

# MAR 20040009: BUFFALO HEAD HILLS

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**ASSESSMENT REPORT FOR MICREX DEVELOPMENT  
CORP.'S BUFFALO HEAD HILLS PROPERTY, NORTHERN  
ALBERTA: MINERAL PERMITS 9302030098 to 107**

**Approximate Property Location**

**Latitude: 57°, 35' N**

**Longitude: 115°, 15.0' W**

**115 km North of Red Earth Creek, North-Central Alberta**

**Completed By:**

**APEX Geoscience Ltd.**

**Suite 200, 9797 – 45th Avenue**

**Edmonton, Alberta, Canada**

**T6E 5V8**

**Completed For:**

**Micrex Development Corp.**

**156 Laurier Drive**

**Edmonton, Alberta, Canada**

**T5R 5P9**

July 14, 2004  
Edmonton, Alberta Canada

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**ASSESSMENT REPORT FOR MICREX DEVELOPMENT  
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ALBERTA: MINERAL PERMITS 9302030098 to 107**

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# **ASSESSMENT REPORT FOR MICREX DEVELOPMENT CORP.'S BUFFALO HEAD HILLS PROPERTY, NORTHERN ALBERTA: MINERAL PERMITS 9302030098 to 107**

## **SUMMARY**

APEX Geoscience Ltd. (APEX) was retained during spring 2004 as consultants by Micrex Development Corp. (Micrex) to compile all existing geological, geophysical and geochemical data for Micrex's Buffalo Head Hills diamond property and to prepare an independent evaluation of the potential of the property to host diamondiferous kimberlites. Micrex owns an undivided 100% interest a single property comprised of ten mineral permits in the Buffalo Head Hills. Micrex's Buffalo Head Hills diamond property is located in the Buffalo Head Hills covering portions of Townships 98 to 100, Ranges 6 to 10, west of the 5<sup>th</sup> meridian. Micrex's Buffalo Head Hills property encompass 10 mineral permits totaling approximately 92,160 hectares (227,727 acres) and are situated adjacent to Ashton Mining of Canada Inc.'s (Ashton) main Buffalo Head Hills property about 330 km northwest of Edmonton. Although diamond exploration at the property is still in the early stages, the potential for discovery of diamondiferous kimberlites on Micrex's properties are considered moderate based upon the regional geological setting in conjunction with the positive results of exploration conducted to date. Micrex has spent in excess of \$81,415 (not including GST) on exploration on the property in the last year.

The regional setting for Micrex's Buffalo Head Hills property is considered favourable for the presence of diamondiferous kimberlites. The permits are underlain by Early Proterozoic to Archean basement of the Buffalo Head Craton. The local bedrock geology and the underlying Archean to Proterozoic crystalline basement in association with deep seated, penetrative structures, such as the Peace River Arch, likely provided a favourable environment for the ascent of kimberlitic magmas in the Buffalo Head Hills. The regional cratonic setting is also considered favourable for the formation and preservation of diamonds in the upper mantle and their transport to surface in kimberlitic magma during periodic tectonic activity associated with movement along the Peace River Arch. This has been confirmed with discovery of 38 kimberlite pipes, of which 26 are diamondiferous, in the Buffalo Head Hills area. The nearest Buffalo Head Hills kimberlite pipes exist within 50 km of the southern boundary of Micrex's diamond property.

To date, a number of diamond indicator minerals have been recovered from limited sampling of glacial outwash gravel, recent fluvial gravel and till on Micrex's Buffalo Head Hills diamond property and down ice of the property. The importance of these indicator minerals and potential source areas are unknown due to the presence of variable thicknesses of glacial drift and the poor sampling density. A number of samples collected Micrex's Buffalo Head Hills property and immediately south by government agencies and industry have yielded significant numbers of indicator minerals including olivine, pyrope garnet, chromite and picroilmenite. All of these sample sites exist well north of the northernmost known Buffalo Head Hills kimberlite. Therefore there is a strong likelihood that undiscovered kimberlites exist on in the vicinity of the Micrex's property. The diamond

potential of Micrex's property cannot be fully assessed with the limited amount of sampling that has been conducted to date. However, it is expected that further systematic sampling will lead to a better understanding of the diamond potential of the properties.

During March-April 2004, an airborne magnetic survey was conducted over Micrex's Buffalo Head Hills property. The data was reviewed on a line by line profile basis to look for high frequency, short wavelength magnetic anomalies that reflect small, shallow source magnetic anomalies potentially related to geological features such as kimberlites. A total of 2 priority 1 and 11 priority 3 magnetic anomalies, along with a large number of weak low priority anomalies were identified in the dataset and are prospective for kimberlites and require follow-up exploration.

Based on these results, a follow-up property-scale exploration program is warranted for Micrex's Buffalo Head Hills property including detailed sampling in conjunction with ground geophysical surveys, followed by drilling of high priority targets. A detailed structural interpretation that includes the acquisition and interpretation of RadarSat and digital elevation data should be completed in conjunction with the sampling program.

For Micrex's Buffalo Head Hills property, future exploration should be conducted in two stages. **Stage 1** should consist of a late summer to fall sampling program for diamond indicator minerals with the planned collection of about 50 samples. The sampling program should be accompanied by or followed with a ground geophysical program and a detailed compilation leading to a structural interpretation. The estimated cost of the Stage 1 program is **\$100,000**, plus GST. **Stage 2** exploration program should consist of a water well or reverse circulation drilling program of two kimberlite targets within Micrex's Buffalo Head Hills diamond property. The development of targets for the stage 2 drilling program will depend upon the Stage 1 exploration results. The estimated cost to conduct a two hole reverse circulation Stage 2 drilling program is **\$150,000** plus GST.

## **INTRODUCTION AND TERMS OF REFERENCE**

APEX Geoscience Ltd. (APEX) was retained during early 2004 as consultants by Micrex Development Corp. (Micrex) to compile all existing geological, geophysical and geochemical data for Micrex's Buffalo Head Hills diamond property and to prepare an independent evaluation of the potential of the property to host diamondiferous kimberlites. During March 2004, APEX was retained by Micrex to oversee a fixed-wing airborne magnetic survey over one of Micrex's Buffalo Head Hills property. APEX was subsequently retained by Micrex during late April to complete an independent review of the diamond potential of all of Micrex's Buffalo Head Hills diamond property. This assessment report documents the results of the data review and exploration performed by Micrex and others to date on the their Buffalo Head Hills property. Mr. M.B. Dufresne, M.Sc., P.Geol., a Qualified Person, has visited the Buffalo Head Hills property on a number of occasions while performing exploration and scientific related work on behalf of the Alberta Geological Survey. To date, Micrex has spent a total of \$81,415 (not including GST) on exploration on its Buffalo Head Hills property during the last year (Appendix 1).

## **DISCLAIMER**

The author, in writing this report, use sources of information as listed in the references. The report written by Mr. M. B. Dufresne, M.Sc., P.Geol., a Qualified Person, is a compilation of proprietary and publicly available information as well as information obtained during a number of property visits. The government reports were prepared by a person or persons holding post secondary geology, or related university degree(s), prior to the implementation of the standards relating to National Instrument 43-101. The information in those reports is therefore assumed to be accurate. Those reports written by other geologists are also assumed to be accurate based on the property visits and data review conducted by the author, however are not the basis for this report. Micrex's Buffalo Head Hills diamond properties are considered early stage exploration properties and do not contain any diamond or kimberlite discoveries to date.

## **PROPERTY DESCRIPTION AND LOCATION**

Micrex Development Corp.'s Buffalo Head Hills diamond property is located in the Buffalo Head Hills about 115 km north of the town of Red Earth Creek in north-central Alberta, roughly covering portions of Townships 98 to 100, Ranges 6 to 10, west of the 5<sup>th</sup> meridian (Figures 1 and 2). Micrex's Buffalo Head Hills diamond property encompass 10 mineral permits totalling approximately 92,160 hectares (227,727 acres) and is situated adjacent to Ashton Mining of Canada Inc.'s (Ashton) main Buffalo Head Hills Property along the northeast flank of the Buffalo Head Hills. The property is located within 1:250,000 scale National Topographic System (NTS) map sheet 84G (Wadlin Lake Map Sheet). A list of legal descriptions for the property is provided in Table 1. A copy of the mineral permit land titles search is included in Appendix 2.

The mineral permits are currently held in the name of Micrex Development Corp. of 156 Laurier Drive, Edmonton, Alberta, T5R 5P9 (Table 1). Based upon a property title search, the mineral permits appear to be free of any encumbrances and are 100% owned by Micrex Development Corp., with no option and/or royalty agreements that the author is aware of in effect. This assessment report is filed for Mineral Permits 9302030098 to 107, shown in Table 1 and on Figure 2.

**TABLE 1**  
**LEGAL PERMIT DESCRIPTIONS\***

Permit Number*	Record Date*	Term Period*	Legal Description	Permit Holder*	Area (Ha)*
<b>Buffalo Head Hills Property</b>					
9302030098	20-Mar-2002	10 Years	5-06-098: 19-36; 5-06-99: 1018	Micrex Development Corp	9216
9302030099	20-Mar-2002	10 Years	5-07-098: 1-36	Micrex Development Corp	9216
9302030100	20-Mar-2002	10 Years	5-08-098: 1-36	Micrex Development Corp	9216
9302030101	20-Mar-2002	10 Years	5-09-098: 1-36	Micrex Development Corp	9216
9302030102	20-Mar-2002	10 Years	5-10-098: 1-36	Micrex Development Corp	9216
9302030103	20-Mar-2002	10 Years	5-06-099: 1-36	Micrex Development Corp	9216
9302030104	20-Mar-2002	10 Years	5-07-099: 1-36	Micrex Development Corp	9216
9302030105	20-Mar-2002	10 Years	5-08-099: 1-36	Micrex Development Corp	9216
9302030106	20-Mar-2002	10 Years	5-09-099: 1-36	Micrex Development Corp	9216
9302030107	20-Mar-2002	10 Years	5-08-100: 1-18; 5-09-100: 1-18	Micrex Development Corp	9216
<b>10 Permits</b>			<b>GRAND TOTAL</b>	<b>92,160.0*</b>	<b>Ha</b>

\*Based upon a land titles search,

Alberta Mining regulations grant metallic mineral permits to the permittee for 10 year terms during which at any time after the initial two year term the mineral permit may be converted into a lease. Leases are granted for 15 year terms and may renewed. A metallic mineral permit gives Micrex the exclusive right to explore for and develop economic deposits of minerals, including diamonds, within the boundaries of the permit. The exclusive right to explore is subject to ALBERTA REGULATION 66/93 of the Alberta Mines and Minerals Act and the contained Metallic and Industrial Minerals Regulations within the act. The Standard Terms and Conditions for the permits are described in detail on Alberta Energy's website at [http://www.qp.gov.ab.ca/Documents/REGS/1993\\_066.CFM](http://www.qp.gov.ab.ca/Documents/REGS/1993_066.CFM).

A permit holder shall spend or cause to be spent with respect to the location of his mineral permit on assessment work an amount equal to \$5 for each hectare in the location during the first two year period; an amount equal to \$10 per hectare for each of the second and third two year periods; and an amount equal to \$15 per hectare for each of the fourth and fifth two year periods. Mineral permits may be grouped and excess expenditures may be carried into the next two year period.

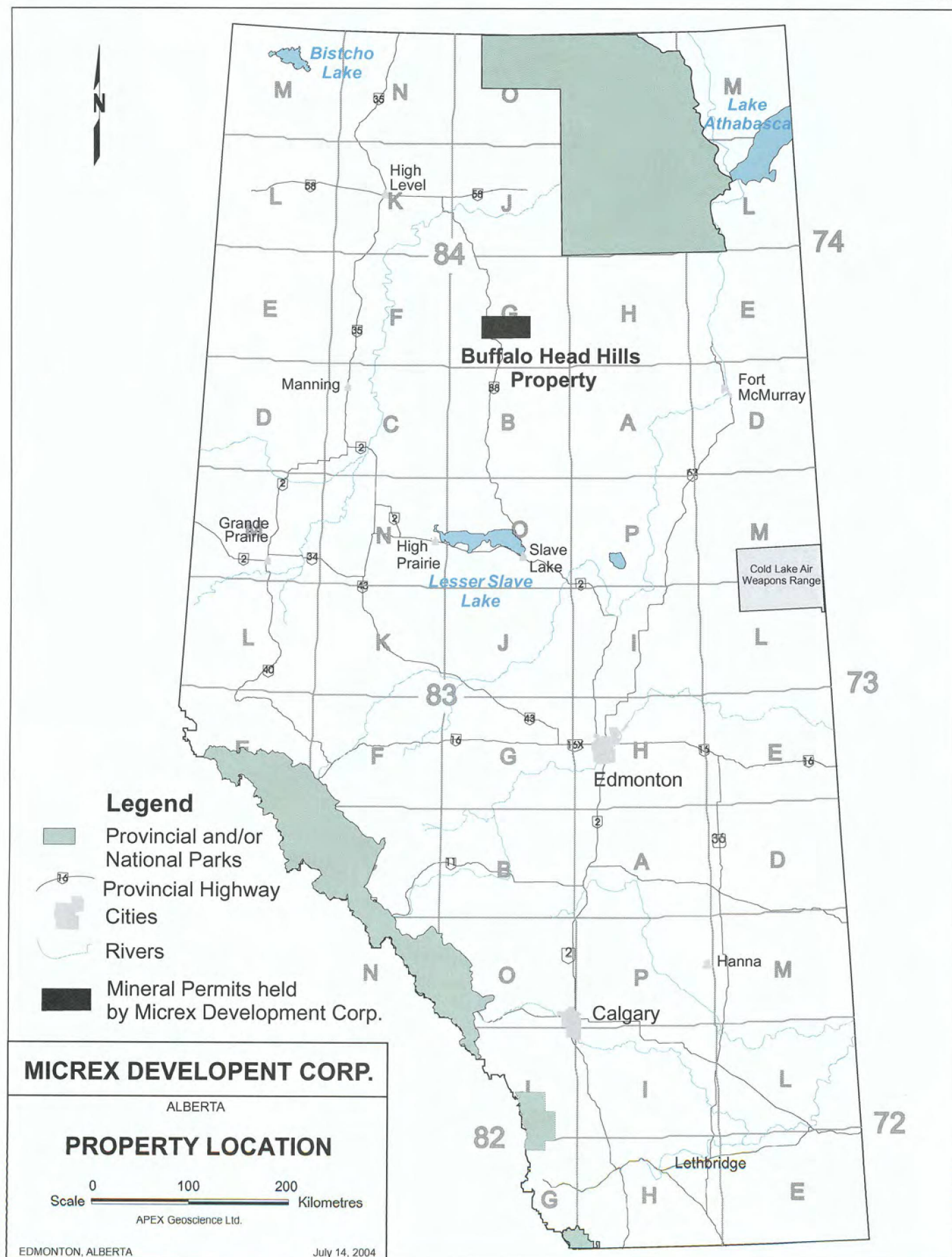
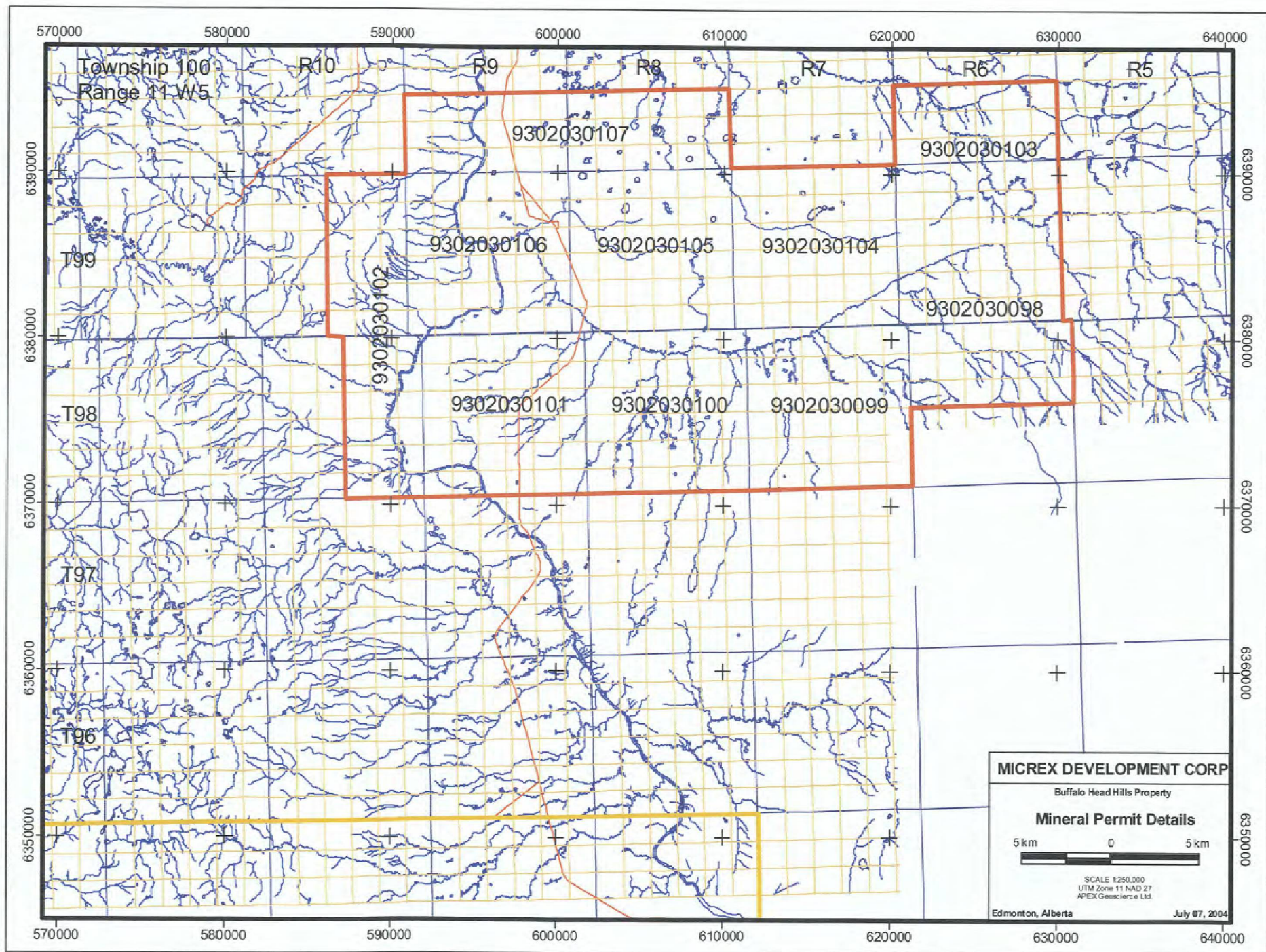


FIGURE 1.



Figure 2.



In addition to the financial commitment, a metallic mineral permit holder is required to file an assessment report that documents all of the work conducted as well as the results of the work to Alberta Energy. The assessment report must be filed within 90 days after the record date after each two year period.

## **ACCESSIBILITY, CLIMATE AND LOCAL RESOURCES**

The Buffalo Head Hills property may be accessed via Provincial Highways 88 and 686, all weather and dry weather gravel roads, cart trails and seismic lines. Most portions of the mineral permit area may be accessed by four-wheel drive vehicles or all terrain vehicles (ATV's) during the summer and winter months. Accommodation, food, fuel, and supplies are best obtained in the towns of Red Earth Creek.

The Buffalo Head Hills property is situated within the Eastern Alberta Plains along the eastern edge of the Buffalo Head Hills Upland. Relief generally comprises rolling hills and undulating plains. Elevation in the region varies from 450 m to 825 m (1,475 ft to 2,700 ft) above sea level (asl). Major topographic features in the region include Lubicon, Loon and Peerless lakes, as well as the Wabasca River, Red Earth Creek and the Loon and Lubicon rivers. In addition to the numerous small lakes and ponds, much of the property is covered by swamps, marshes and fens. A boreal forest containing mainly spruce and jack pine covers the property. Annual temperatures range from -40°C in January to 25°C in July.

## **HISTORY: PREVIOUS EXPLORATION**

### **Previous Exploration Buffalo Head Hills Region**

Previous exploration in the Buffalo Head Hills region has focussed primarily on the search for hydrocarbon and aggregate deposits and the determination of hydrogeological and geothermal regimes (Hackbarth and Nastasa, 1979; Mandryk and Richardson, 1988; Bachu *et al.*, 1993; Edwards *et al.*, 1994). Only recently has the focus of exploration been redirected towards diamonds (Dufresne *et al.*, 1996).

The Buffalo Head Hill region is well known for its wealth of energy resources. The primary established reserves are  $47,196.4 \times 10^3 \text{ m}^3$  of oil in 12 conventional fields and  $808 \times 10^6 \text{ m}^3$  of gas in 3 fields (Eccles *et al.*, 2001). The geology of the Utikuma Lake Keg River Sandstone A and Red Earth Granite Wash A oil pools, the largest pools in the area, was outlined by Angus *et al.* (1989), who suggested that the pools are hosted by Granite Wash sandstone reservoirs. The Granite Wash Formation is composed of interbedded sandstone, siltstone, and shale, with minor amounts of dolostone and anhydrite (Greenwalt, 1956), and is thought to resemble a diachronous basal nonmarine to shallow marine clastic unit deposited farther from the Peace River Arch (Grayston *et al.*, 1964). The oil is trapped in Granite Wash sandstone reservoirs that pinch out against or drape over



numerous paleotopographic features on the Precambrian surface and are sealed by the overlying Muskeg Formation anhydrite.

During 1950 to 1952, the GSC conducted aeromagnetic surveys of the Peerless Lake (NTS 84B) and Peace River (NTS 84C) map areas as part of a regional survey (Geological Survey of Canada, 1989a,b). The surveys were flown at an altitude of 305 m (1,000 ft) with flight lines spaced every 1 mile (1.6 km) and cross-lines every 15 miles (24 km). Closer examination of the 1:250,000 scale aeromagnetic map for the Peerless Lake area indicates a predominance of north to northwest trending basement magnetic highs. These highs parallel the trend of the boundaries of the Buffalo Head Terrane. Unfortunately, the flight lines from the 1950 to 1952 surveys are too widely spaced to be useful for locating possible kimberlites. In addition, the digital data derived from these surveys is the result of manual digitization of the old maps and is not the true raw data, which would be required as part of any search for kimberlites.

The first strong indication that the region could host diamondiferous kimberlites came during September 1995, from sampling conducted by the Alberta Geological Survey (AGS). A single sample from a road cut yielded 152 possible pyrope garnets from 25 kg (60 lbs) of dark greyish brown, silty clay till. The sample was collected from a site about 45 km northwest of Red Earth Creek and about 70 km south of Micrex's Buffalo Head Hills property (Fenton and Pawlowicz, 1997). A total of 35 garnet grains were analyzed by electron microprobe; 27 were classified as Group 9 (G9) garnets according to Gurney's (1984) CaO versus Cr<sub>2</sub>O<sub>3</sub> discrimination scatter plot. The same site was resampled in August 1996 and yielded 176 possible pyrope garnets, thus duplicating the high number of pyrope garnets initially recovered by the AGS (Pawlowicz *et al.*, 1998a). Based on later work conducted by the Buffalo Head Hills Joint Venture (BHHJV), a joint venture between Ashton Mining of Canada Inc. (Ashton), Alberta Energy Company (AEC) and Pure Gold Minerals Inc. (Pure Gold), it was determined that this till site is less than one kilometre (0.6 miles) southwest of the K4 Kimberlite. A number of other government surface and auger drillhole samples have also yielded high counts of Diamond Indicator Minerals (DIMs) in the Buffalo Head Hills (Pawlowicz *et al.*, 1998a,b; Eccles *et al.*, 2001).

Alberta Energy Company Ltd. (now known as EnCana Corporation) conducted a wide spaced (600 m line-spaced) high resolution, fixed-wing aeromagnetic (HRAM) survey in the search for oil and gas deposits over the Buffalo Head Hills during 1995. The survey identified several shallow based, short-wavelength, high-frequency magnetic anomalies that also corresponded to areas of very strong diffraction's in seismic profiles (Rob Pryde, *personal communication*, 1998; Carlson *et al.*, 1999; Skelton and Bursey, 1999)). As a result, during October 1996 a joint venture option agreement, the Buffalo Head Hills Joint Venture (BHHJV), was signed by Ashton, AEC, and Pure Gold to investigate these anomalies.

In January 1997, Ashton announced a drill program to test 10 isolated geophysical anomalies in the Buffalo Head Hills area, approximately 35 to 45 km northwest of the town of Red Earth Creek. The initial 2 drillholes, located on anomalies identified as 7B and 7C, penetrated olivine-dominated fragmental and tuffaceous volcanic materials underlying

glacial overburden at depths of 34.0 m and 36.6 m, respectively. The rock types were interpreted by Ashton to represent kimberlite pipes (diatremes) that intruded from the basement through a thick column of overlying younger sedimentary rocks to the preglacial surface (Ashton Mining of Canada Inc., 1997a). Petrographic studies of core from K7B and K7C confirmed that the drillholes intersected kimberlites and yielded indicator minerals such as chromite, eclogitic garnet and peridotitic garnet (Ashton Mining of Canada Inc., 1997b). By March 1997, a total of 11 kimberlites within a 100 km<sup>2</sup> area had been discovered, 10 by drilling and 1 by bulldozer, including kimberlites K2, K4A, K4B, K4C, K5A, K5B, K6, K7A, K7B, K7C, and K14 (Ashton Mining of Canada Inc., 1997c). The first microdiamond analyses of samples collected from kimberlites K2, K4, and K14 were released in April 1997 and confirmed that the pipes are diamondiferous; more significantly, 3 samples totalling 152.5 kg (387 lbs) from kimberlite K14 yielded significant numbers of diamonds, including 139 microdiamonds and 11 macrodiamonds (Ashton Mining of Canada Inc., 1997d). Mineralogical analysis of indicator minerals from the Buffalo Head Hills kimberlites indicates that although they are not abundant, a significant number of favourable G10 pyrope garnets, some with exceptionally high chromium contents (up to 17.8 wt% Cr<sub>2</sub>O<sub>3</sub>), along with abundant diamond inclusion quality chromites, have been obtained from several of the kimberlites in the central and northern portion of the cluster (Carlson *et al.*, 1999; Hood and McCandless, 2003). In addition, a large number of the kimberlites yield euhedral to subhedral xenocrystic (mantle derived) garnet and clinopyroxene suggesting that resorption has been limited, therefore, the potential to preserve any carried diamonds may be considered high (Carlson *et al.*, 1999). These results ushered in a new era in the history of resource development in Alberta. To date, a total of 38 kimberlites have been discovered by the BHHJV in the Buffalo Head Hills region, with the nearest kimberlite approximately 50 km due south of the Micrex's Buffalo Head Hills property.

More recent results indicate that the Buffalo Head Hills kimberlite field does contain kimberlites that have excellent potential to host a population of commercial-sized diamonds and are approaching the threshold of being economic. As an example, Ashton Mining of Canada Inc. (2001a) have recently reported that a 22.8 tonne mini-bulk sample collected from the K252 Kimberlite (which is located approximately 62 km south of Micrex's Buffalo Head Hills property) has yielded a grade of 55 carats per hundred tonnes (cpht). The mini-bulk sample results also indicate that the deeper breccia phase of the pipe yielded a grade of 85.4 cpht. If these grades and the quality of the stones persist through larger bulk sampling programs the K252 Kimberlite could be the first in a series of economic kimberlite pipes in the Buffalo Head Hills. As a result, Ashton and its joint venture partners have approved further drilling of other kimberlite targets and the collection of a 200 to 400 tonne bulk sample from the K252 Kimberlite during 2002 (Ashton Mining of Canada Inc., 2001b).

### **Previous Exploration Micrex's Buffalo Head Hills Properties**

Exploration by the BHHJV commenced on its main Buffalo Head Hills property in earnest during 1997 with the drilling of a number of kimberlites and a fixed wing HRAM survey (Skelton and Bursey, 1998). The survey was flown by Sanders Geophysics Ltd. (Sanders), using a Cessna 402B aircraft and a flight line spacing of 250 m (820 ft). During

1997 and 1998 airborne magnetic surveys were commenced and completed by the BHHJV over their Birch River, Loon Lake, Rabbit Lake and Muddy River blocks (Skelton and Bursey, 1999; Skelton and Willis, 2001). Micrex's Buffalo Head Hills property is contained within the eastern portion of what was known as the Muddy River block.

Exploration on the Muddy River block commenced during the spring of 1998 with a fixed wing HRAM survey flown by Sanders (Skelton and Bursey, 1999; Skelton and Willis, 2001). A large portion of this survey was conducted over Micrex's Buffalo Head Hills property. Subsequently, high priority magnetic targets, believed to be kimberlite, were chosen by Ashton and were follow up surveyed with either 100 m line-spaced helicopter magnetic surveys or helicopter magnetic-electromagnetic (EM) surveys during the summer of 1998 (Skelton and Bursey, 1998 and 1999). The helicopter magnetic and magnetic-EM surveys were completed by High-Sense Geophysics Ltd. (High-Sense) and Geoterrex-Dighem (Dighem). At least one helicopter magnetic survey and two ground geophysical surveys were conducted on ground now part of Micrex's Buffalo Head Hills property (Skelton and Bursey, 1999; Skelton and Willis, 2001). A number of surveys were also conducted immediately west of the Buffalo Head Hills block by the BHHJV. Some of these surveys have yielded geophysical anomalies that warrant follow-up exploration. Exploration was also conducted by Monopros Limited (Monopros) on behalf of Troymin Resources Ltd. (Troymin) immediately south of the southern portion (T96, R10-14) of Micrex's Buffalo Head Hills property during 1997 to 1999 (Wood, 1999). A number of priority geophysical anomalies and diamond indicator mineral anomalies of interest were identified in the vicinity of the Micrex's Buffalo Head Hills property. Many of the anomalies were not followed up. Wood (1999) reports the presence of a large number of anomalous stream sediment samples with up to 137 and 66 kimberlite indicator minerals in two separate drainages south of the southern boundary of the Buffalo Head Hills property, but north of and up ice of the northernmost known kimberlite. Although the bulk of the kimberlite indicator minerals recovered by Monopros were chromite and ilmenite with a few pyrope garnets, Wood (1999) suggests that the grains are likely locally derived due to thin overburden and the limited drainage basin that most of the indicators were recovered from. Wood (1999) also suggests that a number of geophysical anomalies detected on the property could be kimberlites and be responsible for the indicator minerals in the drainages. The vast majority of these targets were not ground geophysically surveyed or drill tested.

The BHHJV has performed a number of diamond indicator mineral surveys for which data is available from assessment records (Skelton and Bursey, 1998 and 1999; Skelton and Willis 2001). In general, diamond indicator mineral data (picked minerals only) are present in assessment records for areas covered formerly by the BHHJV's Loon Lake, Muddy River, Birch Mountain, Caribou Mountain, Athabasca, Rabbit Lake and Whitemud blocks. A number of the samples, some of which yielded indicator minerals in particular abundant olivine, were collected on ground now part of Micrex's Buffalo Head Hills property or immediately down ice of the block. The BHHJV collected approximately seven samples from land now part of Micrex's Buffalo Head Hills property. At least five diamond indicator samples yielded between 1 and 3 grains of olivine (Skelton and Bursey, 1998 and 1999; Skelton and Willis, 2001). Only one sample was collected within 20 km down-ice of the

Micrex's Buffalo Head Hills property by Ashton (Skelton and Bursey, 1998 and 1999; Skelton and Willis, 2001). However, Monopros collected a large number of samples within 20 km of and down-ice of the southwest corner of the block. A number of these samples yielded abundant chromite, picroilmenite and rarer pyrope garnets (Woods, 1999).

In the available assessment reports, no mineral chemistry is available for the Ashton samples. However, recent papers by Carlson *et al.* (1999), Aulbach *et al.* (2003), Creighton and Eccles (2003), Davies *et al.* (2003) and Hood and McCandless (2003), indicate that the indicator mineral assemblage for the Buffalo Head Hills kimberlites is dominated by xenocrystic olivine with lesser amounts of pyrope garnet, chromite, eclogitic garnet, chromium diopside, titanian pyrope, picroilmenite and phlogopite. Carlson *et al.* (1999) and Hood and McCandless (2003) indicate that although Gurney G10 pyrope garnets and high chromium chromites, which are often associated with diamonds, are present in a number of kimberlites and regionally in the Buffalo Head Hills, to date, there is no direct association of these minerals in kimberlites with better diamond counts. In addition, Hood and McCandless (2003) indicate that some of the highly diamondiferous kimberlites such as K252 and K6 contain relatively few xenocrystic indicator minerals, while some kimberlite with abundant mantle xenocrysts such as K2 and K95 are only weakly diamondiferous. Carlson *et al.* (1999) and Hood and McCandless (2003) indicate that the northern cluster of kimberlites tend to be more diamondiferous and yield a number of pyrope garnets and chromites that yield very high concentrations of chromium, in the case of pyrope garnets from 16 to 18 weight percent (wt.%)  $\text{Cr}_2\text{O}_3$ . In addition, the northern cluster of kimberlites yield few titanian pyrope garnets and low concentrations of picroilmenite, and when picroilmenite is present, it usually contains low concentrations of niobium. In contrast, the southern cluster of kimberlites yield lower chromium pyrope garnets often with high concentrations of calcium, in some cases likely derived from wehrlite, high titanian pyrope garnets, chromites with lower overall chromium concentrations, picroilmenites with high concentrations of niobium and few if any eclogitic garnets (Carlson *et al.*, 1999; Hood and McCandless, 2003). Davies *et al.* (2003), indicates that diamond inclusions in diamonds studied from the K10 and K14 kimberlites consist of roughly equal amounts of peridotitic and eclogitic suite of inclusions, with the peridotitic inclusions indicative of both harzburgite and lherzolite derivation. Davies *et al.* (2003), also point out the presence of rare ferropericlase and marjorite in some of the diamonds, which are generally indicative of ultradeep mineral assemblages and diamonds formed at depths greater than 400 km. Eccles *et al.* (2003), suggest that the most highly diamondiferous Buffalo Hills kimberlites tend to be the more primitive kimberlites with the highest amount of olivine (indicated by overall bulk magnesium number) and the highest concentrations of chromium and nickel, in conjunction with the lowest concentrations of titanium, niobium, silicon and aluminum.

Based upon assessment records (Skelton and Bursey, 1998 and 1999; Skelton and Willis, 2001), and the author's knowledge of exploration costs in Alberta, approximately \$200,000 was spent by the BHHJV on exploration for kimberlites on Micrex's Buffalo Head Hills property. These costs are based upon assuming an overall cost of \$10 per line-km for fixed wing magnetic surveys, \$10,000 per 1 km<sup>2</sup> helicopter or ground geophysics grid and about \$1,000 per indicator mineral sample. Ground truthing of a number of prospective

magnetic anomalies identified from Ashton's recently released assessment reports (Skelton and Bursey, 1999; Skelton and Willis, 2001) indicates that further work was warranted and recommended by the joint venture, however, assessment requirements and a lack of adequate expenditures forced the BHHJV to drop large portions of the lands surrounding their main Buffalo Head Hills block.

### **Government Diamond Indicator Mineral And Other Scientific Surveys**

Diamond indicator mineral studies in the search for kimberlites were first conducted in the region by the AGS in 1993 (Fenton *et al.*, 1994; Dufresne *et al.*, 1996). This initial survey and all of the early reconnaissance work prior to the discovery of the Buffalo Head Hills kimberlites are reviewed in Dufresne *et al.* (1996). The Buffalo Head Hills area yielded a few diamond indicator minerals within the "Wabasca River Trend", which was defined as a northerly belt of sites yielding anomalous diamond indicator minerals centered around the Wabasca and Loon rivers in the vicinity of Red Earth Creek (Dufresne *et al.*, 1996). The first indication that the region may host diamondiferous kimberlites came from sampling conducted by the AGS during September 1995, when a single till sample from a road cut in close proximity to the BHHJV's K4 Kimberlite yielded 152 possible pyrope garnets (Fenton and Pawlowicz, 1997). A number of surveys have been conducted in the region since then (Fenton and Pawlowicz, 1998a,b; Pawlowicz *et al.*, 1998a,b; Pawlowicz and Fenton, 2001), with varying degrees of success since the initial 1993 survey. A recent multidisciplinary study included the collection of 338 samples in the Peerless Lake, Peace River, Bison Lake and Wadlin Lake Map areas (NTS84B, 84C, 84F and 84G) by Eccles *et al.* (2001) and by Friske *et al.* (2003). These surveys have resulted in the discovery of a number of diamond indicator mineral anomalies that potentially indicate the presence of a number of undiscovered kimberlites in the region. Although only three samples have been collected by government organizations from Micrex's Buffalo Head Hills property, two of the samples yielded eclogitic garnets and chromites, respectively. In addition, a number of samples within 10 km down-ice of the southwest corner of the Buffalo Head Hills property yielded pyrope garnets (Friske *et al.*, 2003).

### **DEPOSIT MODEL: DIAMONIFEROUS KIMBERLITES**

To understand the significance of diamond indicator minerals (DIMs), it is important to understand the type of igneous rocks from which primary diamond deposits are mined. The most common rock type from which diamonds are mined are kimberlites and, to a lesser extent, lamproites and orangeites. Diamond indicator minerals (DIMs) describe minerals that are common constituents of these three rock types, some of which are phenocrysts and others that are xenocrysts. For the purposes of this discussion, DIMs will refer to minerals that are both characteristic and diagnostic of kimberlites.

#### **Kimberlites**

Kimberlite is best described as a hybrid igneous rock (Mitchell, 1986, 1989, 1991; Skinner, 1989; Scott Smith, 1995). Kimberlites are igneous in nature since they have

crystallised from a molten liquid (kimberlitic magma) originating from the earth's upper mantle. Kimberlite magma contains volatile gases and is relatively buoyant with respect to the upper mantle. As a result, pockets of kimberlitic magma will begin to ascend upward through the upper mantle and along a path of least resistance to the earth's surface. As the kimberlitic magma ascends, the volatile gases within the magma expand, fracturing the overlying rock, continually creating and expanding its own conduit to the earth's surface. As a kimberlitic magma begins to ascend to the earth's surface it rips up and incorporates fragments or xenoliths of the various rock types the magma passes through on its way to surface. As the magma breaks down and incorporates these xenoliths, the chemistry and mineralogy of the original magma becomes altered or hybridised. The amount and type of foreign rock types a kimberlite may assimilate during its ascent will determine what types of minerals are present in the kimberlite when it erupts at surface.

When kimberlitic magma reaches or erupts at the earth's surface, the resulting volcanic event is typically violent, creating a broad shallow crater surrounded by a ring of kimberlitic volcanic ash and debris ("tuffaceous kimberlite"). The geological feature created by the eruption of a kimberlite is referred to as a diatreme or kimberlite pipe (Mitchell, 1986, 1989, 1991). In a simplified cross section a kimberlite diatreme appears as a near vertical, roughly "carrot shaped" body of solidified kimberlite magma capped by a broad shallow crater on surface that is both ringed and filled with tuffaceous kimberlite and country rock fragments (Mitchell, 1986, 1989, 1991).

### **Diamond Indicator Minerals**

Diamonds do not crystallise from a kimberlitic magma: they crystallise within a variety of diamond bearing igneous rocks in the upper mantle called peridotites and eclogites. Peridotites and eclogites are each made up of a diagnostic assemblage of minerals that crystallise under specific pressure and temperature conditions similar to those conditions necessary to form and preserve diamonds ("diamond stability field"). Diamond bearing peridotite can be further broken down into three varieties which are, in order of greatest diamond bearing significance, garnet harzburgite, chromite harzburgite, and, to a lesser extent, garnet lherzolite. For a kimberlite to be diamond bearing, the primary kimberlitic magma must disaggregate and incorporate some amount of diamond bearing peridotite or eclogite during its ascent to the earth's surface. The type and amount of diamond bearing peridotite or eclogite the kimberlitic magma incorporates during its ascent will determine the diamond content or grade of that specific kimberlite as well as the size and quality of diamonds. Diamond bearing peridotite and eclogite occur as discontinuous pods and horizons in the upper mantle, typically underlying the thickest, most stable regions of Archean continental crust or cratons (Helmstaedt, 1993). As a result, almost all of the economic diamond bearing kimberlites worldwide occur in the middle of stable Precambrian (typically Archean) cratons. The Buffalo Head Hills Craton is an example of such a craton.

Diamond indicator minerals (DIMs) include minerals that have crystallised directly from a kimberlitic magma (phenocrysts), or mantle derived minerals (xenocrysts) that have been incorporated into the kimberlitic magma as it ascends to the earth's surface.



Examples of DIMs are picroilmenite, titanium and magnesium rich chromite, chrome diopside, magnesium rich olivine, pyrope and eclogitic garnets. Varieties of garnet include G1, G2, G9, G10, G11, G12 pyropes as defined by Dawson and Stephens (1975), G9 and G10 pyropes as defined by Gurney (1984) and Gurney and Moore (1993) and G3, G4, G5, and G6 eclogitic garnets as defined by Dawson and Stephens (1975). From this paragraph on, reference to G1, G2, G3, G4, G5, G6, G11 and G12 pyrope garnets refers to Dawson and Stephens' (1975) classification and G9 and G10 refers to Gurney's (1984) G9 and G10 pyrope garnets of Iherzolitic and harzburgitic origin, respectively.

DIMs are used not only to assess the presence of kimberlites in regional exploration programs but also to assess whether the kimberlites have the potential to contain diamonds. There are a limited variety of DIMs from which information pertaining to the diamond bearing potential of the host kimberlite can be gained. Typically, these are DIMs which have been derived from diamond bearing peridotite and eclogite in the upper mantle (Mitchell, 1989). The most common examples of these would include sub-calcic, G10 Cr-pyrope garnets (harzburgitic), G9 pyrope garnets (Iherzolitic), Cr- and Mg-rich chromite (diamond inclusion quality or "DIF" chromite from chromite or spinel harzburgite), diamond inclusion quality "DIF" eclogitic garnets and chemically distinct jadeite clinopyroxene (diagnostic of diamond bearing eclogites).

Other indicator minerals that have crystallised from a kimberlitic magma can provide information as to how well the diamonds in a given kimberlite have been preserved during their ascent to surface. For instance, the presence of low iron and high magnesium picroilmenites in a kimberlite is a positive indication that the oxidising conditions of a kimberlitic magma were favourable for the preservation of diamonds during their ascent to surface in the kimberlitic magma.

### **Exploration**

Due to the unique geometry of a kimberlite pipe and the manner in which the kimberlite has intruded a pre-existing host rock type, there are often differences in the physical characteristics of a kimberlite and the host rock. Sometimes these contrasting physical characteristics are significant enough to be detected by airborne or ground geophysical surveys. Two of the most commonly used geophysical techniques are airborne or ground magnetic surveys and electromagnetic (EM) surveys. A magnetic survey measures the magnetic susceptibility and EM surveys measure the electrical conductivity (or resistivity) of the material at or near the earth's surface. When magnetic or resistivity measurements are collected at regular spaced intervals along parallel lines, the data can be plotted on a map and individual values can be compared. If a geophysical survey is conducted over an area where the bedrock and overburden geology is constant and there are no prominent structures or faults, there will be little variation in magnetic or resistivity response. However, when a kimberlite intrudes a homogenous geologic unit and erupts on surface, there is often a detectable change in the geophysical signature or anomalous magnetic or resistivity response over the kimberlite diatreme. When the data are contoured the anomalous results often occur as a circular or oval anomaly outlining the surface or near surface expression of the diatreme.

The effectiveness of geophysical methods in kimberlite exploration is dependent on the assumption that the difference between the geophysical signature of the hosting rock unit and a potential kimberlite is significant enough to be recognised by the geophysical techniques available. There are many examples of economic kimberlites that produce very subtle, unrecognisable geophysical responses as well as non kimberlite geologic features and man made structures (referred to as "cultural interference") such as oil wells, fences, bridges, buildings which can produce kimberlite like anomalies. In addition, in areas of thick overburden, such as the Buffalo Head Hills region, sand and gravel with water and placer accumulations of heavy oxide minerals, can yield both magnetic and EM anomalies that are easily confused with those due to kimberlite. For these reasons, it is extremely important that other information such as DIM surveys be used in tandem with geophysical evidence to confirm whether there is other information to support the presence of a kimberlite pipe (Fipke *et al.*, 1995).

## **GEOLOGICAL SETTING**

### **Precambrian Geology**

Micrex Development Corp.'s Buffalo Head Hills mineral permits lie near the northeastern to eastern edge of the Western Canadian Sedimentary basin within the central segments of the Peace River Arch (Figure 3). Precambrian rocks are not exposed within the Buffalo Head Hills region. The basement underlying the Peace River Arch (PRA) is comprised of several terranes, including the Buffalo Head and the Chinchaga, both of which were accreted between 1.8 and 2.4 billion years (Ga) ago and collectively form the Buffalo Head Craton (Ross *et al.*, 1991, 1998). Due to their relatively stable history since accretion, the Buffalo Head and Chinchaga terranes (Figure 3), have been and are currently the focus of extensive diamond exploration in northern Alberta. Ashton along with EnCana and Pure Gold have discovered at least 38 kimberlite pipes proximal to the center of the proposed Buffalo Head Craton (Figure 4). To date, a total of 26 of the 38 kimberlites discovered by the joint venture in the Buffalo Head Hills region have yielded diamonds. The nearest kimberlite pipe exists about 61 km south of the southern boundary of Micrex's Buffalo Head Hills property (Figures 3 and 4).

Micrex's Buffalo Head Hills property is underlain by basement comprised of the Buffalo Head Terrane (BHT). The BHT is an area of high positive magnetic relief with a north to northeasterly fabric (Villeneuve *et al.*, 1993). The diamondiferous Buffalo Head Hills Kimberlites and Micrex's property lie near the geographic center of the Buffalo Head Craton (Figure 4). Part of the Churchill Structural Province (Rae Subprovince), the Buffalo Head Craton may represent either Archean crust that has been thermally reworked during the Hudsonian (Proterozoic) Orogeny (Burwash *et al.*, 1962; Burwash and Culbert, 1976; Burwash *et al.*, 1994) or an accreted Early Proterozoic terrane that may or may not have an Archean component (Ross and Stephenson, 1989; Ross *et al.*, 1991; Villeneuve *et al.*, 1993). Precambrian rocks intersected in drill core from the BHT comprise felsic to intermediate metaplutonic rocks, felsic metavolcanic rocks and high-grade gneisses

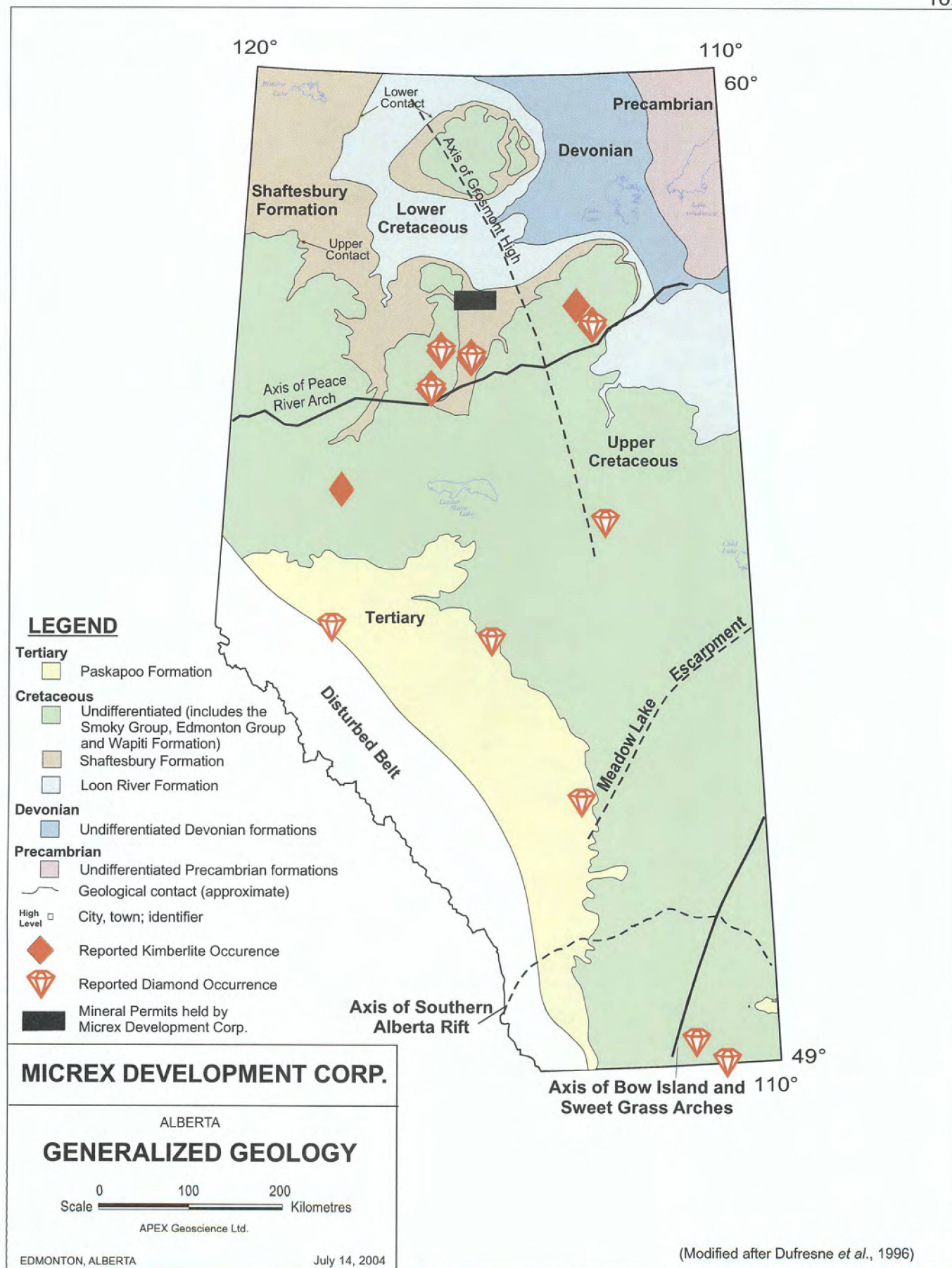


FIGURE 3.



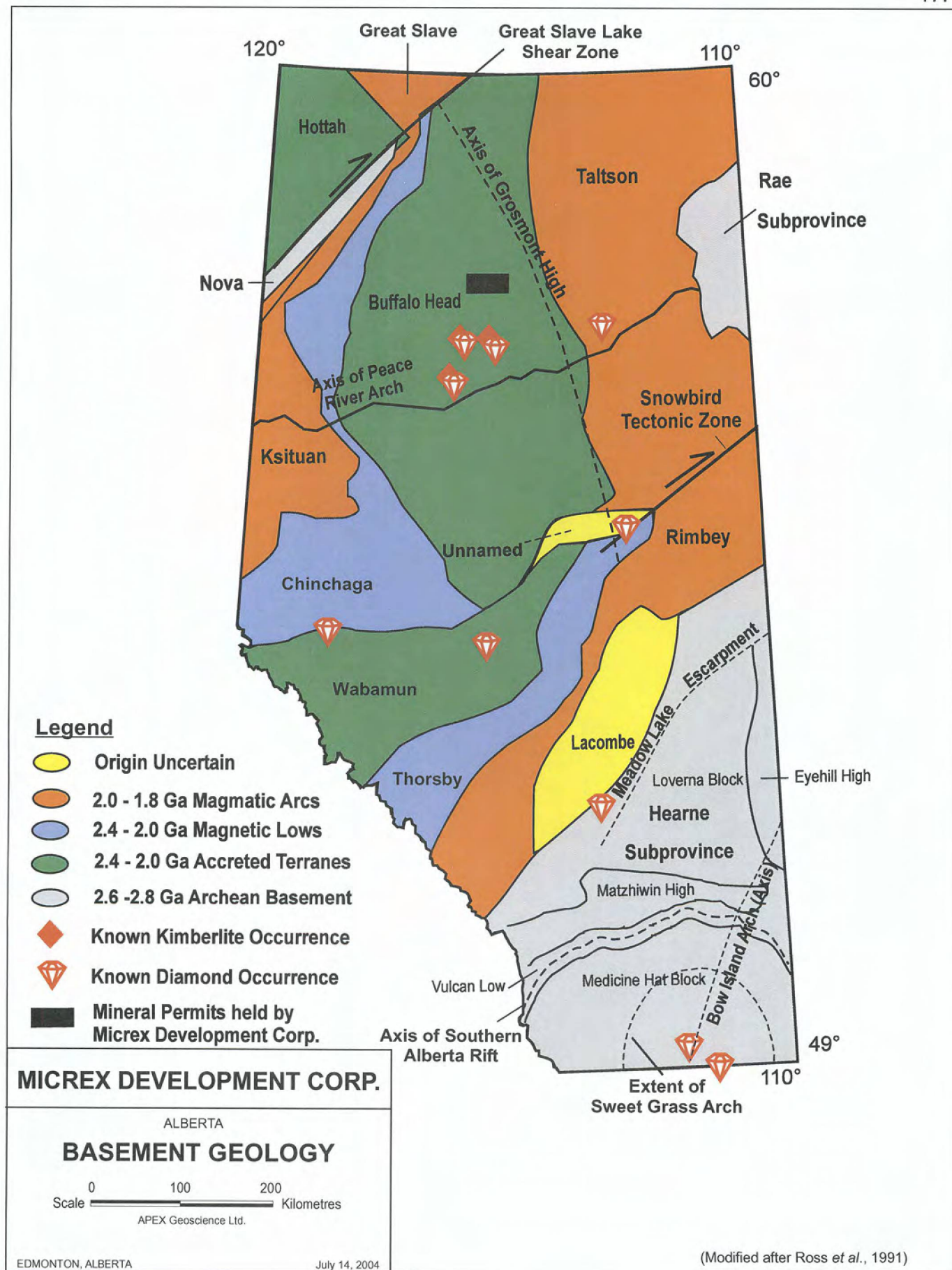


FIGURE 4.

(Villeneuve *et al.*, 1993). Even though Hood and McCandless (2003) suggest that the paucity of subcalcic pyrope garnets in the Buffalo Head Hills is consistent with Proterozoic crust and mantle, recent work by Aulbach *et al.* (2003), indicates that a number of geochemical aspects of the xenoliths from the kimberlites is indicative of the presence of Archean mantle beneath the Buffalo Head Terrane which was likely reworked during Proterozoic crust formation from 2.3 to 2.0 Ga. Seismic refraction and reflection studies indicate that the crust beneath the Buffalo Head Craton is likely between 35 to 40 km (21 to 24 miles) thick, a trait favourable for the formation and preservation of diamonds in the upper mantle (Dufresne *et al.*, 1996). The favourable nature of the Buffalo Head Craton has been confirmed by the discovery of 26 diamondiferous kimberlite pipes near the center of the craton.

### **Phanerozoic Geology**

Overlying the basement in the Buffalo Head Hills region is a thick sequence of Phanerozoic rocks comprised mainly of Cretaceous sandstones and shales near surface and Mississippian to Devonian carbonates and salts at depth (Glass, 1990). Bedrock exposure within the permit block is limited primarily to river and stream cuts and topographic highs. Table 2 shows the upper units found in the region. Further information pertaining to the distribution and character of these and older units can be obtained from well log data in government databases and various geological and hydrogeological reports (Green *et al.*, 1970; Tokarsky, 1972; Vogwill, 1978; Ceroici, 1979; Glass, 1990; Mossop and Shetson, 1994).

Underlying the near surface Cretaceous units in the Buffalo Head Hills area is a thick succession of Devonian to Mississippian carbonates, calcareous shales and salt horizons (Mossop and Shetson, 1994). Several of the Devonian carbonate units are part of the Grosmont Reef Complex, a large structure that extends in a northwesterly direction from east of Lesser Slave Lake to the N.W.T. (Bloy and Hadley, 1989). The Grosmont Reef Complex is likely the result of tectonic uplift along this trend during the Devonian. This structure, in conjunction with the PRA, may have played a significant role in the localization of faults and other structures that could have provided favourable pathways for kimberlite volcanism.

In general, the Cretaceous strata underlying Micrex's Buffalo Head Hills property is composed of alternating units of marine and nonmarine sandstones, shales, siltstones, mudstones and bentonites. The oldest documented units exposed in the permit area belong to the Shaftesbury Formation, a sequence of Upper Cretaceous shales. However, older units from the base of the Fort St. John Group, such as the Peace River and Loon River formations, may be exposed in river and stream cuts.

Part of the Fort St. John Group, the Loon River Formation is Lower Cretaceous in age and is comprised of marine, dark grey, fossiliferous silty-shale and laminated siltstone. Nodules and thin beds of concretionary ironstone may be present within the unit. The Loon River Formation is correlative with the Spirit River Formation. The upper contact is abrupt, but conformable with the Peace River Formation.

**TABLE 2**  
**GENERALIZED STRATIGRAPHY**  
**BUFFALO HEAD HILLS REGION**

SYSTEM	GROUP	FORMATION	AGE* (MA)	DOMINANT LITHOLOGY
PLEISTOCENE			Recent	Glacial till and associated sediments
TERTIARY			6.5 to Recent	Preglacial sand and gravels
UPPER CRETACEOUS	Smoky	Kaskapau	88 to 92	Shale, silty-shale and ironstone; includes the Second White Specks unit
		Dunvegan	92 to 95	Sandstone and siltstone
	Fort St. John	Shaftesbury	95 to 98	Shale, bentonites, Fish-Scale Member
LOWER CRETACEOUS	Fort St. John	Peace River	>98 to <105	Quartzose and glauconitic sandstones and silty shale.
		Loon River	98 to 105	Shale, siltstone and glauconitic sandstone

\*Ages approximated from Green *et al.* (1970), Glass (1990), Dufresne *et al.* (1996) and Leckie *et al.* (1997).

The Peace River Formation is Lower Cretaceous in age and comprises three members, Cadotte, Harmon and Paddy. Correlative with the Pelican and Joli Fou formations, the unit averages 60 m in thickness and contains abundant graptolites and starfish. The lowermost member, the Cadotte, comprises massive, clean, fine-grained quartzose sandstone with alternating bands of thin sandstone and shale. Concretions ranging from 3 to 5 m in diameter are common. The middle member, the Harmon, comprises a fissile, non-calcareous, dark grey silty-shale with thin interbeds of bentonite and siltstone. Both the Cadotte and the Harmon members are laterally extensive, relatively thick and marine in origin. The third member, the Paddy, is comprised of fine-grained glauconitic sandstone with silty interbeds in the lower portions. Thin coal beds and marine fossils may be present. The Paddy is laterally discontinuous and varies from marine to continental (deltaic) in origin. If the Paddy unit is intact, the upper contact is conformable, but abrupt with the Shaftesbury Formation. In many regions, the upper contact of the Peace River Formation is an abrupt hiatus.

The Shaftesbury Formation is lower Upper Cretaceous in age and is comprised of marine shales with fish-scale bearing silts, thin bentonitic streaks and ironstones. The upper contact is conformable and transitional with the Dunvegan Formation. The Shaftesbury Formation may be exposed along river and stream cuts. Evidence of extensive volcanism during deposition of the Shaftesbury Formation exists in the form of numerous bentonitic horizons throughout the formation, especially within and near the Fish Scales horizon (Leckie *et al.*, 1992; Bloch *et al.*, 1993). The deposition of the Shaftesbury

Formation is also chronologically correlative with the deposition of the Crowsnest Formation volcanics of southwest Alberta (Olson *et al.*, 1994; Dufresne *et al.*, 1995) and with kimberlitic volcanism near Fort à la Corne in Saskatchewan (Lehnert –Thiel *et al.*, 1992; Scott Smith *et al.*, 1994). In many cases, the Ashton kimberlite pipes contain extensive volumes of Cretaceous mudstone, most of which is likely derived from the Shaftesbury Formation.

Deltaic to marine, feldspathic sandstones, silty shales and laminated carbonaceous siltstones, characterise the Dunvegan Formation (Glass, 1990). Thin beds of shelly material, coal, siltstone and bentonite may be present. The formation is rich in shallow-water fauna, including abundant molluscs. The Dunvegan Formation becomes more arenaceous and thinner eastwards, where it grades into the LaBiche Formation. The upper contact of the unit is conformable and transitional with the shales of the Kaskapau Formation of the Smoky Group. The Ashton pipes exist just above or near the contact between the Kaskapau and the Dunvegan formations (Dufresne *et al.*, 2001).

The youngest bedrock units belong to the Smoky Group (Glass, 1990). The Smoky Group is Upper Cretaceous in age and is comprised of thinly bedded, marine, silty shale with occasional ironstone and claystone nodules and thin bentonite streaks. The group is divided into three formations: (a) a lower shale unit, Kaskapau, which includes the Second White Specks marker unit (SWS); (b) a middle sandstone, named the Bad Heart; and, (c) an upper shale, Puskwaskau, which contains the First White Specks marker unit. Bedrock exposures in the “Bison Lake” Property are likely comprised of the Kaskapau Formation, in particular, the SWS or lower. Most of the upper portions of the Smoky Group have been eroded away during tectonic uplift, possibly associated with uplift of the PRA. The Kaskapau Formation contains abundant ammonite fossils and concretions. In addition, foraminifera are present in the lower arenaceous units (Glass, 1990). Exposures of the Smoky Group are generally limited to topographic highs and stream cuts within the Buffalo Head Hills. There is strong evidence of volcanism associated within the depositional time span of the Smoky Group around the PRA (Auston, 1998; Carlson *et al.*, 1999). The BHHJV’s recently discovered Buffalo Head Hills kimberlites yield emplacement ages of 86 to 88 Ma (Auston, 1998; Carlson *et al.*, 1999).

### **Structural Geology**

In north-central Alberta, the PRA is a region where the younger Phanerozoic rocks, which overlie the Precambrian basement, have undergone periodic vertical and, possibly, compressive deformation from the Proterozoic into Tertiary time (Cant, 1988; O’Connell *et al.*, 1990; Dufresne *et al.*, 1995, 1996). This pattern of long-lived, periodic uplift and subsidence has imposed a structural control on the deposition patterns of the Phanerozoic strata in northern Alberta. In addition, this periodic movement has resulted in a rectilinear pattern of faults that not only is responsible for structurally controlled oil and gas pools, but may have provided potential pathways for later deep-seated intrusive kimberlitic magmas. Eccles *et al.* (2000) show that several of the Buffalo Head Hills kimberlites occur at the intersection of north and east-northeast trending lineaments likely related to underlying faults that have been reactivated during periodic tectonic activity associated with the Peace

River Arch. Eccles *et al.* (2000) used a combination of very detailed digital elevation data and RadarSat data to identify the intersecting lineaments.

During the mid-Cretaceous and Early Tertiary, compressive deformation occurred as a result of the orogenic event that eventually led to the formation of the Rocky Mountains. The PRA was emergent during this period resulting in the reactivation of many prominent basement faults. The Phanerozoic rocks beneath the Red Earth Creek region lie along the axis of the PRA, and are underlain by and proximal to basement faults related to the Grosmont Reef Complex, which formed over the Grosmont High (Bloy and Hadley, 1989; Dufresne *et al.*, 1996). There is strong evidence that basement faults that have manifested themselves in the overlying Phanerozoic sedimentary succession may have controlled the emplacement of the Buffalo Head Hills kimberlites proximal to Micrex's Buffalo Head Hills properties (Dufresne *et al.*, 1996; Leckie *et al.*, 1997; Eccles *et al.*, 2000). Similar structures observed on Girzzly's Buffalo Head Hills properties could have resulted from tectonic activity associated with movement along the PRA or the Grosmont High and therefore could have provided pathways for kimberlitic volcanism.

### **Quaternary Geology**

Data and information about the surficial geology in central to northern Alberta is sparse and regional in nature. Prior to continental glaciation during the Pleistocene, most of Alberta, including the Buffalo Head Hills region, had reached a mature stage of erosion. Large, broad paleochannels and their tributaries drained much of the region, flowing in an east to northeasterly direction (Dufresne *et al.*, 1996). In addition, fluvial sand and gravel was deposited preglacially in these channels.

During the Pleistocene, multiple southeasterly and southerly glacial advances of the Laurentide Ice Sheet across the region resulted in the deposition of ground moraine and associated sediments (Figure 5 in Dufresne *et al.*, 1996). The advance of glacial ice may have resulted in the erosion of the underlying substrate and modification of bedrock topography. Dominant ice flow directions within the Buffalo Head Hills region appear to be topographically controlled, following the south-southwest trend of the BHH (Fenton and Pawlowicz, *in press*). In addition, topographic variations may have locally channelled ice flow towards the south to south-southeast east of the BHH. Glacial sediments infilled low-lying and depressional areas, draped topographic highs and covered much of the area as veneers and/or blankets of till and diamict. Localised pockets of deposits from glacial meltwater and proglacial lakes likely infilled areas of low relief (Fenton and Pawlowicz, *in press*).

The majority of the Buffalo Head Hills area is covered by drift of variable thickness, ranging from 15 m to over 250 m (Pawlowicz and Fenton, *in press*[a],[b], 1995a,b; Balzer and Dufresne, 1999). The vast majority of the property is thought to be covered with drift ranging from about 75 m to 150 m thick. Drift thickness may be thinner locally, in areas of higher topographic relief. Unfortunately, local drift thickness for Micrex's Buffalo Head Hills property cannot be easily delineated due to the paucity of publicly available data for the region. Limited general information regarding bedrock topography and drift thickness in



northern Alberta is available from the logs of holes drilled for petroleum, coal or groundwater exploration and from regional government compilations (Tokarsky, 1972; Mossop and Shetson, 1994; Pawlowicz and Fenton, *in press*[a],[b], 1995a,b; Dufresne *et al.*, 1996). It should be noted that the drift thickness over the Buffalo Head Hills Kimberlites is extremely variable ranging from more than 120 m to kimberlites that outcrop or subcrop. Several of the kimberlites intersected in drilling to date exist as positive topographic features relative to the local bedrock surface beneath the glacial overburden. For example, the BHHJV's K6 Kimberlite was initially intersected beneath 13 m of overburden (Ashton Mining of Canada Inc., 1997c). The K6 Kimberlite yields depths of overburden of more than 70 m at the margins of the pipe and even thicker depths of overburden over the mudstone bedrock surrounding the pipe (Mr. B. Clements, *personal communication*, 2002). The K6 Kimberlite is one of a number of kimberlites in the Buffalo Head Hills that display this relationship. The implications of this are that in areas where the overburden is estimated to be 75 to 150 m, there is still a chance that any kimberlites found could be covered by substantially less overburden.

Glacial ice is believed to have receded from the BHH region between 15,000 and 10,000 years ago. After the final glacial retreat, lacustrine clays and silts were deposited in low-lying regions along with organic sediments. Rivers previously re-routed due to glaciation, re-established easterly to northeasterly drainage regimes similar to that of the pre-Pleistocene. Extensive colluvial and alluvial sediments accompanied post-glacial river and stream incision.

## **2004 EXPLORATION**

APEX was retained during early 2004 by Micrex to compile all the available geological, geophysical and mineralogical data for the Buffalo Head Hills diamond property and evaluate the potential of the property to host kimberlites and, possibly, diamonds. Based upon the recommendations that resulted from the data compilation and review, a program of fixed-wing airborne geophysics was initiated and completed over the property during April, 2004 (Evans, 2004; Appendix 3).

### **Review Of Existing Geological, Geophysical And Mineralogical Data**

During March to May, 2004, personnel from APEX reviewed and compiled the following data: (1) the detailed fixed-wing, helicopter and ground geophysical data from a number of the BHHJV's assessment reports (Skelton and Bursey, 1998, 1999; Skelton and Willis, 2001; Willis and Skelton, 2002), (2) the 600 m line spaced proprietary Utikuma magnetic data covering much of the Buffalo Head Hills region, (3) all available public and proprietary diamond indicator mineral data for samples collected on and down ice of Micrex's Buffalo Head Hills diamond property, and (4) all available public and proprietary petroleum, hydrogeological and other types of well data in order to construct a drift thickness picture for the Buffalo Head Hills region.

Exploration and drilling during 1997 to 2001 by the BHHJV has resulted in the

discovery of no less than 10 kimberlites less than 70 km from the southern property boundary of Micrex's Buffalo Head Hills property (Skelton and Bursey, 1998 and 1999; Skelton and Willis, 2001). Ashton (2001a) have recently reported that a 22.8 tonne mini-bulk sample collected from the K252 Kimberlite (which is located approximately 61 km south of Micrex's Buffalo Head Hills property) has yielded a grade of 55 carats per hundred tonnes (cpht), demonstrating the economic potential of the Buffalo Head Hills kimberlites.

### **Publicly Available Geophysical Data**

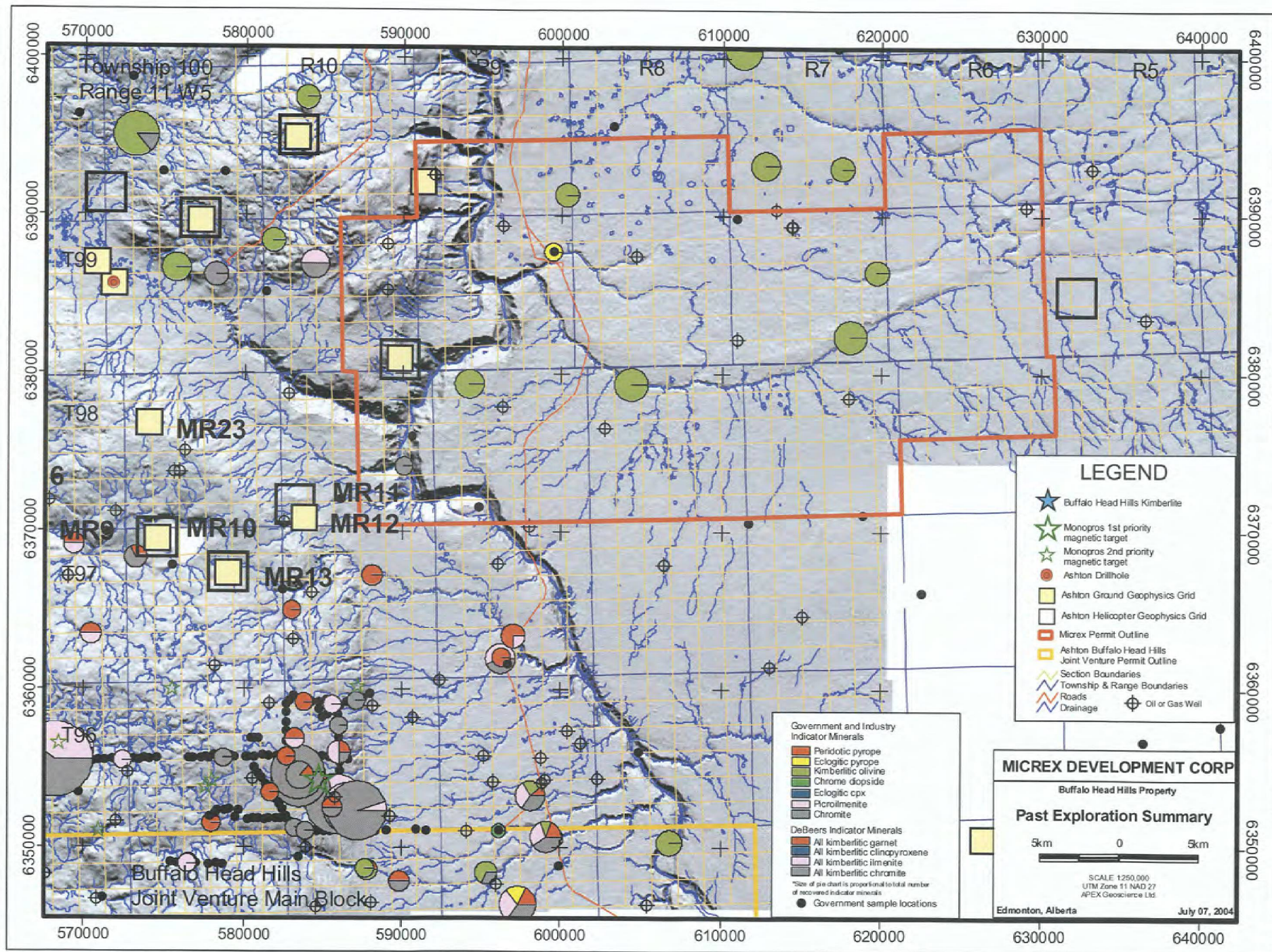
The bulk of the review was focussed on the available magnetic data in order to evaluate whether any untested quality magnetic targets that warrant follow-up exploration could be identified. Detailed helicopter, fixed wing or ground based geophysical grids that Ashton has completed to date as part of prior assessment work but that are now on Micrex's Buffalo Head Hills properties are shown on Figures 5. In addition, Troymin and Monopros (Wood, 1999) identified at least 22 priority 1 and 2 magnetic anomalies on the Bison Lake block townships that now exist immediately south of Micrex's Buffalo Head Hills property (Figure 5).

Ashton identified two tier 1 strongly magnetic circular anomalies during 1998 or 1999 on their Loon Lake block, anomalies LL-07 and LL-08 (Skelton and Willis, 2001). These magnetic anomalies are both characterized as circular anomalies roughly 200 to 300 m in diameter and 100 to 200 nanoteslas (nT) in magnetic amplitude with ground geophysical surveys. Both anomalies yielded kimberlites (both of which the BHHJV retain today), LL-07 at a depth of 114 m below surface and LL-08 at a depth of about 75 m below surface. These two kimberlites yield magnetic anomalies comparable to the three or four of the highest strength anomalies associated with kimberlites K4, K5, K7 and K19 on the main Buffalo Head Hills block.

To date, of the highly magnetic kimberlites that the BHHJV has drilled, only K5 yielded more than five microdiamonds and was mini-bulk sampled. The better diamond counts have come from the less magnetic kimberlite pipes including K91 and K252. The K252, which exists 500 m northwest of the highly magnetic K6 Kimberlite, is not visible on any of the airborne magnetic survey data and was found by the BHHJV by using gravity and EM techniques (Mr. B. Clements, *personal communication*, 2002; Willis and Skelton, 2002). Some scientific literature, particularly from Russia, indicates that many of the producing diamondiferous kimberlites in Russia are associated with only weak to non-existent magnetic signatures, and that the highly magnetic kimberlites tend to yield sub-economic concentrations of diamonds. The Russians suggest that the highly magnetic kimberlites are indicative of what was a highly oxidized kimberlitic magma, which in turn would result in absorption and destruction of any contained diamonds during ascent of the kimberlitic magma. The draw back of exploring for the tier 2 to 4 magnetic strength anomalies is that the success ratio for the discovery of kimberlites drops off dramatically with the lower amplitude magnetic anomalies. The drop in success ratio can be mitigated if a number of good quality tier 2 or tier 3 strength magnetic anomalies can be identified that hold together with ground geophysics or with other techniques such as electromagnetic or gravity surveys. In the end, these lower amplitude anomalies may yield a better



Figure 5.





opportunity for diamonds than the high amplitude tier 1 magnetic kimberlites hence justifying the added risk.

A review of all of the existing BHHJV fixed-wing magnetic data yields a few magnetic anomalies on Micrex's Buffalo Head Hills property, which is most likely the result of the quality of data in the assessment records as opposed to a lack of anomalies. The fixed wing magnetic data provided by the BHHJV in its assessment reports consists of coarse 5 to 10 nT contoured total magnetic field large scale maps for which only the most highly magnetic kimberlites such as LL-07 and LL-08 are visible. It appears that only a few closely spaced helicopter or ground geophysical surveys appear to have been completed by the BHHJV over Micrex's Buffalo Head Hills property, in particular, two ground geophysical grid grids and one helicopter grid over the Buffalo Head Hills property (Figure 5). It should also be noted that Ashton on behalf of the BHHJV has recently restaked roughly eight townships of their former Loon Lake block to the south of their main block, land that they previously held. This supports the observation that the BHHJV was forced to relinquish land before they had completed exploration due to assessment requirements. Based upon the follow-up helicopter magnetic-electromagnetic surveys that the BHHJV performed, a few of the magnetic anomalies on Micrex's Buffalo Head Hills property rank as priority 2 and priority 3 anomalies for kimberlite exploration. All of these anomalies warrant a ground check followed by ground geophysical surveying if the anomaly is unexplained by culture or was not recently drill tested by the BHHJV.

### **Prior Government And Industry Diamond Indicator Mineral Sampling**

Recent surface sampling in the Peerless Lake and Wadlin Lake map sheets (NTS84B and 84G) by the AGS and GSC has resulted in the collection of 3 samples from Micrex's Buffalo Head Hills property for diamond indicator mineral analysis (Eccles *et al.*, 2001 and Friske *et al.*, 2003). However, and additional 14 samples were collected by Eccles *et al.* (2001) and Friske *et al.* (2003) within 20 km of and down-ice (south to southwest) of these the property (Figure 5). Microprobe chemistry for individual mineral grains is available for all of the government data. Assessment records indicate that the BHHJV also conducted limited DIM sampling on the Buffalo Head Hills property and down ice of the property (7 and 3 samples respectively) during 1997 to 1999 (Skelton and Bursey, 1998 and 1999; Skelton and Willis, 2001). Picked DIM data is available for these samples but no microprobe data is available. Monopros appears to have collected about 182 DIM samples south of the Buffalo Head Hills property with some of the samples immediately down-ice of the property (Figure 5). Picked indicator mineral results are available for these samples but no microprobe data for individual mineral grains is available.

In summary, a number of the samples collected from within the boundaries of or down-ice of Micrex's Buffalo Head Hills property have yielded a number of anomalous samples with indicator minerals (Figure 5). Predominant ice-direction was from north to south down the Wabasca River Valley along the east edge of the Buffalo Head Hills (Pawlowicz and Fenton, 1995,a,b, [*in press*]a, [*in press*]b; Fenton *et al.*, 2003a,b,c; Paulen *et al.*, 2003). Indicator results for samples from the Micrex property are anomalous in

terms of the number of samples with indicator minerals and the number of indicator minerals in some of the samples. The sample results to date are suggestive of the presence of possible kimberlites in the vicinity of or on the property.

The DIM sampling that has been conducted to date works out to about one sample per 100 square kilometres or about 1 sample per township (Figure 7). Several of the kimberlites on the BHHJV's Buffalo Head Hills block yield strong DIM anomalies down-ice or down drainage from kimberlites (within about 5 to 10 km), however, the drift thickness in the area of the indicator mineral anomalies ranges from less than 10 m up to about 70 m. Most of the joint venture's kimberlites in areas of deeper drift appear to yield sporadic amounts of DIM's in the tills down-ice of the kimberlites. The drift thickness on Micrex's Buffalo Head Hills property likely ranges from a minimum of 10 m along the western edge of the property to more than 150 in some areas underlain by preglacial channels. In addition, the drift likely consists of multiple till sheets. The behaviour and dispersion patterns of indicator minerals derived from deeply buried kimberlites is poorly understood in areas of thick drift and multiple till sheets. However, It should be noted that a number of the creeks within 5 to 10 km, and on rare occasion up to 20 km, of nearby kimberlites yield stream sediment sample sites with multiple DIMs (Figure 5).

Based upon the results of indicator minerals sampling conducted to date a few important observations can be made. South of Micrex's Buffalo Head Hills property, the sampling conducted by the AGS and GSC in combination with Monopros has yielded a significant number of samples with anomalous amounts of indicator minerals, in some cases more than a hundred grains (Figure 5). These highly anomalous sample results are indicative of undiscovered kimberlites as these samples have all been collected north of the northernmost known Buffalo Head Hills kimberlite. In addition, the mineralogy seen in these samples with abundant picroilmenite is significantly different than the results of DIM sampling down-ice of the Buffalo Head Hills kimberlites, which are reported to be picroilmenite poor kimberlites (Carlson *et al.*, 1999; Aulbach *et al.*, 2003; Creighton and Eccles, 2003; Davies *et al.*, 2003; Hood and McCandless, 2003). This further supports the conclusion that undiscovered kimberlites remain to be discovered in the north portion of the Buffalo Head Hills beyond the kimberlites that have been discovered to date (potentially on Micrex's Buffalo Head Hills property) and that these kimberlites are likely different mineralogically to the kimberlites found to date.

Although only a few government sample indicator results are available from the Buffalo Head Hills property, there are a number of samples that were collected from streams down ice of the property (Figure 5). These samples show a significant plume of anomalous samples down-ice of the western half of the Buffalo Head Hills property (Figure 5). The indicator minerals recovered are predominantly picroilmenite, chromite and minor pyrope garnet. The assemblage is distinct spatially and mineralogically from the indicator plume associated with the Buffalo Head Hills kimberlites and is highly suggestive that undiscovered kimberlites may exist in the western portion of Micrex's Buffalo Head Hills property.

### **2004 Airborne Magnetic Survey Buffalo Head Hills Property**

During March 2004, a high-resolution airborne magnetic (HRAM) survey was commissioned for Micrex's Buffalo Head Hills property in order to satisfy assessment requirements and to identify potential targets for future fieldwork at the property. The HRAM survey was conducted at the Buffalo Head Hills Project out of the town of Peace River between during late march and early April, 2004 (Evans, 2004; Appendix 3). The survey was conducted using a 60 meter drape mode elevation, 200 meter spaced line intervals and with data sample stations at 7 meters along the lines. Tie lines were spaced at 1500 meters. A high sensitivity base magnetic station recorded the diurnal activity throughout the survey and a base GPS station was used to correct range errors in the GPS flight path recovery. The survey was carried out using a Piper Navajo PA-31 aircraft, configured with a specially designed rigid-mount tail boom for geophysical survey operations. The aircraft is equipped with a high sensitivity magnetometer and a full on-board real time compensation recording computer, and related equipment. It is a single engine aircraft with full avionics, including real time differential 3D GPS navigation. The aircraft has been modified to conduct airborne geophysical surveys. Considerable effort has been made to remove all ferruginous materials near the sensor and to ensure that the aircraft electrical systems do not create any noise. Airborne recorded data included total field magnetic data, radar altimeter and all attendant GPS data. The magnetic data were processed, gridded and provided on CD-ROM.

The survey area exists in the northeast portion of the Buffalo Head Hills region, approximately 115 kilometres north of the town of Red Earth, Alberta. The survey was conducted over all Micrex's Buffalo Head Hills permits except those portions in Township 100 (Figure 6). The airborne survey consisted 4,580 line kilometres of survey data (Figures 6 to 8). The area of the survey is shown on Figures 6 to 8 and in an operational report by Evans (2004) in Appendix 3.

APEX conducted a thorough review of the airborne magnetic data during May and June, 2004. The data was contoured using Geosoft Oasis Montaj 5.1.6 and ERMMapper 6.3. Using Geosoft, the data was reviewed on a line by line profile basis to look for high frequency, short wavelength magnetic anomalies that reflect small, shallow source magnetic anomalies potentially related to geological features such as kimberlites. A number of interesting high frequency magnetic anomalies were identified during the review of the data (Figures 6 to 8; Appendix 4). A total of 2 priority 1 and 11 priority 3 magnetic anomalies, along with a number of low priority weak magnetic anomalies were identified in the dataset and are prospective for kimberlites (Figures 6 to 8; Appendix 4). Screen dumps of the magnetic profile for each of the priority 1, 3 and low priority anomalies are provided in Appendix 4. It appears that the two priority 1 anomalies are the results of man-made culture. In addition, a number of the priority 3 and low priority magnetic anomalies present in the survey also appear to be the result of man-made culture or are part of linear arrays that are most likely related to magnetic sands in the overburden or false magnetic anomalies due to uncompensated topographic changes in the Wabasca River Valley. The anomalies most likely related to man-made culture commonly yield very sharp spike like peaks often with an associated adjacent magnetic low on the maps termed a dipole



Figure 6.

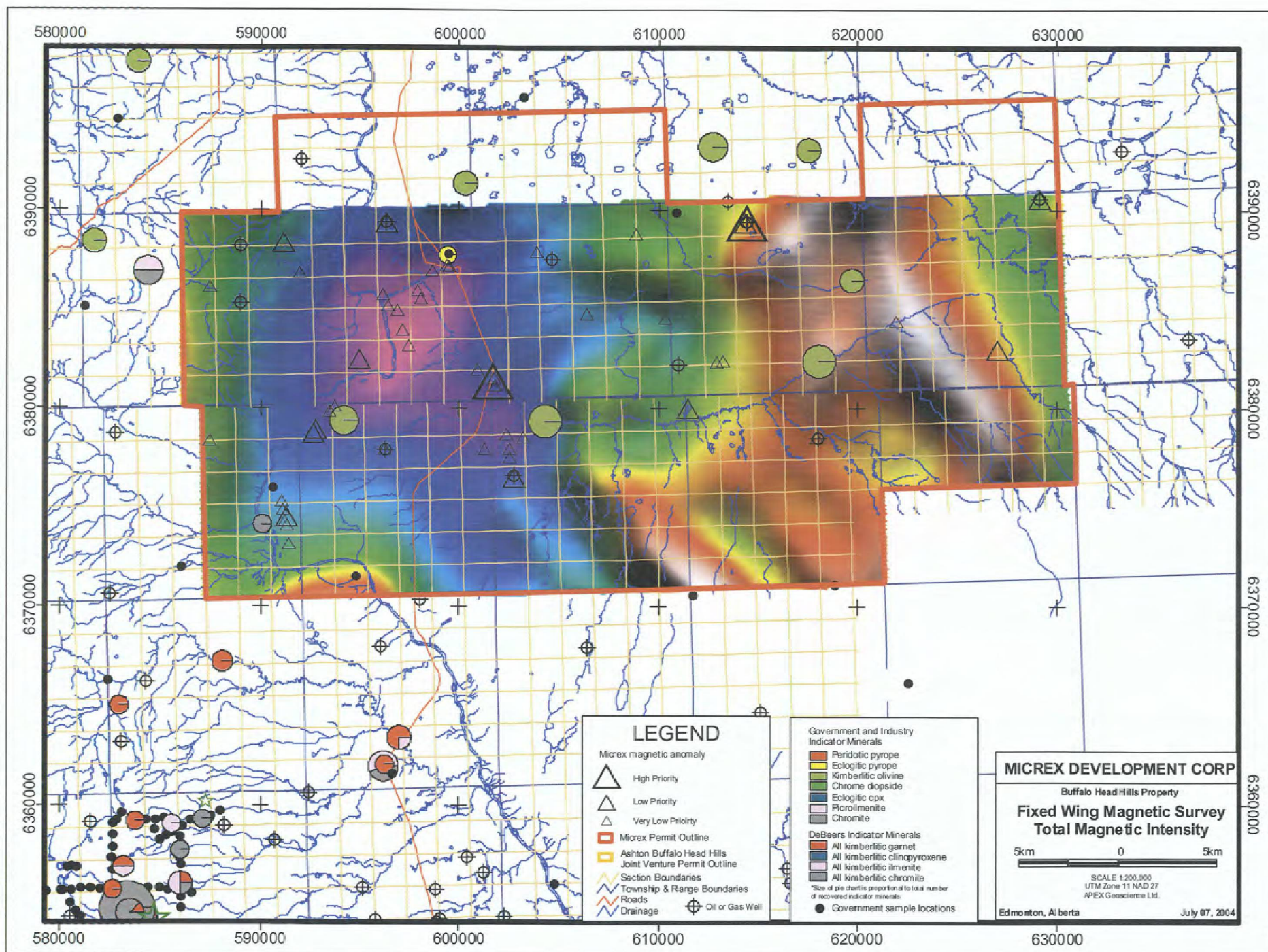




Figure 7.

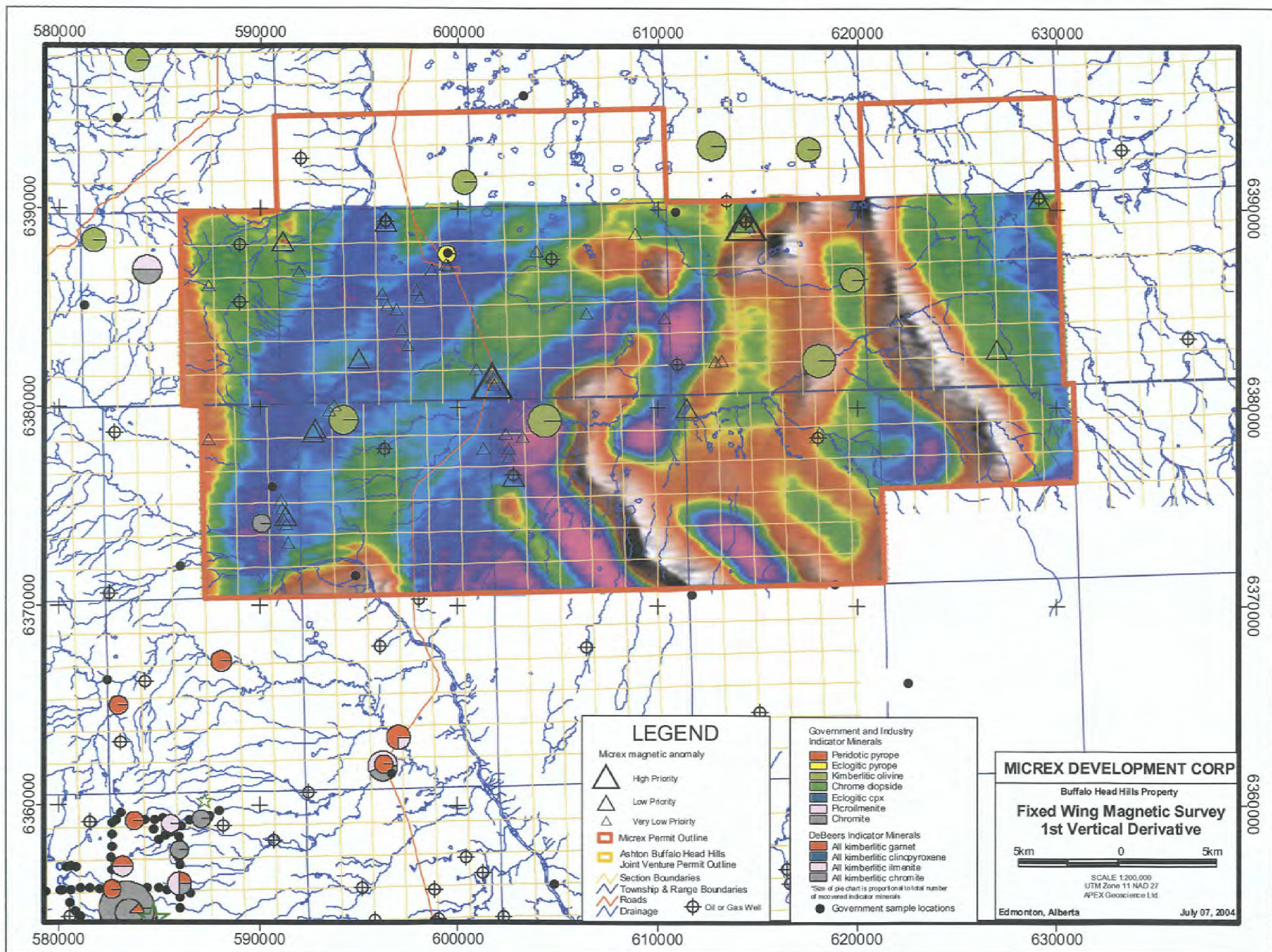
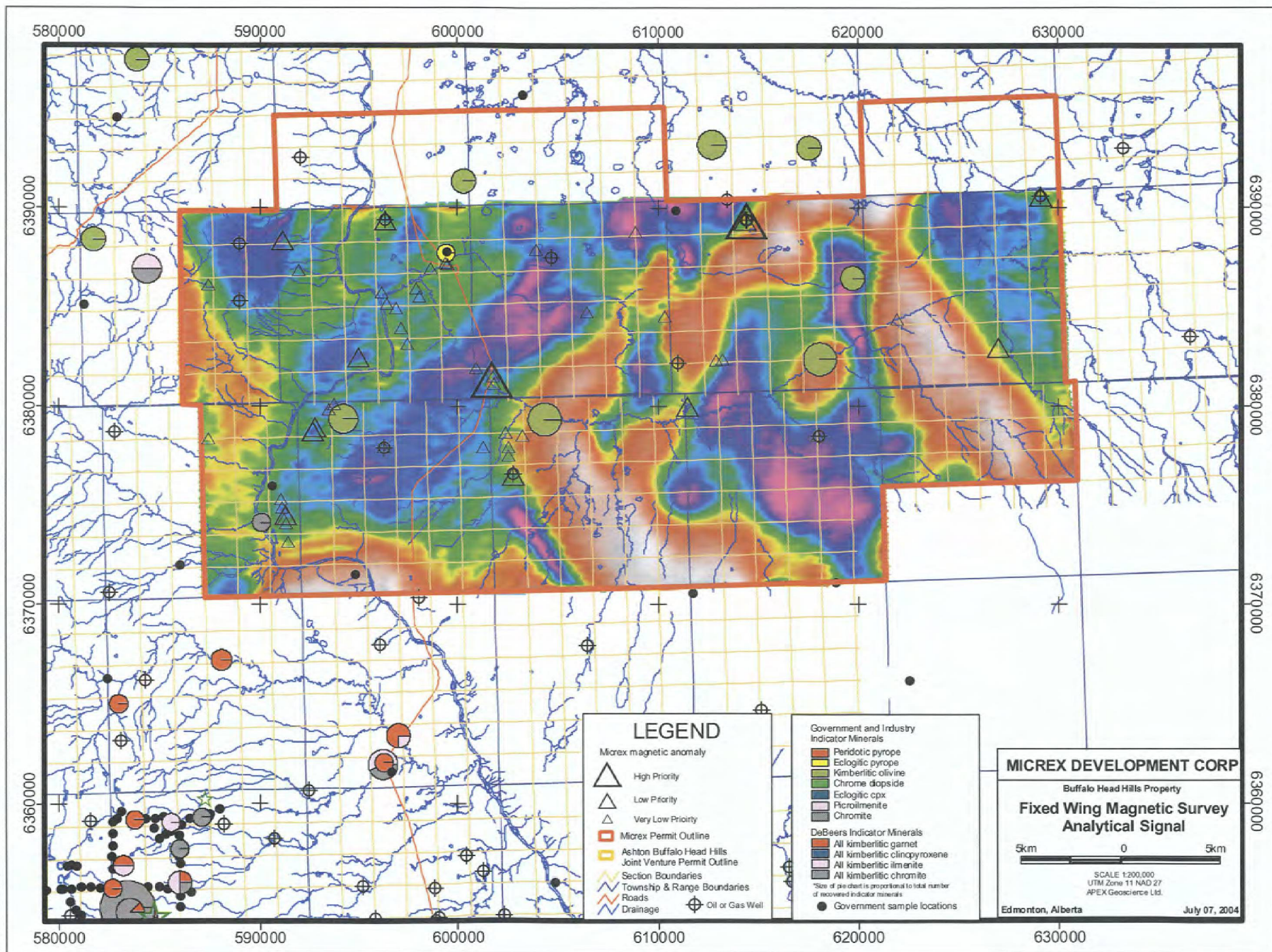




Figure 8.



anomaly. A number of these types of anomalies have been identified and have been placed in the lower priority rankings (Figures 6 to 8; Appendix 4). Magnetic anomalies that are part of linear and sinusoidal arrays are generally related to placer accumulations of magnetite in the overburden or are related to uncompensated elevation changes at the banks of large rivers. The anomalies that fit this criteria have been ranked in the lower priority rankings. A number of the priority 3 anomalies represent isolated high frequency magnetic anomalies that are likely related to near surface geological features and require follow-up exploration. A number of the priority 3 magnetic anomalies remain unexplained and may warrant follow-up ground geophysical surveys.

Based upon the review of the 2004 HRAM survey for Micrex's Buffalo Head Hills property, a few unexplained moderate and low priority magnetic anomalies exist on the property. These anomalies require ground checking for man-made culture. If these anomalies remain unexplained after ground truthing, then ground geophysical surveys should be considered as part of the next phase of exploration along with diamond indicator mineral sampling.

### **EXPLORATION EXPENDITURES**

Exploration expenditures by APEX at Micrex's Buffalo Head Hills diamond property total \$71,415 to date, plus GST (Appendix 1). Micrex Development Corp. reports additional property related exploration expenditures of \$10,000, plus GST, for the airborne geophysical survey and prospecting performed over the Buffalo Head Hills property and (Appendix 1). This yields a total of \$81,415 (plus GST) of exploration related expenditures for Micrex's Buffalo Head Hills property over the last year. Micrex Development Corp. reports that the direct acquisition costs for staking the ground in the Buffalo Head Hills was on the order of \$5,000, plus GST (Appendix 1).

Based upon assessment records and the author's knowledge of exploration costs in Alberta, approximately \$200,000 was spent on exploration for kimberlites on Micrex's Buffalo Head Hills property by the BHHJV (Skelton and Bursey, 1998 and 1999; Skelton and Willis, 2001). Much of the data provided in the assessment reports by the BHHJV has been reviewed and is useable for future exploration.

### **CONCLUSIONS AND DISCUSSION**

The regional setting for Micrex's Buffalo Head Hills diamond property is considered favourable for the presence of diamondiferous kimberlites. The permits are predominantly underlain by Early Proterozoic to Archean basement of the Buffalo Head Craton. The local bedrock geology and the underlying Archean and Proterozoic crystalline basement in association with Phanerozoic structures, such as the Peace River Arch, likely provided a favourable environment for the formation and ascent of kimberlitic magmas in the Buffalo Head Hills area. This regional geological and structural setting is also considered favourable for the formation of kimberlitic magma in the upper mantle and its ascent to



1  
surface during periodic tectonic activity associated with movement along the Peace River Arch and the Grosmont High. Significant crustal thickness (35 to 40) underlying the area in combination with a number of important Gurney (1984) G10 subcalcic pyrope garnets are a strong indication that the area was underlain by upper mantle suitable for the formation and preservation of diamonds. This is confirmed with the discovery of at least 26 diamondiferous kimberlite pipes to date in the Buffalo Head Hills area by the BHHJV. Exploration and drilling during 1997 to 2001 by the BHHJV has resulted in the discovery of no less than 10 kimberlites less than 70 km south of the southern property boundary of Micrex's Buffalo Head Hills property (Skelton and Bursey, 1998 and 1999; Skelton and Willis, 2001). The highly diamondiferous K252 Kimberlite is located approximately 61 km south of Micrex's Buffalo Head Hills property and has yielded a grade of 55 carats per hundred tonnes, demonstrating the economic potential of the Buffalo Head Hills kimberlites and the region.

Limited bedrock exposures have been observed and reported within the area due to presence of extensive glacial deposits. Local bedrock exposed in the area or intersected in near surface drilling is age correlative to bedrock in other parts of the Buffalo Head Hills that has been intruded by kimberlites. The glacial history for the Buffalo Head Hills region is very complex with regions of thick glacial drift, extensive glacial gravel and evidence of extensive glacial tectonism. Drift thickness is known to range from less than 25 m to greater than 250 m with multiple layers of till and glacial outwash. The complex glacial deposits and glacial history can be a serious impediment to exploration for kimberlites. Future exploration programs for kimberlites and diamonds in the Buffalo Head Hills area should include a full compilation of the glacial deposits and drift thickness. Areas of thin drift and less glacial complexity should be the focus of any future exploration programs. Those areas underlain by thick drift in preglacial paleo-river channels should be omitted from future exploration.

To date, a number of diamond indicator minerals have been recovered from limited sampling of outwash glacial gravel, recent fluvial gravel and till on Micrex's Buffalo Head Hills diamond property. The importance of these indicator minerals and potential source areas are unknown due to the presence of variable drift thickness and the poor sampling density. However, a number of samples collected from the Buffalo Head Hills property or down ice of the property by the AGS, the GSC, Ashton and Monopros have yielded significant numbers of indicator minerals including olivine, pyrope garnet, chromite and picroilmenite. All of these sample sites exist well north of the northernmost known BHHJV kimberlite. Therefore there is a strong likelihood that undiscovered kimberlites exist on or to the north of Micrex's Buffalo Head Hills property. The diamond potential of the area cannot be fully assessed with the limited amount of sampling that has been conducted to date. It is expected that further systematic sampling will lead to a better understanding of the diamond potential of the properties.

During March-April 2004, a HRAM survey was conducted over Micrex's Buffalo Head Hills property. Using Geosoft, the data was reviewed on a line by line profile basis to look for high frequency, short wavelength magnetic anomalies that reflect small, shallow source magnetic anomalies potentially related to geological features such as kimberlites. A

total of 2 priority 1 and 11 priority 3 magnetic anomalies were identified in the dataset and are prospective for kimberlites and require follow-up exploration. These anomalies all require ground checking for man-made culture. If these anomalies remain unexplained after ground truthing, then ground geophysical surveys should be considered as part of the next phase of exploration along with diamond indicator mineral sampling. At the same time, any of the geophysical anomalies considered prospective based upon past exploration by Ashton should also be ground checked and those that remain unexplained should be gridded and surveyed with ground geophysical techniques.

Based on these results, an a follow-up property-scale exploration program is warranted for Micrex's Buffalo Head Hills property including sampling in conjunction with ground geophysical surveys, followed by drilling of high priority targets. The DIM sampling program should be planned for the upcoming summer or fall months. In conjunction with the sampling program, a detailed structural interpretation that includes the acquisition and interpretation of RadarSat and digital elevation (DEM) data should be given strong consideration. RadarSat data in combination with detailed digital elevation data and airborne magnetic data shows a number of the Buffalo Head Hills kimberlites at the intersections of lineaments (Eccles *et al.*, 2000).

For existing targets identified out of previous exploration programs, as well as for newly identified geophysical targets at the Buffalo Head Hills property, a detailed ground geophysical program followed by drill testing should be considered during next winter after all of the targets have been ground checked. Consideration should also be given to testing some of the targets prior to drilling using deep penetrating electromagnetic techniques and/or gravity, based upon new discoveries of additional kimberlites using these techniques by the BHHJV.

## **RECOMMENDATIONS**

Based upon the favourable regional geological setting and the positive results of exploration conducted to date within Micrex's Buffalo Head Hills diamond property, a systematic follow-up exploration program, including diamond indicator mineral sampling, and ground geophysical surveys is warranted to search for diamondiferous kimberlites. If positive results are obtained from the ground geophysical surveys and diamond indicator sampling programs, then follow-up drill testing may be warranted.

The potential for discovery of diamondiferous kimberlites within Micrex's Buffalo Head Hills diamond properties is considered moderate based upon the regional geological setting in conjunction with the positive results of limited diamond indicator mineral sampling and, the presence of low to high priority airborne magnetic targets.

For Micrex's Buffalo Head Hills property, future exploration should be conducted in two stages (Table 3) and consist of the following:

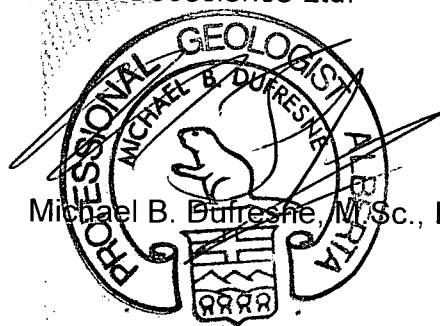
- Stage 1:** Conduct a late summer to fall sampling program for diamond indicator minerals with the planned collection of about 50 samples. The sampling program should be accompanied by or followed with a ground geophysical program to evaluate the existing low to high priority geophysical anomalies. In addition, a compilation of all available indicator sampling data in conjunction with RadarSat, DEM and airborne geophysical data leading to a structural interpretation should be completed for the property. The estimated cost of the Stage 1 program including the data compilation, fieldwork, sampling, data collection, processing and interpretation is **\$100,000**, plus GST (Table 3).
- Stage 2:** Conduct a water well or reverse circulation drilling program of two kimberlite targets within Micrex's Buffalo Head Hills diamond property. The development of targets will depend upon the Stage 1 exploration program. The estimated cost to conduct a two hole reverse circulation Stage 2 drilling program is **\$150,000** plus GST (Table 3).

**TABLE 3**  
**RECOMMENDED 2004-2005 PROGRAM AND BUDGET**  
**BUFFALO HEAD HILLS PROPERTY**

ITEM	DESCRIPTION	COST
<b>Stage 1</b>		
1	Full data compilation and structural interpretation; including LandSat, RadarSat, DEM and available all geophysical data	\$10,000
2	Ground truthing existing geophysical anomalies and 5 ground geophysical surveys at \$10,000 per target	\$50,000
3	Collection of 50 till samples (@\$800/sample all-up; Includes accommodation, travel, taxis, camp and field equipment and supplies, analytical, sample freight, etc.)	\$40,000
<b><u>Total Stage 1 Project Costs, Excluding GST</u></b>		<b>\$100,000</b>
<b>Stage 2</b>		
1	Conduct a two hole reverse circulation drilling program at an estimated cost of \$75,000 per drillhole; if more than two holes are drilled the cost per drillhole could decrease	\$150,000
<b><u>Total Stage 2 Project Costs, Excluding GST</u></b>		<b>\$150,000</b>
<b><u>Total Stage 1 and 2 Project Costs, Excluding GST</u></b>		<b>\$250,000</b>

The total estimated cost of the recommended first two stages of exploration for Micrex Development Corp.'s Buffalo Head Hills property, including drilling two holes, is **\$150,000**, plus GST.

APEX Geoscience Ltd.



Michael B. Dufresne, M.Sc., P. Geol.

Barbara G. Kupsh, M.Sc., G.I.T.

**PERMIT TO PRACTICE**

APEX Geoscience Ltd.

Signature *[Signature]*

Date *July 14, 2004*

PERMIT NUMBER: P-5824

The Association of Professional Engineers,  
Geologists and Geophysicists of Alberta

Edmonton, Alberta  
July 14, 2004



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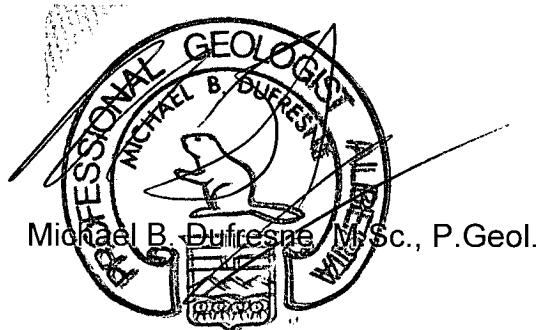
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## CERTIFICATE of AUTHOR

I, Michael B. Dufresne, M.Sc., P.Geol., do hereby certify that:

1. I am President of: APEX Geoscience Ltd.  
Suite 200, 9797 – 45th Avenue  
Edmonton, Alberta T6E 5V8  
Phone: 780-439-5380  
Fax: 780-433-1336.
2. I graduated with a B.Sc. Degree in Geology from the University of North Carolina at Wilmington in 1983 and with a M.Sc. Degree in Economic Geology from the University of Alberta in 1987.
3. I am and have been registered as a Professional Geologist with the Association of Professional Engineers, Geologists and Geophysicists of Alberta since 1989.
4. I have worked as a geologist for a total of 20 years since my graduation from university.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for, or directly supervised, the preparation of all sections of the Technical Report titled "**Assessment Report For Micrex Development Corp.'s Buffalo Head Hills Property, Northern Alberta: Mineral Permits 9302030098 to 107**", and dated July 14th, 2004 (the "Technical Report"). I have visited the property on several occasions over the last two years.
7. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
8. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
9. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
10. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 14th Day of July, 2004.  
Edmonton, Alberta, Canada





## CERTIFICATE of AUTHOR

I, Barbara G. Kupsch, M.Sc., do hereby certify that:

1. I graduated with a B.Sc. Degree in Geology from the University of Alberta at Edmonton in 2001 and with a M.Sc. Degree in Geology from the University of Alberta in 2003.
2. I am and have been registered as a Geologist In Training with the Association of Professional Engineers, Geologists and Geophysicists of Alberta since 2001.
3. I have worked as a geologist for a total of 3 months since my graduation from university.
5. I assisted in the preparation of all sections of the Technical Report titled **"Assessment Report For Micrex Development Corp.'s Buffalo Head Hills Property, Northern Alberta: Mineral Permits 9302030098 to 107"** and dated July 14th, 2004 (the "Technical Report"). I have not visited the property in question.
6. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
7. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
8. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
9. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 14th Day of July, 2004.  
Edmonton, Alberta, Canada

Barbara G. Kupsch, M.Sc., Geol. I. T.

Hazel Henson  
Alberta Energy Mineral Development Division  
7<sup>th</sup> Floor North Tower, Petroleum Plaza  
9945-108 Street  
Edmonton, Alberta T5K 2G6

July 14, 2004

Dear Ms. Henson:

**Re: Micrex Development Corp. - Filing of Assessment Report and Consent Letter**

Please find enclosed an assessment report titled, **"Assessment Report For Micrex Development Corp.'s Buffalo Head Hills Property, Northern Alberta: Mineral Permits 9302030098 to 107"**. The work was completed by APEX Geoscience Ltd. (APEX), on behalf of Micrex Development Corp (Micrex). Also attached is a letter and map indicating what lands are to be relinquished on the basis of a deficiency in expenditures.

Furthermore, I hereby consent to the duplication and use of APEX Geoscience Ltd.'s assessment report titled **"Assessment Report For Micrex Development Corp.'s Buffalo Head Hills Property, Northern Alberta: Mineral Permits 9302030098 to 107"**, after the one-year confidentiality period.

If you have any further questions or concerns, please contact me at (780) 439-5380.

Sincerely,



**APEX Geoscience Ltd.**  
Michael B. Dufresne, M.Sc., P.Geol.

Cc: Mr. Stan Marshall, President  
Micrex Development Corp.

**APPENDIX 1**

2:17 PM  
07/14/04  
Accrual Basis

**Micrex Development Corp.**  
**Expenses by Vendor Detail**  
January 1 2003 through July 14, 2004

**MICREX DEVELOPMENT CORP. EXPENDITURES TO DATE**  
**Buffalo Head Hills Property**

	Type	Date	Num	Memo	Account	Split	Amount
	Bill	03/31/2004		2003-2004 Consulting Services	Consulting Fees	Accounts Payable	10,000.00
Total							<u>10,000.00</u>
<b>APEX Geoscience Ltd.</b>							
	Bill	05/31/2004	3102	Geological Consulting	Geological	Accounts Payable	71,415.09
Total APEX Geoscience Ltd.							<u>71,415.09</u>
							<u>\$ 81,415.09</u>





Suite 200, 9797-45 Ave.  
Edmonton, AB - T6E 5V8  
Bus. 780-439-5380 - Fax 780-433-1336

apexgeo@apexgeoscience.com  
G.S.T. #: 13693 6119 RP0001

**BILL TO:**

*Micrex Development Corp.  
156 Laurier Dr. N.W.  
Edmonton, AB. T5R 5P9  
\* Buffalo Head Hills Project \**

**Invoice**

6/30/2004

INVOICE #

3102

Project Number

99220

DESCRIPTION	DAYS	RATE	AMOUNT
Principals Directly Involved - Office Time	4.55	500.00	2,275.00T
Geological Services Performed Office -	0.53	250.00	132.50T
Principal Directly Involved - Office	0.33	400.00	132.00T
Geological Services Performed Office -	2.53	170.00	430.10T
Review & supervision airborne survey		5,000.00	5,000.00T
Assessment report completion		5,000.00	5,000.00T
Map Town: maps, Inv#059608		36.45	36.45T
Firefly Aviation: completion of survey, 4580 km		58,395.00	58,395.00T
FedEx: courier charges; waybill # 846037527939		13.99	13.99T
Allstream: long distance charges; May/04		0.05	0.05T
Total Reimbursable Expenses			58,445.49
Business Number: 13693 611			
Invoices outstanding after 30 days will be assessed late charges of 2 percent per month	GST		4,999.06
	<b>TOTAL</b>		<b>\$76,414.15</b>

APPENDIX 2



## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030098 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
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2002-03-20	AGREEMENT SELECTION	A93 020010201	APPL-MET. AND IND. MINERALS PERMIT

CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N
CLIENT ID RELATION STATUS	INTEREST
804-8008 001 OWNER ACTIVE MICREX DEVELOPMENT CORP.	50.0000000
805-6384 001 OWNER ACTIVE MARSHALL, STANLEY EDWARD	50.0000000



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030098 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- LAND / ZONE DESCRIPTION -----

LAND DESCRIPTION:  
5-06-098: 19-36  
5-06-099: 1-18

METALLIC AND INDUSTRIAL MINERALS

----- GENERAL REMARKS -----

REMARK TYPE

REMARK

01 OSA1 - ATHABASCA	OIL SANDS AREA 1 - ATHABASCA - PETROLEUM IS DEEMED TO BE OIL
01 OSA1 - ATHABASCA	SANDS BETWEEN THE TOP OF THE VIKING FORMATION AND THE BASE
01 OSA1 - ATHABASCA	OF THE WOODBEND GROUP.

----- ADDENDUM DETAIL -----

ADDENDUM NUMBER: CRG 0001 03

NAME: CARIBOU RANGE  
CARIBOU RANGE  
ACCESS LEVEL: 3 SURFACE ACCESS IS SUBJECT TO SPECIFIC RESTRICTIONS  
SECURITY LEVEL: P PUBLIC INFORMATION  
ACTIVITY TYPE: A ALL ACTIVITIES  
EFFECTIVE DATE: 1991-06-10 EXPIRY DATE: 9999-99-99

----- CONTACT CLIENT -----

CONTACT ID/NAME: F023 RALPH WOODS  
PHONE NO: (780) 624 6331 TITLE: LAND MANAGEMENT FORESTER  
  
CLIENT ID: 805-9652 001 STATUS 5 ACTIVE  
PEACE RIVER OFFICE - LAND AND FOREST SERVICE  
DEPT. OF SUSTAINABLE RESOURCE DEV  
9621 96 AVE FLOOR MAIN  
PEACE RIVER ALBERTA  
CANADA T8S 1T4

----- LAND / ZONE DESCRIPTION -----

LAND DESCRIPTION:  
5-06-098: 19-36  
5-06-099: 1SP;2NP,SEP,SW;3S,NW,NEP;4-7;8S,NW,NEP;9S,NP;10SP,NWP;17SP;18SP



ENERGY

Peter W. - ref. #99239

REQ: R0874070 ACCT: EN0759

REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300

PAGE = 3

AGREEMENT TYPE/NUMBER: 093 9302030098 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

ADDENDUM NUMBER: CRG 0001 03 ( CONTINUED ... )

ALL MINERALS

----- A D D E N D U M T E X T -----

TEXT ID: WLF 16 FISH AND WILDLIFE SERVICES

IS/ARE WITHIN AN IMPORTANT CARIBOU RANGE.

\*\*\*\*\*  
\* THIS SEARCH IS PROVIDED ON THE CONDITION AND UNDERSTANDING THAT HER MAJESTY THE QUEEN IN RIGHT OF ALBERTA IS IN \*  
\* NO WAY RESPONSIBLE FOR LOSS OR DAMAGE ARISING FROM ANY ERRORS OR OMISSIONS IN THIS SEARCH AND ANY PERSON MAKING \*  
\* USE OF OR RELYING IN ANY WAY ON THIS SEARCH HEREBY RELEASES HER MAJESTY THE QUEEN IN RIGHT OF ALBERTA FROM ANY \*  
\* LIABILITY FOR SUCH LOSS OR DAMAGE. \*  
\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*





## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

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PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030099 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

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TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020010401	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020010401	APPL-MET. AND IND. MINERALS PERMIT CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N	
CLIENT ID	RELATION STATUS	INTEREST
804-8008 001	OWNER ACTIVE	50.0000000
MICREX DEVELOPMENT CORP.		
805-6384 001	OWNER ACTIVE	50.0000000
MARSHALL, STANLEY EDWARD		



ENERGY

Peter W. - ref. #99239  
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LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030099 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-07-098: 1-36

METALLIC AND INDUSTRIAL MINERALS

----- G E N E R A L R E M A R K S -----

REMARK TYPE

REMARK

02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2

OIL SANDS AREA 2A - PEACE RIVER AREA 2 - PETROLEUM IS DEEMED  
TO BE OIL SANDS BETWEEN THE TOP OF THE PEACE RIVER FORMATION  
AND THE BASE OF THE RUNDLE GROUP.

----- A D D E N D U M D E T A I L -----

ADDENDUM NUMBER: CRG 0001 03

NAME: CARIBOU RANGE  
CARIBOU RANGE  
ACCESS LEVEL: 3 SURFACE ACCESS IS SUBJECT TO SPECIFIC RESTRICTIONS  
SECURITY LEVEL: P PUBLIC INFORMATION  
ACTIVITY TYPE: A ALL ACTIVITIES  
EFFECTIVE DATE: 1991-06-10 EXPIRY DATE: 9999-99-99

----- C O N T A C T C L I E N T -----

CONTACT ID/NAME: F023 RALPH WOODS  
PHONE NO: (780) 624 6331 TITLE: LAND MANAGEMENT FORESTER

CLIENT ID: 805-9652 001 STATUS 5 ACTIVE  
PEACE RIVER OFFICE - LAND AND FOREST SERVICE  
DEPT. OF SUSTAINABLE RESOURCE DEV  
9621 96 AVE FLOOR MAIN  
PEACE RIVER ALBERTA  
CANADA T8S 1T4

----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-07-098: 1-30;31NP,SE,SWP;32S,NWP,NE;33-36

ALL MINERALS



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 3

AGREEMENT TYPE/NUMBER: 093 9302030099 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

ADDENDUM NUMBER: CRG 0001 03 ( CONTINUED ... )

----- A D D E N D U M    T E X T -----  
TEXT ID: WLF 16 FISH AND WILDLIFE SERVICES

IS/ARE WITHIN AN IMPORTANT CARIBOU RANGE.

\*\*\*\*\*  
\* THIS SEARCH IS PROVIDED ON THE CONDITION AND UNDERSTANDING THAT HER MAJESTY THE QUEEN IN RIGHT OF ALBERTA IS IN \*  
\* NO WAY RESPONSIBLE FOR LOSS OR DAMAGE ARISING FROM ANY ERRORS OR OMISSIONS IN THIS SEARCH AND ANY PERSON MAKING \*  
\* USE OF OR RELYING IN ANY WAY ON THIS SEARCH HEREBY RELEASES HER MAJESTY THE QUEEN IN RIGHT OF ALBERTA FROM ANY \*  
\* LIABILITY FOR SUCH LOSS OR DAMAGE. \*  
\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*



## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030100 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020010601	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020010601	APPL-MET. AND IND. MINERALS PERMIT
			CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N	
CLIENT ID	RELATION STATUS	INTEREST
804-8008 001	OWNER ACTIVE	50.00000000
MICREX DEVELOPMENT CORP.		
805-6384 001	OWNER ACTIVE	50.00000000
MARSHALL, STANLEY EDWARD		



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030100 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-08-098: 1-36

METALLIC AND INDUSTRIAL MINERALS

----- G E N E R A L R E M A R K S -----

REMARK TYPE

REMARK

02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2

OIL SANDS AREA 2A - PEACE RIVER AREA 2 - PETROLEUM IS DEEMED  
TO BE OIL SANDS BETWEEN THE TOP OF THE PEACE RIVER FORMATION  
AND THE BASE OF THE RUNDLE GROUP.

----- A D D E N D U M D E T A I L -----

ADDENDUM NUMBER: CRG 0001 03

NAME: CARIBOU RANGE  
CARIBOU RANGE  
ACCESS LEVEL: 3 SURFACE ACCESS IS SUBJECT TO SPECIFIC RESTRICTIONS  
SECURITY LEVEL: P PUBLIC INFORMATION  
ACTIVITY TYPE: A ALL ACTIVITIES  
EFFECTIVE DATE: 1991-06-10 EXPIRY DATE: 9999-99-99

----- C O N T A C T C L I E N T -----

CONTACT ID/NAME: F023 RALPH WOODS  
PHONE NO: (780) 624 6331 TITLE: LAND MANAGEMENT FORESTER

CLIENT ID: 805-9652 001 STATUS 5 ACTIVE  
PEACE RIVER OFFICE - LAND AND FOREST SERVICE  
DEPT. OF SUSTAINABLE RESOURCE DEV  
9621 96 AVE FLOOR MAIN  
PEACE RIVER ALBERTA  
CANADA T8S 1T4

----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:

5-08-098: 1-4;5NP,SE,SWP;6SP;8SEP;9NP,SE,SWP;10-14;15SE,SWP,NEP;22SEP;23E,WP;24;25S,NWP,NE;26SP,NEP;36SP

ALL MINERALS





ENERGY

Peter W. - ref. #99239

REQ: R0874070 ACCT: EN0759

REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300

PAGE = 3

AGREEMENT TYPE/NUMBER: 093 9302030100 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

ADDENDUM NUMBER: CRG 0001 03 ( CONTINUED ... )

----- A D D E N D U M T E X T -----  
TEXT ID: WLF 16 FISH AND WILDLIFE SERVICES

IS/ARE WITHIN AN IMPORTANT CARIBOU RANGE.

\*\*\*\*\*  
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\* LIABILITY FOR SUCH LOSS OR DAMAGE. \*  
\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*



## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030101 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020010801	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020010801	APPL-MET. AND IND. MINERALS PERMIT

CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA TSR 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N		
CLIENT ID	RELATION	STATUS	INTEREST
804-8008 001	OWNER	ACTIVE	50.00000000
MICREX DEVELOPMENT CORP.			
805-6384 001	OWNER	ACTIVE	50.00000000
MARSHALL, STANLEY EDWARD			



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030101 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-09-098: 1-36

METALLIC AND INDUSTRIAL MINERALS

----- G E N E R A L R E M A R K S -----

REMARK TYPE

REMARK

02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2

OIL SANDS AREA 2A - PEACE RIVER AREA 2 - PETROLEUM IS DEEMED  
TO BE OIL SANDS BETWEEN THE TOP OF THE PEACE RIVER FORMATION  
AND THE BASE OF THE RUNDLE GROUP.

\*\*\*\*\*  
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\* LIABILITY FOR SUCH LOSS OR DAMAGE. \*  
\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*



## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030102 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020011101	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020011101	APPL-MET. AND IND. MINERALS PERMIT
			CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N	
CLIENT ID	RELATION STATUS	INTEREST
804-8008 001	OWNER ACTIVE	50.0000000
MICREX DEVELOPMENT CORP.		
805-6384 001	OWNER ACTIVE	50.0000000
MARSHALL, STANLEY EDWARD		



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030102 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- LAND / ZONE DESCRIPTION -----

LAND DESCRIPTION:

5-10-098: 1-3;10-15;22-27;34-36  
5-10-099: 1-3;10-15;22-27;34-36

METALLIC AND INDUSTRIAL MINERALS

----- GENERAL REMARKS -----

REMARK TYPE

REMARK

02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2

OIL SANDS AREA 2A - PEACE RIVER AREA 2 - PETROLEUM IS DEEMED  
TO BE OIL SANDS BETWEEN THE TOP OF THE PEACE RIVER FORMATION  
AND THE BASE OF THE RUNDLE GROUP.

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\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*





## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030103 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020010301	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020010301	APPL-MET. AND IND. MINERALS PERMIT
			CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N
CLIENT ID RELATION STATUS	INTEREST
804-8008 001 OWNER ACTIVE MICREX DEVELOPMENT CORP.	50.0000000
805-6384 001 OWNER ACTIVE MARSHALL, STANLEY EDWARD	50.0000000



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030103 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-06-099: 19-36  
5-06-100: 1-18

METALLIC AND INDUSTRIAL MINERALS

----- G E N E R A L R E M A R K S -----

REMARK TYPE

REMARK

01 OSA1 - ATHABASCA  
01 OSA1 - ATHABASCA  
01 OSA1 - ATHABASCA

OIL SANDS AREA 1 - ATHABASCA - PETROLEUM IS DEEMED TO BE OIL  
SANDS BETWEEN THE TOP OF THE VIKING FORMATION AND THE BASE  
OF THE WOODBEND GROUP.

\*\*\*\*\*  
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\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*



## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030104 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020010501	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020010501	APPL-MET. AND IND. MINERALS PERMIT
			CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N
CLIENT ID RELATION STATUS	INTEREST
804-8008 001 OWNER ACTIVE MICREX DEVELOPMENT CORP.	50.0000000
805-6384 001 OWNER ACTIVE MARSHALL, STANLEY EDWARD	50.0000000



## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030104 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

## ----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-07-099: 1-36

METALLIC AND INDUSTRIAL MINERALS

## ----- G E N E R A L R E M A R K S -----

## REMARK TYPE

## REMARK

02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2

OIL SANDS AREA 2A - PEACE RIVER AREA 2 - PETROLEUM IS DEEMED  
TO BE OIL SANDS BETWEEN THE TOP OF THE PEACE RIVER FORMATION  
AND THE BASE OF THE RUNDLE GROUP.

## ----- A D D E N D U M D E T A I L -----

ADDENDUM NUMBER: CRG 0001 03

NAME: CARIBOU RANGE  
CARIBOU RANGE  
ACCESS LEVEL: 3 SURFACE ACCESS IS SUBJECT TO SPECIFIC RESTRICTIONS  
SECURITY LEVEL: P PUBLIC INFORMATION  
ACTIVITY TYPE: A ALL ACTIVITIES  
EFFECTIVE DATE: 1991-06-10 EXPIRY DATE: 9999-99-99

## ----- C O N T A C T C L I E N T -----

CONTACT ID/NAME: F023 RALPH WOODS  
PHONE NO: (780) 624 6331 TITLE: LAND MANAGEMENT FORESTER  
  
CLIENT ID: 805-9652 001 STATUS 5 ACTIVE  
PEACE RIVER OFFICE - LAND AND FOREST SERVICE  
DEPT. OF SUSTAINABLE RESOURCE DEV  
9621 96 AVE FLOOR MAIN  
PEACE RIVER ALBERTA  
CANADA T8S 1T4

## ----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-07-099: 1;2;3S,NP;4SP,NEP;10SEP;11SE,SWP,NEP;12S,NP

ALL MINERALS



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 3

AGREEMENT TYPE/NUMBER: 093 9302030104 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

ADDENDUM NUMBER: CRG 0001 03 ( CONTINUED ... )

----- A D D E N D U M T E X T -----  
TEXT ID: WLF 16 FISH AND WILDLIFE SERVICES

IS/ARE WITHIN AN IMPORTANT CARIBOU RANGE.

\*\*\*\*\*  
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\* LIABILITY FOR SUCH LOSS OR DAMAGE. \*  
\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*





## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030105 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20		
CANCELLATION DATE:		CANCELLATION TYPE:	
SECURITY TYPE:		SECURITY DEPOSIT AMOUNT:	\$0.00
OFFSET COMPENSATION:	N	ENCUMBRANCE COUNT:	0
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
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2002-03-20	AGREEMENT SELECTION	A93 020010701	APPL-MET. AND IND. MINERALS PERMIT
			CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N
CLIENT ID	RELATION STATUS
INTEREST	
804-8008 001 OWNER ACTIVE	50.0000000
MICREX DEVELOPMENT CORP.	
805-6384 001 OWNER ACTIVE	50.0000000
MARSHALL, STANLEY EDWARD	



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030105 METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- LAND / ZONE DESCRIPTION -----

LAND DESCRIPTION:  
5-08-099: 1-36

METALLIC AND INDUSTRIAL MINERALS

----- GENERAL REMARKS -----

REMARK TYPE

REMARK

02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2

OIL SANDS AREA 2A - PEACE RIVER AREA 2 - PETROLEUM IS DEEMED  
TO BE OIL SANDS BETWEEN THE TOP OF THE PEACE RIVER FORMATION  
AND THE BASE OF THE RUNDLE GROUP.

\*\*\*\*\*  
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\*\*\* END OF AGREEMENT \*\*\*



## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030106 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020011001	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020011001	APPL-MET. AND IND. MINERALS PERMIT
			CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N
CLIENT ID RELATION STATUS	INTEREST
804-8008 001 OWNER ACTIVE MICREX DEVELOPMENT CORP.	50.0000000
805-6384 001 OWNER ACTIVE MARSHALL, STANLEY EDWARD	50.0000000



ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030106 METALLIC AND INDUSTRIAL MINERALS PERMIT

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----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:  
5-09-099: 1-36

METALLIC AND INDUSTRIAL MINERALS

----- G E N E R A L R E M A R K S -----

REMARK TYPE

REMARK

02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2  
02 OSA2A - PEACE RIVER AREA 2

OIL SANDS AREA 2A - PEACE RIVER AREA 2 - PETROLEUM IS DEEMED  
TO BE OIL SANDS BETWEEN THE TOP OF THE PEACE RIVER FORMATION  
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## ENERGY

Peter W. - ref. #99239  
REQ: R0874070 ACCT: EN0759  
REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 1

AGREEMENT TYPE/NUMBER: 093 9302030107 METALLIC AND INDUSTRIAL MINERALS PERMIT

## ----- C U R R E N T S T A T U S -----

STATUS:	ACTIVE	LAST UPDATE DATE:	2002-03-21
AGREEMENT AREA:	9,216.0000	TERM:	10 YRS 0 MTHS 0 DAYS
TERM DATE:	2002-03-20		
CURRENT EXPIRY DATE:	2012-03-20	CANCELLATION TYPE:	
CANCELLATION DATE:		SECURITY DEPOSIT AMOUNT:	\$0.00
SECURITY TYPE:		ENCUMBRANCE COUNT:	0
OFFSET COMPENSATION:	N		
WELL COUNT:	0		

## ----- O R I G I N D A T A -----

SALE/ORDER IN COUNCIL DATE:	ORIGINAL EXPIRY DATE:	2012-03-20
PAYMENT ORIGIN:	ORIGINAL AREA:	9,216.0000
APPL. - MET. AND IND. MINERALS	PAYMENT AMOUNT:	\$0.00

## ----- R E L A T E D A G R E E M E N T S / A M E N D M E N T S -----

DATE	DESCRIPTION	AGREEMENT TYPE NUMBER	TYPE DESCRIPTION
2002-03-20	ORIGINATING APPLICATION	A93 020010901	APPL-MET. AND IND. MINERALS PERMIT
2002-03-20	AGREEMENT SELECTION	A93 020010901	APPL-MET. AND IND. MINERALS PERMIT
			CANC

## ----- D E S I G N A T E D R E P R E S E N T A T I V E -----

NAME AND ADDRESS	STATUS: ACTIVE
804-8008 MICREX DEVELOPMENT CORP. 001 156 LAURIER DR NW EDMONTON	ALBERTA T5R 5P9

## ----- C U R R E N T P A R T I C I P A N T S -----

LAST TRANSFER DATE:	TRANSFER PENDING: N
CLIENT ID RELATION STATUS	INTEREST
804-8008 001 OWNER ACTIVE MICREX DEVELOPMENT CORP.	50.0000000
805-6384 001 OWNER ACTIVE MARSHALL, STANLEY EDWARD	50.0000000



ENERGY

Peter W. - ref. #99239

REQ: R0874070 ACCT: EN0759

REPORT DATE: 2004-05-18 TIME: 09:26:43

LAND STATUS AUTOMATED SYSTEM  
MINERAL AGREEMENT SEARCH BY CLIENT ID

LFAS4300  
PAGE = 2

AGREEMENT TYPE/NUMBER: 093 9302030107

METALLIC AND INDUSTRIAL MINERALS PERMIT

CONTINUED ...

----- L A N D / Z O N E D E S C R I P T I O N -----

LAND DESCRIPTION:

5-08-100: 1-18

5-09-100: 1-18

METALLIC AND INDUSTRIAL MINERALS

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\* LIABILITY FOR SUCH LOSS OR DAMAGE. \*  
\*\*\*\*\*

\*\*\* END OF AGREEMENT \*\*\*



APPENDIX 3

**BUFFALO HEAD HILLS PROJECT  
PEACE RIVER AREA, ALBERTA**

**HIGH RESOLUTION AEROMAGNETIC  
SURVEY (HRAM)  
LOGISTICAL REPORT**

**For**

**MICREX DEVELOPMENT CORP.**

**May 2004**

**By**

**Bruce T. Evans, P.Geol.  
Firefly Aviation Ltd.  
Calgary, Alberta, Canada**

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## 1.0 INTRODUCTION

This report describes the specifications and operations of an airborne geophysical survey carried out for Micrex Development Corp. by Firefly Aviation Ltd., during March and April of 2004. The Firefly Aviation Ltd. Offices are located at Springbank Airport, 208C Avro Lane, Calgary, Alberta T3Z 3S5. Telephone (403) 246-8083, fax (403) 202-1493.

The purpose of a survey of this type was to acquire high resolution, high sensitivity aeromagnetic data over an area located northeast of Peace River, Alberta. The end result of the HRAM data processing was to provide detailed data to assess the area for anomalies and magnetic features pertaining to their relevance in the local geology.

To achieve this purpose, the survey area was systematically traversed by an aircraft carrying geophysical instruments along parallel flight lines (traverses) spaced 200 meters apart in a north south alignment. The lines were flown normal to the traverses spaced at 1500 meters. The nominal flying height was a best-fit draped 60 meters above the terrain surface. During April 2004 the total number of line kilometres flown and accepted are 4,580 km.

## 2.0 SURVEY AREA

The survey area is located in Buffalo Head Hills area, approximately 100 kilometres northeast of the town of Peace River, Alberta. The survey was conducted over an area as defined by Micrex Development Corp. The area of the survey is illustrated on the survey area map included in the appendices of this report.

## 3.0 EQUIPMENT SPECIFICATIONS

### 3.1 AIRCRAFT

The survey was carried out using a Piper Navajo PA-31 aircraft, registration C-FOOO, configured with a specially designed rigid-mount tail boom for geophysical survey operations. The aircraft is equipped with a high sensitivity magnetometer and a full on-board real time compensation recording computer, and related equipment. It is a single engine aircraft with full avionics, including real time differential 3D GPS navigation.

The aircraft has been modified to conduct airborne geophysical surveys. Considerable effort has been made to remove all ferruginous materials near the sensor and to ensure that the aircraft electrical systems do not create any noise.

The following table lists the relevant aircraft flight parameters for conducting HRAM surveys.

TYPE	R/N	TSOH HOURS	FUEL CAPACITY	CRUISE (kts)	SURVEY ENDURANCE
Piper PA-31	C-FOOO	Left Eng ~1081 hrs Right Eng ~1081 hrs	244 gallons, AVGAS 100/130	165 knots Survey: 150 kts	7.0 hours
Normal Climb/Descent Gradient		1,000 FPM **			
Survey Fuel Consumption		~ 35.0 gph			

\* TSOH = Time Since Overhaul

\*\* This is best rate of climb at SL at gross weight as indicated in the PA-31 pilots' operating manual; short duration rate of climb is much higher, dependent on outside temperature.

### 3.2 AIRBORNE GEOPHYSICAL EQUIPMENT

The airborne geophysical system has one high sensitivity, cesium vapor magnetometer. Ancillary support equipment include tri-axial fluxgate magnetometer, radar altimeter, barometric altimeter, GPS receiver and a navigation system which includes a left/right indicator and a screen showing the survey area with real time flight path. All data are collected and stored by the data acquisition system. The following provides the detailed equipment specifications.

#### Cesium Vapor Magnetometer:

Manufacturer	Geometrics
Model	G-822
Resolution	0.001 nT counting @ 0.1 per second
Sensitivity	+/-0.005 nT
Dynamic Range	15,000 to 100,000 nT
Fourth Difference	0.02 nT

#### Tri-Axial Magnetic Field Sensor (for compensation, mounted in the tail boom proximal to the CS-2 pod):

Manufacturer	Billingsley Magnetics
Model	TFM 1000
Internal Noise	at 1 Hz - 1 kHz; 0.6 nT rms
Bandwidth	0 to 1 kHz maximally flat, -12 dB/octave roll off beyond 1 kHz
Frequency Response	1 Hz - 100 Hz: +/- 0.5% 100 Hz - 500 Hz: +/- 1.5% 500 Hz - 1 kHz: +/- 5.0%
Calibration Accuracy:	+/- 0.5%
Orthogonality	+/- 0.5% worst case
Package Alignment	+/- 0.5% over full temperature range
Scaling Error	absolute: +/- 0.5% between axes: +/- 0.5%

#### Radar Altimeter:

Manufacturer	King
Model	KRA-10A
Accuracy	5% up to 2,500 feet
Calibrate Accuracy	1%
Output	Analogue for pilot; Converted to digital for data acquisition

#### Differential 3D GPS Receiver

Manufacturer	Trimble and Novatel OEM3
Model	AgGPS 132
Serial Number	0224006957
Type	Continuous tracking, L1 frequency, C/A code (SPS), 12 channel (independent)
Position Sensitivity	once per second

---

Accuracy	position (SA implemented) 100 meters, position (no SA) 30 m, velocity 0.1 knot, time recovery 1 pps, 100 nsec pulse width
Data Recording	all GPS data and positional data logged by Picodas Unit

Navigation Interface (with pilot and operator readouts):

Manufacturer	AG-NAV Inc.
Model	P141
Data Input	Real time processing of GPS output data
Pilot Readout	Left/Right indicator / forward line projection screen
Operator Readout	Screen modes: map, survey and line
Data Recording	All data recorded in real time on Compact Flash disk via DGR33A

Data Acquisition System :

Manufacturer	RMS Instruments
Model	DGR33A with Chart Recorder
Operating System	MS-DOS
Microprocessor	RMS4183A
Memory	On board up to 128 MB, via SCSI Compact Flash Interface
Clock	real time; hardware implementation of MC14618 in the integrated peripherals controller
I/O Slots	5 AT and 3 PC compatible slots
Display	Electro – luminescent 640x400 pixels
Graphic Display	Scrolling analog chart simulation with up to 5 windows operator selectable; freeze display capability to hold image for inspection
Recording Media	128 MB SCSI Compact Flash Drive
Sampling	Programmable. Rate for this program set at 1 Hz.
Inputs	32 differential analog inputs
Serial Ports	2 RS-232/RS422
Parallel Ports	4 channel Serial I/O; 4 channel ARINC

Magnetometer Processor

Manufacturer	Geometrics
Model	
Input Range	20,000 - 100,000 nT
Resolution	0.001 nT
Bandwidth	0.7, 1 or 2 Hz
Input Signal	TTL, CMOS, Open collector compatible or sine wave with decoupler
Input Impedance	TTL>1K Ohm

Magnetic compensation for aircraft and heading effects is done in real time. Raw magnetic values are also stored and thus if desired, compensation with different variables can be run at a later time.

Magnetic Compensation System:

Manufacturer	RMS Instruments
Model	AADCII
Operating System	MS-DOS
Inputs	1 to 4 high sensitivity magnetometers
Input Frequency Range	70khz to 350khz
Magnetic Field Range	20,000 to 100,000 nT
Front End Counter	100 MHz

---

Resolution	1 pT
Compensation Perf.	Improvement ratio 10 to 20 typical for total field
Accuracy of Compens.	0.035 nT standard deviation for the entire aircraft flight envelope in the bandwidth 0 to 1 hz typical
Data Output Rate	10 hz maximum
Internal System Noise	less than 1 pT
Vector Magnetometer	3-Axis Fluxgate over sampled, 16 bit resolution
Outputs	3 Serial RS232C ports, max rate 19.2 Kbaud Magnetometer data output Direct Interface with GR33A Parallel output port, 16 bit with full handshaking 4 Analog outputs with 12 bit resolution.

Power Supplies:

- 1) Power Distribution Unit manufactured by Analytic Systems Ltd. interfaces with the aircraft power and provides filtered and continuous power at 27.5 VDC to all components.

### 3.3 MAGNETOMETER BASE STATION

High sensitivity base station data are provided by a cesium vapor magnetometer, data logging onto a dedicated PC module.

Magnetic Sensor:

Scintrex Ltd. Smartmag Cesium

Magnetic Processor:

Manufacturer	Scintrex Ltd.
Model	SM-2
Input Range	15,000 - 100,000 nT
Resolution	0.01 nT
Bandwidth	0.7, 1 or 2 Hz
Input Signal	TTL, CMOS, Open collector compatible or sine wave with decoupler
Input Impedance	TTL>1K Ohm

Logging Software:

Logging software by Scintrex Ltd. Compatible to PC with RS 232 input; supports real time graphics, automatic startup, compressed data storage, selectable start/stop times, automatic disk swapping, plotting of data to screen or printer at user selected scales, and fourth digital difference and diurnal quality flags set by user.

### 3.4 GPS BASE STATION

Ground GPS data was collected to perform any required post-flight differential correction to the flight path. The ground GPS base station equipment is described below:

Manufacturer	Novatel
Model	Novatel OEM2 Card
Type	Continuous tracking, L1 frequency, C/A code (SPS), 10 channel
Position Update	once per second



---

Accuracy	with SA implemented 100 meters, no SA 30 meters, velocity 0.1 knot, time recovery 1 pps, 100 nsec pulse width
Data Recording	all GPS raw and positional data logged by PC based data logger

#### **4.0 SURVEY SPECIFICATIONS**

##### **4.1 LINES AND DATA**

Survey area coverage	A total of 8,364 survey line kilometers were collected.
Traverse Line Direction	270 and 090 degrees true azimuth.
Line Interval	150 m
Tie Line Interval	1000 m flown orthogonal to survey lines.
Terrain Clearance	60 meters drape mode.
Average ground speed	75 meters/second
Data point interval:	Magnetic: 7.5 meters relative ground spacing per sample point.

##### **4.2 TOLERANCES**

- a) Line spacing: At no point did the traverse or control lines deviate more than 50% of the designated flight line spacing over a period of one kilometer of line flown.
- b) Terrain clearance: All flight lines were within tolerance of the planned drape surface.
- c) Diurnal magnetic variation: As per spec, with data not acquired during magnetic storms or short term disturbances which exceeded spec.
- d) Missing data: Any lines with channels or portions of channels missing from the database were reflown.

##### **4.3 NAVIGATION AND RECOVERY**

The satellite navigation system was used to ferry to the survey site and to survey along each line using UTM coordinates. The survey coordinates of the survey outline for navigation purposes and flight path recovery were calculated from the project area coordinates listed above.

The navigation accuracy is variable depending on the number and condition of the satellites, however with use of the real time differential 3D GPS navigation it is generally less than five meters and typically in the 1 to 3 meter range. Post-flight differential correction of the flight path, which corrects for satellite range errors, improves the accuracy of the flight path recovery to approximately within one to three meters.

##### **4.4 OPERATIONAL LOGISTICS**

The main base of operations for the White Bear Project HRAM survey was the community of Peace River (CYPE). The base station magnetometer and GPS equipment were located in a magnetically quiet location at the airport.

Fuel for the aircraft was purchased on site from the local bulk fuel dealer. Accommodations for the field crew were secured in Peace River.

The field crew consisted of:      Dave Fenwick – Survey Pilot  
   Travis Reed – Equipment Operator  
   Matt Johnston – Field Data Processor

The processing crew was:      Bruce Evans – Project Manager

Jeremy Weber – Senior Processor, Quality Control

Field operations were conducted at the White Bear Project between April 21 and April 26, 2004. The aircraft and crew mobilized to the project on April 5, 2004, and conducted initial calibration and compensation flights the same day. The aircraft and crew demobilized from the project on April 28, 2004 and arrived back at the Calgary base the same day. The final acquisition flight was completed on April 26, 2004. There were a total of 7 accepted survey flights, including ferry and survey flights, compensation, and reflights. Unacceptable mission data flights are not included in this total.

## 5.0 DATA PROCESSING

After each mission the flight data was fully field processed and quality-checked. Each line of data was viewed on-screen, displaying raw mag, compensated mag, ground mag, noise, radar altitude, Lat./Long, flight path, and in-grid/out-of-grid. These, with the digital review, were the basis for the data QC. Any flight lines that exceeded the survey specifications due to aircraft positioning, diurnal variations or noise were noted for reflight, and forwarded to the flight crew for re-collection.

The processing procedure during the survey consisted of the following:

- 1) Import all flight and base data into Geosoft.
- 2) Edit DIURNAL channel to remove any uncharacteristic spikes and linearly interpolate across any gaps.
- 3) Establish table of mean terrain clearances at intersection locations from tie line data to provide elevation guidance for survey line navigation. Grid differences in elevations at intersections of tie and survey lines to provide quality check on elevation control and tag any for reflight.
- 4) Edit flight path channels to remove any false spikes and linearly interpolate gaps.
- 5) Edit RAWMAG channel to remove any false spikes and linearly interpolate gaps.
- 6) Create new channel as  $MAGDC = (MAG1 - BASEMAG) + \text{base constant } (59656)$ .
- 7) Perform lag correction and heading correction to MAGDC channel.
- 8) Perform tie line leveling using all the survey line data to level the tie lines.
- 9) Perform preliminary survey line leveling using the leveled tie lines; preliminary leveled channel is labeled MAG\_PRELEV.
- 10) All data were viewed on the screen on a line-by-line basis using the interactive Geosoft Oasis Montaj database to inspect for quality, required tolerances and data integrity.
- 11) Produce preliminary flight path map and gridded magnetic intensity map including shadowing.
- 12) Plot survey line and tie line flight paths and profiles for quality control inspection.

## 5.1 DATA PRODUCTS

For the purposes of the Micrex Development Corp. White Bear Project Firefly has been contracted to provide a complete data set which includes final micro-leveling, processing and plotting. Plotted products include a) Total Magnetic Intensity b) Calculated 1<sup>st</sup> Vertical Derivative and c) Flightpath.

Survey data has been provided on CD-ROM in a Geosoft Oasis Montaj XYZ database format.

## 6.0 SUMMARY

An airborne high sensitivity, high-resolution magnetic survey has been carried out at 60 meter drape mode elevation, 150 meter line intervals and with data sample stations at 7 meters along the lines. Tie lines were

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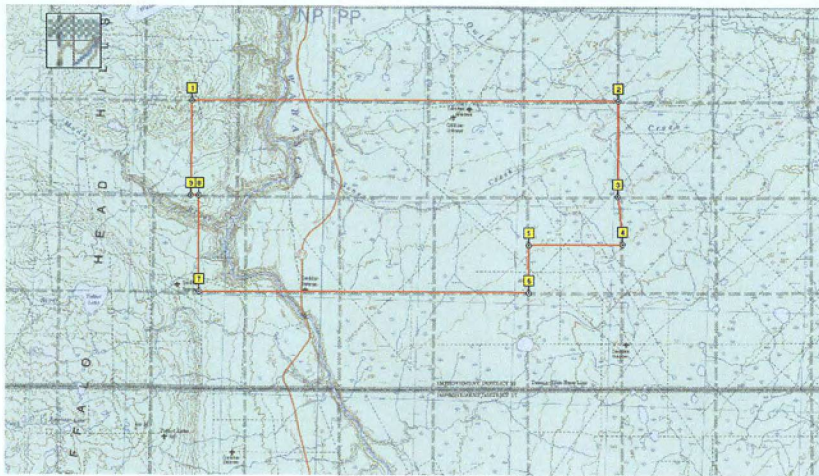
spaced at 1000 meters. A high sensitivity base magnetic station recorded the diurnal activity throughout the survey and a base GPS station was used to correct range errors in the GPS flight path recovery. Airborne recorded data included one fully compensated magnetometer located in a tail boom mounted pod, radar altimeter and all attendant GPS data. The magnetic data have been processed, gridded and provided on CD-ROM.

FIREFLY AVIATION LTD.

Bruce T. Evans, P.Geol.  
30 May 2004

## APPENDIX

## Buffalo Head Hills Project Location



POINT	Easting	Northing
1	585920	6389740
2	630020	6390930
3	630330	6381230
4	630970	6376380
5	621200	6376070
6	621360	6371200
7	587220	6370320
8	587010	6380050
9	586110	6380040

NAD 27 Zone 11 Clark 1866

**APPENDIX 4**

**Appendix 4 - Airborne Geophysical Anomalies**  
**Micrex Development Corp.**  
**Buffalo Head Hills Property**

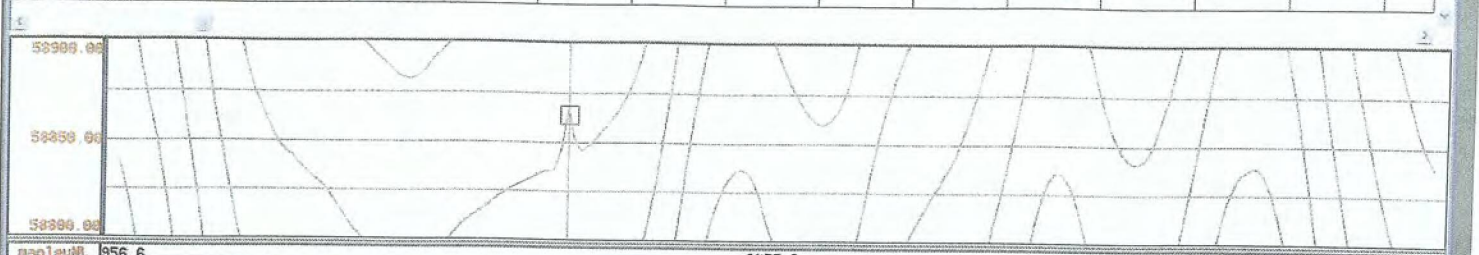
TARGET ID	UTM (EAST)	UTM (NORTH)	Amp (nT)	LINE	COMMENTS	PRIORITY
1	629092.96	6390539.26	2-3	20	v.small, round on shoulder, visible on airborne, intersting 1vd map anomaly	3
2	614355.2	6389337.9	5	80	small, broad, shoulder, shows up well on 1vd	3
3	596297.74	6389343.82	3	80	Interesting shoulder on profile, vis. 1vd map, part of linear	3
4	608888.44	6388750.52	4	110	possibly just basement	low
5	591113.96	6388346.94	4	130	Interesting shoulder on profile, vis. 1vd map, part of linear	3
6	599500.5	6387132.2	3	190	small but visible peak on profile and on 1vd map	low
7	598691.14	6386930.53	2	200	extremely small, might be nothing	Verylow
8	597909.94	6385935.68	2	250	subtle on profile, vis. On 1vd map	low
9	596174.66	6385738.74	3	260	broad on profile, possible channels,weak linear	low
10	598118.68	6385545.02	3	270	small on profile, on weak linear,poss. Channels	low
11	596908.94	6384934.92	3	300	small on profile, on weak linear,poss. Channels	low
12	606440.48	6384746.95	3	310	looks interesting on airborne	low
13	610346.94	6384545.49	7	320	rounded peak with shoulder, on poss. Linear	low
14	597129.82	6383946.42	3	350	linear shows on airborne, poss. Channels	low
15	597475.76	6383145.7	3	390	linear shows on airborne, poss. Channels	low
16	626972.08	6382940.27	5	400	clearly anomaly on profile, vis on 1vd	3
17	613246.26	6382349.19	?	430	Broad shoulder anomaly in profile, barely vis on map	low
18	601797.2	6381540.1	3	470	small peak, start of 2 line anomaly, interesting	low
19	601685.34	6381337.94	25	480	v. well developed peak. 2liner Best candidate, culture?	1
20	601841.08	6381143.38	4	490	fringes of anomaly from last line.	low
21	593748.36	6380129.5	3	540	small anomaly, part of weak linear	low
22	592745.12	6378931.02	5	600	small developed shoulder anomaly could be part of weak linear	3
23	592619.08	6378739.12	2	610	same anomaly as on line above	3
24	617952.91	6378537.32	3+	620	weak shoulder anomaly, vis on 1vd map, poor profile anomaly	low
25	603258.58	6378546.59	2	620	same anomaly as on two lines above	low
26	602572.1	6377546.62	3	670	small profile anomaly vis on 1vd could be part of linear	low
27	602762.42	6376535.94	3	720	nice peak on profile, Inice vis 1vd anomaly	3
28	591031.44	6375326.76	2	780	longshot, very faint on both profile and airborne	low
29	591090.34	6374922.96	3	800	small clear peak on profile, vis on 1vd map, poss on linear	low
30	591237.6	6374522.7	3	820	continuation of likely linear, vis on profile, invis on map	3
31	591444.2	6373146.11	3	890	small broad shouldered peak, on faint linear	low
32	587413.1	6378355.3	3	20	broad peak on profile, semi-interesting	low
33	587419.98	6386077.3	3	20	clear peak on profile, semi-visible on airborne	low
34	591932.9	6386831.25	2	50	v. small on profile, looks interesting on airborne	low
35	593451.49	6379822.41	5	60	broad peak, on likely linear	low
36	594925.14	6382493.8	5	70	broad, well formed peak on profile, low vis on airborne	3
37	596430.65	6385149.2	2	80	subtle on profile, vis on airborne on linear	low
38	599423.72	6387211.52	2	100	clear anomaly on map, negligible on profile	low
39	600945.46	6381965.38	3	110	subtle peak on profile, interesting on map	low
40	602425.75	6378672.18	4	120	small, well formed peak,shows on 1 vd map	low
41	603940.83	6387908.37	-	130	definite anomaly on map, negligible on profile	low
42	611422.01	6380009.21	5	180	well formed peak on profile, poor map anomaly	3
43	612907.1	6382310.4	5	190	subtle peak on profile, and on map	low
44	614368.65	6389301.03	10	200	v. well formed shoulder peak, top priority	1
45	621943.6	6384344.2	2	250	weak profile peak masked by basement	low
46	602538	6377930	2	650	small and weak profile and map anomaly	low
47	601295	6377946	2	650	small and weak profile and map anomaly	low
48	596233	6377935	3	650	small and weak profile and map anomaly	low
49	591219	6374328	3	830	same as anomaly as above, weaker	low
50	591318	6374130	4	840	same as anomaly as above, stronger and better developed	low



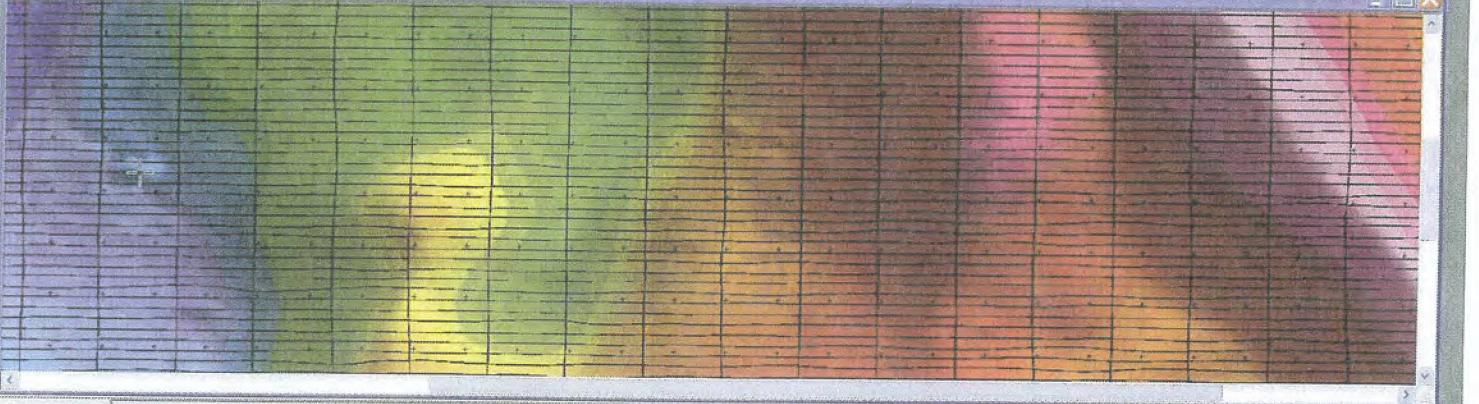
State mental - N:\projects\micrex\Buffalo\_Head\_Hills\MapGeoSoft\Buffalo\_mag.gws  
File Edit Gx Data Profile Map Coordinates Utility X-Utility Grid Mapping DAP Window Help

N:\projects\micrex\Buffalo\_Head\_Hills\MapGeoSoft\BuffMapPRB.gdb

✓ L480:5	rtTopo	maghead	magtie	maglevML															
2700.0	437.2	58721.51	58704.30	58663.57															
2701.0	438.6	58706.55	58693.02	58663.09															

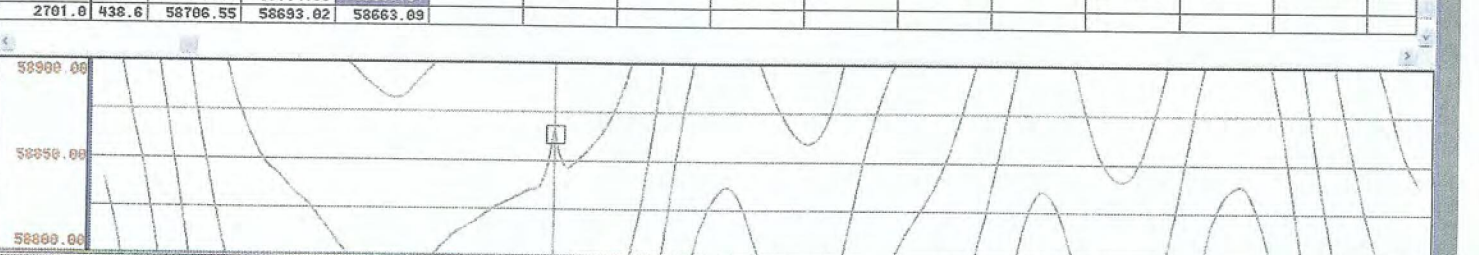


maglevML 956.6 3477.0 5997.4



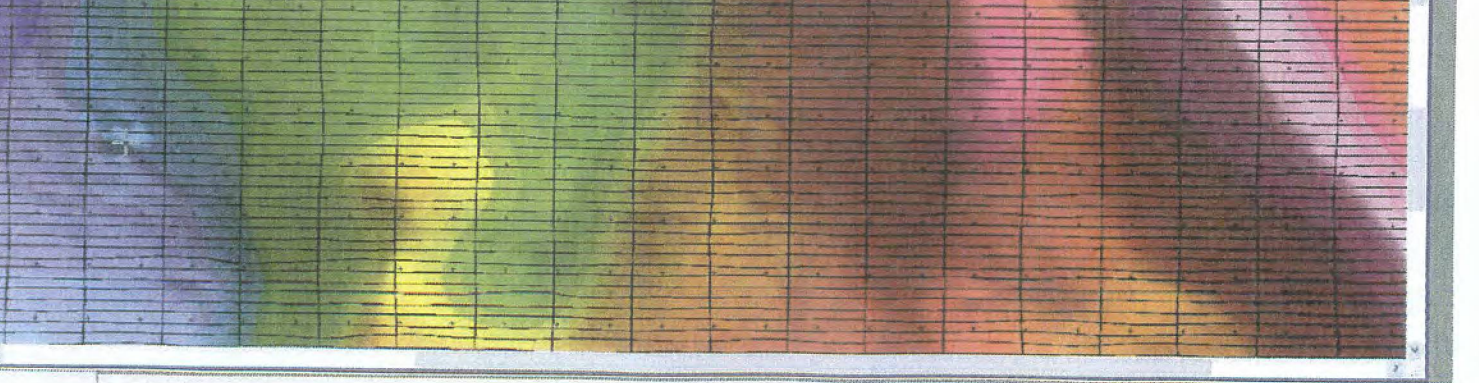
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✓ L480:5	rtTopo	maghead	magtie	maglevML															
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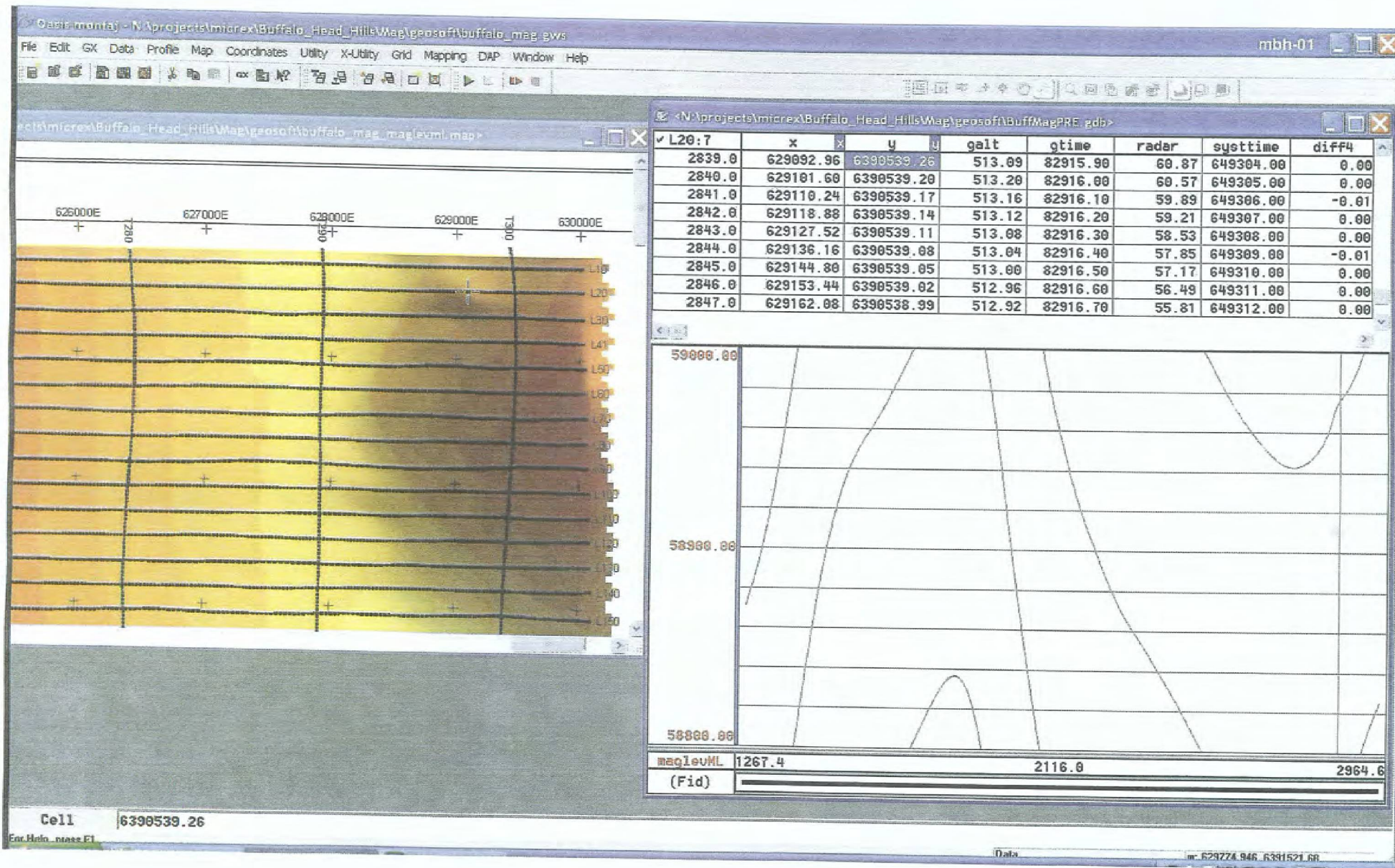


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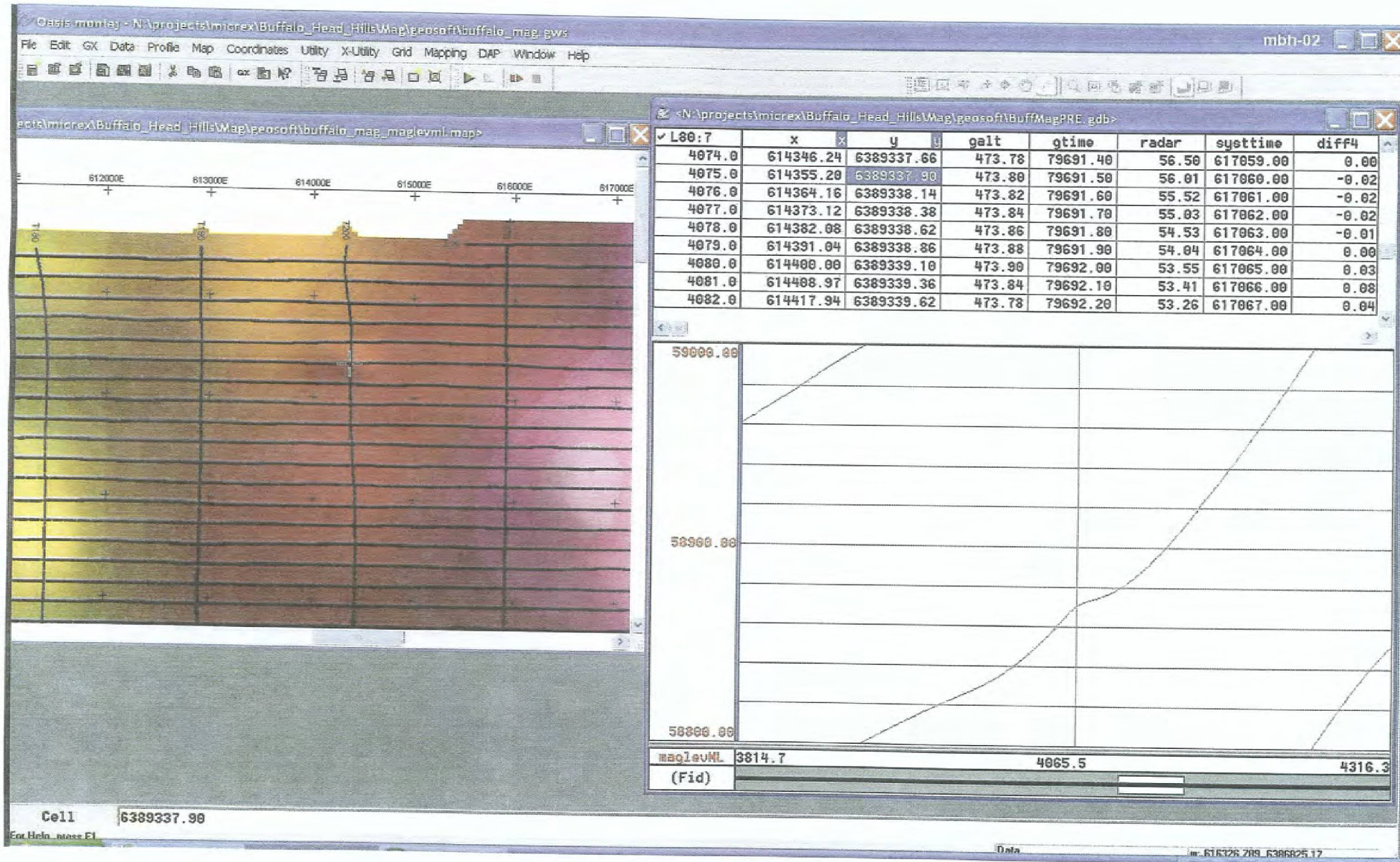
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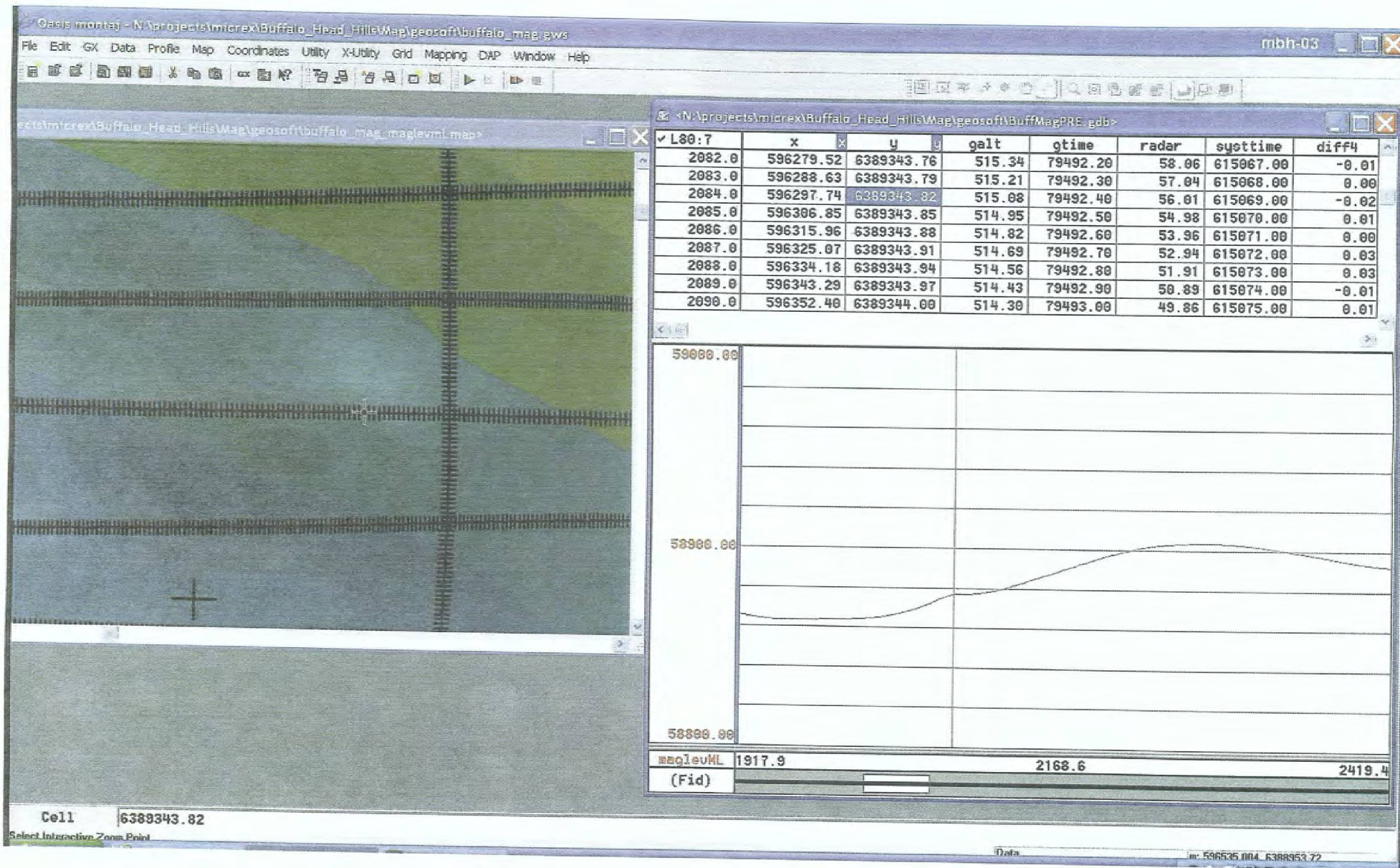




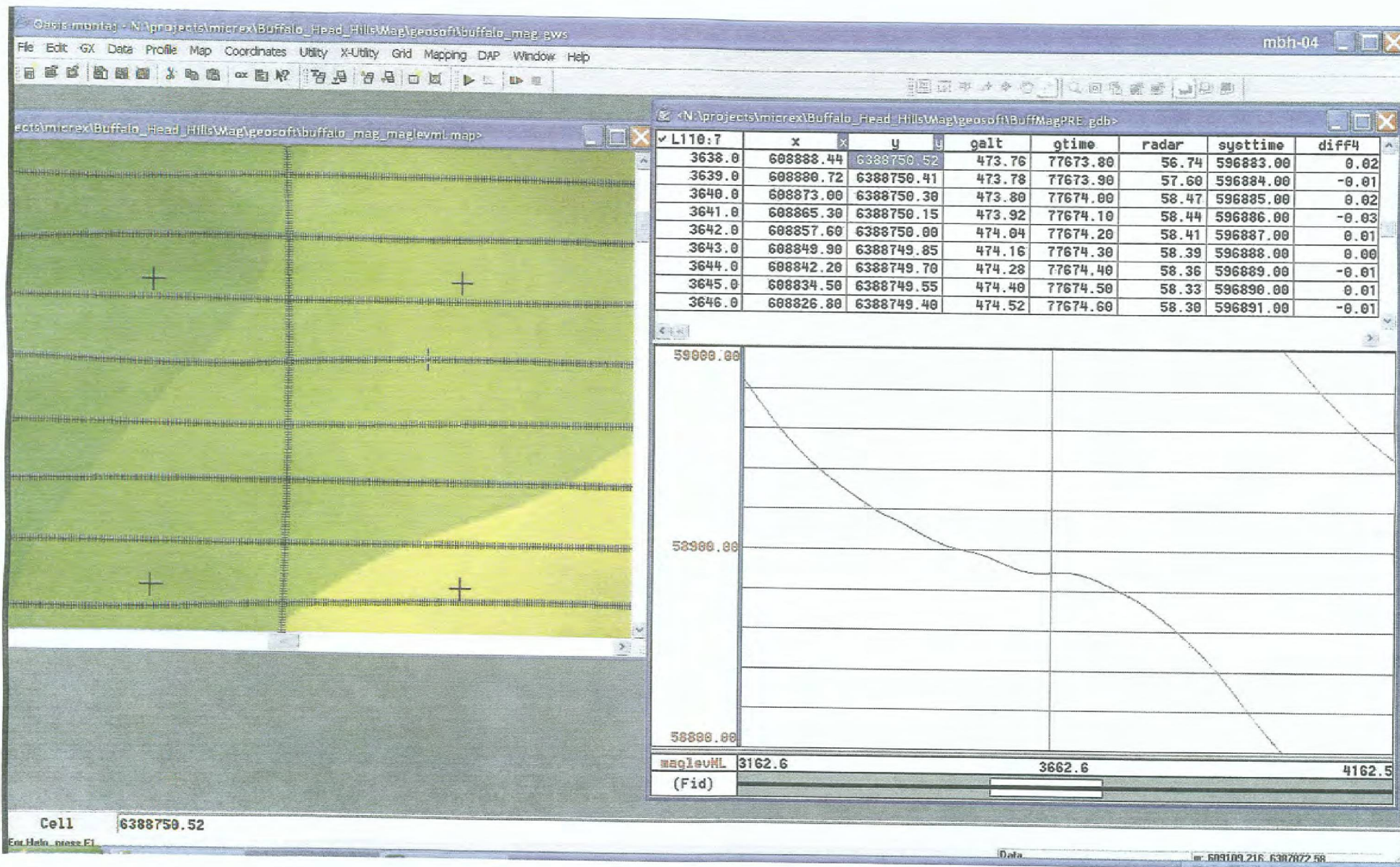




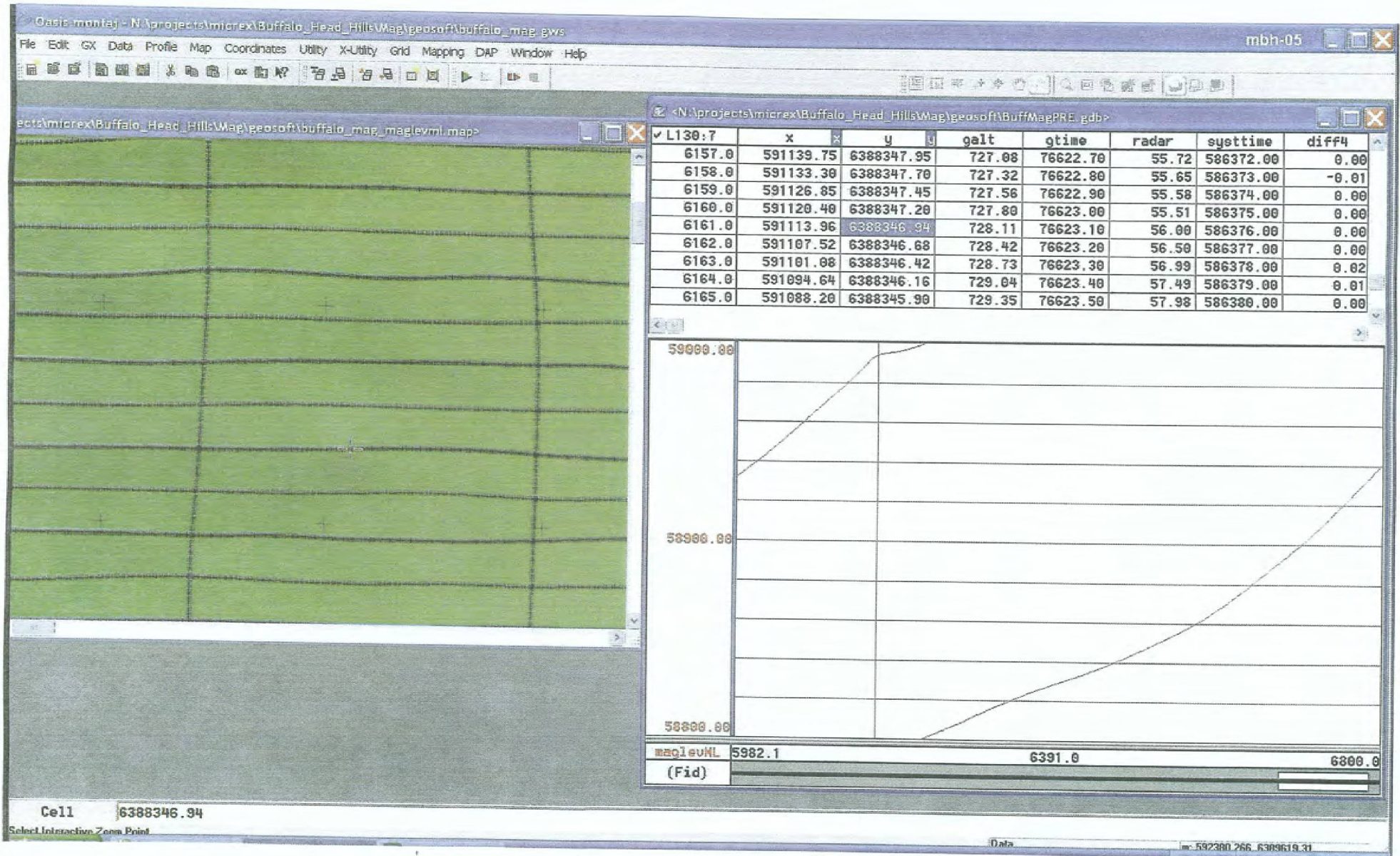




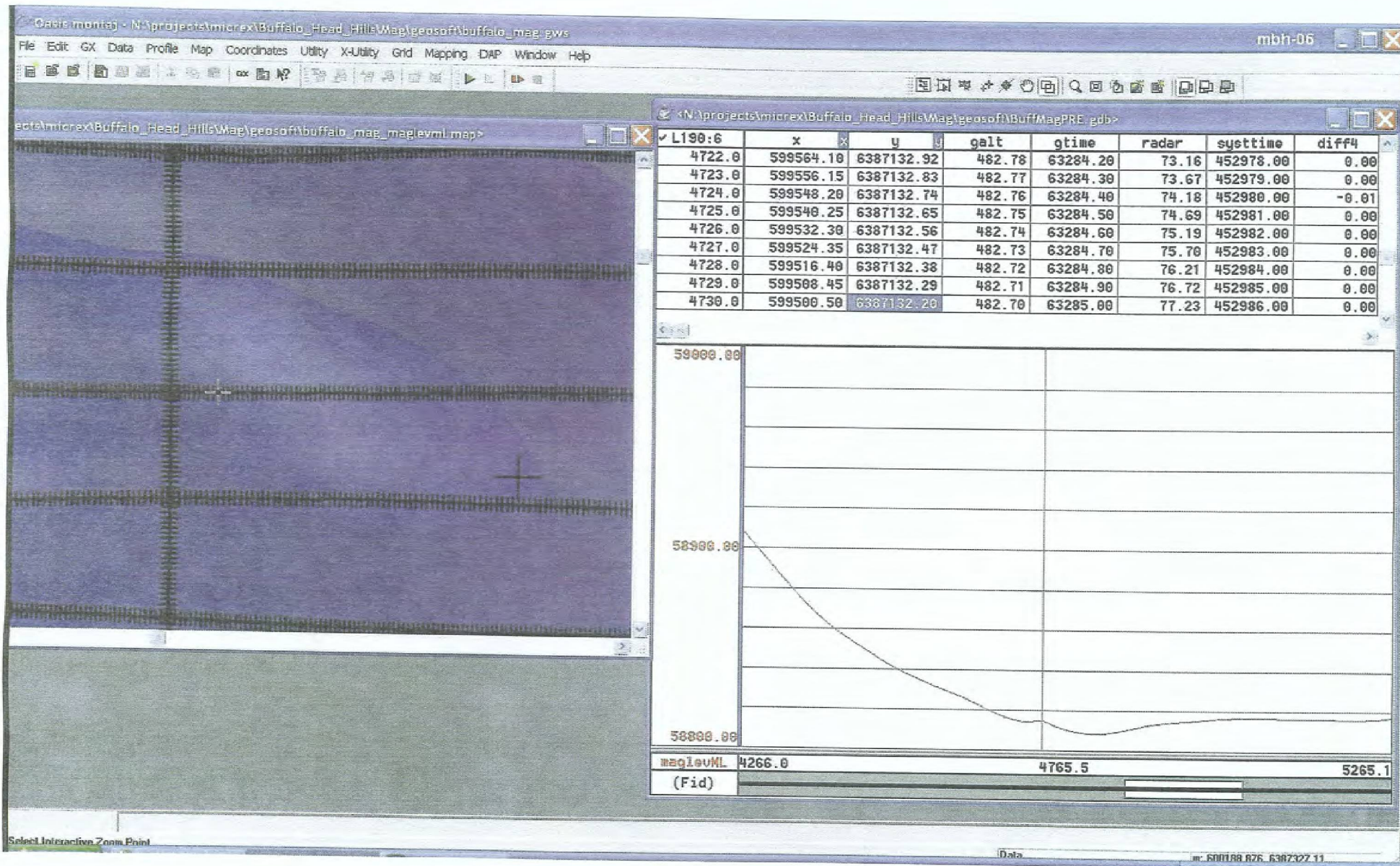




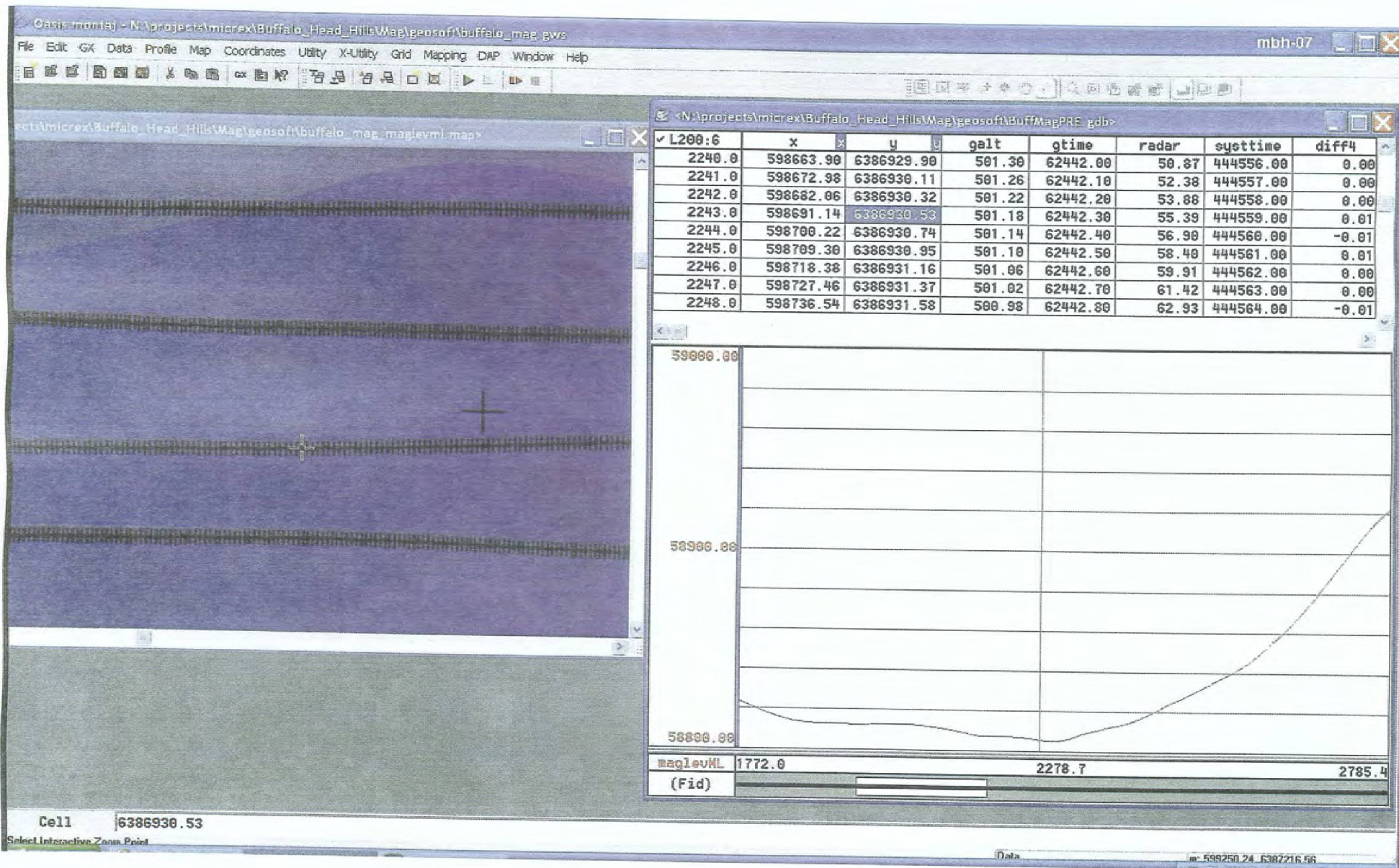




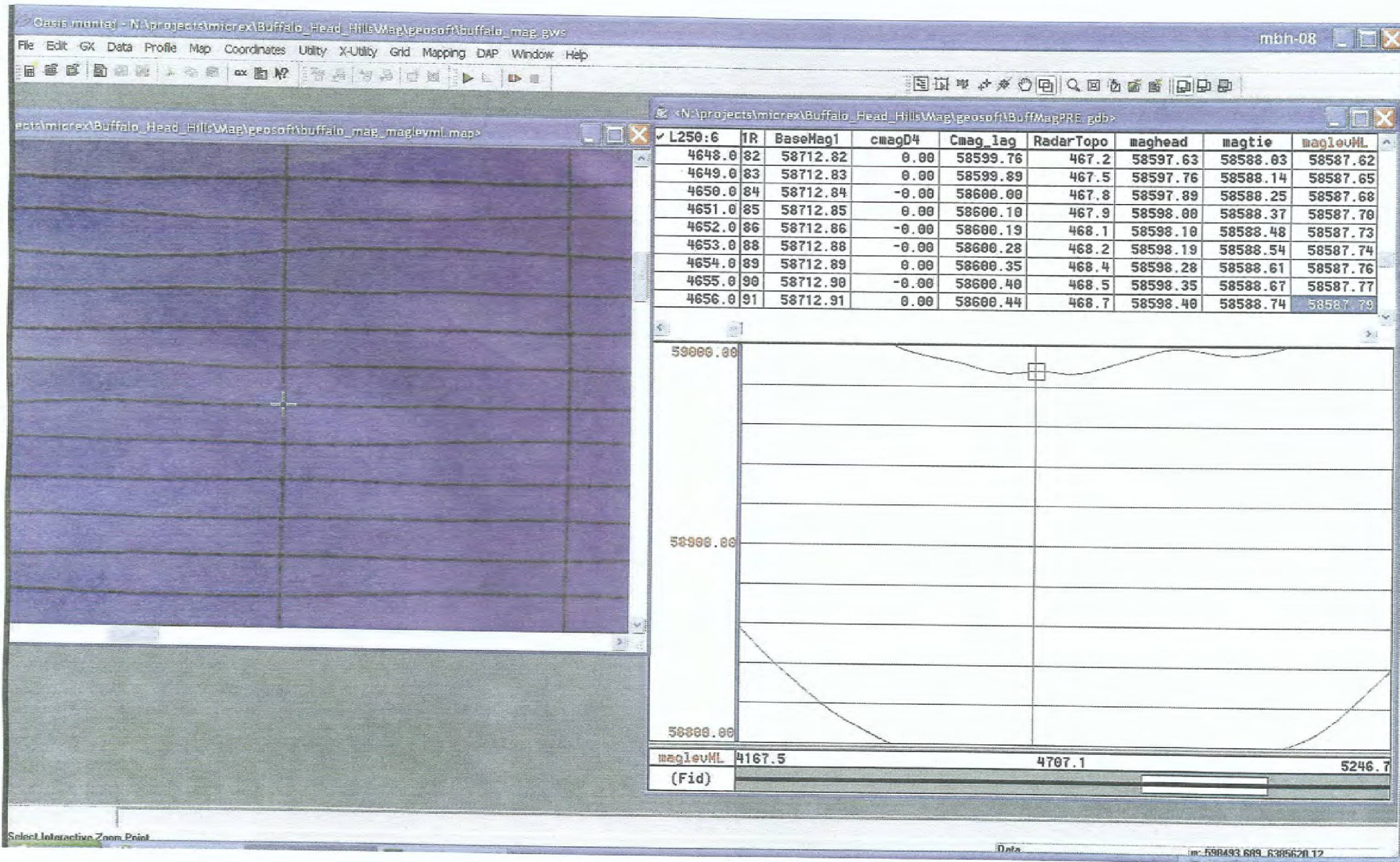




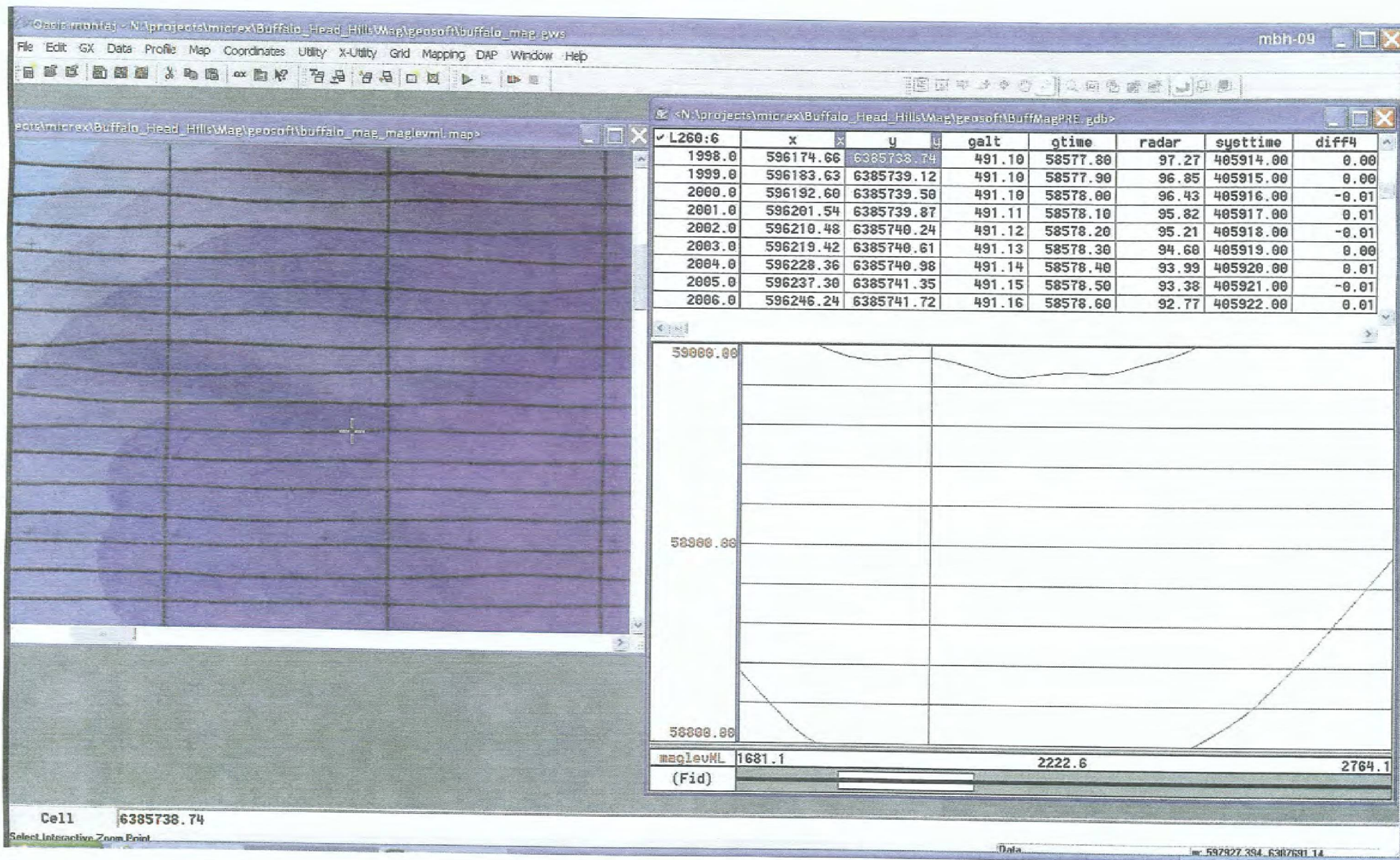




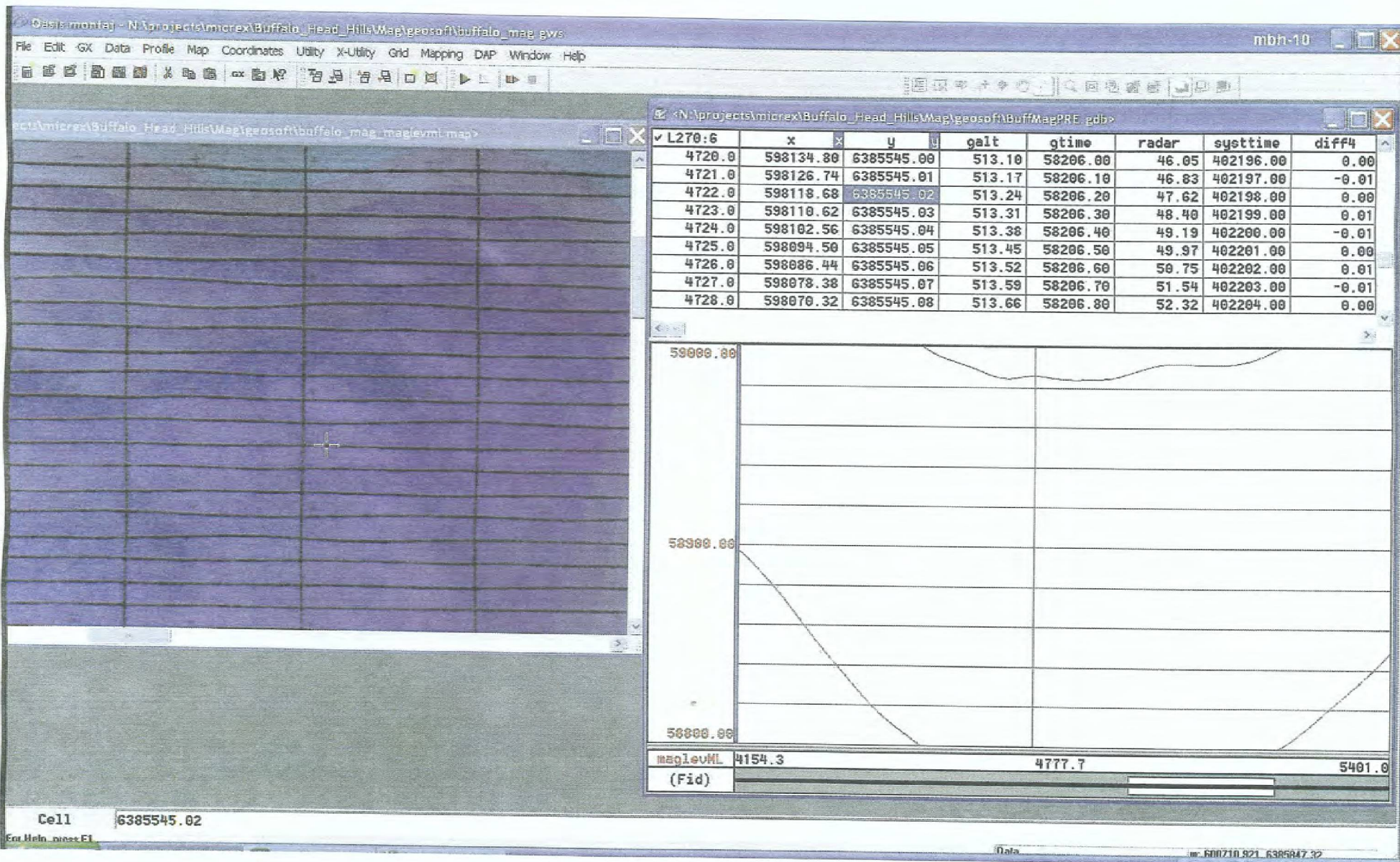




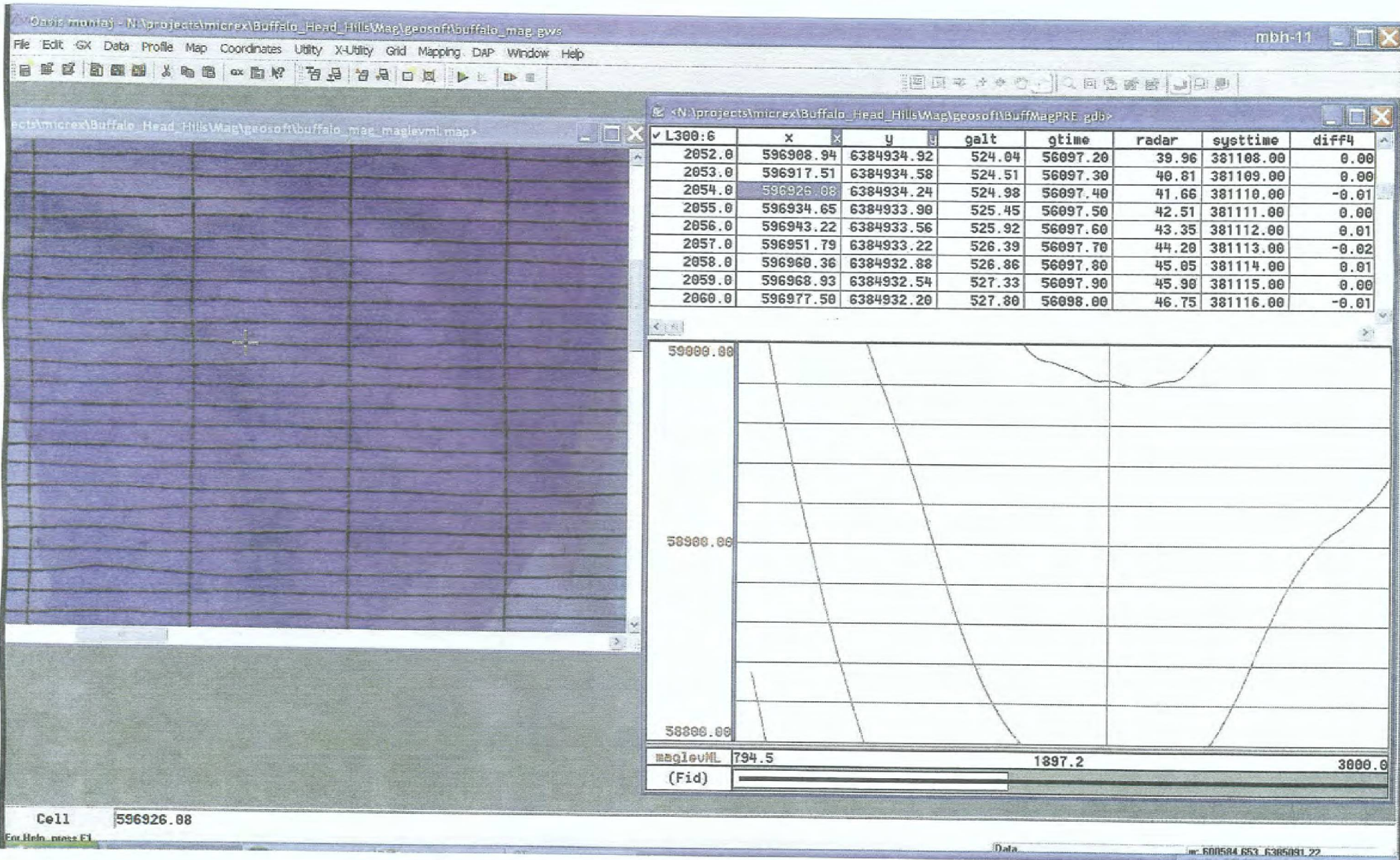




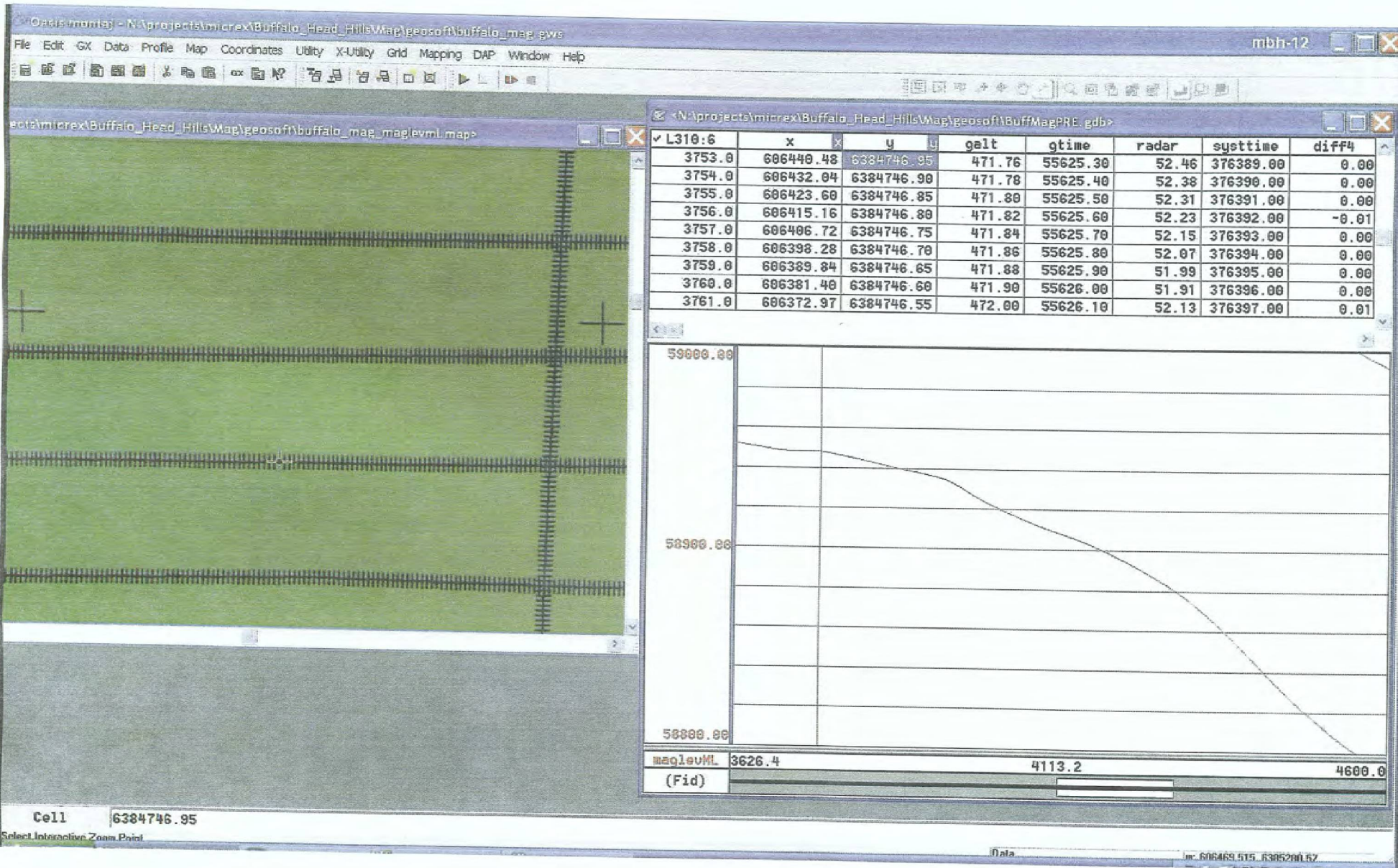




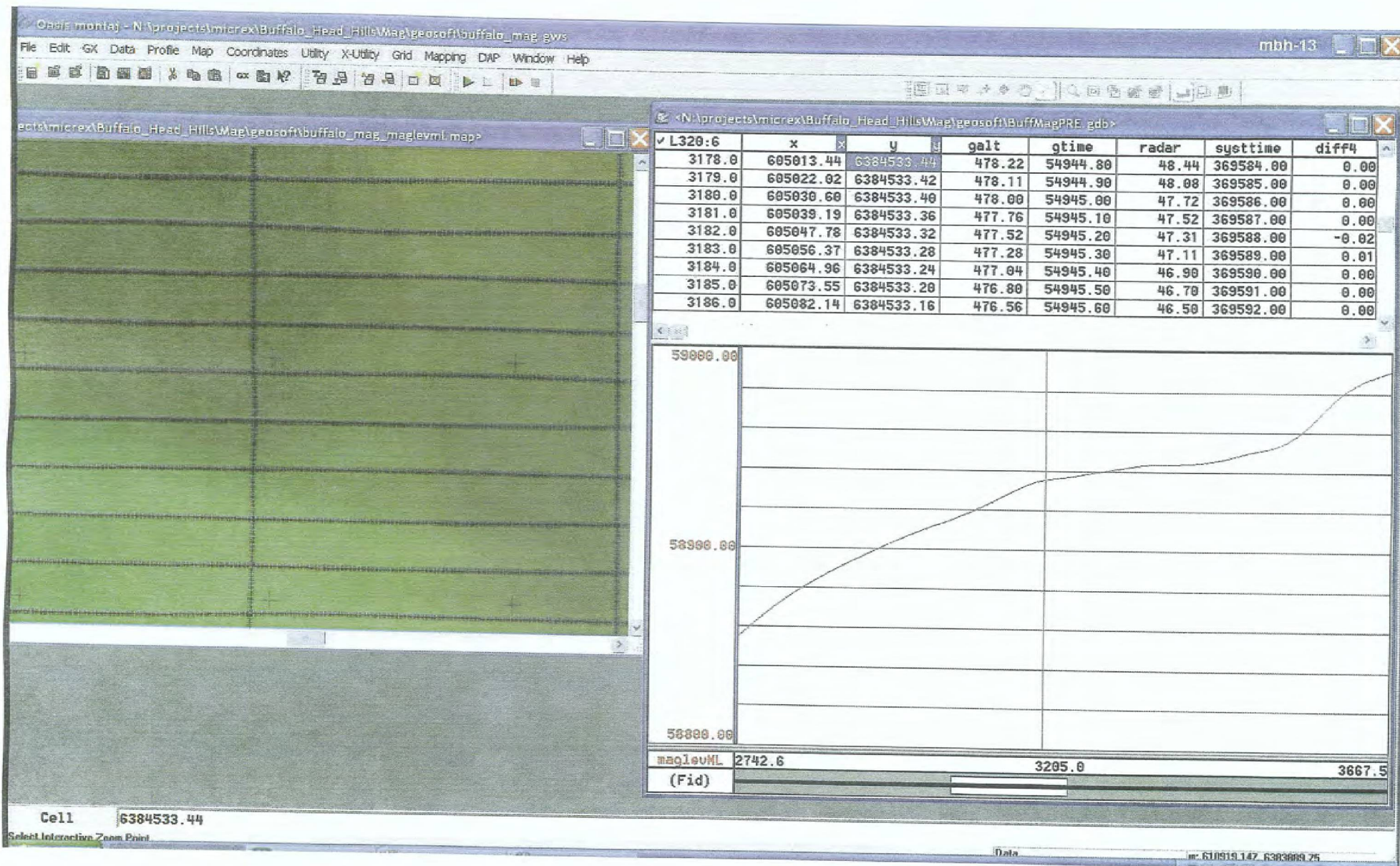




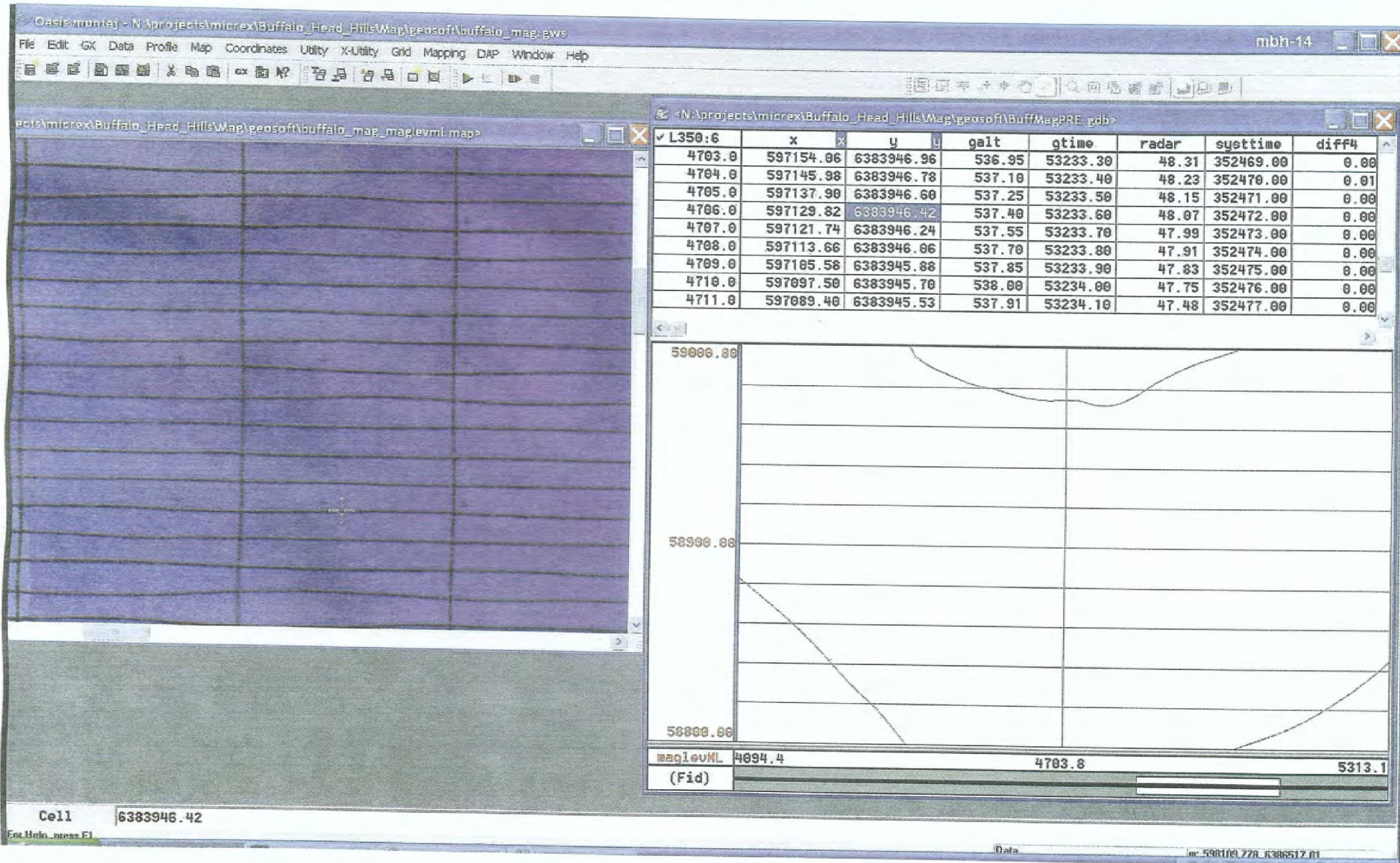




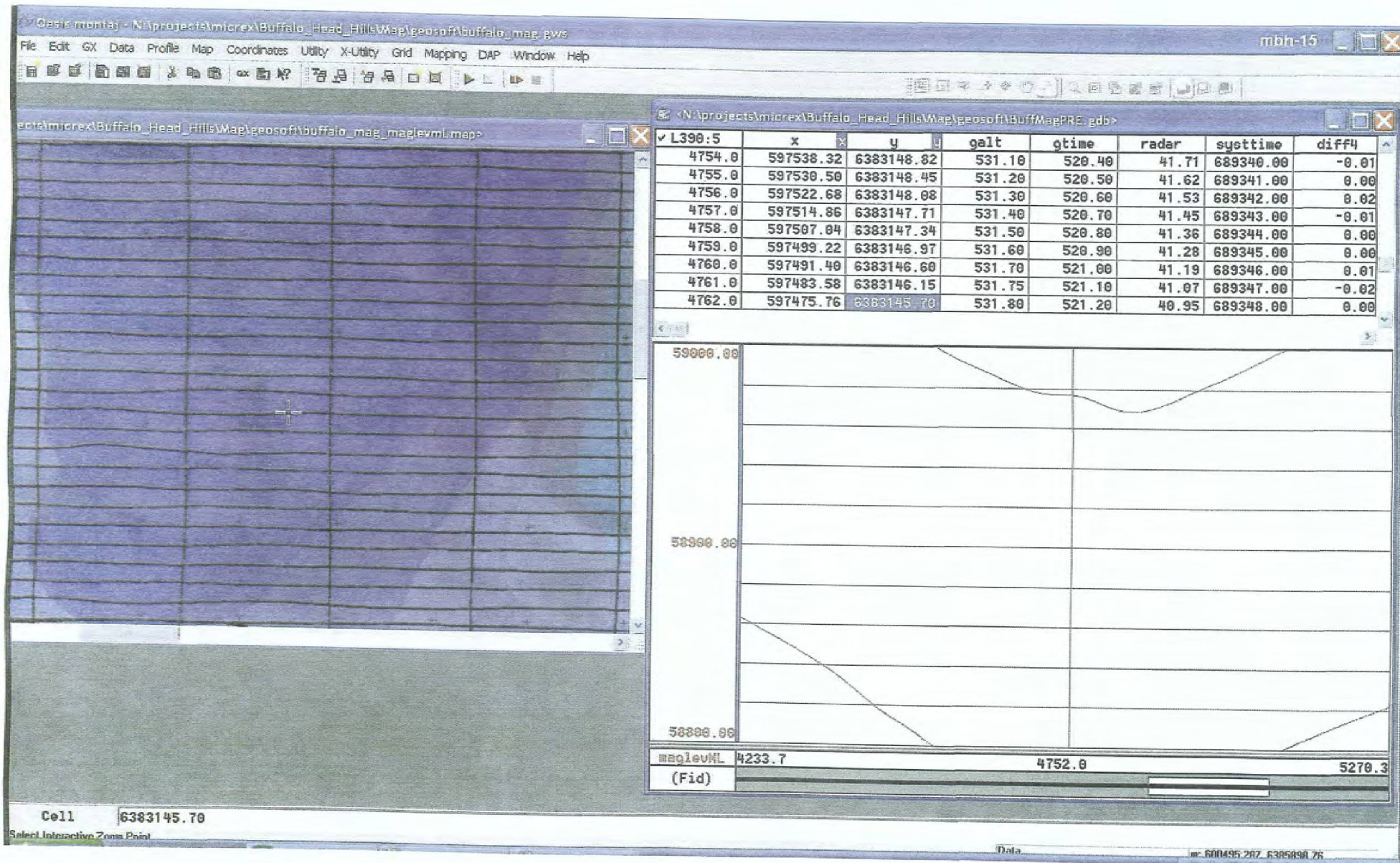




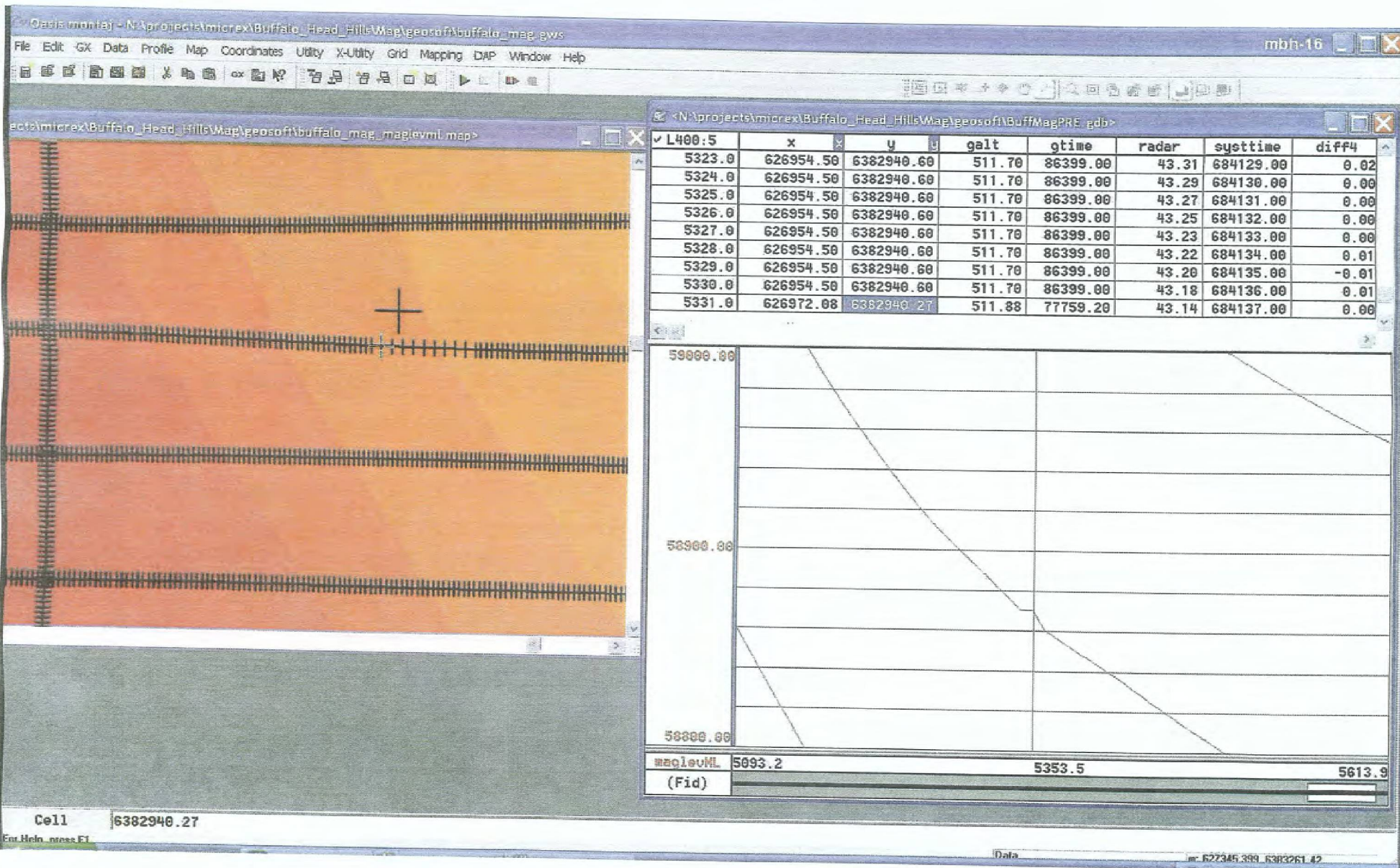




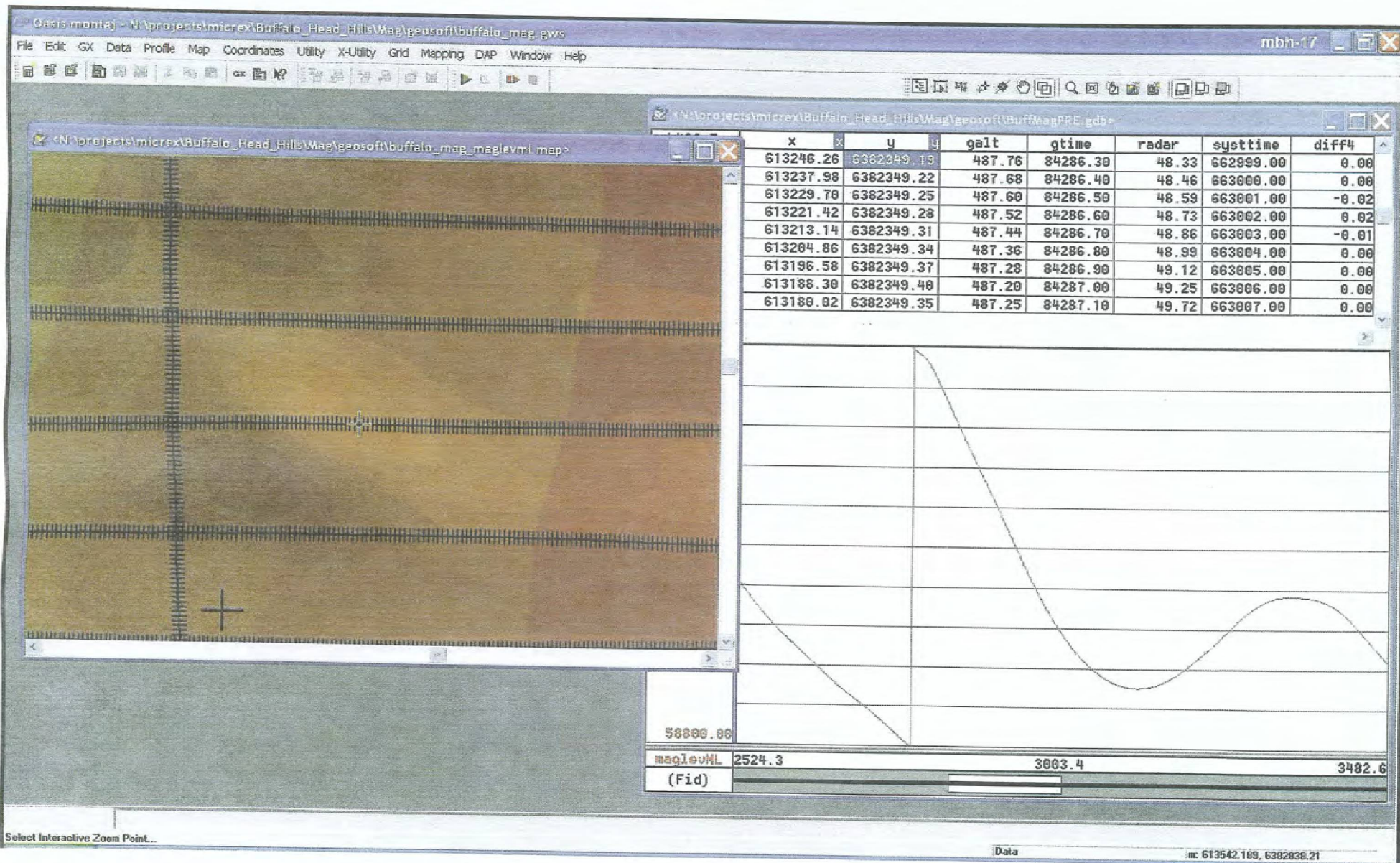




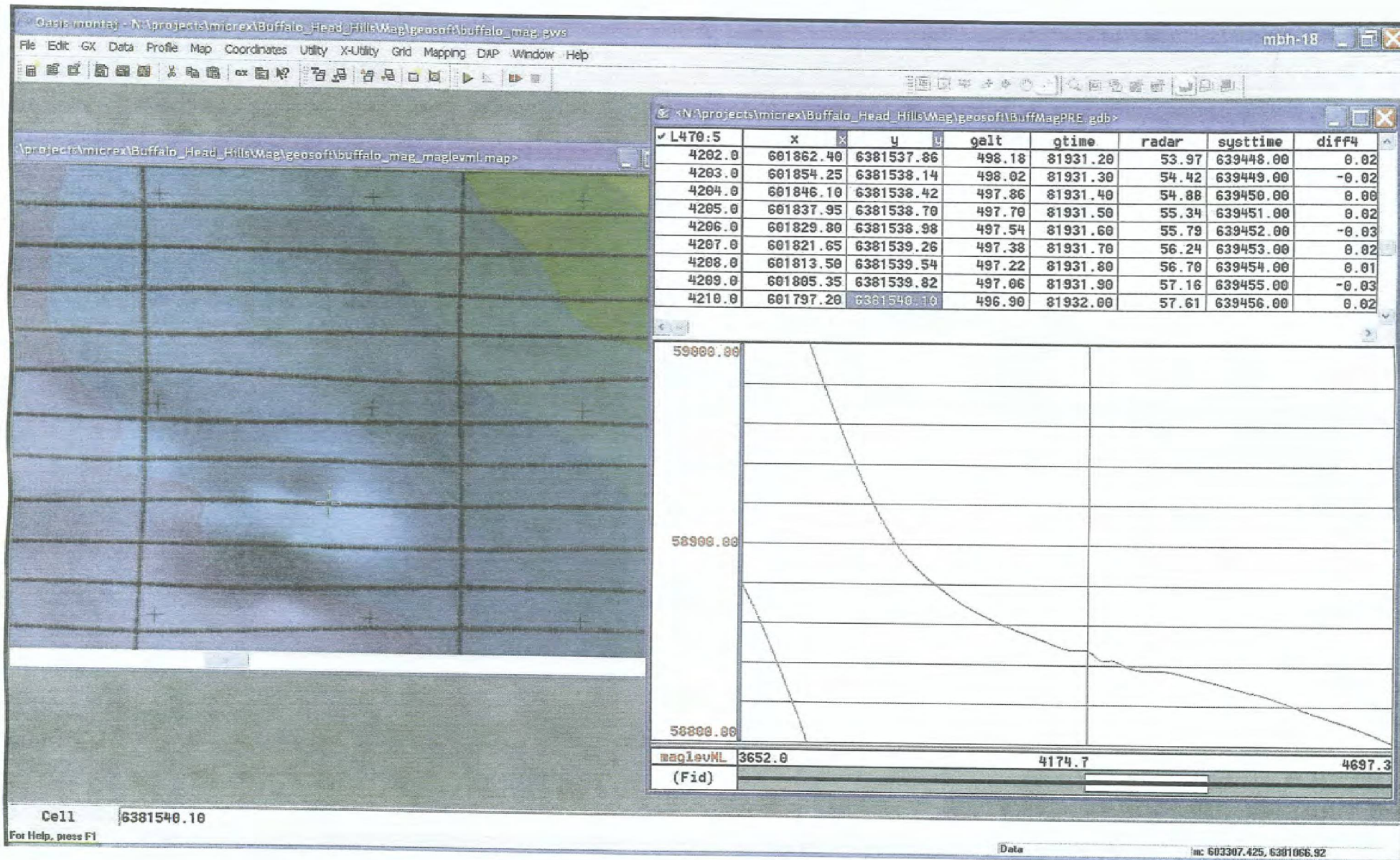




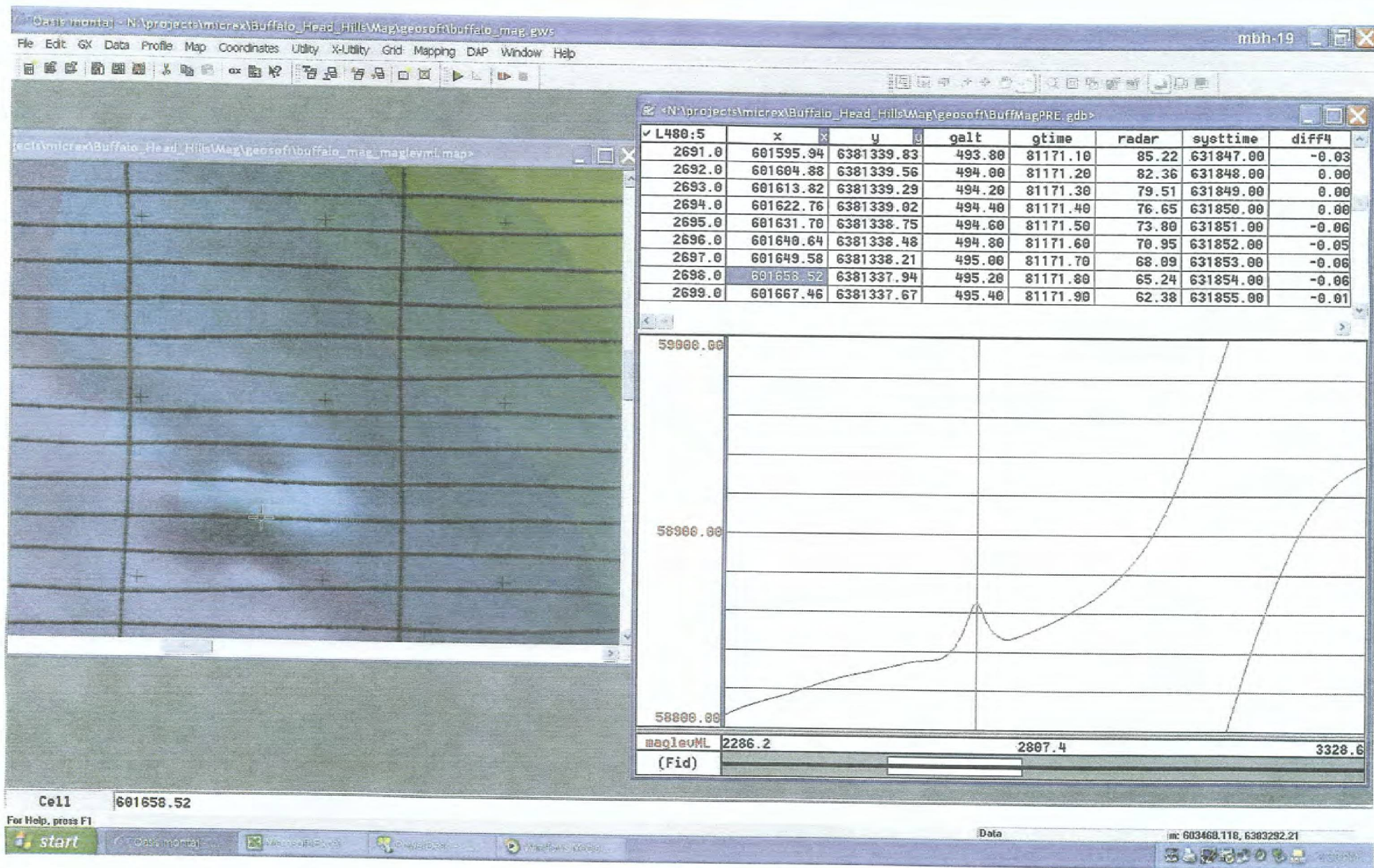








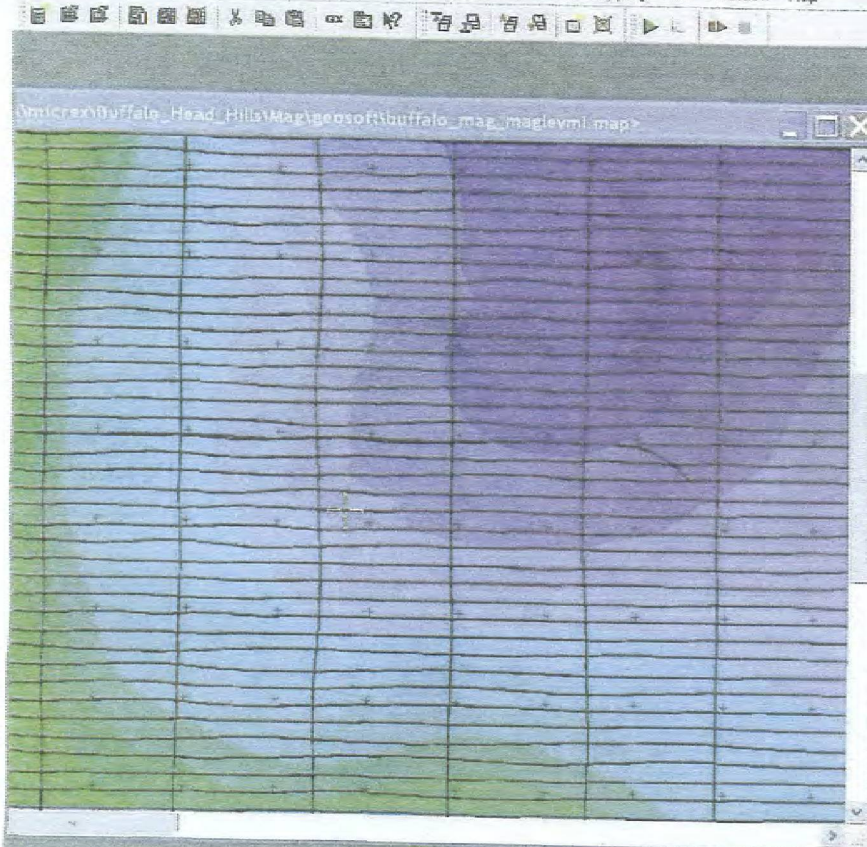






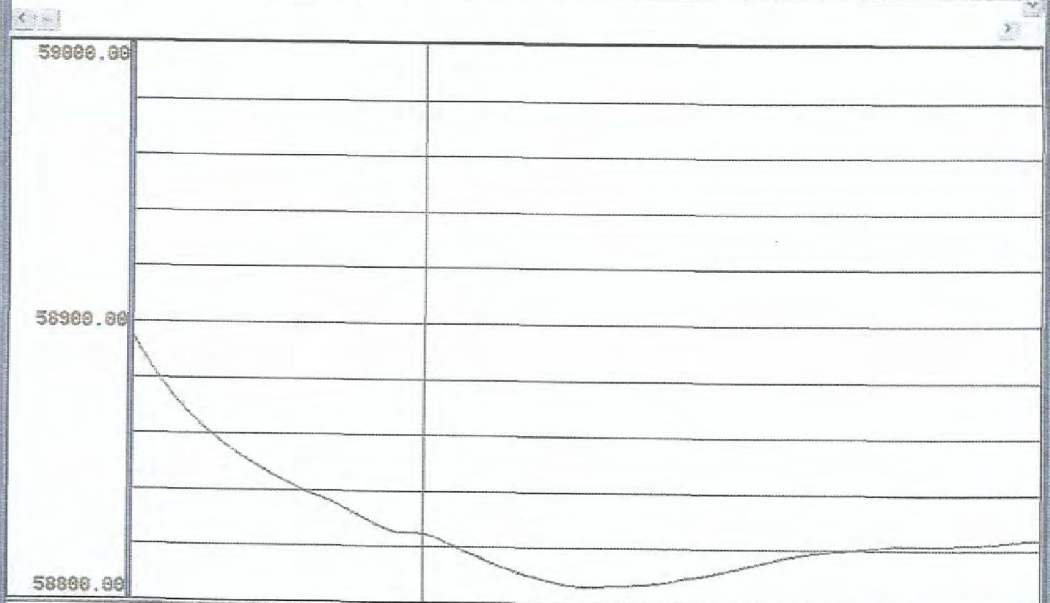






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1571.0	593748.36	6380129.50	575.33	77005.10	53.82	590187.00	-0.01
1572.0	593757.42	6380129.40	575.46	77005.20	54.09	590188.00	0.01
1573.0	593766.48	6380129.30	575.59	77005.30	54.36	590189.00	0.00
1574.0	593775.54	6380129.20	575.72	77005.40	54.63	590190.00	0.00
1575.0	593784.60	6380129.10	575.85	77005.50	54.90	590191.00	0.00
1576.0	593793.66	6380129.00	575.98	77005.60	55.16	590192.00	0.02
1577.0	593802.72	6380128.90	576.11	77005.70	55.43	590193.00	-0.03
1578.0	593811.78	6380128.80	576.24	77005.80	55.70	590194.00	0.03
1579.0	593820.84	6380128.70	576.37	77005.90	55.97	590195.00	-0.02



maglevML 1215.5 1764.5 2313.5  
(Fid)



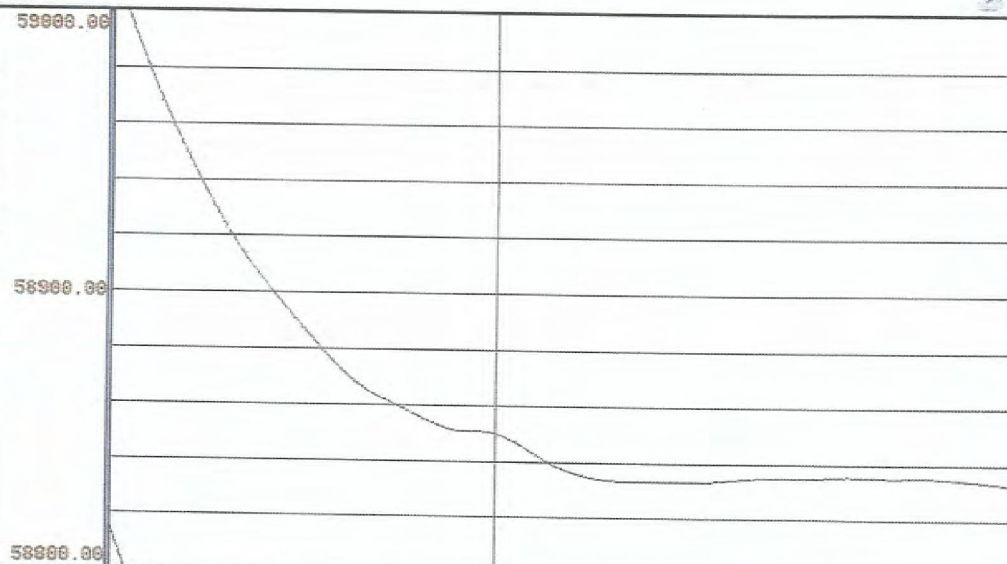
Oasis montaj - N:\projects\micrex\Buffalo\_Head\_Hills\Mag\geosoft\buffalo\_mag.gws  
 File Edit GX Data Profile Map Coordinates Utility X-Utility Grid Mapping DAP Window Help

mbh-22

N:\projects\micrex\Buffalo\_Head\_Hills\Mag\geosoft\buffalo\_mag\_maglevml.map

N:\projects\micrex\Buffalo\_Head\_Hills\Mag\geosoft\BuffMagPRE.gdb

✓ L600:4	x	y	u	galt	gtime	radar	sysstime	diff4
1568.0	592677.36	6378934.34		588.50	64602.80	49.16	466164.00	0.00
1569.0	592685.83	6378933.82		588.75	64602.90	49.29	466165.00	0.02
1570.0	592694.30	6378933.30		589.00	64603.00	49.43	466166.00	-0.04
1571.0	592702.77	6378932.92		589.01	64603.10	49.70	466167.00	0.01
1572.0	592711.24	6378932.54		589.02	64603.20	49.96	466168.00	0.00
1573.0	592719.71	6378932.16		589.03	64603.30	50.23	466169.00	0.00
1574.0	592728.18	6378931.78		589.04	64603.40	50.49	466170.00	-0.02
1575.0	592736.65	6378931.40		589.05	64603.50	50.76	466171.00	0.03
1576.0	592745.12	6378931.02		589.06	64603.60	51.03	466172.00	-0.02



maglevML	1146.6	1651.2	2155.8
(Fid)			

Cell 6378931.02

For Help, press F1

start

Windows Explorer

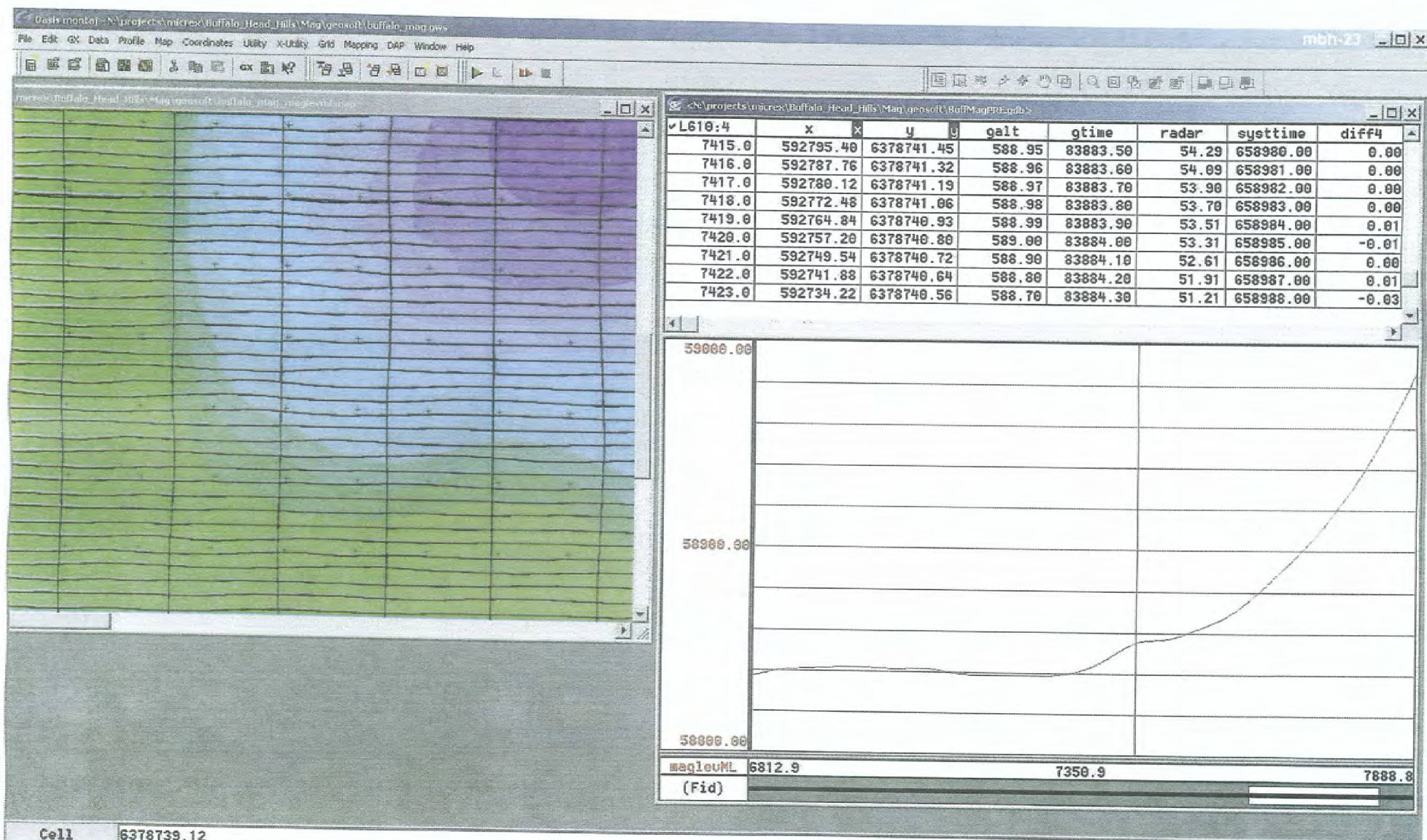
Oasis montaj

Microsoft Excel

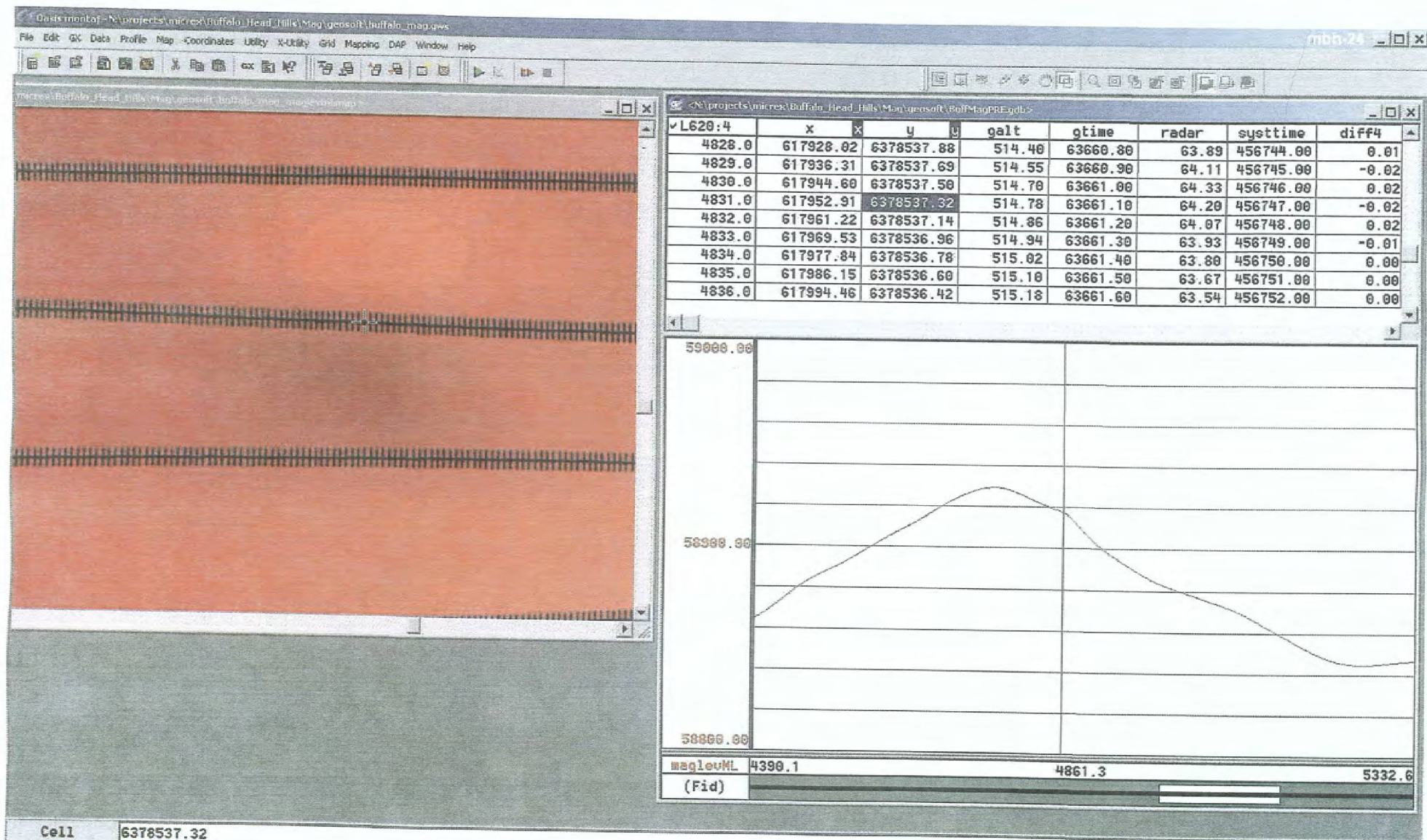
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For Help, press F1

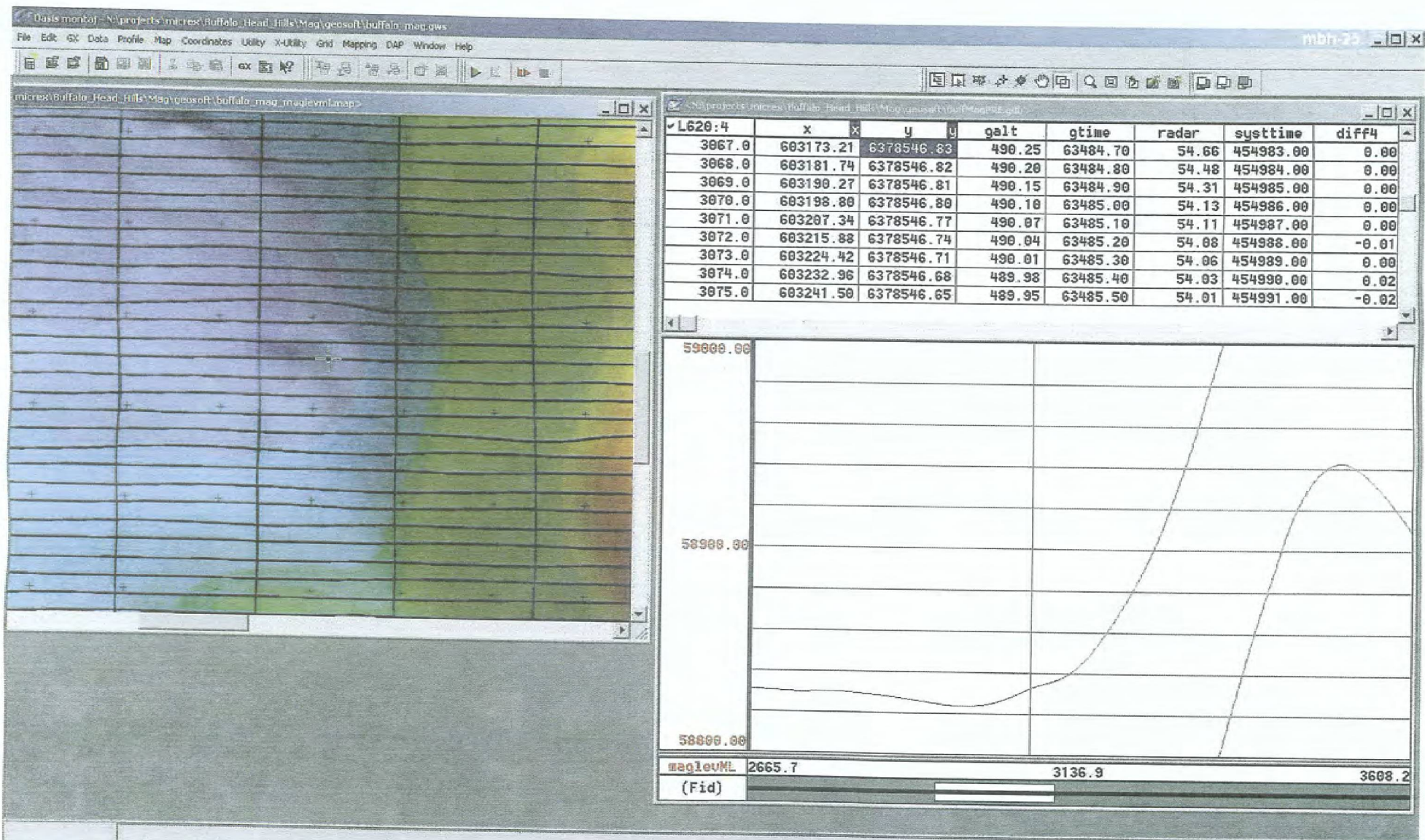
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Data

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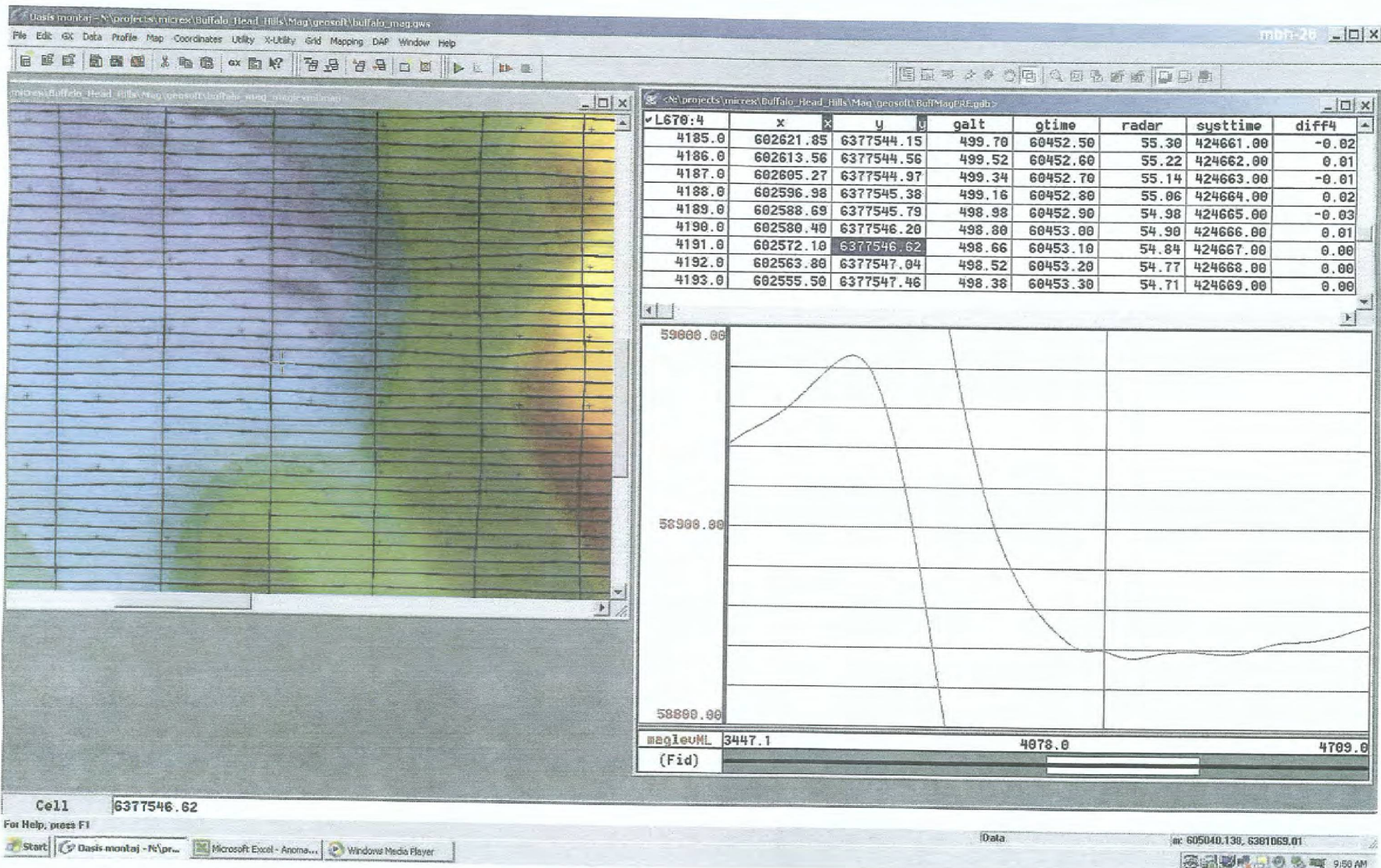
9:27 AM



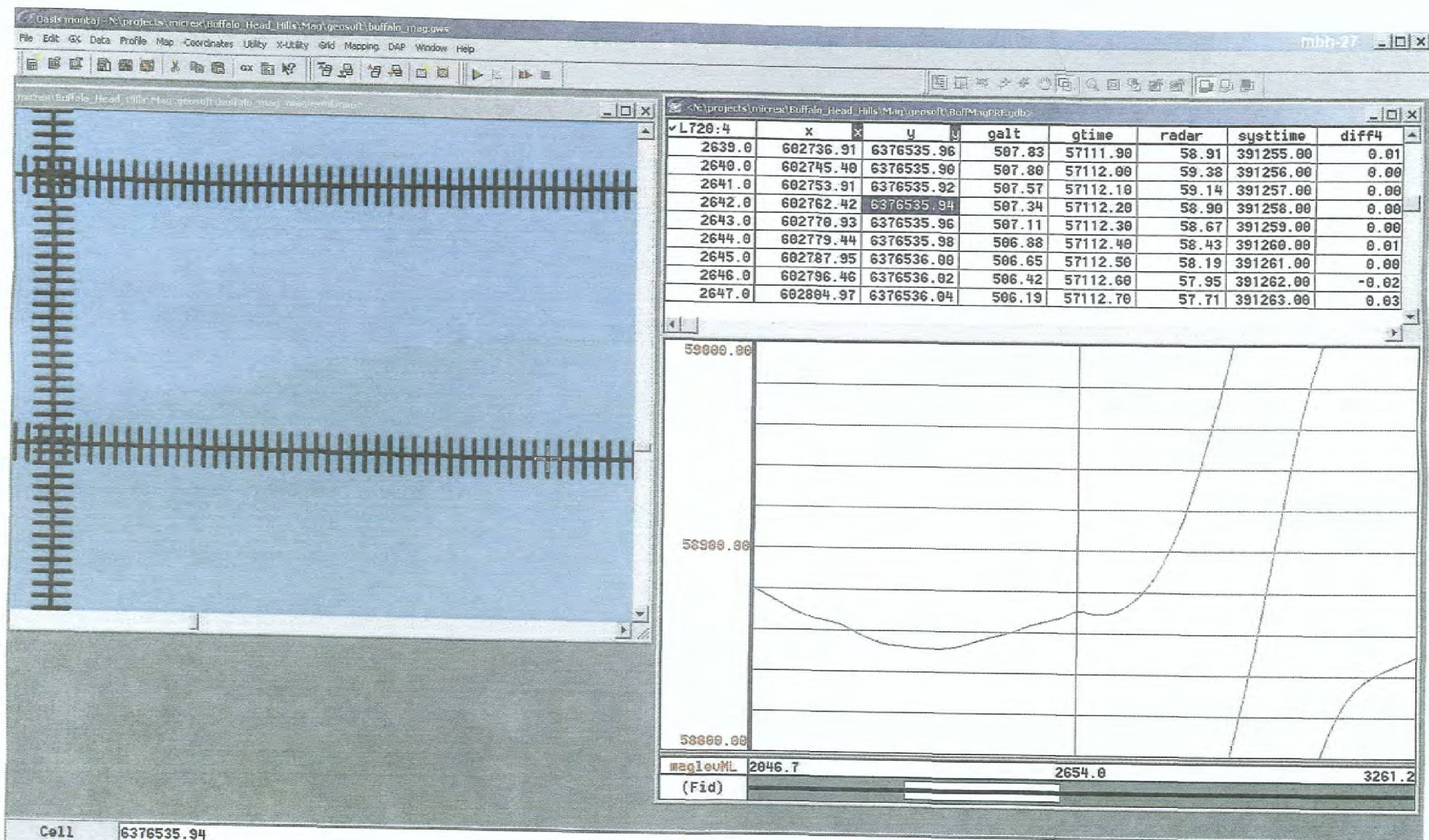


For Help, press F1









For Help, press F1

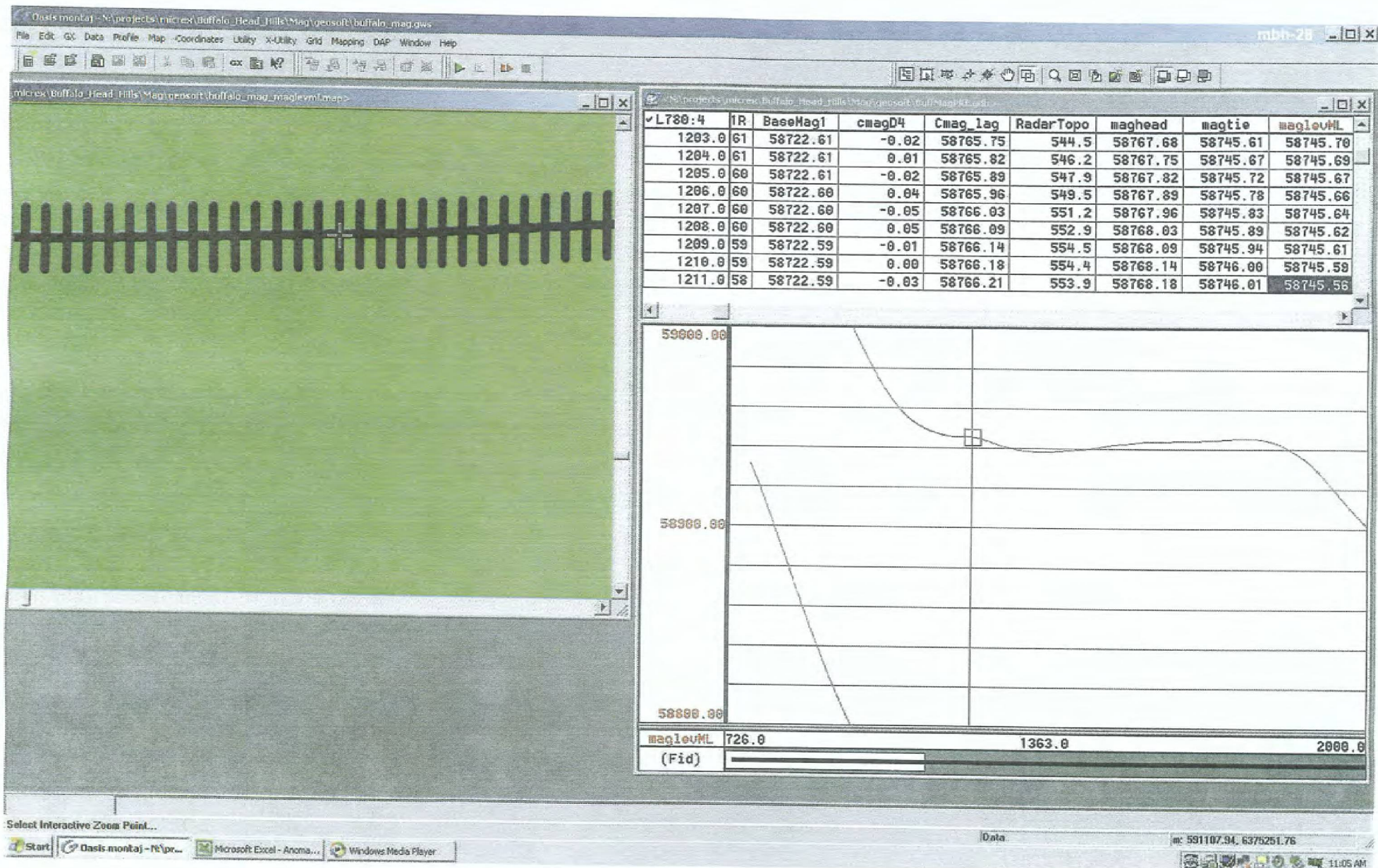
Start Dasis montaj - N:\pr... Microsoft Excel - Anoma... Windows Media Player

Data

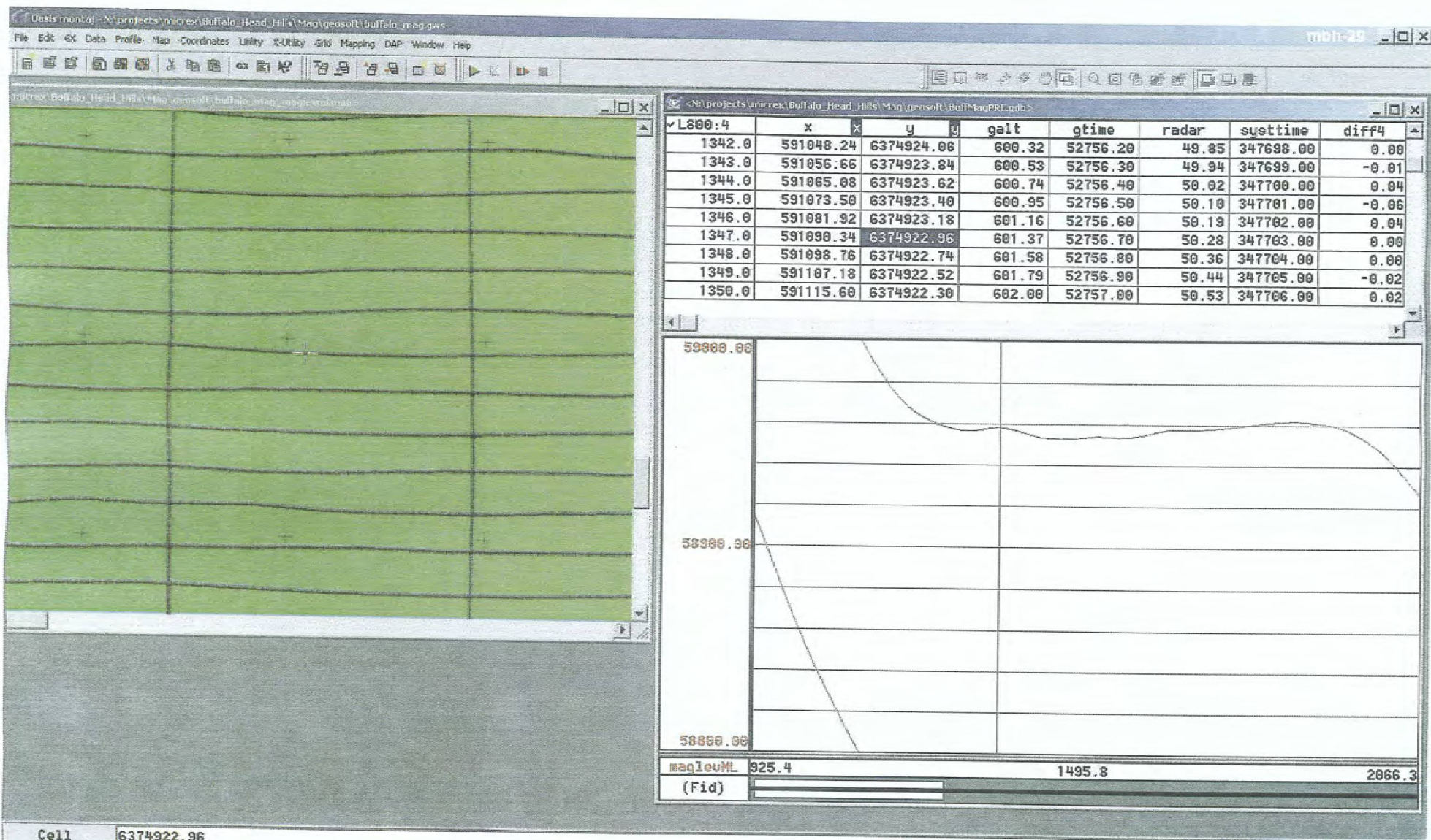
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10:37 AM



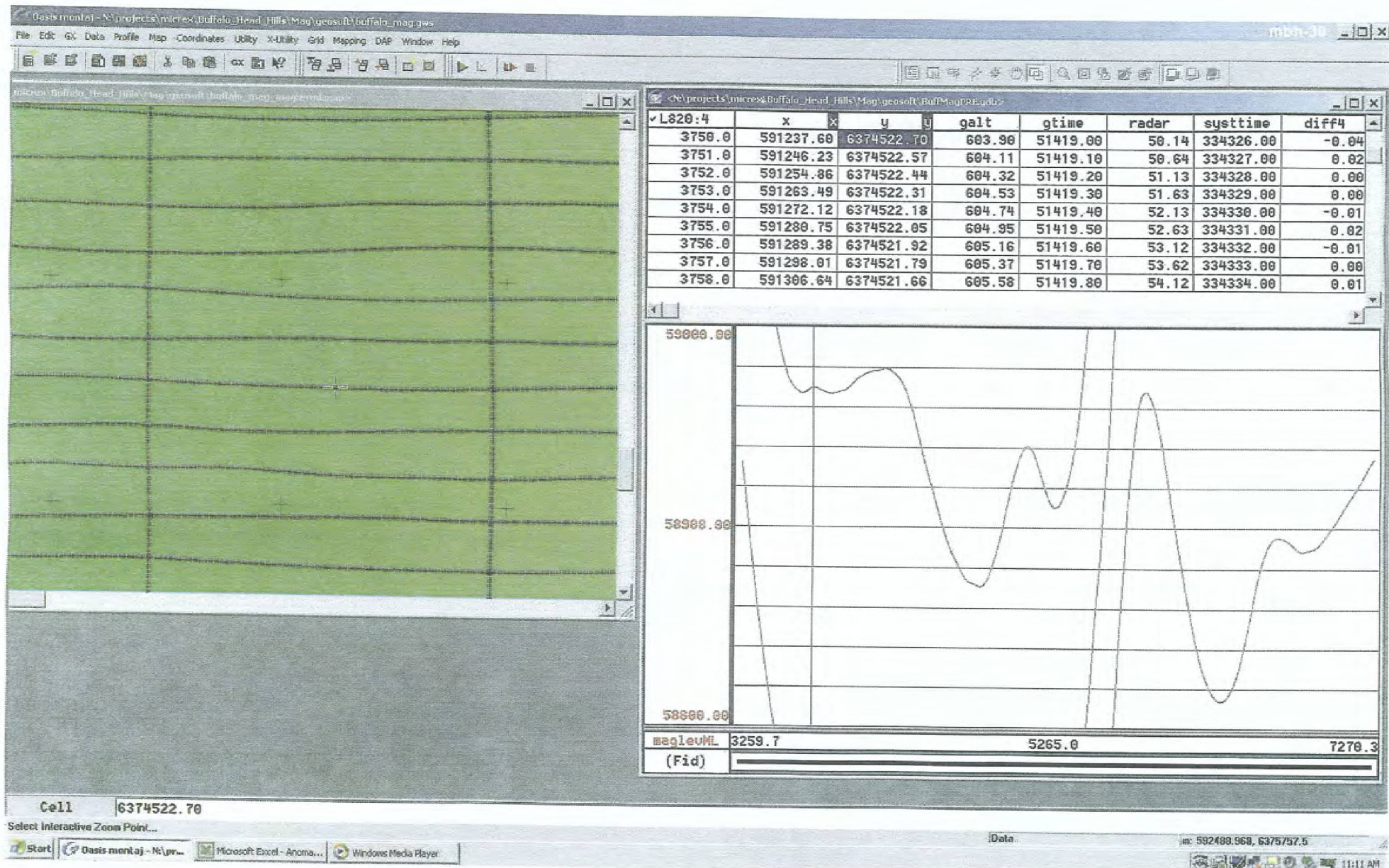




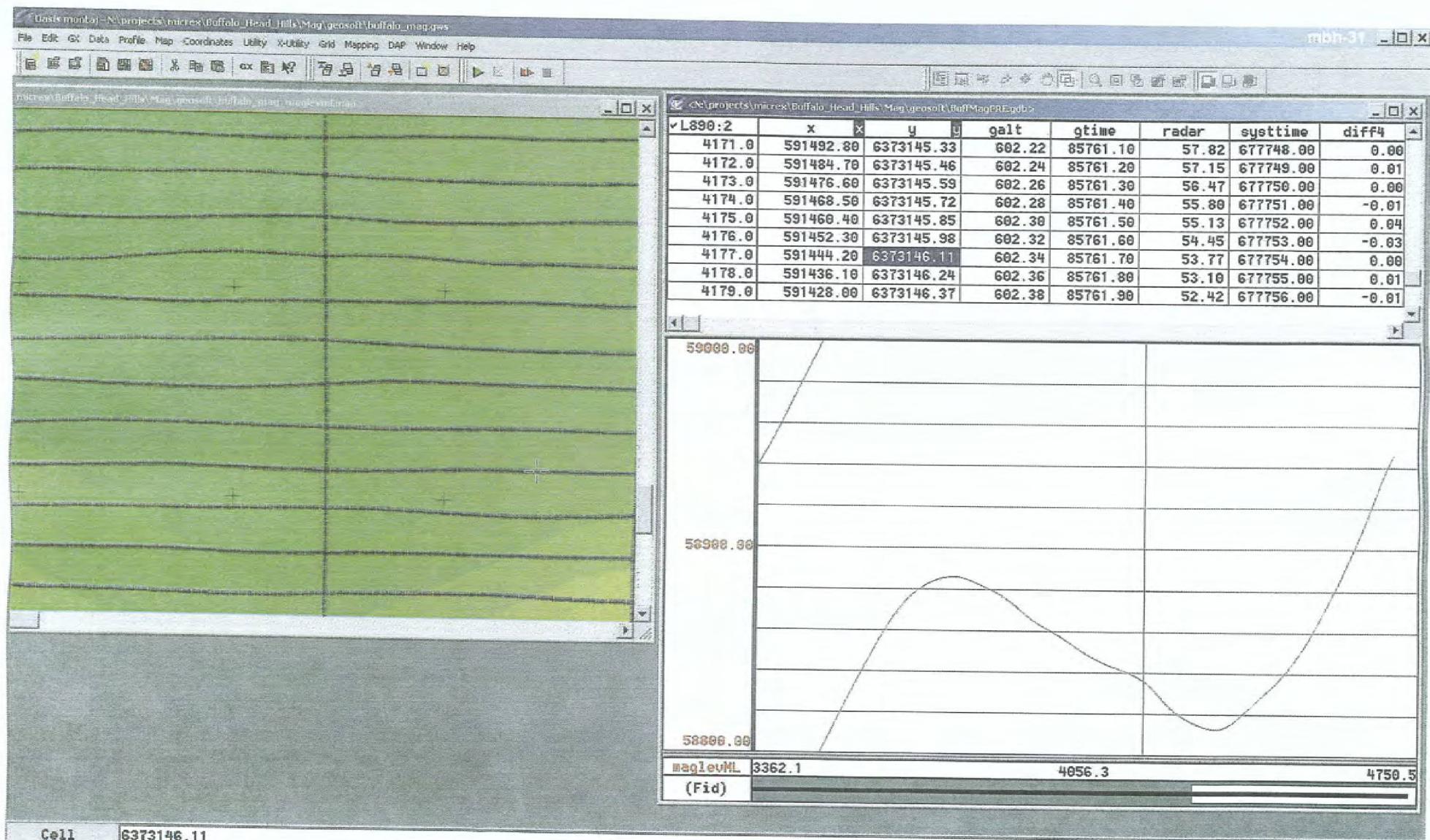


Select Interactive Zoom Point...









For Help, press F1

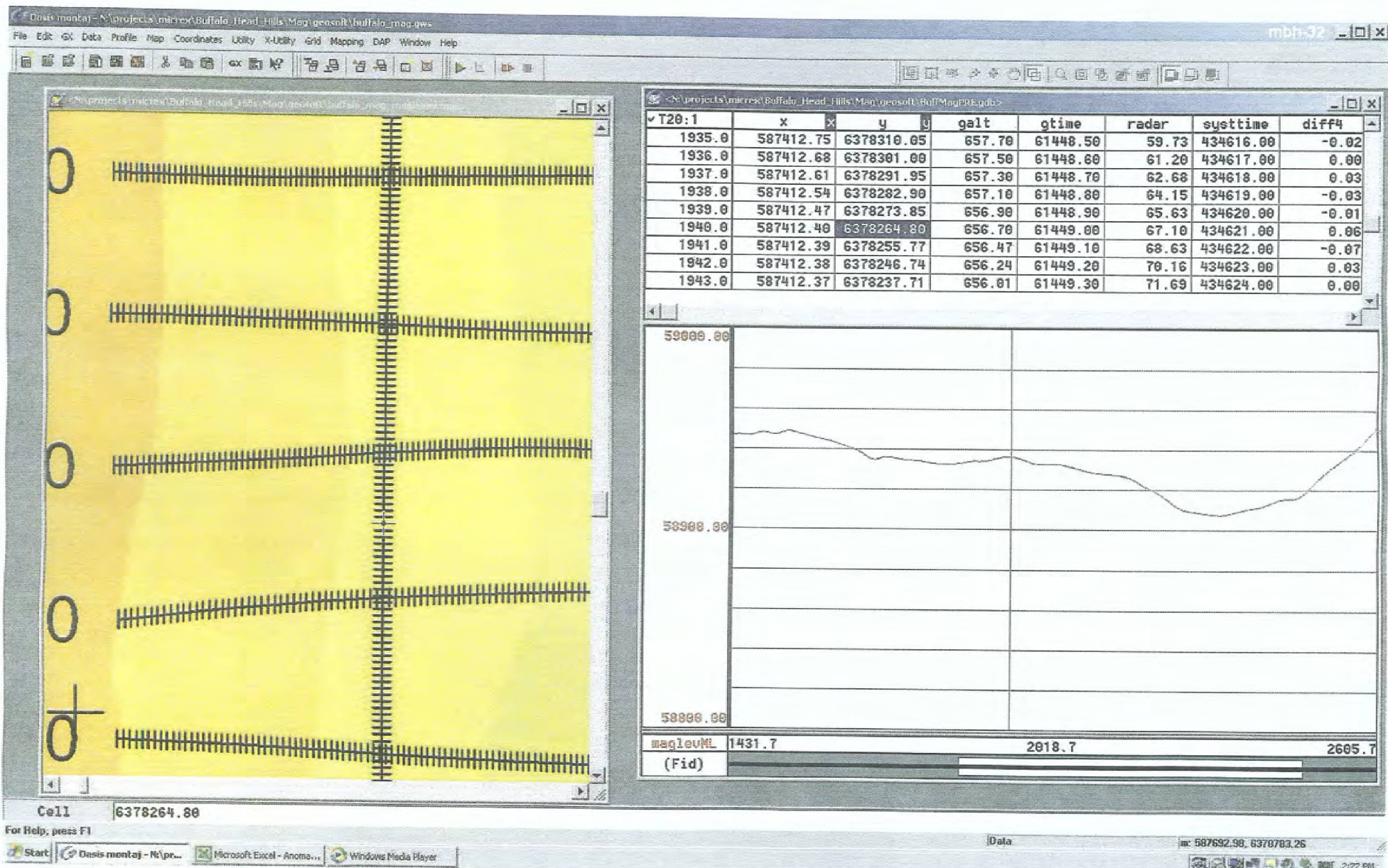
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Data

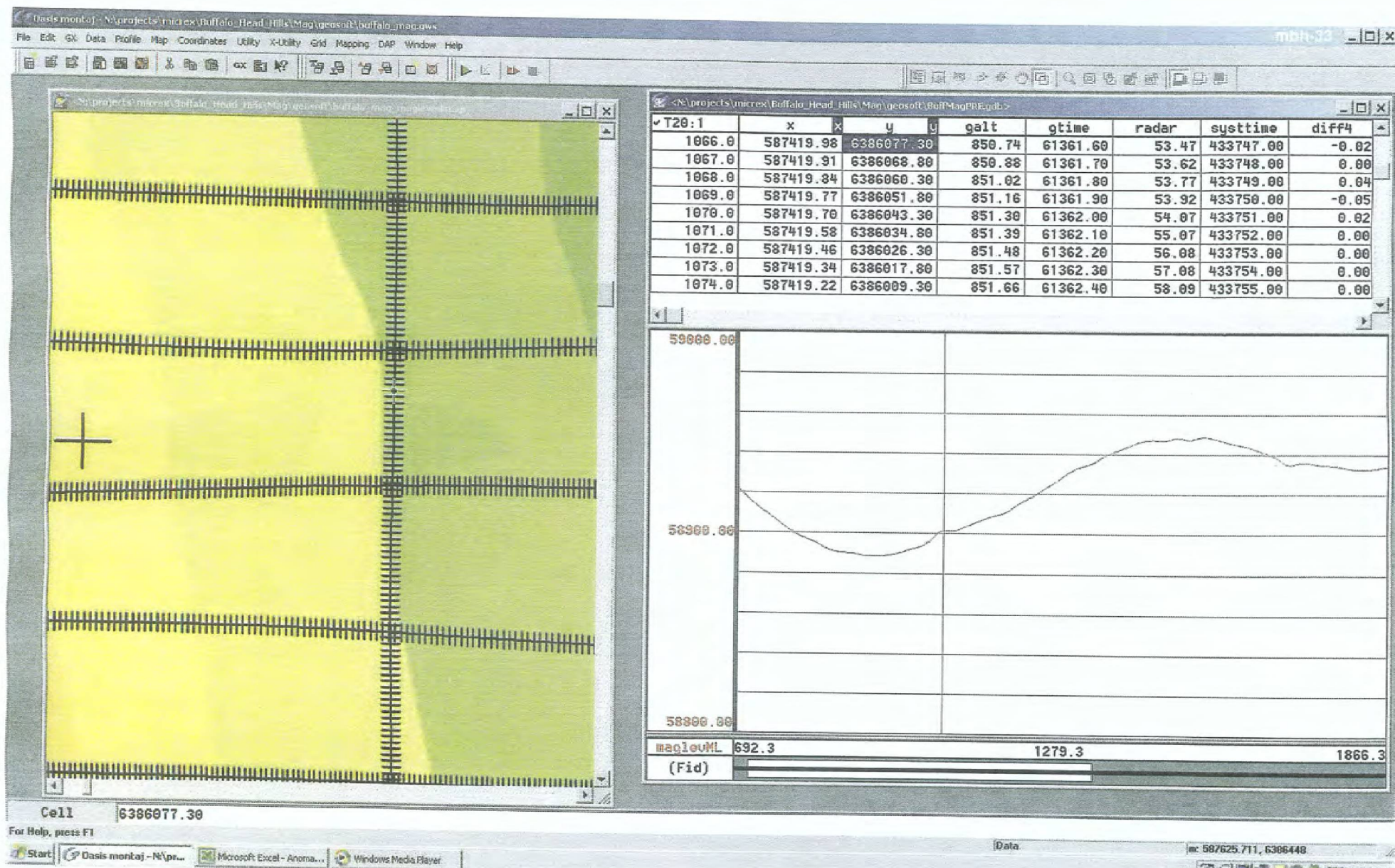
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11:35 AM

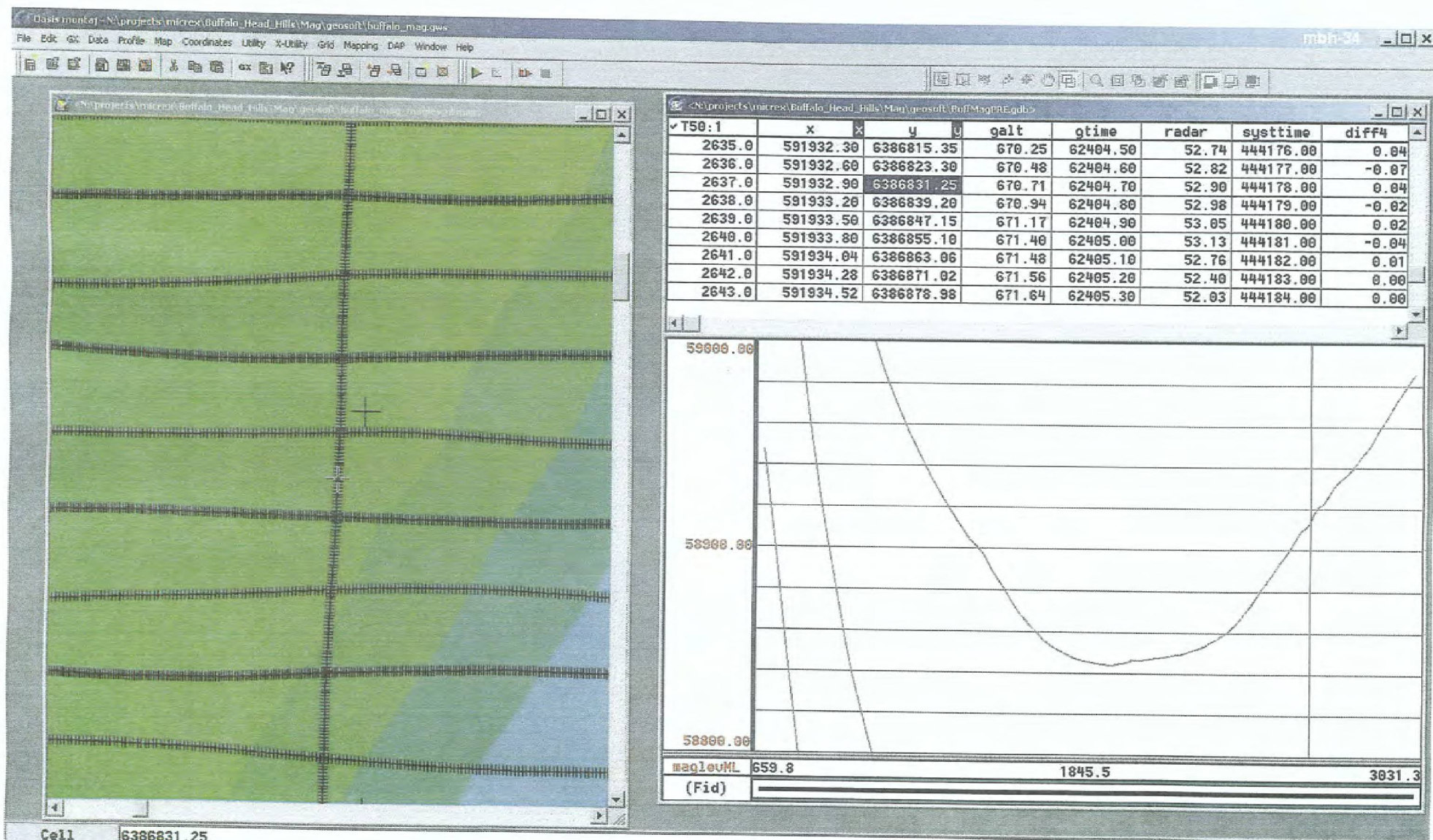




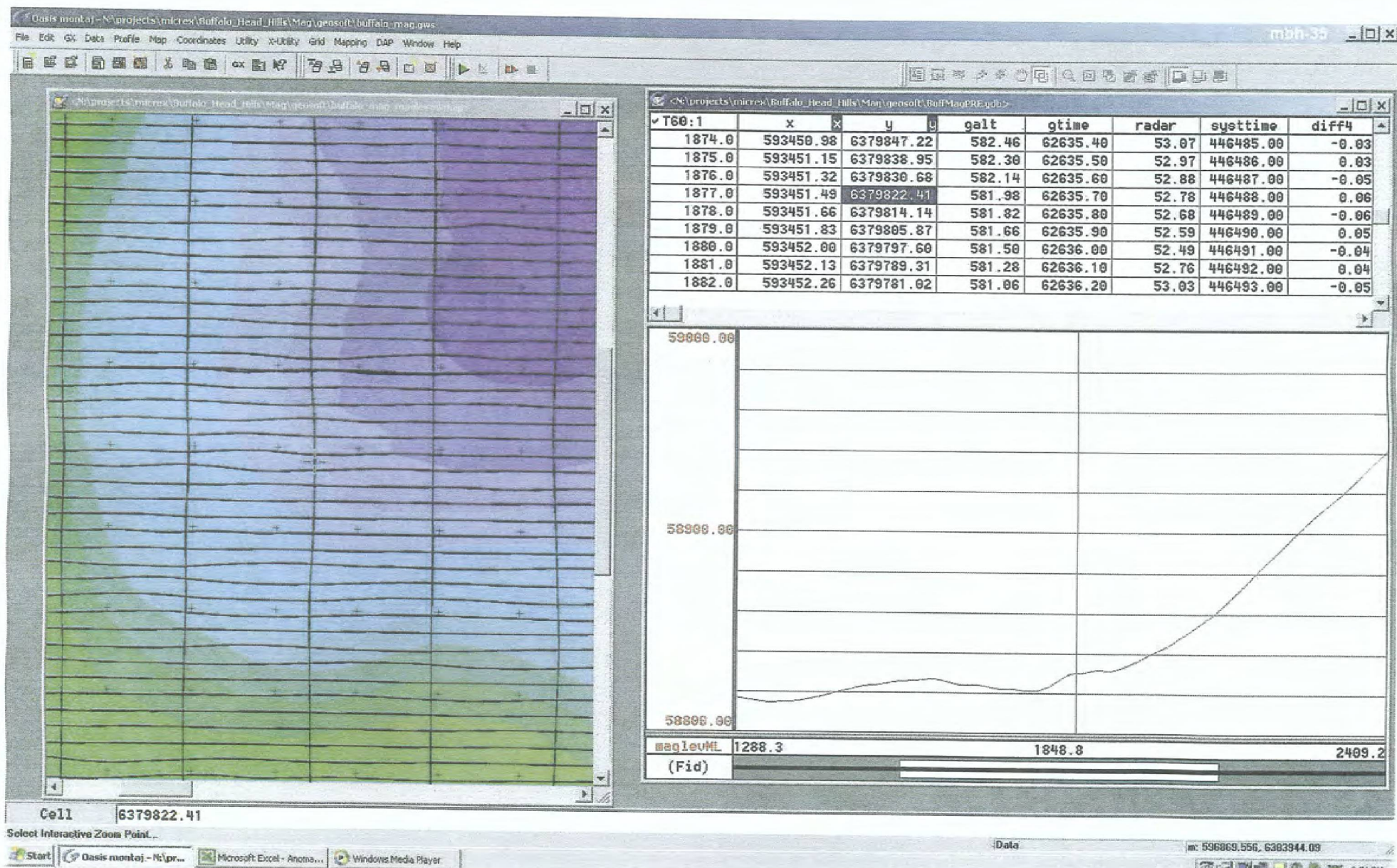




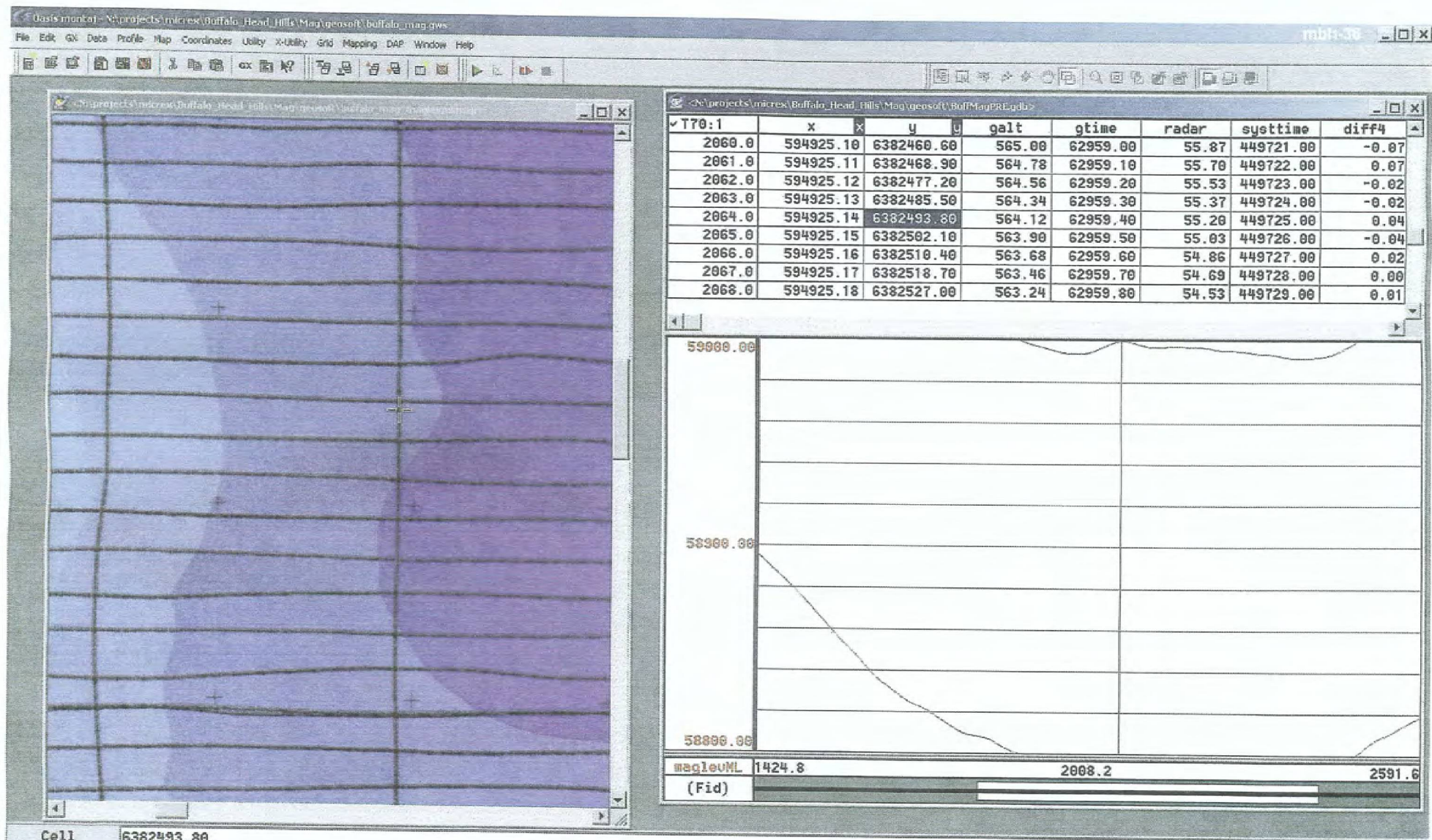












For Help, press F1

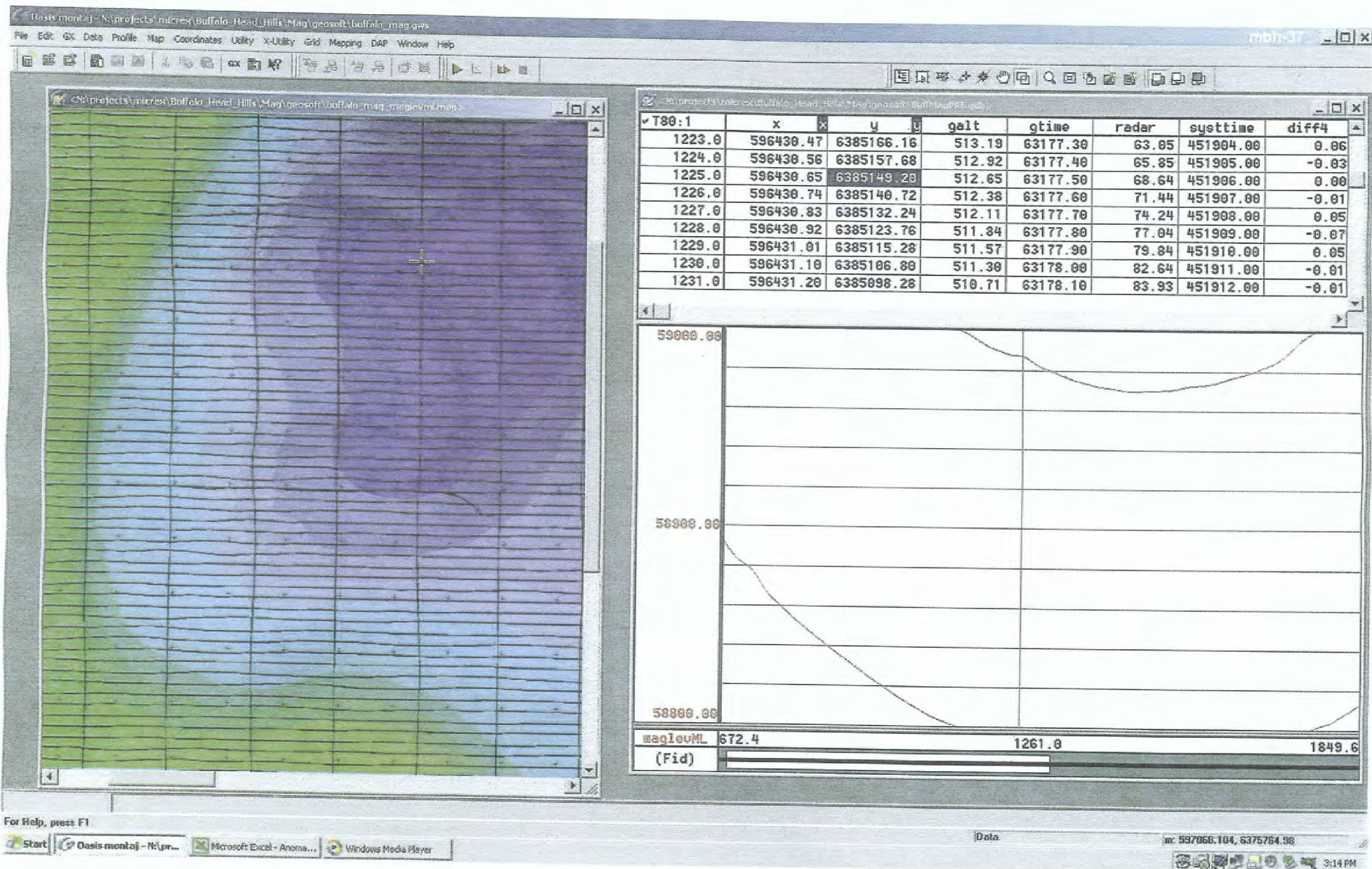
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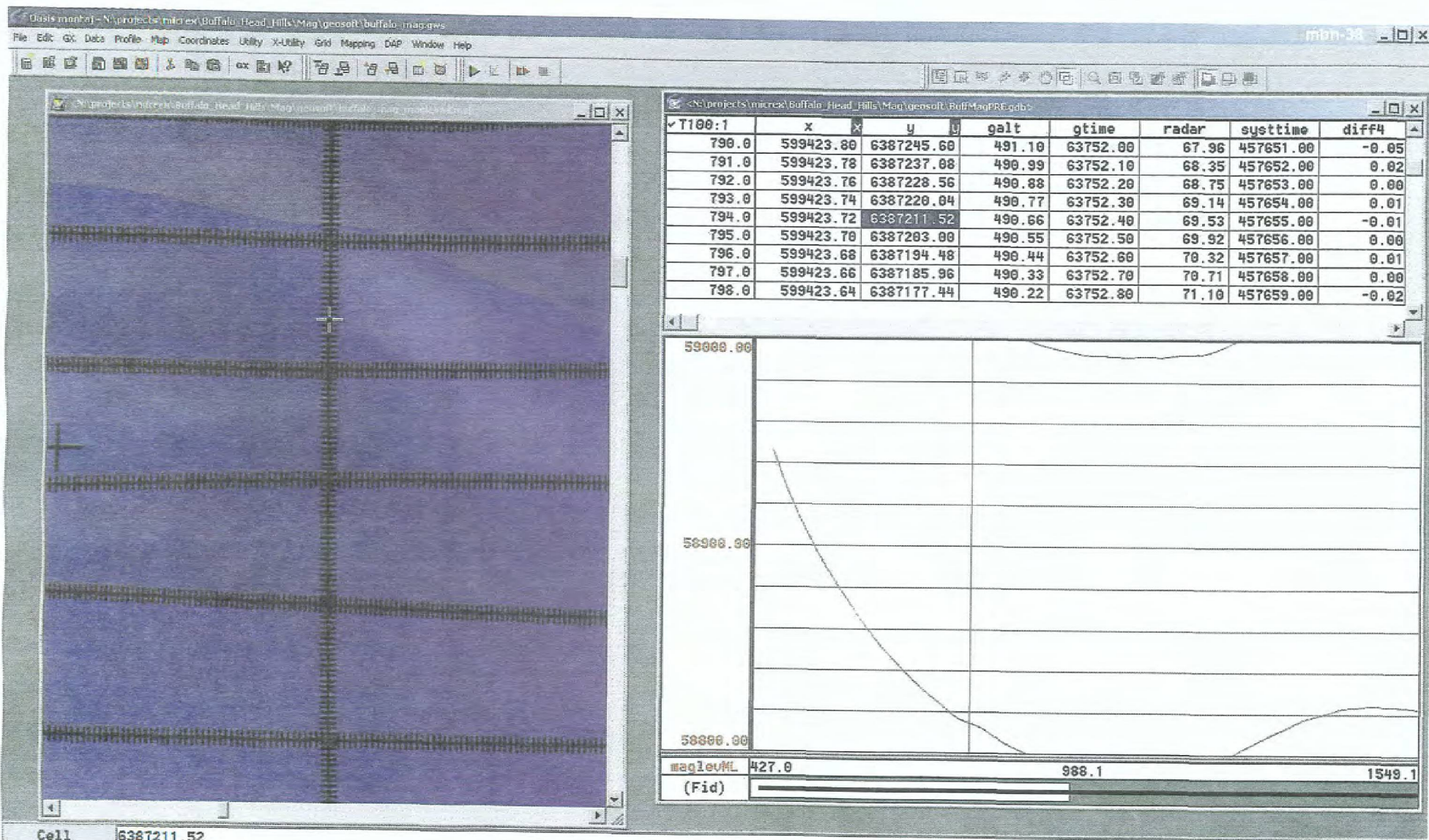
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2:57 PM









For Help, press F1

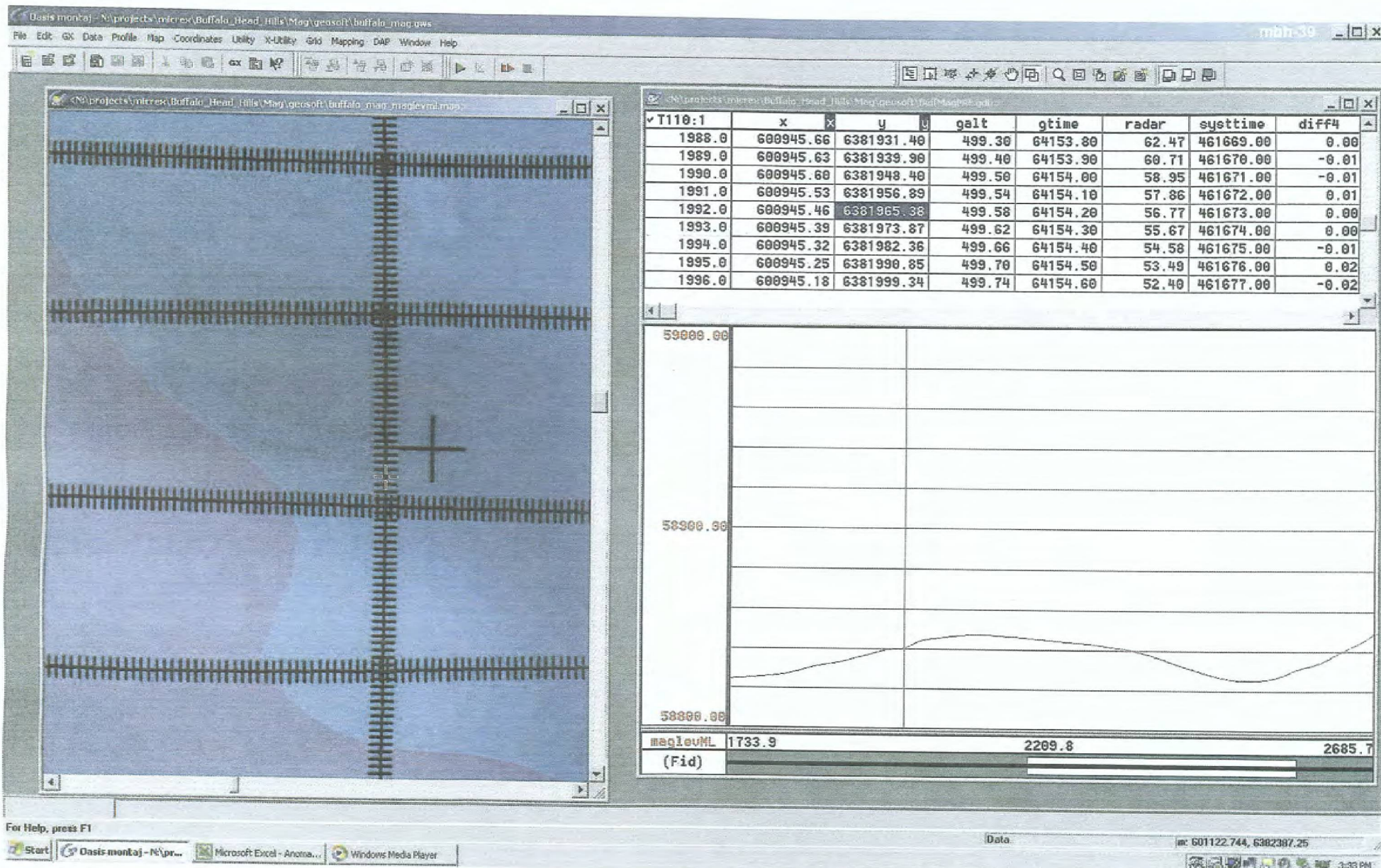
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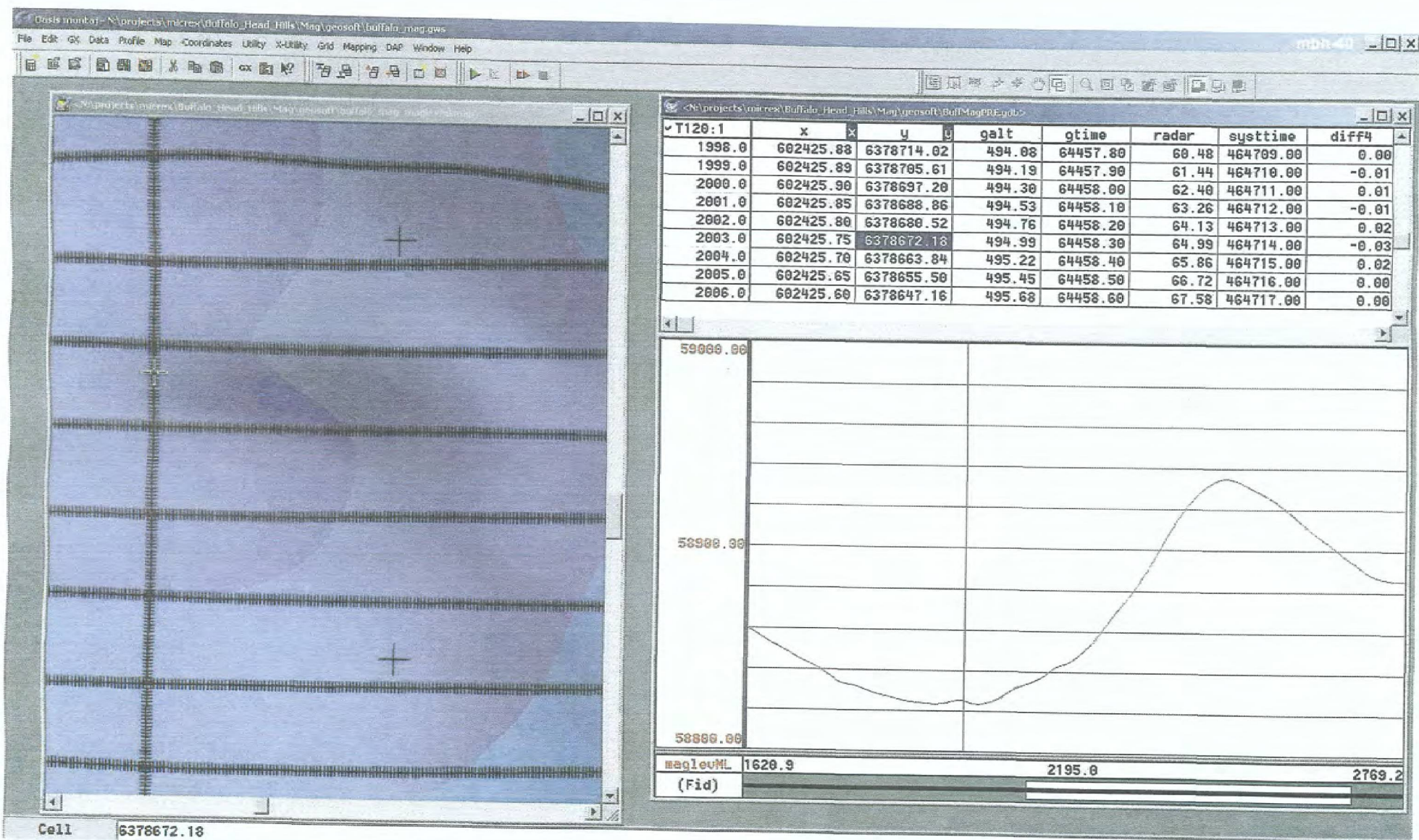
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3:21 PM

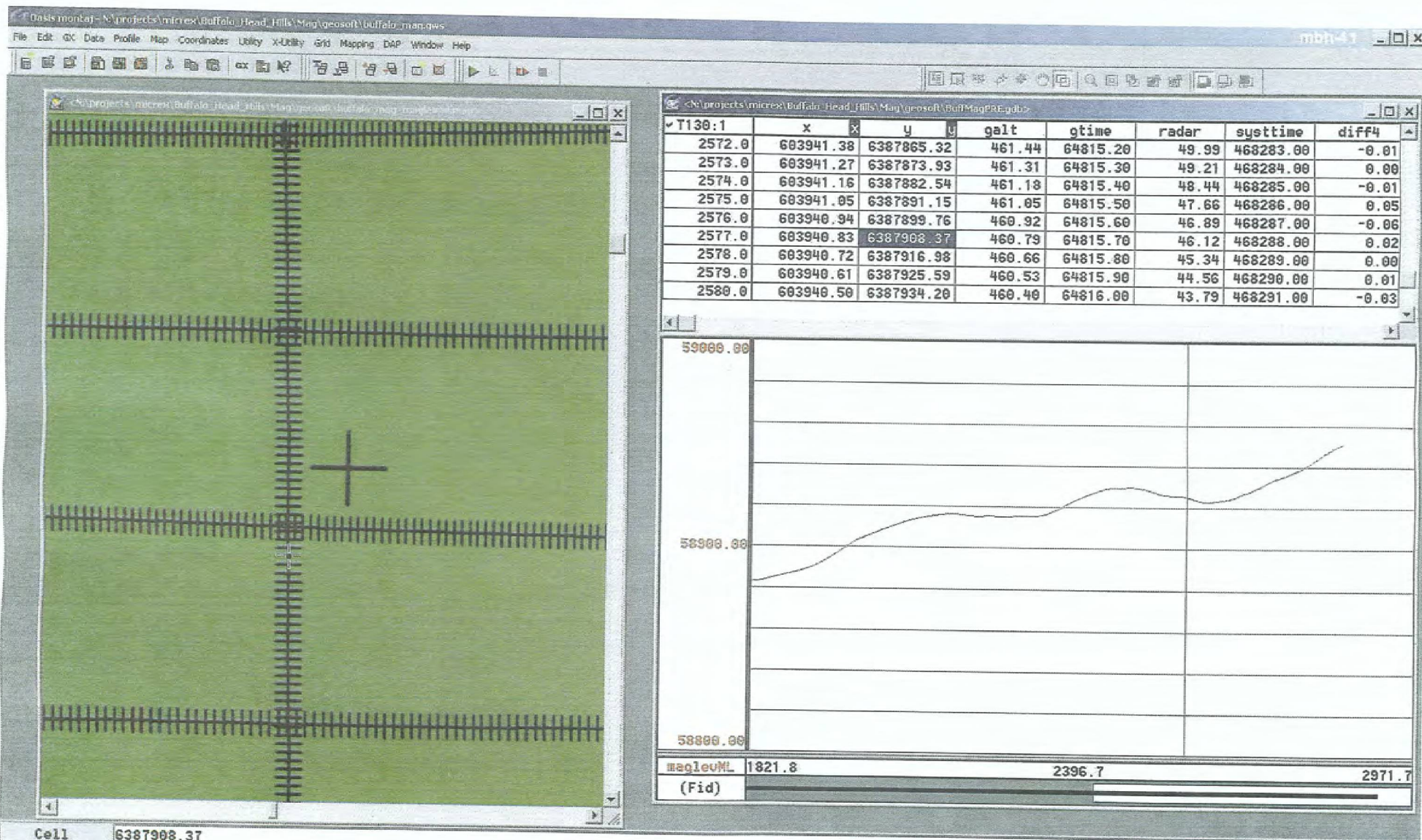












For Help, press F1

Start Dasis montaj - N:\pr... Microsoft Excel - Anome... Windows Media Player

Data

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4:26 PM



