on the eastern side of the Old Plaster Road. The feature was situated on a relatively flat plateau overlooking Shaw Brook (*Figure 9*). A single test pit was excavated in the centre of the depression as it fell within the 5 metre interval grid established for the area. The test pits revealed that the plateau was an artificial feature consisting of overburden likely associated with nearby quarrying activities (*Plate 23*). The overburden consisted of mixed soils and an abundance of gypsum fragments. No artifacts were recovered and no archaeological features were encountered.

Features 4 & 5

Features 4 and 5 were depressions located at the base of a steep slope just west of the Old Plaster Road (*Figure 3*). Due to their close proximity, the same baseline was used during examination of both features (*Figure 10*). The area was subjected to shovel testing at 5 metre intervals plus




	<i>Features 2, 3 & 7 Testing</i>	<i>Figure 9</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT	August 2006
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PLATE 21: Feature 2 test trench excavation.



PLATE 22: Shovel test excavation at Features 2 and 3.

additional test pits within the identified features and other depressions in the area (*Plate 24*). Test pits consistently revealed a dark brown silty loam consisting of forest litter, moss and topsoil, overlying a light brown silty sand with fieldstone inclusions. The features, plus other depressions in the area, are natural and common throughout the study as a result of the gypsum rich topography. No artifacts were recovered and no archaeological resources were encountered.

Features 4 & 5

Features 4 and 5 were depressions located at the base of a steep slope just west of the Old Plaster Road (*Figure 3*). Due to their close proximity, the same baseline was used during examination of both features (*Figure 10*). The area was subjected to shovel testing at 5 metre intervals plus additional test pits within the identified features and other depressions in the area (*Plate 24*). Test pits consistently revealed a dark brown silty loam consisting of forest litter, moss and topsoil, overlying a light brown silty sand with fieldstone inclusions. The features, plus other depressions in the area, are natural and common throughout the study as a result of the gypsum rich topography. No artifacts were recovered and no archaeological resources were encountered.

Feature 6

Feature 6 was a rectangular mounding of material, located at the base of a steep slope and less than 6 metres from the Old Plaster Road (*Figure 3*). Attention was also drawn to the area by the presence of a number of apple trees. Testing began with the removal of brush and small trees by means of hand saws and clippers. All dry ground in the vicinity of the feature was subjected to shovel testing at 5 metre intervals (*Figure 11*). As well, a 1 square metre test unit was excavated within the feature (*Plates 25 & 26*). A smaller depression located to the south of Feature 6 was identified as a possible well, and also subjected to testing. A 1 square metre test unit was excavated over the western half of the second feature (*Plate 27*).

Test excavation revealed that the mounding that defined Feature 6 was a linear gypsum gravel deposit (*Plate 28*). The deposit is cultural, likely part of a stockpile of gravel for road construction, but not part of any structure. Test excavation within the associated feature revealed that it was a natural depression similar to those discussed previously. Shovel tests in the area consistently revealed a 10 centimetre thick sod and topsoil deposit overlying gypsum bedrock. Shovel tests in the vicinity of the road exposed a deposit of gypsum gravel overlying the bedrock. No artifacts were recovered.

Feature 8

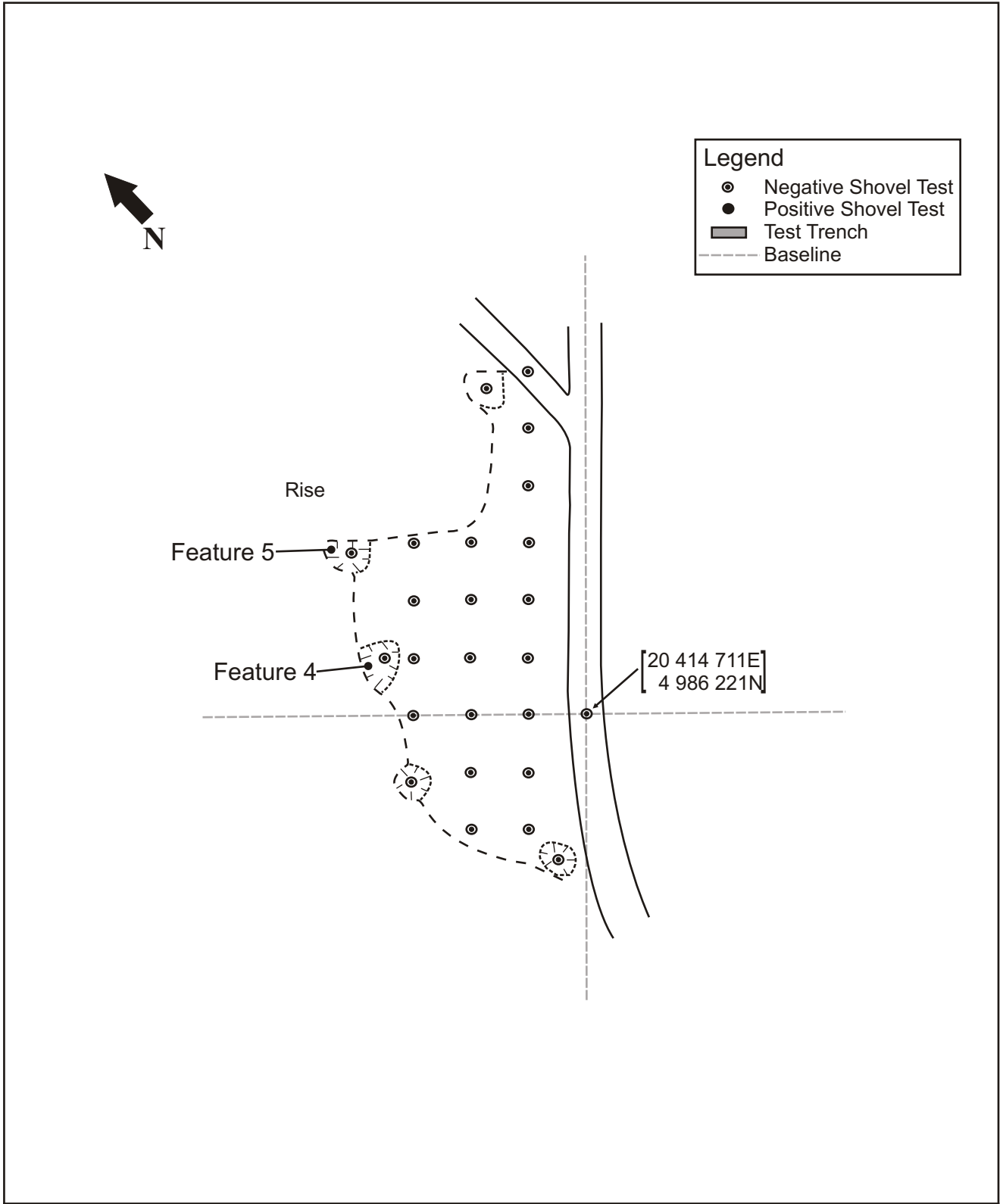
Feature 8 was a wide shallow depression in close proximity to an unidentified road (*Figure 3*). The immediate area around the feature was subjected to shovel testing at 5 metre intervals and revealed that the feature was natural (*Figure 12*). Further and more detailed reconnaissance along the road identified it as a recently constructed road, likely put in place during drill rig testing (*Plate 29*). No artifacts or archaeological features were encountered.



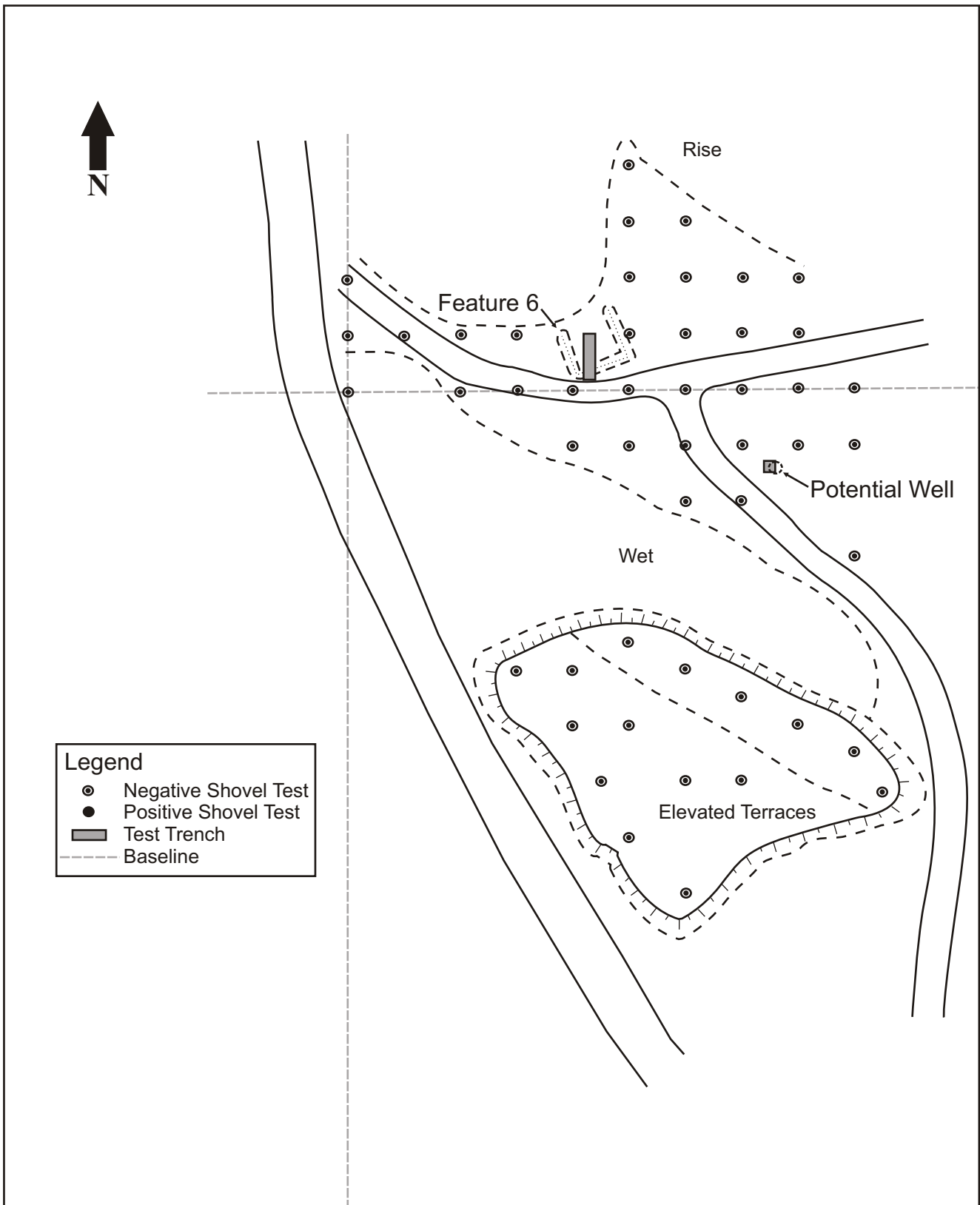
PLATE 23: Feature 7 test excavation.



PLATE 24: Features 4 and 5 shovel test excavation.



	<i>Features 4 & 5 Testing</i>	<i>Figure 10</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT AVONDALE, HANTS COUNTY	August 2006
		Scale 1:500



Test Excavation at Feature 6
 MILLER'S CREEK QUARRY CONTINUATION
 ARCHAEOLOGICAL ASSESSMENT
 AVONDALE, HANTS COUNTY

Figure 11
 August 2006
 Scale 1:500



PLATE 25: Feature 6 test excavation.



PLATE 26: Feature 6 test excavation.



PLATE 27: Feature 6: test unit over associated feature.



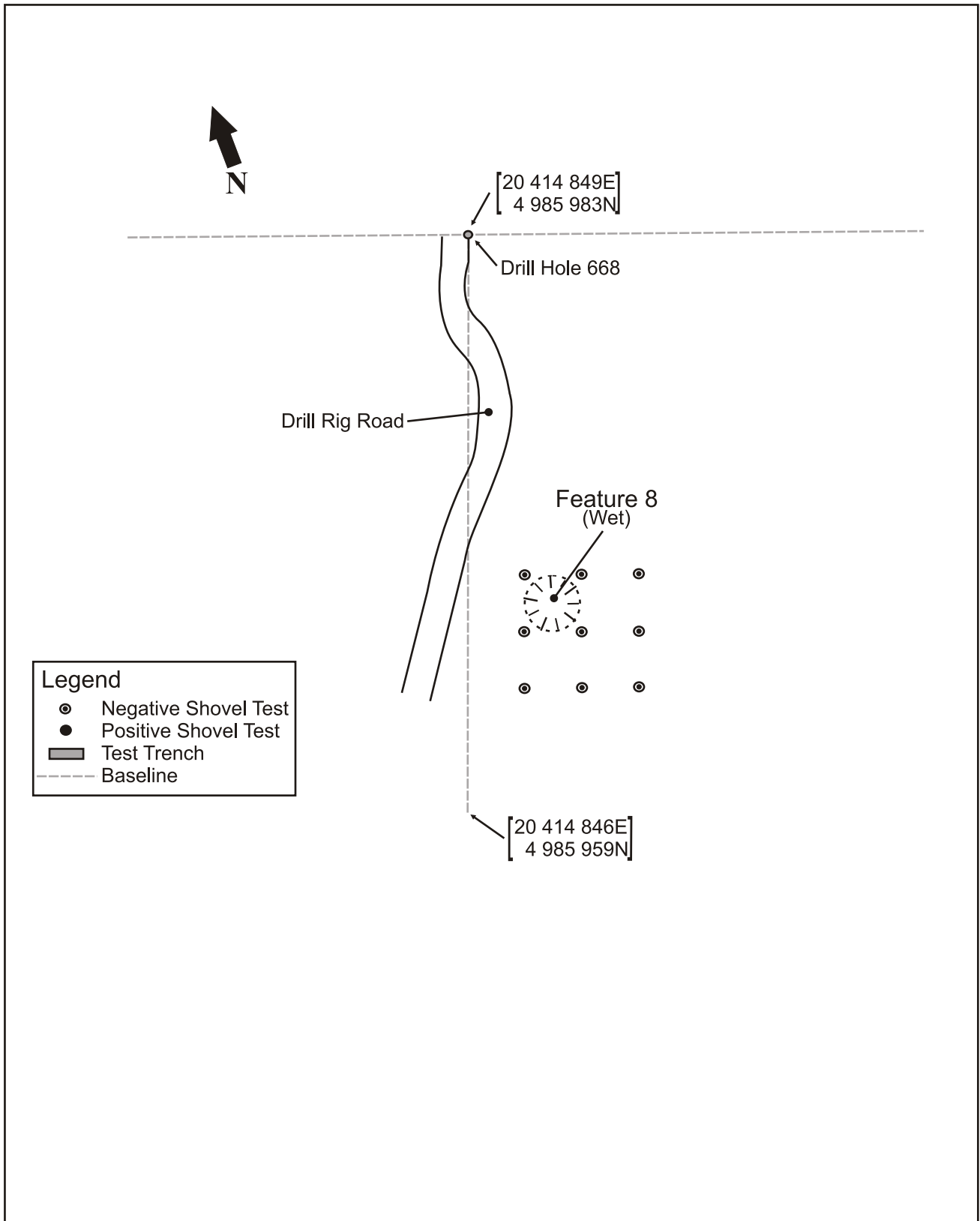
PLATE 28: Feature 6 test trench.




PLATE 29: Feature 8 shovel testing.



PLATE 30: Feature 9 shovel testing.



	<i>Test Excavation at Feature 8</i>	<i>Figure 12</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT AVONDALE, HANTS COUNTY	August 2006
		Scale 1:500

Feature 9

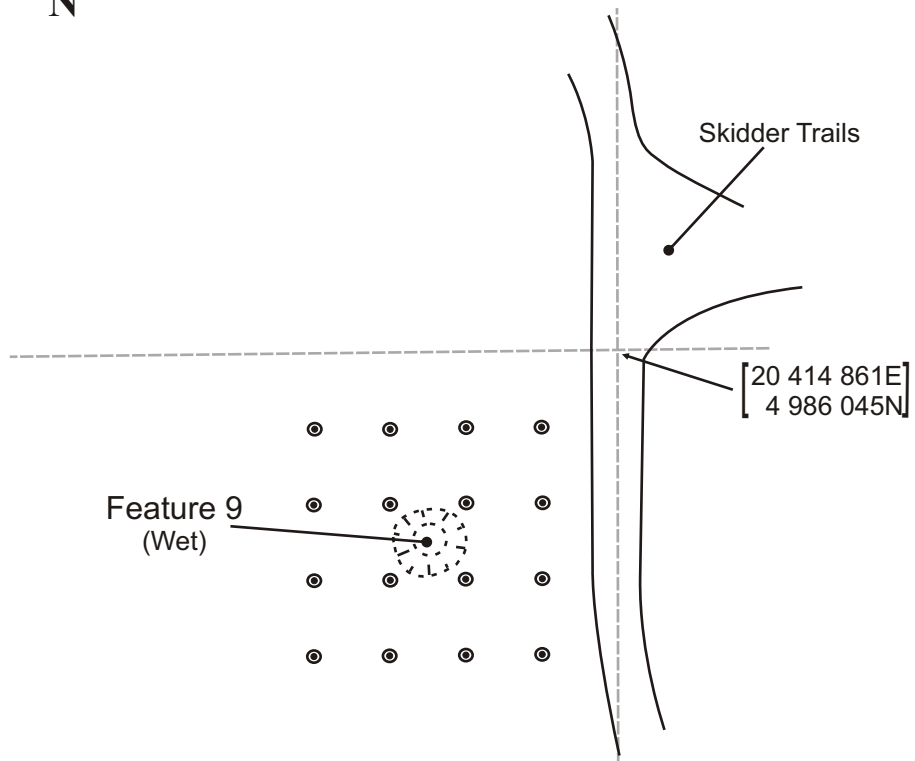
Feature 9 was a depression with slight mounding around its edges, set back approximately 12 metres from a skidder trail. The area around the feature was subjected to shovel testing at 5 metre intervals and revealed that the feature was a natural depression (*Figure 13*). Tests consistently revealed a thin layer of forest debris overlying a thin topsoil which in turn overlay undisturbed subsoil (*Plate 30*). No artifacts were recovered.

Feature 10

Feature 10 was a rectangular depression located just south of an abandoned road, now completely overgrown, which runs west from the Haliburton Road (*Figure 3*). The road is likely a twentieth century feature as it was mechanically constructed. The road appears clearly on a 1981 air photo of the area indicating it was likely in use up to that time. The topography in the immediate area south of the road is relatively flat. Immediately north of the road the ground surface was naturally hummocky and an area north of that appears to be abandoned pasture. Approximately 40 metres west of the depression was a gully with an intermittent stream running through it. There was also a 'borrow pit' immediately east of the gully, likely related to road construction or maintenance. Testing involved clearing of brush and forest debris, and establishing a baseline along a wire fence that ran along the south edge and parallel to the road (*Plates 31 & 32*).

A total of 48 shovel tests were excavated in the relatively flat area around the feature. In addition, a 1square metre test unit was excavated within the feature itself (*Figure 14*). Approximately 120 artifacts were recovered from the 9 positive shovel tests and the test unit. The artifacts reflect a mid-nineteenth century habitation site. The majority of the artifacts represent food consumption/storage items such as ceramic sherds (78%) and bottle glass fragments. Architectural artifacts (10%) including nails and window glass were also recovered. The majority of the ceramics recovered were pearlware, a ceramic type associated with the early nineteenth century. An unidentified coarse red earthenware vessel possibly dating to the late eighteenth century was also recovered. However, the presence of 'Rockingham' ware, a type not in production until the 1840s, suggest the site was in use until the mid-nineteenth century (Savage & Newman 1976). No structural remains were exposed during the testing.

This cellar feature is located less than 1 kilometre northwest of the Smoot Quarries. However, that is still likely too great a distance to suggest an association between the site and the quarries. Based on the artifacts recovered from the archaeological testing, the feature appears to pre-date the road visible on twentieth century air photos. The remains of a second road which runs roughly north-south past the feature, likely represents an associated road or driveway. It is not known if the abandoned pasture north of the road is related to the cellar. The feature does not appear on any historical maps and no information could be found regarding those who occupied the site.



Legend

- ⊙ Negative Shovel Test
- Positive Shovel Test
- ▬ Test Trench
- - - Baseline


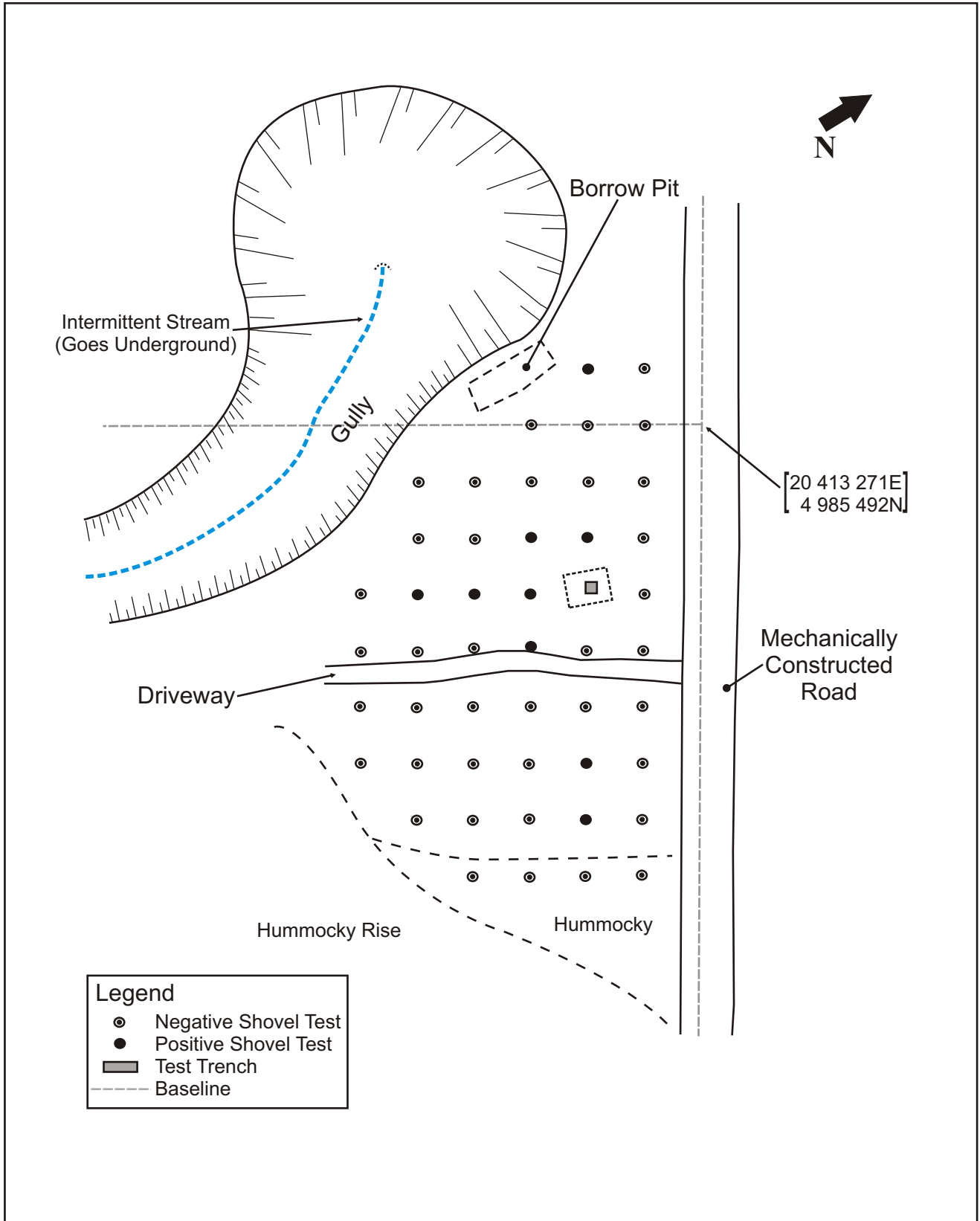
	<i>Test Excavation at Feature 9</i>	<i>Figure 13</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT	August 2006
	AVONDALE, HANTS COUNTY	Scale 1:500




PLATE 31: Feature 10 shovel testing.



PLATE 32: Feature 10 test excavation.



	<i>Test Excavation at Feature 10</i>	<i>Figure 14</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT AVONDALE, WEST HANTS	
		August 2006 Scale 1:500

Haliburton Road Site 1

Field reconnaissance identified an artifact scatter on the ground surface at the junction of the original Haliburton Road and a modern offshoot which leads to the west side of the Dump Pond (*Figure 3*). A total of 48 artifacts were recovered during the reconnaissance (*Plate 33*). The surface assemblage reflects an early to mid-nineteenth century context. Ceramics represent the majority of recovered artifacts and included pearlwares, refined white earthenwares, maritime redwares and ironstone.

A baseline was established along an east-west aligned portion of the original Haliburton Road. Subsequently all relatively flat land in the area was subjected to shovel tests at 5 metre intervals (*Plate 34*). Of the 61 shovel tests excavated, 4 yielded artifacts (*Figure 15*). The majority of recovered artifacts were ceramic sherds (80%). The ceramic assemblage, which included pearlware, refined white earthenware and yellow ware, reflected a c. 1830's occupation. While no structural remains were encountered, a linear concentration of stones visible on the ground surface may represent an archaeological feature.

Historic maps do not depict a structure at this location and local residents could not offer any information regarding the site. In conversation with Sherman Hines, current owner of the Old Stone House, mention was made of an old homestead in the general area, but he could provide no further information or identify its location (Hines 2006). The remains of an apple orchard, partially enclosed by a barbed wire fence, are situated in the vicinity of the possible feature, but it is not known if they are related.

J. Miller

The J. Miller site is located in a large field on the west side of Ferry Road, near the southern edge of a small plateau (*Figure 3*). The site was identified during the historical background component of the archaeological screening as it appears on the 1871 A.F. Church map of the county (*Figure 4*). Field reconnaissance identified a concentration of stones near the summit of the hill (*Plate 35*). After establishing a baseline was established along the edge of Ferry Road, the site area was subjected to shovel tests at 5 metre intervals (*Plates 36-38*). A 2 metre by 50 centimetre test trench was strategically positioned in an attempt to intersect building remains. A shovel test at 5S, 20W identified an atypical concentration of field stones and a 1 square metre test unit was excavated over this area.

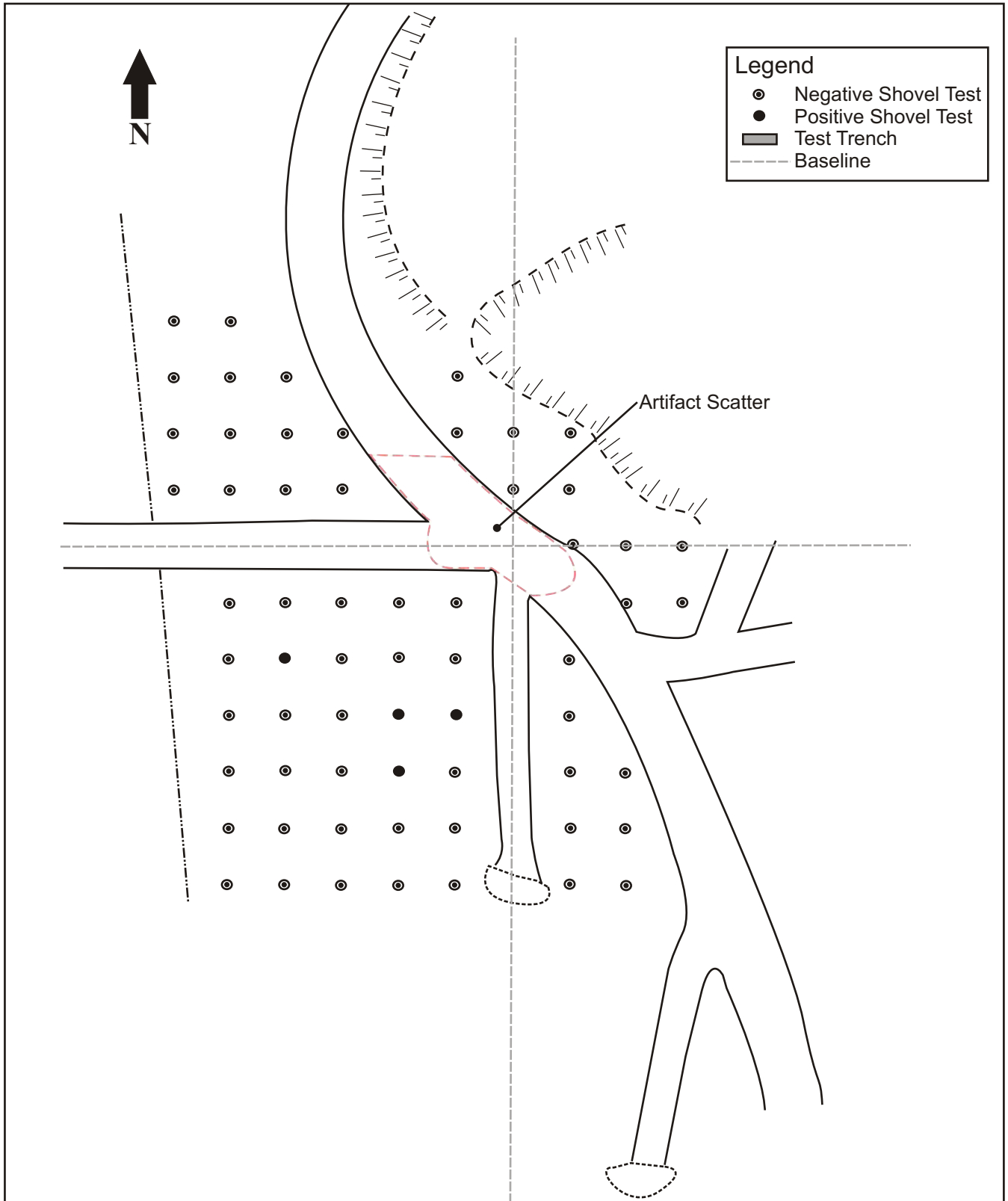
Of the 77 shovel tests pits excavated, 44 of them yielded artifacts (*Figure 16*). The assemblage reflects long-term habitation beginning as early as the 1830s and lasting until at least the mid-twentieth century. Food consumption/storage related artifacts, such as ceramics and bottle glass, made up 53% of the shovel test assemblage. This included early nineteenth century ceramic types, such as pearlware, and later types, such as vitrified earthenwares and modern porcelain.



PLATE 33: Recovering artifacts from surface at junction of 'new' and 'old' Haliburton Roads.



PLATE 34: Haliburton Road Site 1 shovel testing.




	<i>Test Excavation at Haliburton Road Site 1</i>	<i>Figure 15</i>
	MILLER'S CREEK QUARRY CONTINUATION ARCHAEOLOGICAL ASSESSMENT	August 2006
	AVONDALE, HANTS COUNTY	Scale 1:500



PLATE 35: Reconnaissance of field west of Ferry Road.



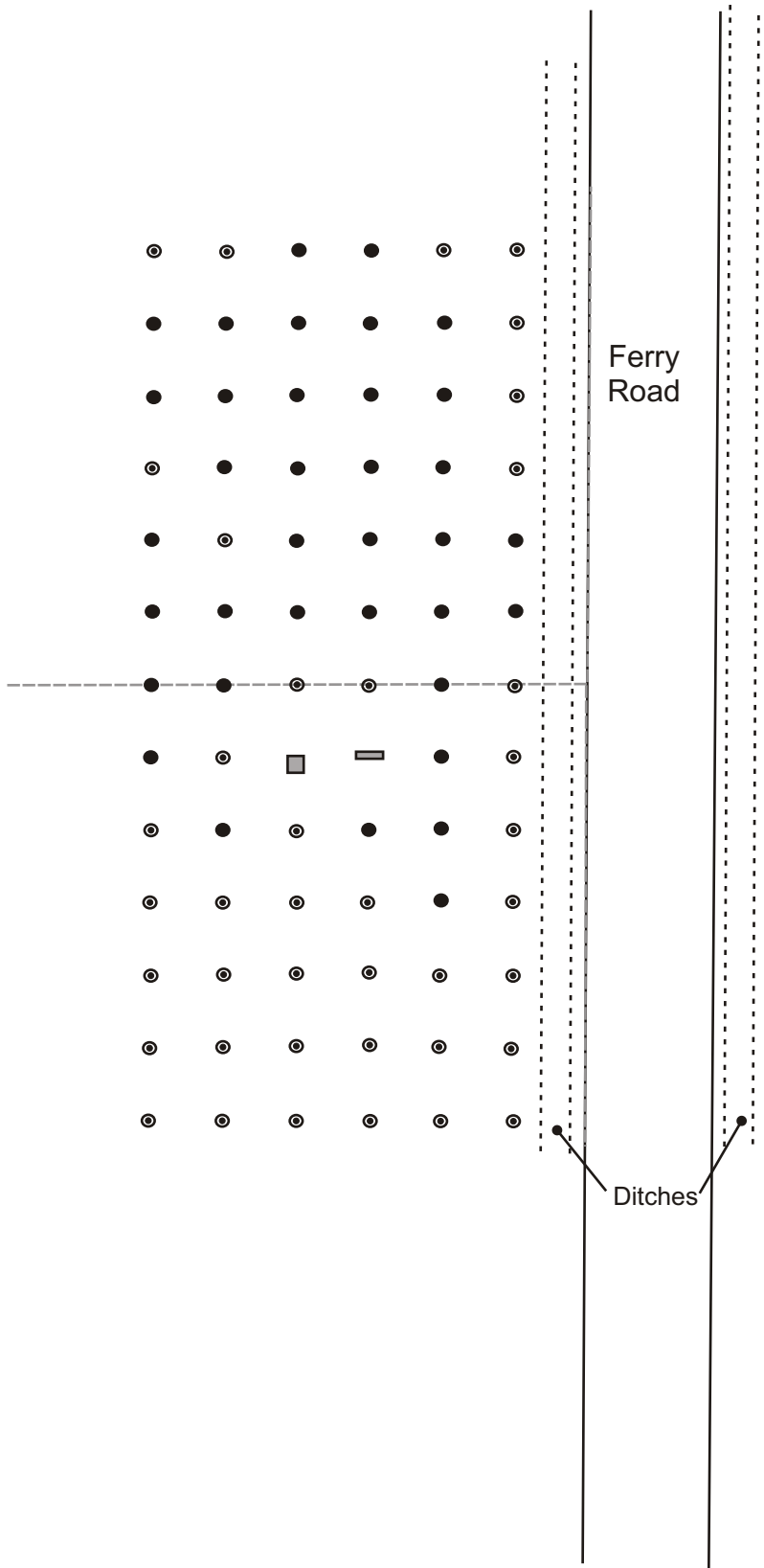
PLATE 36: J. Miller Site shovel testing.



PLATE 37: J. Miller Site western test excavation unit.



PLATE 38: J. Miller Site eastern test trench excavation.



- Legend**
- Negative Shovel Test
 - Positive Shovel Test
 - Test Trench
 - Baseline



Test Excavation at the J. Miller Site

MILLER'S CREEK QUARRY CONTINUATION
ARCHAEOLOGICAL ASSESSMENT
AVONDALE, HANTS COUNTY

Figure 16

August 2006

Scale 1:500

Modern beer bottle glass and green pop bottle glass fragments were recovered alongside nineteenth century dark green bottle glass. Architectural artifacts, such as window glass and nails, comprised 30% of the shovel test assemblage and included roofing slate, brick fragments and both cut and wire nails.

The two test units recovered over 400 artifacts and revealed deep infilling. Excavation in the easternmost test unit exposed 72 centimetres of fill confirming that there had been a deep depression at this location. The western test unit exposed a similar fieldstone fill deposit to at least 50 centimetres below the surface, but due to time constraints excavation was unable to proceed any further in the fill. The artifacts recovered from the test squares are consistent with the artifacts recovered from the shovel tests, and reflect a long-term habitation site. The assemblage includes early nineteenth century (pearlwares) thru to twentieth century materials (plastics).

John and Samuel Miller acquired Newport Township Lot C2 and the adjoining Lot C3 in 1783 (Deed Book 7: 253-254). It is not known when the features on the property were built, but a structure belonging to one J. Miller, likely a descendent of the original Miller brothers, is identified on the Church Map of 1871. Charles Shaw obtained the property in the early twentieth century and sold the mineral rights to the J.B. King Company in 1909. Local resident, Beulah Shaw, referred to the property as the "O'Toole place" and believes that Charles Shaw acquired it from the O'Toole family (B. Shaw 2006). She recalled that the house was standing when she arrived in the area in 1940, but was torn down shortly thereafter. She also described a barn which was standing until the 1980's. The current owner, David Shaw, filled in a number of features which he described as a barn, house and well, situated very close together. He also mentioned another feature to the northwest that he described as a small cellar, which was also subsequently in-filled (D. Shaw 2006). It is clear from both the historical background and the archaeological testing that the site was occupied well into the twentieth century. Many of the artifacts recovered, however, could relate to the infilling of the cellar feature rather than actual occupation of the house.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The archaeological assessment conducted by CRM Group as part of the overall environmental screening of the Miller's Creek Quarry Continuation Project resulted in the identification of numerous cultural and archaeological resources.

Based on the results of the archaeological assessment, CRM Group offers the following recommendations:

1. It is recommended that Feature 2 be subjected to further archaeological testing and/or mitigation should development necessitate any impacts to the site.
2. It is recommended that Feature 10 be subjected to further archaeological testing and/or mitigation should development necessitate any impacts to the site.
3. It is recommended that the J. Miller Site be subjected to further archaeological testing and/or mitigation should development necessitate any impacts to the site. Further reconnaissance and testing is recommended to locate the barn and well associated with the J. Miller residence. Further reconnaissance is recommended west of the J. Miller site to locate the second feature described by the landowner.
4. It is recommended that Haliburton Road Site 1 be subjected to further archaeological testing and/or mitigation should development necessitate any impacts to the site.
5. It is recommended that archaeological testing be conducted at the feature identified as the possible NPMMC Cookhouse to assess the age, function and integrity of the feature.
6. It is recommended that further archaeological reconnaissance and testing be conducted in the area of the potential feature identified as 'W.K' on historic maps.
7. It is recommended that, if possible, the Smoot Quarries be set aside for future interpretation. The Smoot Quarries are easily accessible, visually impressive and historically significant for the community as they reflect the continuity of the gypsum industry in the area.
8. It is recommended that, if possible, the Shaw Plaster Quarry be set aside for future interpretation. The Shaw Plaster Quarry is historically significant as it is the earliest known operation in the area and was important for the development of the local community.

9. It is recommended that, if possible, the Newport Plaster Mining and Manufacturing Company Quarry 4 be set aside for future interpretation. The karst topography associated with this quarry is unique and visually impressive. If the site of Quarry 4 cannot be protected, it should be documented as outlined in Recommendation #11 below.
10. It is recommended that reconnaissance be conducted in any areas where the proposed impact area differs from the original plan from which CRM Group worked. Especially should any changes take the proposed impact area towards the area where the biface was recovered.
11. It is recommended that detailed documentation of all features, including quarries, likely to be impacted by development be conducted. Documentation should include video, photography and surveyed plans.
12. It is recommended that any significant ground disturbance (road building, geotechnical testing, etc.) in the vicinity of identified archaeological features be preceded by a site specific archaeological assessment or be monitored by an archaeologist.
13. It is recommended that caution be taken when using existing historical trails, such as the Old Plaster Road, so as to ensure minimal impact.

6.0 REFERENCES CITED

- Adams, G.C.
1991 *Gypsum and Anhydrite Resources in Nova Scotia*. Economic Geology Series 91-1. Department of Natural Resources, Halifax, Nova Scotia.
- Anonymous
1754 *Description Failé par un Acadien te quelq. Partie de ce Pays en 1754*.
- Bellin
1744 *Carte de L'Accadie*.
- Church, Ambrose F.
1871 *Topographical Township Map of Hants County, Nova Scotia*. A.F. Church & Co.: Halifax.
- Clarke, Garnet
2006 Personal communication with Sara Beanlands on May 23, 2006.
- Cole, L.H.
1913 *Gypsum in Canada: its Occurrences, Exploitation and Technology*. Department of Mines, Ottawa.
- Deal, M. and Butt, A.
1990 'The St. Croix Excavation, 1990' Ms. on file, Special Places Program-Heritage Division (SPP-HD), Halifax.
- Deed Books
Old Deed Books # 7, 12, 13, 19, 22, 68, 71, 101, 113, 129. Registry of Deeds, Hants County. Windsor, Nova Scotia
- Department of Mines
1913 *Mines Report, 1912*. Halifax, Nova Scotia.
- Department of Mines
1914 *Mines Report, 1913*. Halifax, Nova Scotia.
- Department of Mines
1922 *Mines Report, 1921*. Halifax, Nova Scotia.

Duncanson, John Victor

1985 *Newport, Nova Scotia – A Rhode Island Township*. Mika Publishing Company, Belleville, Ontario.

Dunn, Brenda

1990 *The Acadians of Minas*. Minister of Supply and Services Canada.

Faribault, E.R. & H. Fletcher

1909 *Province of Nova Scotia, Hants County, Windsor, Sheet 73*. Geological Survey of Canada.

Foley, Tom

1995 *United States Gypsum: A Company History 1902-1994*. USG Corporation.

Fowler, Jonathan

2005 *A New Acadian Domestic Site at Poplar Grove, Nova Scotia*. Unpublished report submitted to the Nova Scotia Museum.

Haliburton, T.C.

1829 *An Historical and Statistical Account of Nova Scotia*. Volume 2. Joseph Howe, Halifax.

Hamilton, J.

1753 "View of Fort Edward in Pisiquid River". National Archives, Ottawa, C-2708.

Hind, H.Y.

1889 *Sketch of the Old Parish Burying Ground, Windsor Nova Scotia*. J.J. Anslow, Hants Journal, Nova Scotia.

Hines, Sherman

2006 Personal communication with Sara Beanlands on May 25, 2006

Huntley, Fred

2006 Personal communication with Sara Beanlands on May 3, 2006.

Jennison, W.F.

1911 *Report on the Gypsum Deposits of the Maritime Provinces*. Department of Mines, Ottawa.

Knowles, Gordon

-
- 2006 Personal communication with Sara Beanlands on May 10, 2006.
- MacLean, Phyllis
2006 Personal communication with Sara Beanlands on May 24, 2006.
- Miller, George
2000 "Telling Time for Archaeologists," *Northeast Historical Archaeology*, Vol.29.
- Mosher, Edith
1979 *White Rock: The Story of Gypsum in Hants County*. Lancelot Press, Hantsport, Nova Scotia.
- Newport Plaster Mining and Manufacturing Company Maps
1912 "Plan of Back Quarries Avondale N.S. July 1912"

"Rear Section of Plaster Areas Avondale N.S.
- Ross, James A.
1932 *The Story of Newport Township*.
- Savage G. & H. Newman
1976 *An Illustrated Dictionary of Ceramics*. Van Nostrand Reinhold, New York
- Shand, G.V.
1979 *Historic Hants County*. Petheric Press, Halifax, Nova Scotia.
- Shaw, Allen
2006 Personal communication with Sara Beanlands on May 10, 2006.
- Shaw, Beulah
2006 Personal communication with Sara Beanlands on May 12, 2006.
- Shaw, David
2006 Personal communication with Sara Beanlands on May 12, 2006.
- Webb, Paul
2005 *Newport Landing: A Historical Report, 1976*. Avon River Heritage Society Museum, Avondale, Nova Scotia.

H.2

MI'KMAQ KNOWLEDGE STUDY

MI'KMAQ KNOWLEDGE STUDY

Fundy Gypsum Miller Creek Expansion Project
Hants County, Nova Scotia

Prepared for CRA Ltd.

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August 2006

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1.0 INTRODUCTION

1.1 Mi'kmaq Environmental Services

Mi'kmaq Environmental Services (MES) is a program operated by the Lands, Environment, and Natural Resources directorate of The Confederacy of Mainland Mi'kmaq (CMM) that provides fee for service environmental consulting services. CMM provides advisory services to six Mi'kmaw communities in the province of Nova Scotia – Paq'tnkek First Nation, Annapolis Valley First Nation, Bear River First Nation, Glooscap First Nation, Millbrook First Nation, and Pictou Landing First Nation.

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1.2 Project Description

Fundy Gypsum Company, Windsor, Nova Scotia is planning the expansion of its existing Miller's Creek gypsum mine site. This project would involve the extraction of the gypsum deposit directly adjacent to the existing operations at Miller's Creek on lands currently owned, to be owned, or leased by Fundy Gypsum.

The site is located in Hants County in the Avondale/Poplar Grove/Belmont area of central Nova Scotia, on the peninsula bounded by the Avon, Kennetcook and St. Croix rivers. The candidate site is an area of approximately 1000 acres comprising the west half of Non-Mineral Registration 002. The area consists of forested land in varying stages of re-growth due to extensive logging, farmland and under-utilized former farmland with limited residential properties along the Avondale, Belmont and Ferry Roads, which

completely encircle the site.

The site has a number of mapped and unmapped surface watercourses of varying sizes that flow to the north, south and west, discharging to the Kennetcook, St. Croix and Avon rivers, respectively. Topography of the site is generally higher than that of the surrounding areas (salt marshes along the river banks, which give way to gently undulating plains further inland) with surface elevations across the site ranging from approximately 20 to 75 metres above sea level (masl) and slopes ranging from 1-3%, with some localized grades of up to 30%. The site is made up of a series of low rolling hills (described as knobs or knolls) with moderately incised drainages and valleys. The underlying bedrock, with karst features, has locally influenced the topography of the area and numerous pits and excavations (developed to extract gypsum; some dating to the mid 19th century) noted within the study area. Some sinkholes and former pits support small ponds and lakes.

The mine extension would be a surface drill-blast-haul-crush-screen-transport-ship type development. The current crusher and train loading equipment would be left in place at the Bailey Quarry and gypsum would be transported from the extension for crushing in off-highway trucks. Initial production would be in the order of 100,000 tonnes per annum ramping up to a production rate of between 1.5 and 2.0 million tonnes per annum as operations at the Bailey Quarry are reduced over the next 10 to 12 years. Product would be transported along the existing train route to Hantsport for ship loading. The mine life of the Millers Creek Expansion project is estimated at more than 25 years.

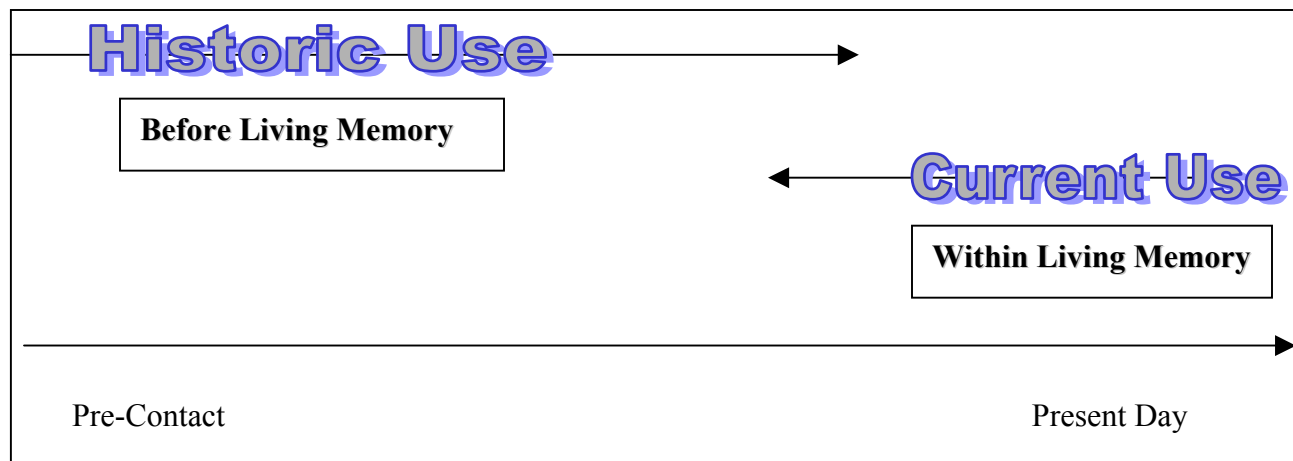
2.0 DEFINITION OF TERMS

Living Memory is the memory of living Mi'kmaw. The period of time included in living memory varies from knowledge holder to knowledge holder. Living memory often extends to the father and grandfather of the knowledge holder and can be estimated at 3 to 4 generations.

Current Mi'kmaq Land and Resource Use occurred within living memory or is occurring at the present day (Figure 1).

Historic Mi'kmaq Land and Resource Use occurred before living memory (Figure 1).

Figure 1: Historic and Current Use Timeline



Mi'kmaw Ecological Knowledge is the collective body of knowledge which Mi'kmaq possess based on their intimate relationship with their natural surroundings, which involves exploitation, conservation and spiritual ideologies, and has been passed on from generation to generation, “*kisaku kinutemuatel mijuijij*”, elder to child.

Mi'kmaq Land and Resource Use Sites are locations where Mi'kmaq land and resource use activities have taken place or are taking place at present day. These sites may or may not display physical evidence of Mi'kmaq use.

Mi'kmaq/Mi'kmaw *Mi'kmaq* means the Family and is an undeclined form. The variant form, *Mi'kmaw*, plays two grammatical roles: 1) it is the singular of Mi'kmaq and 2) it is an adjective in circumstances where it precedes a noun.

Mi'kma'ki is the Mi'kmaw homeland (Atlantic provinces and Gaspé peninsula).

Specific Land Claim arises when a First Nation alleges that the federal government has not honoured its treaties, agreements or legal responsibilities. According to federal policy, a valid specific claim exists when a First Nation can prove the government has an "outstanding lawful obligation". The Mi'kmaq are currently pursuing several specific land claims in Nova Scotia.

Comprehensive Claim is based on underlying Aboriginal Title to traditional territory that has not been dealt with by treaty or other means. Aboriginal Title to lands exists as a legal right derived from First Nations historical occupation and possession of their tribal lands. The process of negotiating the settlement of comprehensive claims, which is known as modern-day treaty making, clarifies access and ownership to land and resources. Currently, the Mi'kmaq have a comprehensive claim to all lands within the province of Nova Scotia including all inland and adjacent waters.

3.0 PURPOSE AND SCOPE OF THE MI'KMAQ KNOWLEDGE STUDY

3.1 Purpose of the Mi'kmaq Knowledge Study

The purpose of the Mi'kmaq Knowledge Study is to support the integration of Mi'kmaq knowledge of use and occupation of Mi'kma'ki into development decisions via the environmental assessment process.

3.2 Scope of the Mi'kmaq Knowledge Study

The MKS includes:

- 1) A study of historic and current Mi'kmaq land and resource use;
- 2) An evaluation of the potential impacts of the Project on Mi'kmaq use and occupation and constitutionally based rights;
- 3) An evaluation of the significance of the potential impacts of the Project on Mi'kmaq use and occupation; and
- 4) Recommendations to proponents and regulators that may include recommendations for mitigation measures, further study, or consultation with Mi'kmaq.

3.3 Not included in the scope of the Mi'kmaq Knowledge Study

3.3.1 Section 35 Consultation

This study is not consultation for justification of the infringement of constitutionally protected aboriginal and treaty rights. If the project involves possible infringements of Mi'kmaq constitutional rights, the MKS recommends further action.

3.3.2 Archaeological Screening and Resource Impact Assessment

The study is not an Archaeological Screening or Archaeological Resource Impact Assessment. Results presented in the study can inform and be informed by archaeological screenings and assessments.

3.3.3 Notification of Mi'kmaw individuals or communities of the Project

The study is not intended to inform or notify Mi'kmaw individuals or communities of the Project, solicit the opinions or concerns of Mi'kmaw individuals or communities on the Project, or promote the Project to Mi'kmaw individuals or communities.

4.0 METHODOLOGY

4.1 Historic Mi'kmaq Land and Resource Use

Historic Mi'kmaq land and resource use occurred before living memory. The study of historic land and resource use paints a broad portrait of Mi'kmaq use and occupation of Mi'kma'ki in centuries past.

4.1.1 Study Area

The historic land and resource use study area is in the Mi'kmaq district of *Segepenegatig* and encompasses the area of Minas Basin and its river system, particularly the Avon and Kennetcook rivers, and the surrounding lands.

4.1.2 Methods

Research was done at the Nova Scotia Public Archives, Dalhousie University, St. Mary's University, Mount Saint Vincent University, Acadia University, King's College, Annapolis Valley Regional Library, and the Nova Scotia Museum. For the most part, secondary sources were consulted for this project, although some primary sources from the Nova Scotia Museum and the Nova Scotia Public Archives were used as well.

4.1.3 Limitations

Recorded documents are the primary source of information for the study of historic Mi'kmaq land and resource use. There are no recorded documents in the pre-contact period and recorded documents in the post-contact period are not comprehensive. Furthermore, existing documentation has largely been written by people of a different culture. This means that information may either not be completely accurate or may be incomplete.

4.2 Current Mi'kmaq Land and Resource Use

Current Mi'kmaq land and resource use occurred within living memory or is presently occurring. The MKS includes a study of:

- 1) Current Mi'kmaq land and resource use sites
- 2) Plants of significance to Mi'kmaq
- 3) Mi'kmaw communities

4.2.1 Study Areas

The study areas are described in Figure 2.

4.2.1.1 Current Mi'kmaq Land and Resource Use Sites

The study area for current Mi'kmaq land and resource use sites is a 5 km area surrounding the Fundy Gypsum property boundary.

4.2.1.2 Plants of Significance to Mi'kmaq

Two plant study areas were chosen within the Fundy Gypsum property boundary. The areas were chosen based on access and representative habitat types. Both study areas are located within the Fundy Gypsum property boundary. Plant Study Area 1 has a total area of 170 acres. Plant Study Area 2 has a total area of 230 acres.

4.2.1.3 Mi'kmaw Communities

The study area for Mi'kmaw communities is a 5 km area surrounding the Fundy Gypsum property boundary.

4.2.2 *Methods*

4.2.2.1 Current Mi'kmaq Land and Resource Use Sites

Mi'kmaq knowledge on current land and resource sites was gathered through a review of information collected during the Aboriginal Title Project and through oral interviews with Mi'kmaw knowledge holders.

All individuals who were interviewed signed consent forms. Knowledge was gathered in accordance with the *Mi'kmaq Ecological Knowledge Protocol* and an application to complete research was submitted to Mi'kmaw Ethics Watch.

Knowledge collected is reported in a general format only. No names or specific locations are published.

Collected knowledge was digitized and compiled to allow for an analysis of potential impacts of the project on current Mi'kmaq land and resource use.

4.2.2.2 Plants of Significance to Mi'kmaq

A system of stratified random sampling was employed to identify plants present in the study areas of significance to Mi'kmaq. Plants were surveyed in the fall of 2005 and the spring of 2006. Information collected is reported in a general format only. The names of the species are not recorded.

4.2.2.3 Mi'kmaw Communities

A review of Mi'kmaq communities in the study area was undertaken.

4.2.3 *Limitations*

While every attempt was made to document all available Mi'kmaw knowledge, the

knowledge gathering process may not have captured some available Mi'kmaw knowledge. It is also recognized that over generations of cultural and political suppression, much Mi'kmaq knowledge has been irretrievably lost.

5.0 RESULTS

Results of the study are divided into two categories:

- 1) Historic land and resource use, that is, use that occurred before living memory, and
- 2) Current land and resource use, or use that occurred within living memory or is occurring at the present day.

Land and resource use may be for hunting, burial/birth, ceremonial, gathering, or habitation purposes.

5.1 Historic Mi'kmaq Land and Resource Use

5.1.1 *Pre-Contact*

Mi'kmaq traditional use of the land in Nova Scotia involved semi-permanent and permanent settlements. Summer villages of the Mi'kmaq were usually located on the banks of streams or rivers. The most important factor in the choice of a site was the proximity of the site to a navigable body of water. Sites around the mouths of rivers with heavy spawning runs were highly favourable for use, as well as smaller rivers running back into a system of lakes.¹ It is therefore likely that the Mi'kmaq settled in the study area, which exhibits these types of natural features.

Minas Basin is a large reservoir that receives waters of 19 rivers, including the Pereau, Canar, Habitant, Horton, Gaspereau, Halfway, Avon, St. Croix, Kennetcook, Cackmagon, Shubenacadie, Salmon, North, Chegenois, Debert, Great Village, Porteaupique, Bass, and Diligent Rivers. From here they escape between Partridge Island and Blomidon into the Bay of Fundy.² Outside the strait the tides are rapid but regular. Within it, the rise of the tide is greater than that of any part of America. As the Bay becomes narrower, a large body of water rushes toward the area very quickly and fills the

¹ Julien, Donald M., **Historical Perspective of Micmac Indians Pre & Post Contact Period**, p. 3.

² Haliburton, Thomas C. Esq., **History of Nova Scotia: Volume Two**, p. 125.

Minas and Chignecto Basins. The tides in some areas can rise as high as 70 feet.³

These rivers were rich with salmon, gaspereau, shad, smelt, cod, mackerel, sturgeon, and many other fish. Towards the end of the 18th century, it was still possible to kill salmon with clubs, as they were extremely plentiful at spawning time.⁴ The Fundy tides made deep-water navigation possible far inland in small rivers.⁵

Travelling on the water by canoe was much faster than travelling on foot. Portage routes led up the Avon's branches, across lakes and down rivers to the sea. Up the St. Croix, another portage system led to Panuke Lake and connecting waterways to Chebucto's eastern harbour.⁶ Further down the coast, the portage system of the Shubenacadie River led to the Dartmouth lakes, and again to Chebucto Harbour.⁷

The Mi'kmaq may have valued this area because of the available water-routes that were used for travel by canoe. This area made it possible to travel across Nova Scotia to some extent, as well as travel across the Bay of Fundy to other parts of Nova Scotia and New Brunswick.

The Mi'kmaq pursued fishing and hunting in the Minas Basin and its rivers.⁸ The Mi'kmaq regularly camped at headwaters around Minas Basin where in season they fished for alewife (gaspereau), salmon, and blackfish (or porpoise). Deer and moose figured among the Mi'kmaq foods, and their name for this region was *Kakagwek*, which meant, "where meat is sliced up and dried."⁹ Robertson states that the area was a "favourite resort" of the Mi'kmaq, and that there was a large settlement and also a burial ground.¹⁰

Before the 11th century, the Mi'kmaq brought semi-precious stones from Blomidon and the North Mountain volcanic ridge to the Gaspereau River area. Mi'kmaq tradition states that they gathered at this site, which is known as Melanson, from hundreds of miles around to chip arrowheads, spearheads, knives and axes from jasper, chalcedony, agate,

³ Haliburton, Thomas C. Esq., **History of Nova Scotia: Volume Two**, p. 125

⁴ Loomer, L.S., **Windsor, Nova Scotia: A Journey in History**, p. 18.

⁵ Loomer, L.S., **Windsor, Nova Scotia: A Journey in History**, p. 18.

⁶ Loomer, L.S., **Windsor, Nova Scotia: A Journey in History**, p. 18.

⁷ Loomer, L.S., **Windsor, Nova Scotia: A Journey in History**, p. 18.

⁸ Robertson, Allen B., **Tide and Timber: Hantsport, N.S.**, p. 20.

⁹ Robertson, Allen B., **Tide and Timber: Hantsport, N.S.**, p. 20.

¹⁰ Robertson, Allen B., **Tide and Timber: Hantsport, N.S.**, p. 20.

quartz, and amethyst brought from the Blomidon area.¹¹

The area near Brooklyn was known to the Mi'kmaq as *Nelegakumik*, or “broken snowshoe.” This indicates that the Mi'kmaq travelled through this area, potentially on trails that linked the area to settlements around Minas Basin.¹² Many of the Mi'kmaq travel routes have now become roads. One trail from Kennetcook through Rawdon and Brooklyn is used as the present day road.¹³

The Mi'kmaq named many places in Nova Scotia. The following is a list of Mi'kmaq names for some places in the study area. *Pesegitk* means to flow “split wise,” and refers to the forks of the river where the tide passes near Windsor and divides off into the St. Croix. *Setunook* is what the Mi'kmaq called Windsor, which meant, “where the Seal Water flows back.” *Apsetkwechk* was the eastern branch of the Avon River, which meant, “running small.” *Amagapskeget* was the larger branch of the Avon River at the forks, meaning “running over stones.” *Kunetkook* was Canticook, in Newport. Fort Lawrence in Windsor, Nova Scotia was called *Kwesomalegek*, meaning “hardwood point”.¹⁴

5.1.2 Post-Contact

When the Europeans arrived in Hants County they found Mi'kmaq moving from one hunting or fishing ground to the other in order to maintain food supply.¹⁵ There is ample qualitative data to indicate the existence of two separate villages in the Minas region, one adjacent to the Acadian Minas settlement and another along the Pizquit River.¹⁶ The Deschamps Papers in the Nova Scotia Archives record Mi'kmaq hunting on the Kennetcook River in the township of Newport, at the location of a summer residence.¹⁷ The tribe, with Captain Joseph Nocout as leader, consisted of 14 men, nine women, three aged women, nine boys and three girls. Deschamps also listed a tribe of Mi'kmaq in the Falmouth area. Both English and French records document these two tribes in the area.¹⁸ Along with this record goes the find of a Mi'kmaq burying ground on Willow Hill in

¹¹ Loomer, L.S., **Windsor, Nova Scotia: A Journey in History**, p. 23.

¹² McGray & McGray, **Brooklyn in Retrospect**, p. 7.

¹³ McGray & McGray, **Brooklyn in Retrospect**, p. 9.

¹⁴ Rand, Silas T., **Micmac Place Names**.

¹⁵ McGray & McGray, **Brooklyn in Retrospect**, p. 7.

¹⁶ Wicken, William C., **Encounters with Tall Sails and Tall Tales**, p. 104.

¹⁷ McGray & McGray, **Brooklyn in Retrospect**, p. 9.

¹⁸ Wicken, William C., **Encounters with Tall Sails and Tall Tales**, p. 104.

what is now known as Ardoise.¹⁹ By 1764 the Indians of the two tribes had all been baptized and many of them had been given French names.²⁰

In the Mi'kmaq district of *Segepenegatig*, which is where the study area lies, the chief in 1750 was Jean Baptiste Cope. Claud Piguidawalwet, who was chief from 1760 onward, succeeded him.²¹

With the coming of the Acadians to the Avon Valley just before 1700 and their rapid expansion, it is likely the Mi'kmaq were pushed back from the riverbanks and into the forests. Later they were to be found near the sources of the rivers and streams.²²

One of the routes of travel was from Minas Basin up the Shubenacadie River to Grand Lake, and by other lakes and short portages to Halifax Harbour. This route was used when the Mi'kmaq were sent by the French to harass the English settlement at Halifax in 1750.²³ At Long Point, where the St. Croix river makes a right-angle turn, travellers forded the river by descending the steep and muddy bank to a river bed of rock and over to Chamber's Island, where the road began again. This road dated to Acadian times, and was likely a Mi'kmaq trail before then.²⁴

Around the time of the expulsion of the Acadians the Mi'kmaq resisted the English. The government brought in the New England Rangers, who travelled the rivers and attacked the Mi'kmaq. The Mi'kmaq decided to make peace in 1755. "Peace Treaties" were drawn up between the Indians and the British, and certain lands were granted to the Mi'kmaq.²⁵

In December 1764, Isaac Deschamps carried on commerce with the government on behalf of the Indians at Fort Edward and in Kings County. By April 1765, Moses Delesderniers had been appointed to act for Windsor. The difficulty of the Mi'kmaq became very evident about the time a Council and an Assembly were formed for Nova Scotia in 1758 and 1759. Indian agents were appointed by the government to different

¹⁹ McGray & McGray, **Brooklyn in Retrospect**, p. 9.

²⁰ McGray & McGray, **Brooklyn in Retrospect**, p. 9.

²¹ Julien, Donald M. O.N.S., **Historical Perspective**, p. 3.

²² Shand, Gwendolyn V., **Historic Hants County**, p. 4.

²³ Stoddard, Natalie B., **The Micmac Indians**, p. 2.

²⁴ Loomer, L.S., **Windsor, Nova Scotia: A Journey in History**, p. 100.

²⁵ Shand, Gwendolyn V., **Historic Hants County**, p. 5.

regions across Nova Scotia. Among those who served for Hants County were Lieutenant Governor Michael Franklin and George Henry Monk. As the Indians lost their ability to make a living in their accustomed way because of land encroachment, it was judged necessary to give them food, medicine, and at times to help them provide shelter and clothing for themselves. The accounts kept by the Indian agents show how great the need had become by 1770.²⁶

After 1760 there was an influx of many settlers to Hants County. With this influx, some of the land, which had been allotted to the Mi'kmaq, was handed over to the newcomers. Sometimes the settlers simply seized the land from the Mi'kmaq themselves. Each year, more small estates and farms were established, resulting in the destruction of great sections of forest. There was also increased competition for game; this made it more difficult for the Indians to sustain themselves according to the customary way of living.²⁷ Between the months of September 1766 and the same month of 1767, the Mi'kmaq near Fort Edward and Cornwallis sold 1000 Beaver, 50 Otter, 80 Fishers, 300 Martins, 300 Mink, 100 Musquash, and 50 Bear skins, although this level of trade did not sufficiently sustain the Mi'kmaq in the face of loss of traditional territory²⁸

Silas T. Rand is an important figure in post-contact Mi'kmaq history in the Minas Basin area. Rand was a self-educated man, who had mastered French, German, Latin, Greek, Hebrew, and began to study the Mi'kmaq language in 1846. In the 1850s Rand made a report to the Micmac Missionary Society, of which he was a member. He had chosen Hantsport as a place to work with settled native peoples since it had a long held significance for them.²⁹ Supported entirely by the money he was able to collect at his public appearances, the society began to purchase land in Hantsport for a school and “industrial establishment” where Indians would be encouraged to work. A depot was set up in Halifax for the sale of their artefacts, but the enterprise seems to have been neither durable nor profitable. Yet by 1856 the society had amassed 458 acres and named them “Mount-Micmac.” Rand reported that the Indians were being instructed in “agricultural and mechanical improvement.” However, the school was never founded as the New England Company turned down his application for support.³⁰

²⁶ Shand, Gwendolyn V., **Historic Hants County**, p. 5.

²⁷ Shand, Gwendolyn V., **Historic Hants County**, p. 6.

²⁸ Draper, Thos. F., **Essay on the History of Hants County**, p. 89.

²⁹ Robertson, Allen B., **Tide & Timber**, p. 20.

³⁰ Upton, L.F.S., **Micmacs and Colonists**, p. 167.

5.1.3 Archaeology

Two known archaeological sites are located within the study area. Site BfDa-1, known as the St. Croix Site, runs along the east bank of the St. Croix River from the St. Croix Bridge for a distance of approximately 560 m. The site is on the flat bank just behind the original riverbank. Much of it is now under lawns, houses and gardens. Both Ceramic and Archaic Period artefacts are represented. Flakes, stone tools, and large amounts of prehistoric pots were found at this site.³¹

Site BfDa-02 is a Contact Period site near Windsor where an iron hatchet was found. Site BfDb-03 is located along the southwest branch of the Avon River, about 10 km northeast of the Avon River proper near Upper Falmouth. This was an isolated find of ground slate from the Archaic Period.

During the period 1870-1885, an old Indian burying ground was discovered on King Street, in the Curry's Corner area of Windsor. A number of bodies wrapped in birch bark, the characteristic Mi'kmaq funeral fashion, were discovered while digging operations were in progress for the erection of a barn. They were reburied, and it is possible there may have been an Indian mission chapel in the vicinity.³² There is reference to this church in the anonymous newspaper series "Reminiscences of Windsor" that was published in the *Hants Journal* on November 8th, 1883:

"There is a farm, on which the Indians have long buried, and still bury their dead. Near that burial ground a Roman Catholic Chapel once stood, although no known vestige of it now exists. In connection with it this story has come down traditionally. A letter addressed to a Frenchmen at Grand Pre, was entrusted with a Micmac squaw. She, taken ill on her journey, committed it to a soldier bound for Pesegitk who handed it to his commanding officer there. Opened by him, it conveyed information that an important paper would be found in a recess near the altar of the chapel. Thither, at midnight, the magistrates with lanterns and torches, repaired, and discovered the detailed plan of a projected rising of the French and Indians."³³

³¹ Nova Scotia Museum, **Archaeological Papers**.

³² Shand, Gwendolyn Vaughn, **Historic Hants County**, p. 4.

³³ Loomer, L.S., **Windsor, Nova Scotia: A Journey in History**, p. 271.

The burying ground located south of the Chapel, near the corner of highway 1 and the Chester road, continued to be used by the Mi'kmaq long after the deportation of the Acadians.³⁴

5.2 Current Mi'kmaq Land and Resource Use

The study of current Mi'kmaq land and resource use is comprised of a study of current Mi'kmaq land and resource use sites, plants of significance to Mi'kmaq, and Mi'kmaw communities.

5.2.1 Current Mi'kmaq Land and Resource Use Sites

Current Mi'kmaq land and resource use activities are divided into five categories:

- 1) Kill/hunting
- 2) Burial/birth
- 3) Ceremonial
- 4) Gathering food/ medicinal
- 5) Occupation/habitation

Table 1 provides a description of activities undertaken at the sites.

Table 1: Description of Activities Undertaken in Current Mi'kmaq Land and Resource Use Sites

TYPE OF SITE	DESCRIPTION OF ACTIVITIES IN STUDY AREA
KILL/HUNTING	Eel, Trout, Smelt, Trapping
BURIAL/BIRTH	Burial sites
CEREMONIAL	
GATHERING	
HABITATION	

Fishing activity is concentrated north of the project area in the Kennetcook River. Trapping occurred to the east of the project area.

³⁴ Loomer, L.S., *Windsor, Nova Scotia: A Journey in History*, p. 271.

Burial Sites are not located within the project footprint.

5.2.2 *Plants of Significance to Mi'kmaq present in study area*

Plants of significance to Mi'kmaq in the study area are divided into three categories:

- 1) Medicinal
- 2) Food/Beverage
- 3) Craft/Art

The following table describes the number of plants of significance present in the study areas during the fall and spring surveys.

Table 2: Number of Plants of Significance to Mi'kmaq Present in the Study Areas Fall 2005

TYPE OF USE	NUMBER OF SPECIES PRESENT FALL 2005
MEDICINAL	81
FOOD/BEVERAGE	35
CRAFT/ART	22

Plant Study Area 1 is comprised of farmland, active select cuts, and areas of clear-cut in various stages of regeneration. Plant Study Area 2 is comprised predominantly of mixed forest habitat. Plant Study Area 2 contained the largest concentration of specimens. Specimens were scattered throughout plant Study Area 1.

Table 3: Number of Plants of Significance to Mi'kmaq Present in the Study Areas Spring 2006

TYPE OF USE	NUMBER OF SPECIES PRESENT SPRING 2006
MEDICINAL	66
FOOD/BEVERAGE	11
CRAFT/ART	9

A substantial population of a rare medicinal plant has been identified surrounding the Dump Pond, feeding into Shaw Brook.

5.2.3 *Mi'kmaw Communities*

There are no Indian Reserves located within the current use study area, however, there are two reserves located within approximately 12 kms of the project area.

The 171-hectare Horton Reserve, controlled by Glooscap First Nation, is located approximately 12 kms west of the project area on the road from Hantsport across the county line into Bishopville. Most of this land was a purchase arranged by Silas T. Rand on behalf of the Micmac Missionary Society. Rand hoped to provide undisputed control of land by Mi'kmaq in a traditional hunting and encampment site. Although other people occupied Hantsport, the Mi'kmaq of Glooscap First Nation were able to stay in an area accessible both to hunting and the tidal Avon fisheries.³⁵

The 126-hectare St. Croix Indian Reserve # 34 is located at the north end of St. Croix Lake, approximately 12 kms south of the project area. Annapolis Valley First Nation controls the St. Croix reserve.

³⁵ Robertson, Allen B., **Tide & Timber: Hantsport, Nova Scotia**, p. 54.

6.0 POTENTIAL PROJECT IMPACTS ON MI'KMAQ LAND AND RESOURCE USE

The following table presents potential project impacts on historic and current Mi'kmaq land and resource use.

Table 4: Potential Project Impacts on Mi'kmaq Land and Resource Use

POTENTIAL IMPACTS ON MI'KMAQ LAND AND RESOURCE USE	
6.01	The historic review of Mi'kmaq use and occupation documents considerable historic Mi'kmaq use and occupation in the study area, and potentially the project area. A potential impact of the project is the disturbance of archaeological resources.
6.02	The permanent loss of a substantial population of the rare medicinal plant surrounding the Dump Pond area is a potential impact of the project.

7.0 SIGNIFICANCE OF POTENTIAL PROJECT IMPACTS ON MI'KMAQ LAND AND RESOURCE USE

The concept of significance in the Mi'kmaq Knowledge Study is distinct from the concept of significance under the *Canadian Environmental Assessment Act* or the *Nova Scotia Environmental Assessment Regulations*. Significance to Mi'kmaq is evaluated only in accordance with the criteria listed below. The MKS evaluation of the significance of the potential project impacts on Mi'kmaq should be used by regulators to inform their determination of the significance of the environmental effects of the Project.

7.1 Significance Criteria

The following criteria are used to analyze the significance of the potential project impacts on Mi'kmaq use:

- 1) Uniqueness of land or resource
- 2) Culture or spiritual meaning of land or resource
- 3) Nature of Mi'kmaq use of land or resource
- 4) Mi'kmaq constitutionally protected rights in relation to land or resource

7.2 Evaluation of Significance

Table 5: Significance of Potential Project Impacts on Mi'kmaq Land and Resource Use

POTENTIAL IMPACT	EVALUATION OF SIGNIFICANCE
<p>6.01 The historic review of Mi'kmaq use and occupation documents considerable historic Mi'kmaq use and occupation in the study area, and potentially the project area. A potential impact of the project is the disturbance of archaeological resources.</p>	<p>7.2.01 Mi'kmaq archaeological resources are extremely important to Mi'kmaq as a method of determining Mi'kmaq use and occupation of Mi'kma'ki and as an enduring record of the Mi'kmaq nation and culture across the centuries. Archaeological resources are irreplaceable. Any disturbance of Mi'kmaq archaeological resources is significant.</p>
<p>6.02 The permanent loss of a substantial population of the rare medicinal plant within the Dump Pond area, feeding into Shaw Brook, is a potential impact of the project.</p>	<p>7.2.02 The rare medicinal plant species found within the Dump Pond area, feeding into Shaw Brook, is not commonly accessible throughout Nova Scotia, and is not commonly found in such concentrations; the population is therefore judged to be a significant population of the species.</p>

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.01 In the event that Mi'kmaw archaeological deposits are encountered during construction or operation of the Project, all work should be halted and immediate contact should be made with David Christianson at the Nova Scotia Museum and with Donald M. Julien at The Confederacy of Mainland Mi'kmaq.

8.02 Disturbance of the sensitive area containing the rare medicinal plant species shown in Figure 2 should be avoided during clearing/construction.

9.0 REFERENCES

- Campbell, M.W. Hants County History and Geography, 1941. West Hants Historical Society. 2002.
- Draper, Thos. F. Essay on the History of Hants County. King's College, Windsor. 1881.
- Haliburton, Thomas C. History of Nova Scotia: Volume Two. Printed and published by J. Howe. 1829.
- Julien, Donald M., O.N.S. Historical Perspective of Micmac Indians Pre & Post Contact Period. Confederacy of Mainland Micmacs.
- Loomer, L.S. Windsor, Nova Scotia: A Journey in History. West Hants Historical Society. 1996.
- Maritime Resource Management Service Inc. Natural History of Nova Scotia: Volume Two. 1984.
- McGray, Edith Alida Claire & McGray, Rev. George Stanley. Brooklyn in Retrospect. Lancelot Press Ltd., Hantsport, Nova Scotia. 1992.
- Nash, Ronald J. & Stewart, Frances L. Melanson: A Large Micmac Village in Kings County, Nova Scotia. Curatorial Report Number 67. Nova Scotia Department of Education. 1990
- Neitfield, Patricia, & Kathleen Linskey. Determinants of Aboriginal Micmac Political Structure. The University of New Mexico. 1981.
- Newcomb, Lawrence. Newcomb's Wildflower Guide: An Ingenious New Key System for Quick, Positive Field Identification of the Wildflowers, Flowering Shrubs and Vines of North-eastern and North-central North America. Boston: Little, Brown and Co., 1997.

Nova Scotia Museum. Archaeology Papers. 2005.

Rand, Silas T. Micmac Place Names in the Maritime Provinces and Gaspé Peninsula. Ottawa. 1919.

Robertson, Allen B. Tide & Timber: Hantsport, Nova Scotia 1795-1995. Lancelot Press, Hantsport, N.S. 1996.

Shand, Gwendolyn Vaughn. Historic Hants County. McCurdy Printing Co. Ltd. 1979.

Stoddard, Natalie B. The Micmac Indians. Nova Scotia Museum. 1965.

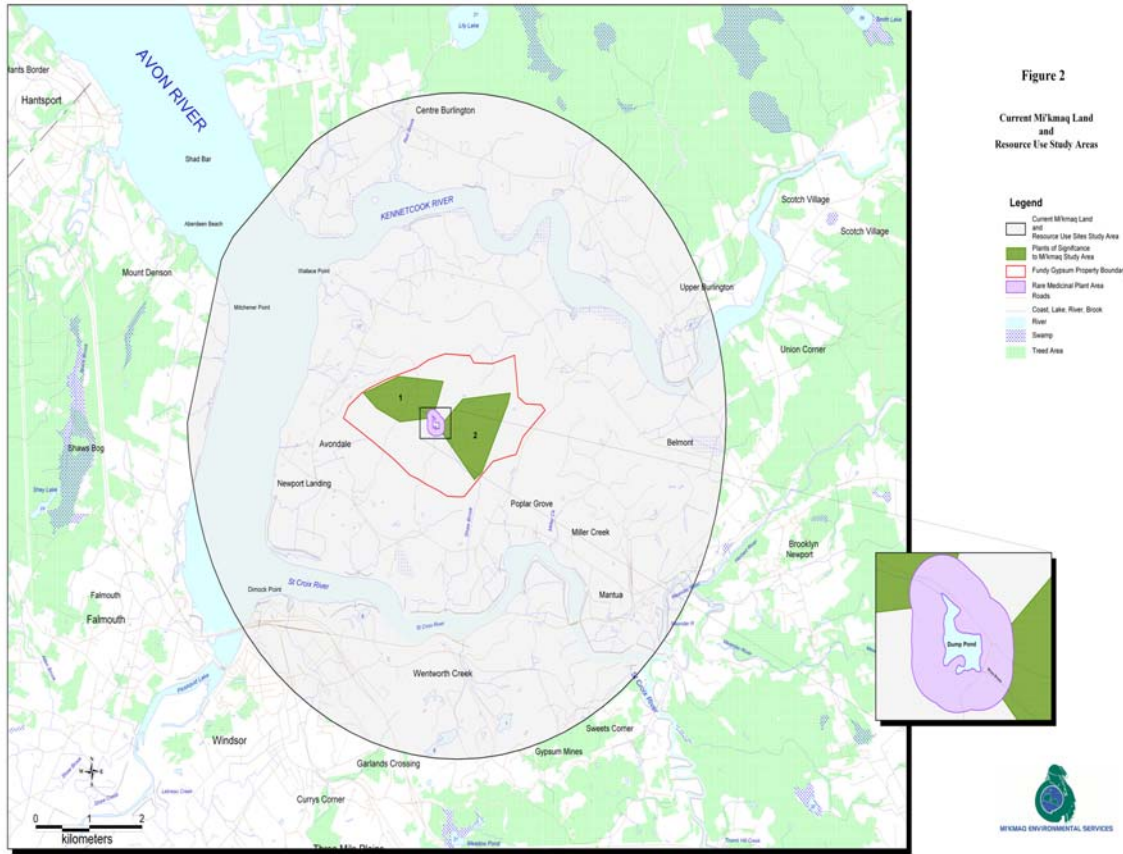
Thieret, John W. National Audubon Society Field Guide to North American Wildflowers Eastern Region. Revised Edition. New York: Alfred A. Knopf, 2001.

Upton, L.F.S. Micmacs and Colonists: Indian-White Relations in the Maritimes, 1713-1867. University of British Columbia Press, Vancouver. 1979.

Whitehead, Ruth Holmes. Nova Scotia: The Protohistoric Period 1500-1630. Nova Scotia Museum. 1993.

Wicken, William C. Encounters with Tall Sails and Tall Tales: Mi'kmaq Society, 1500-1760. McGill University. 1994.

Zinck, Marian. Roland's Flora of Nova Scotia. Volumes 1 and 2. Nova Scotia Museum and Nimbus Publishing, 1998



Fundy Gypsum Miller's Creek Expansion Project MKS

APPENDIX I

I.1

WINDSOR PLANT (FG), CRISIS RESPONSE PLAN &
EMERGENCY PROCEDURES, 2007/2008



Windsor Plant (FGC)

Crisis Response Plan & Emergency Procedures 2007/2008

**Windsor Plant
Crisis Response
&
Emergency Procedures**

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Windsor Plant Crisis Response & Emergency Procedures

Employee Guidelines

1. INTRODUCTION:

An emergency or crisis can occur at any time with minimal or no warning. The Windsor plant's Emergency Procedures & Employee Guidelines are designed to serve in organizing the response to an emergency or crisis situation. While the specific action(s) to deal with each situation would be based on the circumstances, there are general guidelines that are appropriate to all circumstances. The purpose of this document is to provide broad basic guidance to all land based employees on action(s) to take in the following types of emergencies/crises: **(Contingency plans in the event of an emergency situation involving the M/V Spanish Mist are included in Appendix 1, attached to the this program.)**

- **MEDICAL**
- **WEATHER**
 - **Severe Storms and Tornado**
 - **Earthquake**
 - **Flood**
 - **Hurricane**
- **FIRE and EXPLOSION**
- **HAZMAT INCIDENT**
- **PUBLIC EMERGENCY**
 - **Civil Strife**
 - **Sabotage**
 - **Bomb Threat**
 - **Terrorist Threat**
- **POWER FAILURE**
- **INTERNATIONAL INCIDENT**
- **PORT SECURITY ALERT/INCIDENT**

The Safety of each employee at the Windsor plant is a core value of USG Corporation and will be the overriding concern in all situations.

The Plant Manager and Department Managers administer this Emergency Response Plan as follows.

Plant Manager – or designee, will have the primary responsibility of determining if and when the Emergency Response Plan is to be implemented and will be the primary contact point.

Human Resources Manager – will insure that there are a sufficient number of individuals trained in First Aid/CPR/AED and available in the plant at all times in order to attend to matters during an emergency situation. The Human Resources Manager will be the secondary contact.

Department Managers - will be responsible for all plant equipment. He/she will insure that there are sufficient mechanics and electricians available in the plant as required should the Emergency Response Plan be put into effect.

- will be responsible for damage control in their respective departments and will take any required action to minimize any risk or exposures of employees and equipment during an emergency situation.

Office Controller - will, in conjunction with the Plant Manger and Human Resources Manager, be responsible for handling public relations and implementing additional security measures as required.

Port Facility Security Officer - will be responsible for the implementation of the Windsor Plant's Facility Security Plan, ensuring sufficient trained employees are available and communicate with Transport Canada officials as required.

Employees – will follow the instructions and guidance of Managers and Supervisors and will assist when and where instructed.

The primary objective of the Windsor Plant Emergency Response Plan is to define responsibilities and provide guidance to all employees with the result being to control and minimize the adverse effects of an emergency situation on all employees, plant operations and the surrounding community.

Remember:

- ***Be prepared 24 hours a day and 7 days a week, not just 9-5, Monday – Friday***
- ***Act early to minimize risk to employees and damage to the facility***

1.1 FACILITY EMERGENCY RESPONDER(S)

Purpose: The senior supervisor, foreman or member of the plant management team at the site shall be designated the *Facility Emergency Responder* and will assume control in the event of an emergency or crisis. In the event that the senior member of the plant management team is unfamiliar with the area and procedures, the responsibility may be delegated to another supervisor. This individual will have the necessary training and access to equipment to assist coworkers in responding to emergency/crisis situations. He/she will be responsible to establish suitable means of communications in the event of an emergency. (Radio, Cell Phone, Land Phone). The Facility Emergency Responder or designate shall be responsible to notify their immediate supervisor in the event of an emergency or crisis.

Equipment:

Five emergency response packs will be located throughout the Windsor Plant as follows:

1. Main Office, Wentworth Road
2. Hantsport Office
3. Wentworth First Aid Room
4. Miller's Creek Department Manager's Office
5. Miller's Creek First Aid Room

Facility Emergency Responders(s) shall be equipped with, and be responsible for, an emergency response pack that will include such items as the following:

- Bright yellow backpack with **USG** logo
- Emergency flashlights, w/spare batteries
- Hard hat, w/safety glasses (for those not already so equipped)
- Clip board, pad and pens
- Emergency evacuation signs to be used to mark evacuated areas
- A bright yellow jacket with the **USG** logo to be worn for easy identification in the case of an evacuation or other emergency
- A multi-channel, two-way, AM/FM radio which is available from the Miller's Creek mill, upstairs in the Hantsport change house and in the Wentworth Engineering office.
- Basic First Aid kit
- A list of emergency contact numbers
- Megaphone
- Whistle w/lanyard
- Other plant specific emergency tools, supplies or equipment

Training:

A minimum of two meetings will be held each year with all supervisors and *Facility Emergency Responder(s)* to review and practice emergency procedures and discuss any concerns or questions. *Facility Emergency Responders(s)/Alternate(s)* will also be trained in First Aid/CPR/AED. Emergency response procedures and requirements will also be reviewed with all employees at least annually.

2. EMERGENCY/CRISIS MANAGEMENT

In emergency situations the *Facility Emergency Responder(s)* is/are authorized by plant management to direct all employees in evacuation procedures. All employees are expected and required to follow the directions of the *Facility Emergency Responders*

Facility Emergency Responder(S) (FERs) & Alternate(s)

<i>SENIOR PLANT MANAGEMENT</i>					
<i>Position</i>		<i>Alternate(s)</i>	<i>Phone Work</i>	<i>Phone Cell</i>	<i>Phone Home</i>
Plant Manager	██████████		██████████	██████████	██████████
		██████████			
Human Resources	██████████		██████████	██████████	██████████
		██████████	██████████	██████████	██████████
Wentworth / Hantsport	██████████		██████████	██████████	██████████
		██████████	██████████	██████████	
		██████████	██████████	██████████	██████████
		██████████	██████████	██████████	██████████
Miller's Creek	██████████		██████████	██████████	██████████
		██████████	██████████	██████████	██████████
		██████████	██████████	██████████	██████████
Office	██████████		██████████		██████████
		██████████			
Marine Services	██████████		██████████	██████████	██████████
		██████████		██████████	
Geologic Services	██████████		██████████	██████████	██████████
Maintenance Planning	██████████		██████████	██████████	██████████

<i>FACILITY EMERGENCY RESPONDERS</i>					
<i>Department</i>	<i>FER</i>	<i>Alternate(s)</i>	<i>Phone Work</i>	<i>Phone Cell</i>	<i>Phone Home</i>
Hantsport	██████████		██████████	██████████	██████████
		██████████	██████████		
Wentworth Sink/float	██████████		██████████	██████████	██████████
		██████████	██████████	██████████	
Wentworth Mobile Shop	██████████		██████████	██████████	██████████
		██████████	██████████		
Wentworth Quarry	██████████		██████████	██████████	██████████
		██████████	██████████		
MC Mill	██████████		██████████	██████████	██████████
		██████████	██████████		
MC Quarry	██████████		██████████	██████████	██████████
		██████████	██████████		██████████
		██████████	██████████		
MC Mobile Shop	██████████		██████████	██████████	██████████
		██████████	██████████		██████████
		██████████			
Electrical	██████████		██████████	██████████	██████████

3. MEDICAL & PLANT EMERGENCIES

3.1 CATEGORIES

Non life threatening: The first involves an individual requiring medical attention, which is not life threatening, such as a sprained ankle. In this situation you should provide assistance and notify your supervisor or contact **Human Resources @ ██████████** or ██████████. They will coordinate medical assistance as appropriate.

Life Threatening: The second is a potentially life threatening medical emergency, such as a heart attack. In this situation, take care of individual first, make sure someone immediately calls **911** and then call **Human Resources @ [REDACTED] or [REDACTED]** and your Supervisor. The Facility Emergency Responder shall be responsible to post personnel at the property gates to direct emergency responders to the employee requiring assistance. The Facility Emergency Responder is responsible to maintain a post at all points of access to the property when an emergency or crisis occurs. **Be prepared to assist in admitting and directing emergency medical personnel to the appropriate area of the plant.**

Plant assistance during an emergency:

When emergency crews are called to the Windsor Plant the department Foreman will be responsible to send two (2) employees to the entrance of the location where the medical emergency has taken place. The employees will need to have two (2) radios and a company vehicle.

Employee #1- Responsibilities

- Guide emergency crews arriving on site to the location of the medical emergency.

Employee #2- Responsibilities

- Secure the entrance of the plant or quarry to limit who enters the quarry or plant.
- Will remain at the entrance of the location until the Plant Manager or designee releases the accident site after the investigation by all parties involved is completed.

The following responders should have immediate access to medical emergency:

- Police
- Ambulance
- Firefighters
- Department of Environment and Labour
- Windsor plant personnel required to be at the site (i.e. safety committee members, witnesses, department managers etc)
- Anyone else will gain access at the discretion of the Plant Manager

The following visitors to the emergency scene should be restricted unless authorized by the Plant Manager:

- Media (print and television)
- Visitors driving by the plant
- Windsor plant personnel that do not normally work in the area

3.2 LOCATION OF EMERGENCY RESPONSE KITS (First Aid / Trauma Kits & Defibrillators):

- Hantsport Office (upstairs) First Aid Room
- Wentworth Office First Aid Room
- Miller's Creek First Aid Room
- Spanish Mist

3.3 LOCATION OF CRISIS RESPONSE PLAN:

- Miller's Creek: Shop, Mill, Foreman's Offices and Office
- Wentworth: Shop, Mill, Foreman's Offices, Engineering Office and Main Office (HR)
- Hantsport: Dump-House, Maintenance Shop, Welding Shop, Control Room, Office and Tug
- Every Plant Foreman and Hourly Supervisor
- All Emergency Response Kits

4. SEVERE WEATHER

4.1 STORMS (Tornado, Hurricane, Thunder or Snow):

In the case of a severe weather warning, supervisors are advised to take the following action:

- Refer to Plant operational procedures during an emergency situation. [Exhibit B, page 17]
- Refer to emergency shut down list to insure that equipment is secured. [Exhibit A, page 16]
- While no one will be restricted from leaving the building during a warning, the Windsor Plant is designed to offer occupants significant protection. Generally individuals would be at greater risk on the street than in the Plant.

Employees due to report to work can call their supervisor to check on their work status and to see if the Plant will be operating.

4.2 EARTHQUAKE:

There is no warning system to alert people of an earthquake and while the Windsor area is generally not subject to earthquakes, the following basic guidelines are offered:

- In the case of an earthquake you should seek protection immediately; if near windows get at least 15 feet away. If possible get under a desk, table, into a doorway or other secure area to prevent being struck by falling objects.
- After the shaking subsides stay in your protected position for several minutes so that items stabilize and to confirm that aftershocks are not severe.
- Refer to emergency shutdown procedures [Exhibit A, page 16]
- Check in your area to determine if anyone is injured, trapped or requires other assistance
- Check areas such as rack storage and other overhead storage sections which might be prone to fall or collapse in an earthquake
- Remain in the building/plant for several minutes or until notified by your supervisor that the danger has passed or, if evacuation is appropriate, know the safest route.
- If on a floor above ground level, when descending stairways extreme caution should be exercised since these areas could be damaged or blocked.

It is important to be alert and prepared, you can expect to hear noise from broken glass, creaking walls and falling objects.

4.3 FLOOD:

Parts of the Windsor area may be susceptible to flooding. The primary concern for employees in this situation would be power interruption. The Windsor Plant is equipped with multiple power feeds. However, general services could be disrupted. Plant management will provide additional guidance as appropriate and will notify all supervisors as to appropriate actions.

The Facility Emergency Responder is responsible to ensure that emergency shutdown procedures are initiated.

5. FIRE or EXPLOSION

It is the Windsor plant's policy to evacuate in the case of any fire that cannot be immediately extinguished with a fire extinguisher. Do not attempt to fight a fire involving the ammonium nitrate truck, the ammonium nitrate storage silo, or any buildings or vehicles used to transport or store explosives or blasting products. Evacuate the area. The designated assembly areas are listed in Section 11.

In the event of a fire, call **911** immediately. **next call your Department Manager** ([REDACTED] in Wentworth or Hantsport, [REDACTED] in Miller's Creek and [REDACTED] on the Tug) and the **Human Resources Department** @ [REDACTED] or [REDACTED] if possible. The local Fire Departments will visit the plant at least annually for a familiarization tour and plant personnel will conduct monthly fire prevention inspections.

6. INCIDENTS INVOLVING AMMONIUM NITRATE and/or EXPLOSIVES:

Ammonium Nitrate: As stated by Term 10 of the Fundy Gypsum Company manufacturing certificate, any incident involving the Process of Vehicle #16, (Nitrate Truck) the Explosives Regulatory Division (ERD) must be informed. The report shall be rendered to the Chief Inspector of Explosives immediately upon the occurrence of any theft or attempted theft of explosives or any accident or unusual occurrence that may arise at the site that involves any explosive material whether or not accompanied by ignition of the material, injury to personnel or damage to property. These reports should not be delayed for investigation as to the cause, but it is essential that immediate notification be given of the actual occurrence of any such event. Outside of normal working hours, if an inspector must be reached, a commissionaire of the ERD's office should be called at [REDACTED].

If such an incident should occur the Department Manager and/or General Foreman are to inform the Explosives Regulatory Division (ERD) in Ottawa by fax [REDACTED] or phone [REDACTED].

Explosives: Where a vehicle transporting explosives is involved in an accident, fire or other incident that causes a delay in the delivery of explosives other than a delay due to a vehicle breakdown, damage to a vehicle or to the explosive or if any quantity of the explosive escapes from any packaging or vehicle that represents a danger to health, life, property, or the environment or when there is an unintentional explosion or fire:

The blasting supervisor, foreman, General Foreman or Department Manager shall immediately notify the local emergency services and CANUTEC at (613) 996 – 6666.

Per the ***Emergency Response Assistance Plan 2-0161*** (See Appendix 1), the first contact is responsible to activate the plan.

7. HAZMAT INCIDENT (SPILL)

The Windsor Plant complies with both federal and provincial regulations on Hazard Communications. In the event of a spill, immediately contact your Supervisor and/or Department Manager. If non-toxic (Petroleum based products), contain the spill. Spill kits are located throughout the plant. Additional supplies are available in the Miller's Creek Storeroom.

7.1 HOW TO RETRIEVE A MSDS:

1. To request a MSDS form, call 3E Company MSDS On-demand. There is a sticker on every phone (white, yellow and black) indicating the phone number [REDACTED]. There should also be red or yellow signs (8 ½ X 11) posted in your area indicating the same details.
 - a. The information they will require is:
 - i. Product Name
 - ii. Product #
 - iii. Manufacture Name
 - iv. UPC Code
 - v. Manufacture's Phone #
 - vi. Your fax number
2. Located next to the phone you called from is a small yellow (8 ½" X 5") sign that indicates the closest fax machine to you and its number. Give 3E Company this fax number.
3. After you have completed all the steps in 1 and 2 you should receive a fax in 5 minutes or less of the MSDS you requested.

8. PUBLIC EMERGENCY

8.1 CIVIL STRIFE:

In the event of a civil disturbance, riot or other disruptive activity affecting the Windsor Plant, appropriate action will be taken to insure the safety of all employees. This action could include:

- Security at the Plant entrances will be increased and a review of the need for individuals to have access to or be in the Plant.
- The local Police Department will be contacted for additional security
- Access to the Plant will be restricted to employees only.

Civil strife could also involve one or more individuals entering your work area with the intention of disrupting normal operations. In this situation you should:

- Be calm and courteous, so as not to provoke or elevate an incident.
- Notify your Department Manager and the **Human Resources Department** @ [REDACTED] or [REDACTED] for assistance.

If you witness or suspect a civil strife type situation in another area of the Plant please avoid the situation and notify your Department Manager and the **Human Resources Department** @ [REDACTED] or [REDACTED] immediately.

In either of the above situations plant evacuation or possibly even closure may be required. Please refer to the Plant Evacuation or Closure section.

8.2 SABOTAGE:

Sabotage can take a wide variety of forms and involve various levels of sophistication. Any suspicion of sabotage, regardless how insignificant, should be immediately reported to your supervisor.

8.3 BOMB THREAT

If you receive a call of a bomb threat try to find out the following information (see Bomb Threat Checklist [Exhibit E, page 20]):

Questions to ask while on a bomb threat call:

- When will the bomb detonate?
- Where is the bomb right now?
- Who placed the bomb and why?
- What is the caller's name?

In addition, please listen for any other clues such as; background noises, accents, etc. If you should discover a suspicious package, box etc. you should not attempt to handle it [Exhibit D, page 19].

Immediately notify your Department Manager and the **Human Resources Department** at **798-6015 or 798-6014** and the Department Manager, General Foreman and/or Foreman of the affected Department.

8.4 SUSPICIOUS MAIL

In the event of suspicious mail, the same procedures required for a bomb threat should be followed. Individuals should be on alert for unusual packages/envelopes that raise suspicions/ questions such as:

- Lopsided or bulky packages/envelopes
- Strange Odour
- Badly typed or written addresses/labels
- No return address
- Address and title only (no name)
- Incorrect title
- Too much postage
- Too little postage
- Excessive wrapping, tape or string
- Oily stains, discolorations, powder or crystallization on wrapper.
- Return address appears to be false or non-existent
- Or simply that there is something suspicious about the letter or package.

Such packages should not be opened and should be put aside in a sealed container, out of the way and the authorities alerted.

If individuals who handle the mail would feel more comfortable wearing latex gloves, they are readily available. A diagram of items to what to be aware of with suspect packages is provided in Exhibit D, page 19.

8.5 TERRORIST THREAT:

In light of events over the past several years, safety measures for all contingencies must be considered. In the case of a possible terrorist threat to the Windsor Plant or the immediate surrounding area, the Plant may be evacuated or closed as appropriate following the procedures outlined in the “Plant Evacuation or Closure” section.

9. POWER FAILURE:

The Windsor Plant has several power feeds into the facility to maintain the continuity of power in an upset condition. Depending on the cause, extent and anticipated length of the emergency, it may be required that the Plant be evacuated or closed (see, Plant Evacuation or Closure, page 10). It is important to remain calm and realize that only limited lighting and other services will be available. Your Supervisor will provide details, as they become available.

10. INTERNATIONAL EMERGENCY:

An international emergency may or may not have a direct impact on operations within the Windsor Plant. However, it might have an impact on a USG employee who is traveling at the time of the incident. USG Corporation maintains a relationship with SOS Services for emergency assistance for all employees when traveling internationally. All international travelers are provided with an emergency medical kit, which includes an SOS Emergency card that explains how to use the service.

In addition, if you or members of your family need to contact USG Plant Management for special assistance they should call the Plant offices which are open Monday through Friday from 8:00 a.m. to 5:00 p.m. The main number is **902-798-4676**. The **USG Emergency Hotline** number is [REDACTED].

The Plant should also maintain a travel schedule (flight times, what locations are being visited on which dates, contact persons and phone numbers at those locations, etc.)

For further information, refer to the Travel section on USG Connections.

11. PLANT EVACUATION or CLOSURE

11.1 EVACUATION:

Should an evacuation be required the following procedures will be utilized:

- The Supervisor will first be notified by the Plant Manager or designee and the Human Resources Manager or designee to evacuate the plant as well as the designated assembly area(s) (see, Assembly Areas/Meeting Points, page 10).
- The Supervisor will inform all employees that evacuation is required and the assigned assembly area(s).
- You should stay in the assembly area to receive further instructions. It is important for all employees to remain in the designated assembly area(s) so that it can be verified that everyone is out of the plant/building.
- When instructed to evacuate, employees **must** comply quickly since time is critical.
- Persons that volunteered to assist disabled employees should provide assistance as required.
- No one should leave until all employees are accounted for.
- Employees will be sent to their homes and contacted by their Supervisor for information on when the plant will resume operations.
- The Supervisor or designate will then place signs in each area of the plant that has been evacuated and checked to insure no one remains.

11.2 ASSEMBLY AREAS / MEETING POINTS:

The Windsor Plant's designated assembly areas are:

- Miller's Creek – On the east side of the storage shed
- Wentworth – Watchpersons building
- Hantsport - Watchpersons building

11.3 **CLOSURE:**

A variety of situations could develop requiring the Windsor Plant to be closed such as a snowstorm, hurricane, flood, etc. If the Plant is being closed during operating hours due to an emergency you will be advised by your supervisor. If the Plant is being closed during non-operation hours, employees will be contacted and told of the closure along with any other details as appropriate (i.e. when operations can be expected to resume).

12. EMPLOYEE ASSISTANCE PROGRAM (EAP)

In any traumatic event or emergency situation, the toll on human emotions must also be considered in the aftermath. -Harris-Rothenberg International, our EAP provider, is best equipped to deal with this aspect of such an event. They are available at:

- Outside Chicago at: [REDACTED]
- In the Chicago area at: [REDACTED]
- 24-hour Crisis Line at: [REDACTED]
- On the WEB at: www.harrisrothenberg.com

13. EMERGENCY COMMUNICATIONS & NOTIFIND:

In some emergency situations, normal communication methods may be inoperative or overloaded. A list of all authorized cell phones in the Plant should be kept for such an eventuality. Also an emergency call list should be established for both incoming and outgoing calls. This will enable families to contact or check on employees working at the time of the emergency and will allow working employees to contact their families at home.

NotiFind is a web-based tool that enables the plant to quickly and effectively contact key personnel, deliver messages, solicit responses, and receive important data via mobile phone, landline, pagers, e-mail, fax, PDA, SMS and Blackberry®. NotiFind's messaging capability is able to send out thousands of voice messages and text messages simultaneously.

Should the need exist to activate the NotiFind system, the Human Resources Manager will send out the appropriate message using the NotiFind system to notify employees of local disruptive events, the status of events or to solicit the well-being of employees.

14. PORT SECURITY

Security regulations prohibit including the Windsor Plant's Facility Security Plan in this program. In the event of an emergency or crisis involving Port Security, immediately contact the Port Facility Security Officer, Heather Gatza @ [REDACTED].

Exhibit "A"

Plant Shut Down Action List

The following actions may need to be taken in the even of a crisis or emergency:

- 1.) All equipment to be shutdown using normal shutdown procedures.
- 2.) Power will be shut off at appropriate location prior to substation. This must only be completed by qualified electricians.
- 3.) All building doors are to be closed and properly secured.
- 4.) All equipment at or on the dock is to be stowed and/or secured (if applicable).
- 5.) All Plant vehicles are to be fully fueled if possible.
- 6.) All Plant gates are to be secured by last person exiting the property.

Exhibit "B"

Windsor Plant's Response Procedures

 **Emergency/Crisis Occurs** 

Call 911 for emergency services
Contact Department Manager
Contact H.R. Manager
Dept Manager or H.R. Manager to Contact necessary regulatory agencies
Dept Manager or H.R. Manager to Contact Plant Manager
Plant Manager to contact USG Safety & Regional V.P.

**EMPLOYEE
SAFETY**

H.R. Manager

Evacuation
First Aid
Additional Medical
Family Notification
Document Injuries
Injury Report
Complete Forms

**EQUIPMENT SAFETY, DAMAGE
CONTROL AND SHUTDOWN**

Department Manager

Evacuation
De-energize Power (to be assigned to
electrician)
Isolate systems
Emergency Personnel
Liaison
Gather technical information
Document Emergency Personnel on-site

**General Foreman / Foreman (at Dept.
Managers Direction)**

Head Count
Guard Plant Gates
Keep Press of Property
Control Fire / Spill
Direct Emergency Personnel
Assist Emergency Personnel
Move / Cover / Secure Equipment & Materials

**PUBLIC
RELATIONS**

Plant Manager

Evacuation
Issue press release
Obtain copies of new
releases
Record All Media on
site
Hold Employee
Meetings

Exhibit "C"

INITIAL STATEMENT TO PRESS

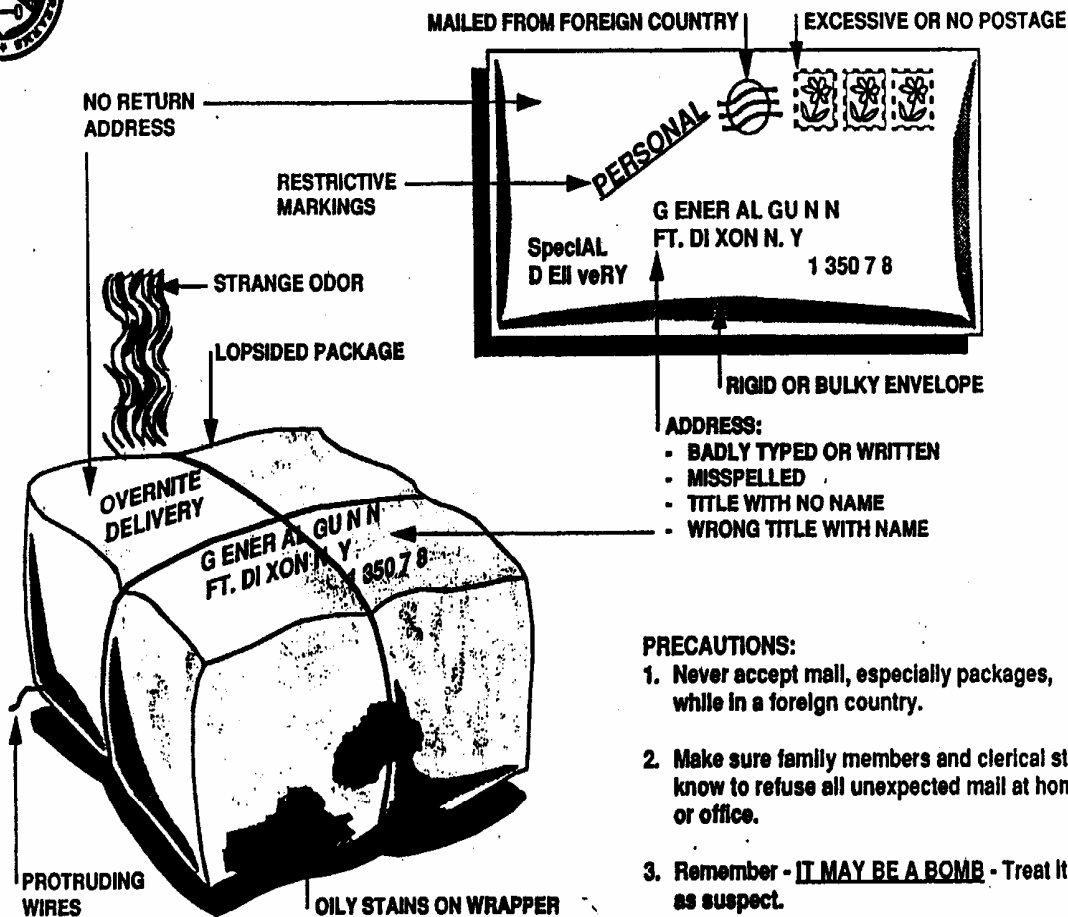
[REDACTED]

[REDACTED]

Suspect Package - Letter



WARNING! Suspect Letter and Package Indicators



FOR INFORMATION ON BOMB SECURITY OR BOMB THREATS, CONTACT YOUR LOCAL ATF OFFICE.

Exhibit "E"

BOMB THREAT CHECKLIST

Exact time of call _____

Exact words of caller _____

QUESTIONS TO ASK (ask questions to keep caller on the line)

- 1. When is bomb going to explode? _____
- 2. Where is the bomb? _____
- 3. What does it look like? _____
- 4. What kind of bomb is it? _____
- 5. What will cause it to explode? _____
- 6. Did you place the bomb? _____
- 7. Why? _____
- 8. Where are you calling from? _____
- 9. What is your address? _____
- 10. What is your name? _____

CALLER'S VOICE (circle)

Calm	Disguised	Nasal	Angry	Broken
Stutter	Slow	Sincere	Lisp	Rapid
Giggling	Deep	Crying	Squeaky	Excited
Stressed	Accent	Loud	Slurred	Normal

If voice is familiar, whom did it sound like? _____

Were there any background noises? _____

Remarks: _____

Person receiving call: _____

Telephone number call received at: _____

Date: _____

Report call immediately to: _____

CONTACT LIST / EMERGENCY COMMUNICATIONS

1. Ambulance Service 911
2. Dept. of Environment & Labour 1-800-565-1633
[REDACTED]
3. Occupational Health & Safety 1-800-952-2687
[REDACTED]

*MUST BE CONTACTED AS WELL AS DEPARTMENT OF ENVIRONMENT & LABOUR WHEN DEALING WITH CHEMICAL FIRES OF ANYTHING THAT CAN ADVERSELY AFFECT A PERSONS HEALTH.

4. Public Safety/Office of the Fire Marshal: 1-800-559-3473
5. All Fire Departments 911
Fred Fox, Windsor Fire Chief 902-798-3204 (res.)
6. All RCMP 911
Windsor Rural & Highway Detachment 902-798-2207
7. Hospital 902-792-2000
Emergency 902-792-2056
8. Emergency Measures Organization (E.M.O.) 902-679-6100
[REDACTED]
- West Hants Coordinator 902-798-8391 (bus.)
Rick Sherrard 902-798-5503 (res.)
9. Nova Scotia Power (Outages) 1-877-428-6004
(Service & Accounts) 1-800-428-6230
10. ORICA Explosives 902-568-2527
Peter Doucette

FUNDY EMPLOYEE PHONE LIST

<u>EMPLOYEE</u>	<u>OFFICE</u>	<u>HOME</u>	<u>CELLULAR</u>
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

USG EMERGENCY PHONE NUMBERS:

Occupational Safety & Health

[REDACTED]

Environmental

[REDACTED]

Product Safety

[REDACTED]

Labor/Regulatory Counsel

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

I.2

EMERGENCY RESPONSE ASSISTANCE PLAN 2-0161, FOR APPLICATION DURING
EMERGENCIES IN THE TRANSPORTATION OF EXPLOSIVES

Fundy Gypsum Company



EMERGENCY RESPONSE ASSISTANCE PLAN 2-0161

FOR APPLICATION DURING EMERGENCIES IN THE TRANSPORTATION OF EXPLOSIVES

**Revised
July 2006**

**Updated/Reviewed
February, 2007
January 2008**

TO ACTIVATE CALL XXXXXXXXXX

XXXXXXXXXX

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

INTRODUCTION

Fundy Gypsum Company (FGC) transports products regulated under the **Transportation of Dangerous Goods Act and Regulations** that requires **Emergency Response Assistance Planning (ERAP)**.

This plan is designed to meet the requirements under Part 7.15 to 7.17 of the Transportation of Dangerous Goods Regulations.

It is the policy of FGC to satisfy all applicable laws and regulations dealing with the handling, transportation and use of explosives.

All employees of the company involved with the handling, transportation and use of explosives must have a clear understanding of the contents of this plan, know their roles and responsibilities and the roles and responsibilities of others implicated. Key personnel must be familiar with emergency response equipment, where it is located, how to access it quickly and must act in an efficient manner when called upon.

The purpose of this ERAP document is to outline transportation emergency procedures, to list the resources available within FGC to respond to transportation incidents.

FGC is the distributor of explosives from Miller's Creek to Wentworth and back. The principal addresses of the company are:

MAIN OFFICE

**Fundy Gypsum Co.
669 Wentworth Rd.
Hants Co.
Nova Scotia
PO Box 400 Windsor
N.S. B0N 2T0
TEL: 902-798-4676
FAX: 902-798-5639**

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

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FGC operates Gypsum Mines at **Wentworth Rd.** and **Mantua Hants Co.** Telephone and fax numbers are as follows:

MAIN OFFICE

TEL: 902-798-4676

FAX: 902-798-5639

FGC transports explosive products and Ammonium Nitrate between Miller's Creek Mine magazines at Mantua, Hants Co, Nova Scotia and the Wentworth Mine, Windsor Nova Scotia.

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

PREPAREDNESS

FGC uses trucks equipped to meet all applicable regulations covering the transport of explosives. These trucks are the only ones authorized to carry explosives. It is the responsibility of the driver to ensure that transportation is carried out in a safe, legal manner. That all safety equipment is present and operational, that the required placards are displayed and that all necessary documentation accompanies the vehicle.

The documentation kept in the vehicle at all times includes:

- applicable Provincial Vehicle Registration Certificates.
- copy of FGC. ERAP Summary.
- List of drivers authorized to operate the vehicle.

While underway and carrying explosives, the driver must have in his possession a correctly completed Bill of Lading and a Certificate of Training.

A document titled "**What to do When Someone Calls**" as well as an **Emergency Response Telephone List** is posted at the activation number phone.

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

SCOPE OF PLAN

The aim of FGC., through timely and effective action, is to reduce the risk to the public, property, and the environment from the hazards of the explosive products carried, should there be an incident. This can be done by:

- Advising first responders on the true hazards of the explosives.
- Transferring explosives from non-operating to operating vehicles.
- Recovering all explosives by searching; identifying damaged explosives, repackaging damaged explosives for safe transportation and disposing of or arranging for the disposal of same.
- Advising first responders on fire fighting options, if necessary.
- Advising first responders on evacuation distances, assisting them to accomplish this and in extremely urgent situations acting to do so ourselves.

We may find ourselves responding to any of the following :

Vehicle Fire

Motor Vehicle Accident – Causing Vehicle to be Disabled

Motor Vehicle Accident Resulting in Load Being Spilled on Road
or Private Property

Motor Vehicle Accident Involving Another Vehicle Carrying Dangerous
Goods

Fires at or Near our Storage Facilities

Criminal Activity

Our goal is to prevent any of the above from escalating.

Our duty is to get the best possible advice to our employees and any persons responding to emergency.

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

DUTIES and RESPONSIBILITIES

First Contact

- (1) Receives emergency call in the office.
- (2) Activates the plan.
- (3) Completes Emergency Reporting Form (Appendix VIII) to collect relevant information about the incident.
- (4) Alerts Dept. Manager or their designate and briefs them on the incident.
- (5) Remains at the phone to serve as communications liaison between personnel at the site and other people involved until relieved.
- (6) Has access to the current Material Safety Data Sheets (MSDS) for all hazardous materials used by FGC.

Plant Manager

- (1) Is the ultimate authority in charge of all company involvement in the response.
- (2) Submits written report to TDG Directorate, **within 30 days**, using the Transport Canada Dangerous Occurrence Report (DOR) Form (see Appendix V) as per Section 9:14 of the TDG Regulations.
- (3) Deals with incoming government and media inquires during emergency.
- (4) Notifies appropriate governmental agencies of incident. (see Appendix III)

Department Manager

- (1) Maintains direct contact with the Technical Advisor and Home Coordinator to arrange for additional help and equipment as required.
- (2) Travels to the scene and acts as the coordinator with all individuals and organizations present.
- (3) Updates the Emergency Response Plan as changes occur and advises Transport Canada of any major changes to same.

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

Coordinator

- (1) Activates the plan.
- (2) Maintains direct contact with the Technical Advisor and Home Coordinator to arrange for additional help and equipment as required.
- (3) Travels to the scene and acts as the coordinator with all individuals and organizations present.

Home Coordinator

- (1) Assists Coordinator by obtaining resources and dispatching equipment as required by Coordinator.
- (2) Assists in advising appropriate resources of the emergency and possibility of the need For supportive action.

Technical Advisor

- (1) Advises Coordinator of specific hazards and actions needed to safely reduce the exposure of the public to any dangers.
- (2) Organizes and directs clean up and repackaging of any product required, in consultation with the Coordinator or the supplier's representative.
- (3) Maintains a current Nova Scotia Blasters Certificate issued by the Department of Labour in conjunction with Department of Education.

Trained Hands

- (1) In the event of a motor vehicle accident involving a truck carrying explosives, if not injured or requiring medical attention, drivers and/or helpers must stay with the vehicle after notifying the proper authorities.
- (2) Work under direct supervision of the Coordinator or the Technical Advisor.

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

RESPONSE ORGANIZATION

The key personnel with responsibilities in the event of a transportation accident are:

At the scene:	Coordinator Technical Advisor Trained Hands	At office:	First Contact Home Coordinator
		Others:	Orica Representative

RESPONSE LIST

Name	Title/Experience	Duty
██████████	Blasting Supervisor Class II Blaster, TDG, Supervisor	Coordinator Home Coordinator Technical Advisor First Contact
██████████	Blasting/Quarry Supervisor Class II Blaster, TDG, Supervisor	Coordinator Home Coordinator Technical Advisor First Contact
██████████	Blasting/Quarry Chargehand Class II Blaster, TDG, Supervisor	Coordinator Home Coordinator Technical Advisor First Contact
██████████	Blasting/Quarry Chargehand Class II Blaster, TDG, Supervisor	Coordinator Home Coordinator Technical Advisor First Contact Trained Hand
██████████	Senior Mine Technician Blasting/Quarry Supervisor Class II Blaster, TDG, TWS, TCP, Supervisor	Coordinator Home Coordinator Technical Advisor First Contact

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

██████████	Mine Technician Class III Blaster, TDG, TWS, TCP	Coordinator Home Coordinator First Contact Trained Hand
██████████	Quarry General Foreman Supervisor	First Contact Home Coordinator Coordinator
██████████	FGC Operations Manager Supervisor	First Contact Home Coordinator Coordinator
██████████	FGC H.R. Manager Supervisor	First Contact Home Coordinator Coordinator
██████████	M.C. Quarry Eng. Supervisor	First Contact Home Coordinator Coordinator
██████████	TDG Trainer Supervisor	TDG Technical Trainer
██████████	Blasting Chargehand Class II Blaster, TDG, TWS, TCP	Trained Hand Technical Advisor Coordinator First Contact
██████████	Blaster Class II Blaster, TDG, TCP	Trained Hand Technical Advisor
██████████	Blaster Class II Blaster, TDG,	Trained Hand Technical Advisor

Fundy Gypsum Company

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EMERGENCY RESPONSE ASSISTANCE PLAN

NUMBER: 2-0161

TCP

[REDACTED]

Blaster
Class III Blaster, TDG,
TCP

Trained Hand

[REDACTED]

Blaster
Entry Level Blaster, TDG,
TCP

Trained Hand

[REDACTED]

Blaster
Entry Level Blaster, TDG,
Supervisor

First Contact
Home Coordinator
Trained Hand
First Contact

[REDACTED]

Blaster
Entry Level Blaster, TCP,
TDG

Trained Hand

[REDACTED]

Blaster
Entry Level Blaster, TCP,
TDG

Trained Hand

[REDACTED]

Storeroom Chargehand,
TDG

First Contact

[REDACTED]

Storeroom, TDG

First Contact

[REDACTED]

Storeroom, TDG

First Contact

[REDACTED]

Storeroom, TDG

First Contact

[REDACTED]

Storeroom, TDG

First Contact

[REDACTED]

Storeroom, TDG

First Contact

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RESPONSE ORGANIZATION

Primary Responsibility for activation of the ERAP is with the First Contact. In their absence responsibility would go to a designate from the above list. Most individuals from this list are cross trained and could act in more than one capacity.

Telephone numbers of employees for contact during working hours and after hours are listed in Appendix II. General contact numbers are shown in Appendix III. These are displayed in the ERAP Summary which is kept in each vehicle and posted at the offices of the activation number (Storeroom).

PLAN ACTIVATION and RESOURCE MOBILIZATION

PLAN ACTIVATION

The plan is activated by calling FGC [REDACTED] (Storeroom) during business hours.

Once an emergency call has been received the Dept. Manager, or their designated Coordinator will be briefed on the circumstances. The Coordinator will then brief/consult onsite personnel, and will activate the Emergency Response Plan. The Coordinator will ensure that calls have been made to: any trained hands he feels appropriate to assist in the company response; and to the supplier's representative.

These people will assist in collecting the necessary equipment to ensure that the emergency can be safely answered. This should include copies of MSDS documents, safety placards and warning signs. The group will then proceed to the site of the emergency at the direction of the Coordinator.

Transportation to the scene will be by company vehicle, arranged by the Coordinator.

TELEPHONE ADVICE

Should the incident be considered relatively minor and not requiring the attendance of additional company personnel, the coordinator or the suppliers representative will maintain contact with the first responders, on scene, to provide information in response to their concerns.

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When responding to telephone inquiries, it is vitally important to bear the safety of the public and those at the scene in mind. If in doubt consultation with trained individuals from the suppliers or manufacturers will take place. These are listed as resource people in this plan (see page 11).

COMMUNICATIONS

The Coordinator will establish a communication schedule between the Home Coordinator and the site of the incident to ensure quick response to any problems arising and to provide accurate updates as the response progresses. This could be via telephone, two way radio or mobile telecommunication equipment depending on the location of the incident and equipment that is readily available.

RESPONSE EQUIPMENT

A list of mobile equipment available to answer an emergency can be found in Appendix IX. Maintenance of all equipment is carried out on a scheduled basis; logs are available at the nearest office as listed in the introduction.

TRAINING AND EXERCISES

Certificates of Training with respect to the Transportation of Dangerous Goods Act are required for those individuals acting in a supervisory capacity at the scene of emergencies as well as for those individuals defined by the TDG Regulations. Others who are not holders of TDG certificates may work under direct supervision of a certificate holder.

Training in, emergency situations, will take place during regular safety meetings. All new employees will be required to read and sign off the attached record as an indication of having understood the plan.

RESOURCES

MUTUAL AID

Atlantic Explosives Ltd, are distributors of explosives and have an approved **ERAP** filed.

<u>Name</u>	<u>Business</u>	<u>Residence</u>	<u>Cellular</u>
██████████	██████████	██████████	██████████
██████████████████	██████████	██████████	██████████

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TRANSPORTATION ACCIDENTS INVOLVING

POTENTIAL ACCIDENT ASSESSMENT

Accident site scenarios	Consequences	Actions at scene	By Whom
Motor vehicle accident with fire but without detonation	Possible injuries or death from MVA	Medical attention	First Responders
	Fire	Fire Suppression	First Responders
	Evacuation of Hazard Zone well beyond transportation corridor implemented	Evacuation ordered by Civic Authorities	First Responders
	Traffic and Commerce disrupted until threat of detonation eliminated	Traffic halted, detoured, businesses closed and people leave homes	First Responders
	Questions re: Packaging	Provision of information re: Packaging of explosives	Technical Advisor
	Potential for theft	Constant security protection against theft	Coordinator/Police
	Significant risk to public safety, possible evacuation	Advice to First Responders regarding hazards, fire fighting options and zone limits for evacuation	Technical Advisor
Traffic and Commerce disrupted until explosives picked up and removed (if applicable)	Recover scattered explosives <ul style="list-style-type: none">- Search- Locate- Inspect- Analyze damaged explosives- Recover- Repackage and ship- Dispose if necessary	Coordinator/Police	

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EMERGENCY RESPONSE ASSISTANCE PLAN

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Accident site scenarios	Consequences	Actions at scene	By Whom
Motor Vehicle Accident with fire and Detonation	Injuries and death from MVA and from detonation	Medical assistance	First Responders
	Fires from Detonation	Fire suppression	First Responders
	Major disruption to traffic and commerce	Traffic halted, detoured and businesses forced closed	First Responders
	Property damage potentially very significant	Peoples' homes not habitable – arrange alternate housing	Civic Provincial Authorities
	Highest risk to Public Safety Possible Evacuation	Advice to first responders regarding hazards, fire fighting options and zone limits for evacuation	Technical Advisor
	Questions re: Packaging	Provisions of information re: Packaging of explosives	Technical Advisor
	Potential for theft	Constant security protection against theft, if applicable	Coordinator/Police
	Traffic and commerce disrupted until explosives picked up and removed (if applicable)	Recover scattered explosives, if applicable: - Search - Locate - Inspect - Analyze damaged explosives - Recover Repackage and ship - Dispose if necessary	Technical Advisor Coordinator/Police
Public demand for Inquiry	Major accident investigation	Many Authorities	

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Accident site scenarios	Consequences	Actions at scene	By Whom
Simple motor vehicle accident No scattered explosives	Possible injuries or death from MVA	Medical attention	First Responders
	Possible traffic disruption	Detour/ Halt traffic	First Responders
	Questions re: Packaging	Provision of information re: Packaging of explosives	Technical Advisor
	Perceived risks by First Responders from Explosives	Advice to First Responders regarding true hazards	Technical Advisor
	Potential for theft	Constant security protection against theft	Coordinator/Police
		Transfer load of explosives to operational vehicle for safe and legal transport	Coordinator/Police
Low/ Modest Frequency Low Consequences			

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Accident site scenarios	Consequences	Actions at scene	By Whom
<p>Motor Vehicle Accident with Scattered Explosives</p> <p>Consequences increase as Accident Escalates</p>	<p>Possible injuries and death from MVA</p> <p>Increased risk to Public Safety from scattered powder</p> <p>Questions re: Packaging</p> <p>Potential for theft</p> <p>Possible Evacuation</p> <p>Traffic and Commerce disrupted until Explosives picked up and removed</p>	<p>Medical assistance</p> <p>Possible evacuation ordered by Civic Authorities</p> <p>Provisions of information re: Packaging of explosives</p> <p>Constant security protection against theft</p> <p>Advice to First Responders regarding true hazards</p> <p>Recover scattered explosives, if applicable:</p> <ul style="list-style-type: none"> - Search - Locate - Inspect - Analyze damaged explosives - Recover Repackage and ship - Dispose if necessary 	<p>First Responders</p> <p>First Responders</p> <p>Technical Advisor</p> <p>Coordinator/Police</p> <p>Technical Advisor</p> <p>Coordinator/Police</p>

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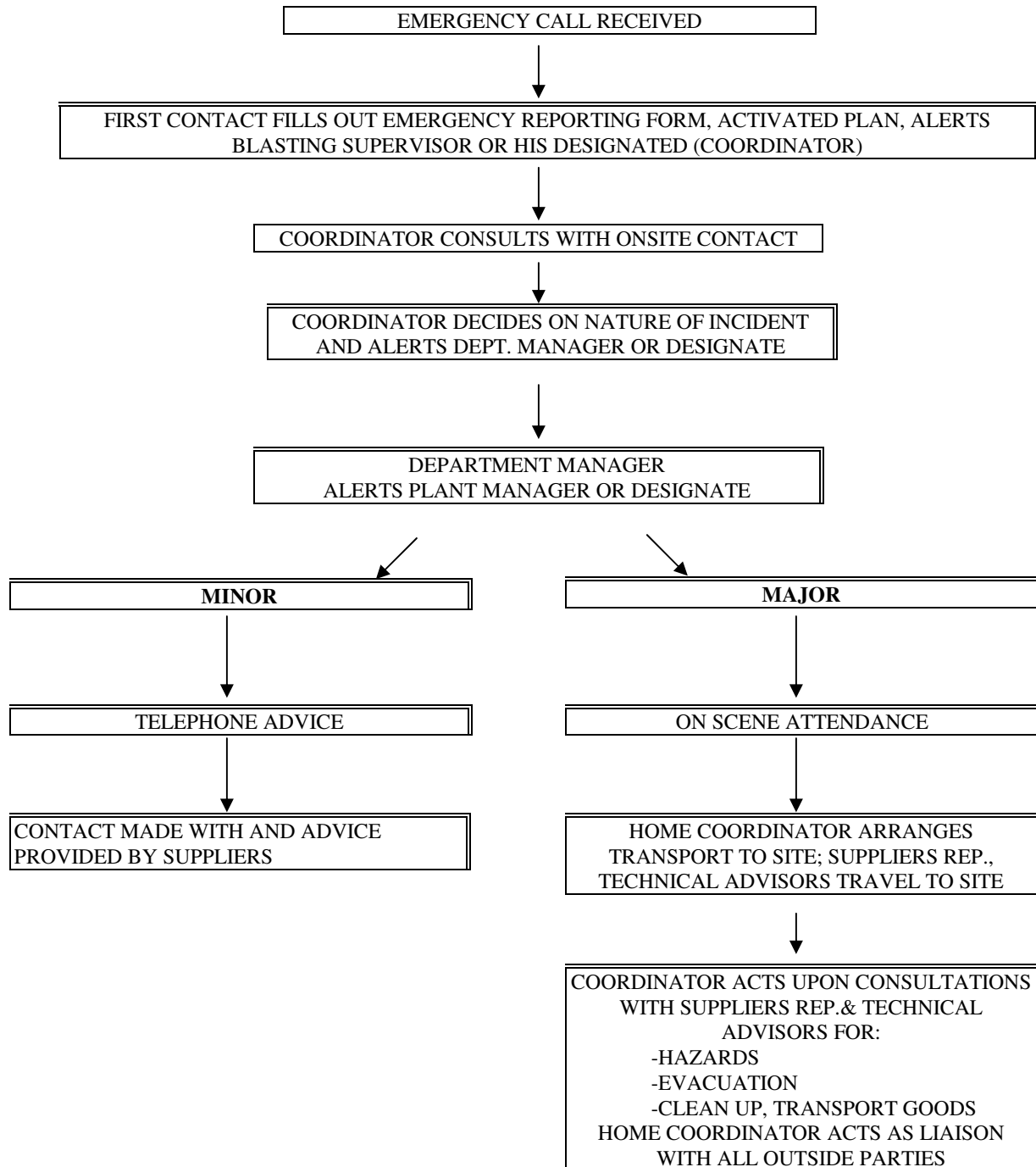
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Appendix I

Emergency Response Flow Chart



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EMERGENCY RESPONSE ASSISTANCE PLAN

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<u>NAME</u>	<u>OFFICE</u>	<u>RESIDENCE</u>	<u>CELLULAR</u>
██████████	██████████	██████████	
██████████	██████████	██████████	
██████████	██████████	██████████	
██████████	██████████	██████████	
██████████	██████████	██████████	

Appendix III

General Contact List for Emergencies

	<u>PHONE NUMBER</u>
FGC Activation number (Storeroom)	██████████
FGC Quarry/Blasting Forman	██████████
CANUTEC (Canadian Transport Emergency Centre) (Call Collect 24 hrs)	██████████
RCMP	911
FIRE Dept.	911
Ambulance	911
Atlantic Explosives Ltd.	902-568-2527
N.S. Dept. Environment & Labour	902-424-8281
Explosives Branch - Ottawa	613-995-8415
Senior Inspector, Halifax	902-426-3599
Atlantic Transport Dangerous Goods	902-426-9461

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Appendix IV

List of Authorized Explosives Transported by Fundy Gypsum Company

BOOSTER SENSITIVE

Explosive Blasting Type E	Class & Division 1.5D	UN0332
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DETONATOR SENSITIVE

Explosive Blasting Type E	Class & Division 1.1D	UN0241
---------------------------	-----------------------	--------

Boosters	Class & Division 1.1D	UN0042
----------	-----------------------	--------

Ammonium Nitrate	Class & Division 5.1	UN1942
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DETONATORS

Detonator Assemblies Non-Electric	Class & Division 1.4B	UN0361
-----------------------------------	-----------------------	--------

Handidet Non-Electric	Class & Division 1.4B	UN0500
-----------------------	-----------------------	--------

Electric Detonator	Class Division 1.4B	UN0255
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Form 22 (cont.)

7. Complete A or B

A. Dangerous occurrence during transport

Or B. Dangerous occurrence during handling or temporary storage

I. Mode of transport:

Road Air

Rail Marine

II. Type of vehicle: _____

III. Carrier (name and address):

I. Facility:

Terminal: Air Rail Road

Port: On shore On ship

Warehouse: Bulk storage plant Other

Other: _____

II. Name and address of facility:

8. Consignor (name): _____

(address): _____

9. Origin of consignment: _____

10. Destination of consignment: _____

11. Dangerous goods involved in occurrence were: In bulk Packaged In containers

P.I.N.	Classification	Shipping Name	Type of Package	Total Mass or Volume of Shipment	Mass or Volume of Estimated Loss

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Form 22 (cont.)

12. Describe the events leading to, during and resulting from the dangerous occurrence:

13. Number of deaths: _____

14. Number of injured persons requiring hospitalization: _____

15. Evacuation of surrounding area: Yes No

16. Emergency response personnel at site of dangerous occurrence:

Police Fire Department Other _____

17. Comments and additional information:

18. Information on the person completing this report:

Name: _____

Title: _____

Address: _____

Telephone Number: _____

I certify that this information is accurate to the best of my knowledge.

(Signature)

(Date)

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Appendix VI

INSTRUCTIONS TO DRIVERS & FIRST RESPONDERS

EMERGENCY ACTIONS – EXPLOSIVES – FLAMMABLE LIQUIDS & SOLID

DIVISIONS 1.1, 1.4, 1.5, 5.1

POTENTIAL HAZARDS

If subjected to heat, shock or friction:

Explosives of Division **1.1** or **1.5** will burn and may detonate in mass at any time.

Explosives of Division **1.4** may burn or detonate with projection of fragments.

GENERAL

Assess the Situation

Isolate Hazard Area.

Keep “Up-Wind” and use terrain and building for shielding.

Keep unnecessary people away. Keep away from windows.

Contact local police and activate ERAP.

EVACUATION

Hazard Area: Initial minimum evacuation distances in all directions:

<u>QUANTITY</u>	<u>DIV. 1.1</u>	<u>DIV. 1.5</u>
1,000 Kg	500 Metres	500 Metres
5,000 Kg	800 Metres	800 Metres
10,000 Kg	1,000 Metres	1,000 Metres
20,000 Kg	1,200 Metres	1,200 Metres

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Fire - Cargo

DO NOT FIGHT FIRE involving explosives if cargo is subjected to heat.

EVACUATE the surrounding area.

If possible, and **WITHOUT RISK**, use unmanned hose holders or monitor nozzles, from maximum distance to prevent fire from spreading to cargo area. Do not move cargo that was exposed to heat, except under supervision of a specialist. Keep unauthorized personnel away.

Fire – Vehicle & Equipment

Use dry chemical, sand or flooding quantities of water.

Pay special attention to tire fire as re-ignition may occur.

Spill

Eliminate all ignition sources.

Do not touch damaged containment vessels, packages or spilled material.

Do not operate radio transmitters within 100 metres of electric detonators.

Keep cellular phones 20 metres away from electric detonators.

If bulk fuel (**UN1202**) is spilling make effort to contain spillage and prevent fuel from entering manholes and drainage ditches.

Advise your First Contact of conditions at scene.

Do not clean up or dispose except under supervision of a specialist.

EVACUATION PROCEDURE

Along public highways or within municipalities advise the first emergency responders at the scene (Police or Fire) of the need to evacuate using the guidance in the **Emergency Response Assistance Plan** located in the vehicle.

It is the responsibility of local authorities to initiate such action but it is vitally important that they understand the circumstances and take the appropriate evacuation actions if there is a danger of a detonation.

Employees at the scene should assist local emergency services to the best of their ability to accomplish this.

However if action is immediately required and there are no emergency services on the scene enlist the help of other motorists to prevent access into the hazard zone until such time as the Fire Department or Police arrive.

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EMERGENCY RESPONSE DATA FOR EXPLOSIVES SHIPPED BY FUNDY GYPSUM COMPANY

Explosives of Class 1.1, 1.4, 1.5 & Oxidizer 5.1 (AN) are included in the list of products transported and stored by Fundy Gypsum Company.

1.1D – DETONATOR SENSITIVE EXPLOSIVES

UN0042 *Pentex Cast Booster*

UN0241 *Magnafrac Emulsion Booster*

Packaging - Heavy Cardboard Boxes

Hazards

1. Explosion
2. Toxic Fumes if Burning
3. Possible Water Contamination

1. Easily the most important concern. The possibility of major detonation. This could be triggered by heat, impact or lighting.
2. Burning explosives gives off toxic fumes. The area should be evacuated before this is a problem.
3. Usually water contamination is a very minor problem with Class 1.1D.

INITIAL ACTION

1. **SHUT OFF IGNITION. When exiting vehicle shut off electrical master switch and master fuel valve.** Eliminate all sources of fire. Control any spillage of fuel or oil.
NO SMOKING!
2. Extinguish any small engine fire, tire fire, etc. **only if deemed safe to do so.**
3. If detonators are included in the load separate these from the load **if deemed safe to do so.**
4. Keep all unauthorized personnel away from the area. If fire develops in or near cargo or cargo compartment, evacuate immediately to distance suggested in **Evacuation Chart** for size of load involved.
5. Wait for qualified assistance to help in handling clean up of explosives.

NOTE – If approached by person from news media advise them to contact Mike Bishop (Plant Manager) or Designate and supply telephone numbers.

EVACUATION DISTANCES - Initial minimum evacuation distances in all directions:

<u>QUANTITY</u>	<u>DIV. 1.1</u>	<u>DIV. 1.5</u>
1,000 Kg	500 Metres	500 Metres
5,000 Kg	800 Metres	800 Metres
10,000 Kg	1,000 Metres	1,000 Metres
20,000 Kg	1,200 Metres	1,200 Metres

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EMERGENCY RESPONSE DATA FOR EXPLOSIVES SHIPPED BY FUNDY GYPSUM COMPANY

1.5D BOOSTER SENSITIVE – DETONATOR INSENSITIVE – BLASTING EXPLOSIVES

UN 0332 *Apex Super 3000 Watergel*
Apex Super 4000 Watergel

HEAVY CARDBOARD BOXES
HEAVY CARDBOARD BOXES

Hazards -

1. Fire and Potential Explosion
2. Toxic Fumes
3. Water Pollution

1. Apex Super 4000 can explode violently if overheated in confined space.
2. Apex Super 4000 is difficult to initiate but have mass detonation hazard.

INITIAL ACTION

1. Keep all unauthorized personnel away from the area.
2. **SHUT OFF IGNITION. When exiting vehicle shut off electrical master switch and master fuel valve.** Eliminate all sources of fire. **NO SMOKING!**
3. Control all fuel and oil spillage.
4. Extinguish any small engine fire, tire fire, etc. **only if deemed safe to do so.**
5. If fire develops in or near cargo or cargo compartment evacuate immediately distance suggested in **Evacuation Chart** for size of load involved.
- 6 Wait for qualified assistance to help in clean up of explosives.

EVACUATION DISTANCES - Initial minimum evacuation distances in all directions:

<u>QUANTITY</u>	<u>DIV. 1.1</u>	<u>DIV. 1.5</u>
1,000 Kg	500 Metres	500 Metres
5,000 Kg	800 Metres	800 Metres
10,000 Kg	1,000 Metres	1,000 Metres
20,000 Kg	1,200 Metres	1,200 Metres

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EMERGENCY RESPONSE DATA FOR EXPLOSIVES SHIPPED BY FUNDY GYPSUM COMPANY

5.1 PRILLED AMMONIUM NITRATE

Packaging - BULK 1942

Hazards - 1. Fire and Potential Explosion
2. Toxic Fumes
3. Water Pollution

1. **Ammonium Nitrate (AN)** is an oxidizing agent – hence will supply oxygen to support combustion of fuels. It can explode violently if overheated in a confined space particularly if mixed with organic materials such as fuel oils.
2. Will emit toxic fumes (yellow, red or brown) of nitrogen oxides (NOx).
3. **Ammonium Nitrate** is toxic to aquatic life in concentrations as low as 10-100 parts/million. AN can melt at 170 and therefore begin to flow.

INITIAL ACTION

1. Keep all unauthorized personnel away from the area.
2. **SHUT OFF IGNITION. When exiting vehicle shut off electrical master switch and master fuel valve.** Eliminate all sources of fire. **NO SMOKING!**
3. Control all fuel and oil spillage.
4. Extinguish any small engine fire, tire fire, etc. **only if deemed safe to do so.**
5. If there is fire and it is deemed safe extinguish with copious amounts of water. Remember AN is water soluble so strict attention should be paid to run-off to avoid contamination of streams. AN is an oxidizer. Thus it is useless to attempt to smother the fire. Attempts to ventilate, open the van box or container, should be undertaken only if deemed safe, in order to avoid an “overheated state in a confined space” which may lead to detonation. Self-contained breathing apparatus should be used.

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6. If anyone becomes exposed to fumes from the fire (NO_x) they should be laid down in the uncontaminated area, kept warm and referred to medical attention immediately. The doctor should be alerted that the patient has been exposed to NO_x fumes. Avoid exertion.
7. If the fire is uncontrollable or deemed unsafe to combat, evacuate the area for a distance referenced in the **Evacuation Chart** for the equivalent quantity of explosives in the transport vehicle.
8. If there is no fire contain or control any leakage or run-off by digging a pit or corralling with dirt. Cover Prills with plastic to avoid dissolving by rainwater. Call for assistance by trained personnel to assist in the clean up.

NOTE: If AN is confined, one-half of its weight is considered an explosive and the area should be evacuated accordingly.

EVACUATION DISTANCES - Initial minimum evacuation distances in all directions:

<u>QUANTITY</u>	<u>DIV. 1.1</u>	<u>DIV. 1.5</u>
1,000 Kg	500 Metres	500 Metres
5,000 Kg	800 Metres	800 Metres
10,000 Kg	1,000 Metres	1,000 Metres
20,000 Kg	1,200 Metres	1,200 Metres

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EMERGENCY RESPONSE DATA FOR EXPLOSIVES SHIPPED BY FUNDY GYPSUM COMPANY

1.4B *Handidet* **UN0360**

1.4B *Electric Blasting Cap* **UN0361**

Packaging - Cardboard Boxes

Hazards - 1. Potential Explosion with Shrapnel

1. Fundy Gypsum Company transports detonators in quantities from less than a case to multiple cases. In confined areas they are capable of explosion from heat, concussion, abrasion and lightening.
2. When detonated the danger of flying metal fragments is very likely

INITIAL ACTION

1. **SHUT OFF IGNITION. When exiting vehicle shut off electrical master switch and master fuel valve.** Eliminate all sources of fire. **NO SMOKING!**
2. Control all fuel and oil leaks or spillage.
3. Extinguish any fires and oil leaks or spillage.
4. Keep all unauthorized personnel away from the area.
5. If a small quantity of detonators is being carried as part of a mixed load and there is a threat of fire remove the detonators to a safe location, **if deemed safe to do so.**
6. If there is uncontrollable fire, evacuate the area to a distance relative to the quantity of Explosives of this and other types present. Refer to the **Evacuation Chart.**
7. Wait for assistance from trained personnel before handling or removing damaged detonators.

EVACUATION DISTANCES - Initial minimum evacuation distances in all directions:

<u>QUANTITY</u>	<u>DIV. 1.4</u>	<u>DIV. 1.5</u>
1,000 Kg	500 Metres	500 Metres
5,000 Kg	800 Metres	800 Metres
10,000 Kg	1,000 Metres	1,000 Metres
20,000 Kg	1,200 Metres	1,200 Metres

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Appendix VII

WHAT TO DO WHEN SOMEONE CALLS

In the event of an emergency call regarding a transportation accident involving explosives, do the following:

1. Immediately obtain the name of the caller and a call back number.
2. Activate the Plan, Quickly complete the Emergency Reporting Form to the best of your ability.
3. Ask the caller to **stay at the phone** for a return call.
4. Locate Department Manager or their alternate. **Do not stop until contact is made.** Advise them of the situation.
5. Stand by at the phone to receive and relay information until relieved.

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Appendix VIII

EMERGENCY REPORTING FORM FOR ACCIDENTS INVOLVING EXPLOSIVES

WHO IS CALLING? **DATE:** _____ **TIME:** _____

NAME: _____ TELEPHONE: _____

ORGANIZATION: _____

ACCIDENT LOCATION: _____

CONTACT PERSON (if different from caller): _____

TELEPHONE NUMBER OF CONTACT PERSON: _____

HAVE THE POLICE (or others) BEEN CONTACTED? YES/NO Who? _____

WHAT IS THE EMERGENCY/PROBLEM? (MVA/Scattered Powder, Fire & Detonation, etc.)

EXPLOSIVES QUANTITY: _____ TYPE: _____

INJURIES: _____

PROPERTY DAMAGE: _____

UNIT NUMBER: _____ LICENSE NUMBER: _____

DRIVER: _____ CARRIER: _____

WHEN DID IT OCCUR? DATE: _____ TIME: _____

EXACT LOCATION OF EMERGENCY: (City, Town, Specific Directions)

BUSINESSES OR OTHER PLACES WITH PEOPLE IN THE IMMEDIATE AREA? (describe)

WHAT ACTION HAS BEEN TAKEN? (Medical, evacuation, fire fighting)

REQUEST FOR ASSISTANCE? _____

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Appendix IX

RESPONSE EQUIPMENT

UNIT NO.72

2004 Ford F150
COLOUR RED
¾ TON PICK-UP
WITH CAP

UNIT NO.33

(Storeroom Truck)

2001 Chev. 2500HD
COLOUR RED
¾ TON PICK-UP
WITH CAP

