

# Bigfork East Gold in Till

*This page last updated: 03/2011*

*Metadata created using [Minnesota Geographic Metadata Guidelines](#)*

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## Metadata Summary

<b><i>Originator</i></b>	Minnesota Department of Natural Resource, Division of Lands and Minerals, Mineral Potential Evaluation Section
<b><i>Abstract</i></b>	<p>The MnDNR is releasing a dataset of gold in till results from 133 soil samples collected in Western St. Louis and Northeastern Itasca Counties. The majority of these samples were collected within an area where shallow deposits of Rainy Lobe till overlie an Archean granite-greenstone terrane. This area, approximately 60 square miles in size, is referred to as the "Bigfork East Project Area." Till samples were collected over a two-year period (October 2008 to October 2010), using either a hand shovel, or by opening temporary test pits with a track-mounted excavator. Samples were sent to ODM Ltd for gold grain counts and heavy mineral concentrate (HMC) analysis.</p> <p>Sample descriptions, maps, and analytical results have previously been released over the course of this project (See MnDNR Public Data Releases dated June 2009, December 2009, July 2010, and March 2011). This dataset combines the analytical results and associated sample information from these individual releases into a single data file. Each Bigfork East Gold in Till record provides all or some of the following information: sample name, sample location (UTM coordinates and/or PLS information), sample depth, collection date and method, gold grain counts, heavy mineral concentrate weights, physical descriptions of the sample material, and laboratory report descriptors. Experienced MnDNR glacial geologists, Glenn Melchert and Heather Arrends, examined ten test pits to verify that till was sampled (both in the test pits, and, by association, proximal hand shovel samples).</p> <p>Bigfork East Gold in Till data are provided in 2 formats in this release: 1) a Microsoft® Excel ® 2003 spreadsheet, and 2) a geospatial GIS format, using the NAD83 geographic coordinate system in ESRI® shape file format.</p>
<b><i>Browse Graphic</i></b>	none available
<b><i>Time Period of Content Date</i></b>	03/2011
<b><i>Currentness Reference</i></b>	Data were collected between October 2008 and October 2010.
<b><i>Access Constraints</i></b>	
<b><i>Use Constraints</i></b>	Acknowledgement of the Minnesota Department of Natural Resources is appreciated for products derived from these data.
<b><i>Distributor Organization</i></b>	Minnesota Department of Natural Resources, Division of Lands and Minerals
<b><i>Ordering Instructions</i></b>	See contact information
<b><i>Online Linkage</i></b>	none available

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## Full Metadata

# Bigfork East Gold in Till

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Section 1	Identification Information	<a href="#">Top of page</a>
<b>Originator</b>	Minnesota Department of Natural Resource, Division of Lands and Minerals, Mineral Potential Evaluation Section	
<b>Title</b>	Bigfork East Gold in Till	
<b>Abstract</b>	<p>The MnDNR is releasing a dataset of gold in till results from 133 soil samples collected in Western St. Louis and Northeastern Itasca Counties. The majority of these samples were collected within an area where shallow deposits of Rainy Lobe till overlie an Archean granite-greenstone terrane. This area, approximately 60 square miles in size, is referred to as the “Bigfork East Project Area.” Till samples were collected over a two-year period (October 2008 to October 2010), using either a hand shovel, or by opening temporary test pits with a track-mounted excavator. Samples were sent to ODM Ltd for gold grain counts and heavy mineral concentrate (HMC) analysis.</p> <p>Sample descriptions, maps, and analytical results have previously been released over the course of this project (See MnDNR Public Data Releases dated June 2009, December 2009, July 2010, and March 2011). This dataset combines the analytical results and associated sample information from these individual releases into a single data file. Each Bigfork East Gold in Till record provides all or some of the following information: sample name, sample location (UTM coordinates and/or PLS information), sample depth, collection date and method, gold grain counts, heavy mineral concentrate weights, physical descriptions of the sample material, and laboratory report descriptors. Experienced MnDNR glacial geologists, Glenn Melchert and Heather Arrends, examined ten test pits to verify that till was sampled (both in the test pits, and, by association, proximal hand shovel samples).</p> <p>Bigfork East Gold in Till data are provided in 2 formats in this release: 1) a Microsoft® Excel ® 2003 spreadsheet, and 2) a geospatial GIS format, using the NAD83 geographic coordinate system in ESRI® shape file format.</p>	
<b>Purpose</b>	<p>The Bigfork East Gold in Till compilation is a digital geosciences database that characterizes the quantity and morphology of gold grains within samples of glacial till and related sediments from the Bigfork East Project Area in Western St. Louis and Northeastern Itasca Counties, Minnesota, USA. The purpose of till sampling program itself was to identify state-owned lands and/or mineral rights that have high mineral potential. The discovery of anomalous concentrations of gold grains in till elsewhere has led to the identification of associated bedrock gold deposits, both worldwide and within other granite-greenstone terranes in the Archean Superior Province of Canada. Anomalously high gold grain counts and distinct gold grain morphologies are described in this data set. The Bigfork East project area has the largest area of anomalously high gold in till values in the State of Minnesota. At the same time, the preponderance of “reshaped” grain morphologies and torroidal forms indicate a complex depositional history with potential intermediary paleoplacer point sources. This information can be used as source data for geographic information systems and earth science analysis for research and mineral exploration. The object of this product is to collate and disseminate geosciences information for Minnesota.</p> <p>The samples were all collected in areas of State-owned or State-administered lands and/or mineral rights. The Bigfork East Project Area is also within the Area Under Consideration for inclusion within an April, 2011 State Mineral Lease Sale. The product may provide useful guidance for private mineral exploration companies that are considering gold exploration programs on State lands.</p>	
<b>Time Period of Content Date</b>	03/2011	
<b>Currentness</b>	Data were collected between October 2008 and October 2010.	

## ***Reference***

### ***Progress***

In work

### ***Maintenance and Update Frequency***

As needed

### ***Spatial Extent of Data***

Northeastern Itasca and Western St. Louis Counties

### ***Bounding Coordinates***

-92.93  
-93.26  
47.42  
47.73

### ***Place Keywords***

Itasca County, St. Louis County, Bigfork East

### ***Theme Keywords***

ARCHEAN, BIGFORK, BIGFORK EAST PROJECT AREA, DIGITAL DATA, EXPLORATION DATA, FIELD DATA, GEOLOGY, GREENSTONE, GIS, GOLD AU, GRANITE-GREENSTONE, ITASCA COUNTY, MINERAL DEPOSITS, MINNESOTA, MINNESOTA DEPARTMENT OF NATURAL RESOURCES, MNDNR, GENERAL MINERAL EXPLORATION, MINERAL OCCURRENCES, MINERALS, MINES MINISTRY, PRECIOUS METALS (AU, AG, PGE), RAINY LOBE, TILL, SAMPLE, ST LOUIS COUNTY

### ***Theme Keyword Thesaurus***

### ***Access Constraints***

### ***Use Constraints***

Acknowledgement of the Minnesota Department of Natural Resources is appreciated for products derived from these data.

### ***Contact Person Information***

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### ***Browse Graphic***

none available

### ***Browse Graphic File Description***

### ***Associated Data Sets***

Bigfork East Gold in Till data are provided in 2 formats in this release: 1) a Microsoft® Excel ® 2007 spreadsheet, and 2) a geospatial GIS format, using the NAD83 geographic coordinate system in ESRI® shape file format.

## **Section 2**

## **Data Quality Information**

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### ***Attribute Accuracy***

### ***Logical Consistency***

### ***Completeness***

The data points were gathered at the location where the samples took place using GPS.

### ***Horizontal Positional Accuracy***

Horizontal accuracy generally varies between 1 and 10 meters. The geographic coordinates at each sample location was determined in the field using a hand-held GPS device. The accuracy of this device is dependent on signal strength, which degrades in forested areas and other places with obstructed views of the sky. Sample locations were also identified in the field using topographic maps and aerial photographs. In some instances, UTM coordinates were adjusted to resolve discrepancies between the GPS data and the fixed locations of readily

identifiable geographic and/or man-made features (e.g. trails, roads, and other rights-of-way). Vertical accuracy is not applicable.

### ***Vertical Positional Accuracy***

Ground surface elevation measurements were not collected in the field. The depths and thicknesses of soil horizons, till units, and sampled intervals were measured with a steel tape, and are generally accurate to within 0.2 feet.

### ***Lineage***

Field data were recorded by the MnDNR personnel who collected the samples. Analytical results and associated sample characterizations were provided by a third-party independent laboratory and provided to the MnDNR in both electronic and hard-copy reports. Other data sources (if any) are documented where appropriate within the database field descriptions below.

### ***Source Scale Denominator***

Section 3	Spatial Data Organization Information	<a href="#">Top of full metadata</a>	<a href="#">Top of page</a>
<i>Native Data Set Environment</i>	ArcGIS 9.3		
<i>Geographic Reference for Tabular Data</i>			
<i>Spatial Object Type</i>	Point		
<i>Vendor Specific Object Types</i>	Point		
<i>Tiling Scheme</i>			
Section 4	Spatial Reference Information	<a href="#">Top of full metadata</a>	<a href="#">Top of page</a>
<i>Horizontal Coordinate Scheme</i>	UTM		
<i>Ellipsoid</i>	GRS80		
<i>Horizontal Datum</i>	NAD83		
<i>Horizontal Units</i>	Meters		
<i>Distance Resolution</i>			
<i>Altitude Datum</i>	Not applicable		
<i>Depth Datum</i>	Not applicable		
<i>UTM Zone Number</i>	15E		
Section 5	Entity and Attribute Information	<a href="#">Top of full metadata</a>	<a href="#">Top of page</a>
<i>Entity and Attribute Overview</i>	This dataset consists of, but is not limited to (see attribute table for details): the sample id; weight of sample; gold grain count, weight, and quality information; characterization of sand, silt, clay, organics; material matrix, and link to online PDF version of the lab report.		

***Entity and Attribute  
Detailed Citation***

Attribute values can be found in a table at the bottom of this document.

Section 6	Distribution Information	<a href="#">Top of full metadata</a>	<a href="#">Top of page</a>
<b><i>Publisher</i></b>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section		
<b><i>Publication Date</i></b>	03/2011		
<b><i>Contact Person Information</i></b>	Mineral Potential Evaluation Section Don Elsenheimer Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5433 FAX: 651-296-5939 E-mail: <a href="mailto:donald.elsenheimer@state.mn.us">donald.elsenheimer@state.mn.us</a>		
<b><i>Distributor's Data Set Identifier</i></b>	Bigfork East Gold in Till		
<b><i>Distribution Liability</i></b>	The Minnesota Department of Natural Resources makes no representation or warranties, express or implied, with respect to the reuse of data provided herewith, regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability, or reliability of this data for any purpose. The user accepts the data 'as is', and assumes all risks associated with its use. By accepting this data, the user agrees not to transmit this data or provide access to it or any part of it to another party unless the user shall include with the data a copy of this disclaimer. The Minnesota Department of Natural Resources assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data.		
<b><i>Transfer Format Name</i></b>			
<b><i>Transfer Format Version Number</i></b>			
<b><i>Transfer Size</i></b>			
<b><i>Ordering Instructions</i></b>	See contact information		
<b><i>Online Linkage</i></b>	none available		
Section 7	Metadata Reference Information	<a href="#">Top of full metadata</a>	<a href="#">Top of page</a>

<b><i>Metadata Date</i></b>	03/2011
<b><i>Contact Person Information</i></b>	Don Elsenheimer, Economic Geologist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5433 FAX: 651-296-5939 E-mail: <a href="mailto:donald.elsenheimer@state.mn.us">donald.elsenheimer@state.mn.us</a>
<b><i>Metadata Standard Name</i></b>	Minnesota Geographic Metadata Guidelines

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Table Name	Field Name	Definition	Valid Values	Descriptions
	SAMPLE_ID	Text, 8	Ex: BF-25, LL-03	Sample ID
	AREA	Text, 8	See Below	Project area associated with the sample location
			BFE	Bigfork East Project Area
			CAL	Calumet Project Area
	TABLFEED	Number	Ex: 9.5, 10.2	Total weight (in kilograms) of the sample, less +2.0mm clasts.
	RAWGGC	Number	Ex: 38, 3	Total number of gold grains observed within the sample.
	RAWRESHP		Ex: 38, 3	Total number of reshaped gold grains observed within the sample.
	RAWMOD		Ex: 38, 3	Total number of modified gold grains observed within the sample.
	RAWPRIS		Ex: 38, 3	Total number of pristine gold grains observed within the sample.
	NORMGGC		Ex: 215.3	Total number of gold grains, normalized to a 10kg sample weight. Calculation: (TABLEFEED/10)*RAWGGC.
	NORMRESHP		Ex: 215.3	Total number of gold grains, normalized to a 10kg sample weight. Calculation: (TABLEFEED/10)*RAWRESHP.
	NORMMOD		Ex: 215.3	Total number of gold grains, normalized to a 10kg sample weight. Calculation: (TABLEFEED/10)*RAWMOD.
	NORMPRIS		Ex: 215.3	Total number of gold grains, normalized to a 10kg sample weight. Calculation: (TABLEFEED/10)*RAWPRIS.
	HMC_GGC		Ex: 412.9	Laboratory calculated weight of Total visible gold grains in Heavy Mineral Concentrate. In parts per billion. Value of 0.5 assigned for "<1" non-detect.
	HMC_RESHP		Ex: 412.9	Laboratory calculated weight of Reshaped visible gold grains in Heavy Mineral Concentrate. In parts

				per billion. Value of 0.5 assigned for “<1” non-detect.
	HMC_MOD		Ex: 412.9	Laboratory calculated weight of Modified visible gold grains in Heavy Mineral Concentrate. In parts per billion. Value of -1 assigned for “<1” non-detect.
	HMC_PRIS		Ex: 412.9	Laboratory calculated weight of Pristine visible gold grains in Heavy Mineral Concentrate. In parts per billion. Value of -1 assigned for “<1” non-detect.
	TABLCONC		Ex: 345.2	-2.0mm Table Concentrate Weight (g dry)
	HMC_WT		Ex: 48.3	Weight of heavy mineral concentrate (S.G. 3.3 liquid separation). In grams.
	NMHMC_WT		Ex: 34.0	Weight of non-magnetic fraction of heavy mineral concentrate (S.G. 3.3 liquid separation). In grams.
	CLST_VS		Ex: 50	Laboratory qualitative estimate of the percentage of clasts (> 2.0 mm) in the sample that are volcanic and/or sediment in composition.
	CLST_G		Ex: 50	Laboratory qualitative estimate of the percentage of clasts (> 2.0 mm) in the sample that are granitic in composition.
	CLST_LS		Ex: 10, 0	Laboratory qualitative estimate of the percentage of clasts (> 2.0 mm) in the sample that are limestone or carbonate in composition.
	CLST_OT		Ex: 10, 0	Laboratory qualitative estimate of the percentage of clasts (> 2.0 mm) in the sample that are of other lithologies (refer to LABNOTES)
	SORT	Text	See Below	
			S	Sorted matrix distribution
			U	Unsorted matrix distribution
	SD_MATRIX	Text	See Below	Characterization of sand within the <2.0mm sample matrix
			Y	Sand fraction present in matrix
			N	Sand fraction not present in matrix
			+	Sand fraction more abundant than normal.
			-	Sand fraction less abundant than normal
			F	Sand fraction is fine-grained

			M	Sand fraction is medium-grained
			C	Sand fraction is coarse-grained
	ST_MAT	Text	See below	Characterization of silt within the <2.0mm sample matrix
			Y	Silt fraction present in matrix
			N	Silt fraction not present in matrix
			+	Silt fraction more abundant than normal.
			-	Silt fraction less abundant than normal
	CY_MAT	Text	See below	Characterization of clay within the <2.0mm sample matrix
			Y	Clay fraction present in matrix
			N	Clay fraction not present in matrix
			+	Clay fraction more abundant than normal.
			-	Clay fraction less abundant than normal
	ORG_MAT	Text	See below	Characterization of organic matter within sample matrix
			Y	Organics present in matrix
			N	Organics absent or negligible in matrix
			+	Matrix is mainly organic
	COL_SDMAT	Text	See below	Laboratory identified color of sample matrix sand particles
			BE	Beige
			GY	Grey
			GB	Grey-beige
			GN	Green
			GG	Grey-green
			PP	Purple
			PK	Pink
			PB	Pink-beige
			OC	Ocre (Secondary soil)
			BN	Brown (Secondary soil)
			BK	Black (Secondary soil)
			L	Light (secondary modifier used with other color codes)
			M	Medium (secondary modifier used



				with other color codes)
			D	Dark (secondary modifier used with other color codes)
	COL_CYMAT	Text	See below	Laboratory identified color of sample matrix clay particles
			BE	Beige
			GY	Grey
			GB	Grey-beige
			GN	Green
			GG	Grey-green
			PP	Purple
			PK	Pink
			PB	Pink-beige
			OC	Ocre (Secondary soil)
			BN	Brown (Secondary soil)
			BK	Black (Secondary soil)
			L	Light (secondary modifier used with other color codes)
			M	Medium (secondary modifier used with other color codes)
			D	Dark (secondary modifier used with other color codes)
	CLASS_MAT	Text	See below	Laboratory characterization of sample matrix
			TILL	Sample matrix consists of unsorted glacial till
			SAND	Sample matrix consists of sorted sand
			SAND + SILT	Sample matrix consists of a mixture of sorted sands and silt.
			SAND + GRAVEL	Sample matrix consists of a mixture of sorted sands and gravels.
			TILL + SOIL	Sample matrix consists of unsorted glacial till and soil
	LAB	Text	Ex: ODM	Laboratory that provided gold grain count and HMC sample analysis.
	LABID	Number	Ex: 4804	Numeric laboratory identification of sample batch
	LABRPTDATE	Date	Ex: 12/23/2009	Date of laboratory report
	LABNOTE	Text	Ex: No Sulfides	Laboratory comments on sample.
	WEBLINK	Text	Ex: http://____	Link to on-line PDF version of laboratory report

	BULK_WT			Weight of the bulk sample (including container) in kg.
	CLST_WT			Weight of the sample fraction that is greater than 2mm in diameter (kg).
	LM_WT			Weight (g dry) of the table concentrate (less than 2mm) material that has a specific gravity less than 3.3.
	MHMC_WT			Weight (g dry) of the magnetic fraction of the heavy mineral concentrate.
	CLST_SZ			Largest-sized clasts within the sample. G = granules, P = pebbles, C = cobbles.
	COL_DATE			Date that the sample was collected in the field.
	COL_TYPE			Describes whether the sample was collected by hand shovel (SHOVEL) or within a mechanically-excavated test pit (PIT)
	FROM			Approximate depth (in feet) of the top of the sampled interval of soil
	TO			Approximate depth (in feet) of the base of the sampled interval of soil
	SCREEN			Describes whether the samples were screened in the field to remove clasts greater than 5mm in diameter (YES) or submitted unscreened (NO). Cobbles and boulders were segregated in either case.
	CTY			County in which sample was collected.
				St. Louis County
				Itasca County
	TWNSP			PLS township coordinate
	RANGE			PLS range coordinate
	SECT			PLS section number