Frontier Analysis, Ltd

TECHNICAL SERVICE RESPONSE NO.: UT095

Subject: Analysis of Soil Samples from the Travis Walton Abduction Site (Apache-Sitgreaves National Forest, Near Heber Arizona)

Date: April 4, 2017

Reported By: Phyllis A. Budinger
Analytical Scientist

Bruce O. Budinger
Composite Ceramics Scientist

Background/Objective:

The Travis Walton abduction is well known to most people reading this. Suffice to say he was part of a logging crew on November 5, 1975 in the Apache-Sitgreaves National Forest. The abduction site is in the east central Arizona mountains, and is accessed only by old logging roads. After calling it a day, and with the sun going down, the crew of seven got in the truck to head home. As they traveled down the road, a UFO was spotted hovering off to the side. Travis got out, approached it, and was hit by a beam. The crew panicked and drove off, but quickly returned to find Travis missing. He was gone five days, and then reappeared just outside Heber, Arizona. For details on this event, see his site www.travis-walton.com or read Travis Walton's book "*Fire in the Sky*".

Though the event happened 40 years ago, soil samples were collected from the site, along with nearby control samples. It should be noted that besides 40 years of weathering, a massive forest fire occurred in 2002 which devastated the area. Still, it was hoped that if a permanent change was made to the soil due to the UFO's proximity, it would be detected.

This laboratory is also in possession of wood core samples from the site. The trees were cored 24 years after the event in winter 1998/1999 by Mike Rogers before the forest fire. He sent cores to W. C. Levengood. Levengood passed them along to this laboratory September 2012. The core samples are intriguing because of the tree rings. Wide rings from the site trees show that from the time of the abduction in 1975, and for 15 years afterwards, they experienced rapid growth. Cores of trees just outside the site show no rapid growth. Furthermore it was observed in January 2012 that the wide rings are not concentric around the trunk. That is, they are elliptical and even wider where they faced the UFO. Some testing has been done on selected core samples and is not completed. This analysis will not be addressed in this report.

The objective of this project is to determine whether the analysis of the soils will detect any anomalies which can be related to an unknown craft (UFO). Also it hoped to be informative to other scientists/investigators that may be able to add input and further interpretation to build on what is found. It is also desired that the information and testing serves as a protocol for future testing of soil samples related to UFO events. That is, which procedures and tests should be done.

Acknowledgement:

While this project was personally generated and primarily financed by this laboratory, we must acknowledge and thank our friend and colleague Dr. Sampath Iyengar for discounting and partially donating his services for EDX elemental analysis and XRD characterization of the soil samples and magnetic particles.

Conclusions:

●The composition of each the soils consist of primarily quartz, mica and feldspars (microcline) minerals with some humates (organics). Small amounts of metallic particulates are present which contain iron oxide permutations of hematite (Fe_2O_3), ilmenite ($FeTiO_3$) and magnetite (Fe_3O_4). Quantitatively the amounts of these components vary between the samples.

●It is revealed that iron containing particulates amounts are higher in the site soils compared to the control soils. Furthermore, there is indication that the levels tend to be higher in the surface soils compared to the sub-surface soils of the site samples. This laboratory speculates that the hovering craft propulsion system has a powerful electromagnetic effect thereby drawing (and concentrating) these iron particulates toward the surface. This has been observed in the analysis of soils from other sites where UFOs landed or hovered close to the ground.[1] It was more specifically noted that sample 2 contains less particlulates compared to the other site samples, but slightly more than the controls. Soil 2 is approximately where Travis landed after the beam hit him. Perhaps this suggests that the UFO was not influencing the metal content as much at this location.

● The exchangeable cations (calcium, magnesium, potassium) are significantly higher in the site samples than the control samples[2]. This would indicate some chemical

---

[1] Unreported soil samples from Stevensville, Montana.

[2] Cation Exchange Capacity (CEC) Cation-exchange capacity is defined as the degree to which a soil can adsorb and exchange cations. (Cation-a positively charged ion (NH_4^+, K^+, Ca^{2+}, Fe^{2+}, etc...) Anion-a negatively charged ion)(NO_3^-, PO_4^{2-}, SO_4^{2-}, etc...)
Soil particles and organic matter have negative charges on their surfaces. Mineral cations can adsorb to the negative surface charges or the inorganic and organic soil particles. Once adsorbed, these minerals are not easily lost when the soil is leached by water and they also provide a nutrient reserve available to plant roots.

changes in the site samples. The detection of the differences in cationic activity in the soils is intriguing. However, compositional differences, e.g. such as clay (microcline) content may affect the CEC values.[3] (The amounts of minerals were not determined.) It very speculative that the effect is due to a UFO, because the samples were collected 40 years after the event. But, it should be noted that this laboratory has analyzed substances from other events which were in proximity to a UFO. And, there is indication that while hovering an electronic force field surrounds the craft, causing an ionizing effect to materials in close proximity. For example, in the famous Delphos Kansas event, a craft was observed depositing what turned out to be mostly fulvic acids which chemilumenesced for almost two days.[4] In Poland, a hovering/landed craft deposited vitrified soil chunks which glowed for months.[5]

●We believe this analysis justifies additional examination of soil samples from the site. It was under sampled and more metal particulates analysis is needed for confirmation of their relation to the UFO effects.

<u>Recommendations</u>:

●Clearly the quantitative results for the iron containing particulates need to be further verified. So definitely, more soil sampling is needed from the site and outside the site (especially better control samples). Unfortunately, there was only limited time to collect the samples that we did get. Also there is a need to more accurately locate the site samples. They are an approximation and could be off as much as four feet. This sampling should be done in the presence of the witnesses, most importantly Travis Walton and Mike Rogers who also drew the map.

●We would limit the testing of additional samples to ICP for iron content and magnetic drag amounts. Other testing, such as XRD and infrared analyses, probably need not be repeated as these tests already provided information needed on soil and identification of the metal particulates. Also, other testing on the soils would not provide significant information after 40 years of weathering and a forest fire, e.g. seed germination and soil assay.

●People with expertise in different disciplines should be invited to look at these data. For example, the soil assay test results should be evaluated by an Agronomist (soil scientist). We do not have that background in this field, though we know that interaction of properties, e.g. pH, soil mineral composition, humates content, affect the results of other tests.

●A consistent protocol for sample acquisition and treatment should be adhered to. The procedure for future testing of any UFO site soil samples should definitely include the

---

These minerals can then be replaced or exchanged by other cations (i.e., cation exchange)

[3] Cornell University Cooperative Extension, Agronomy Fact Sheet Series, Fact Sheet 22.
[4] Technical Service Response No.: UT001 Frontier Analysis, Ltd.
[5] Technical Service Response No.: UT030 Frontier Analysis, Ltd.

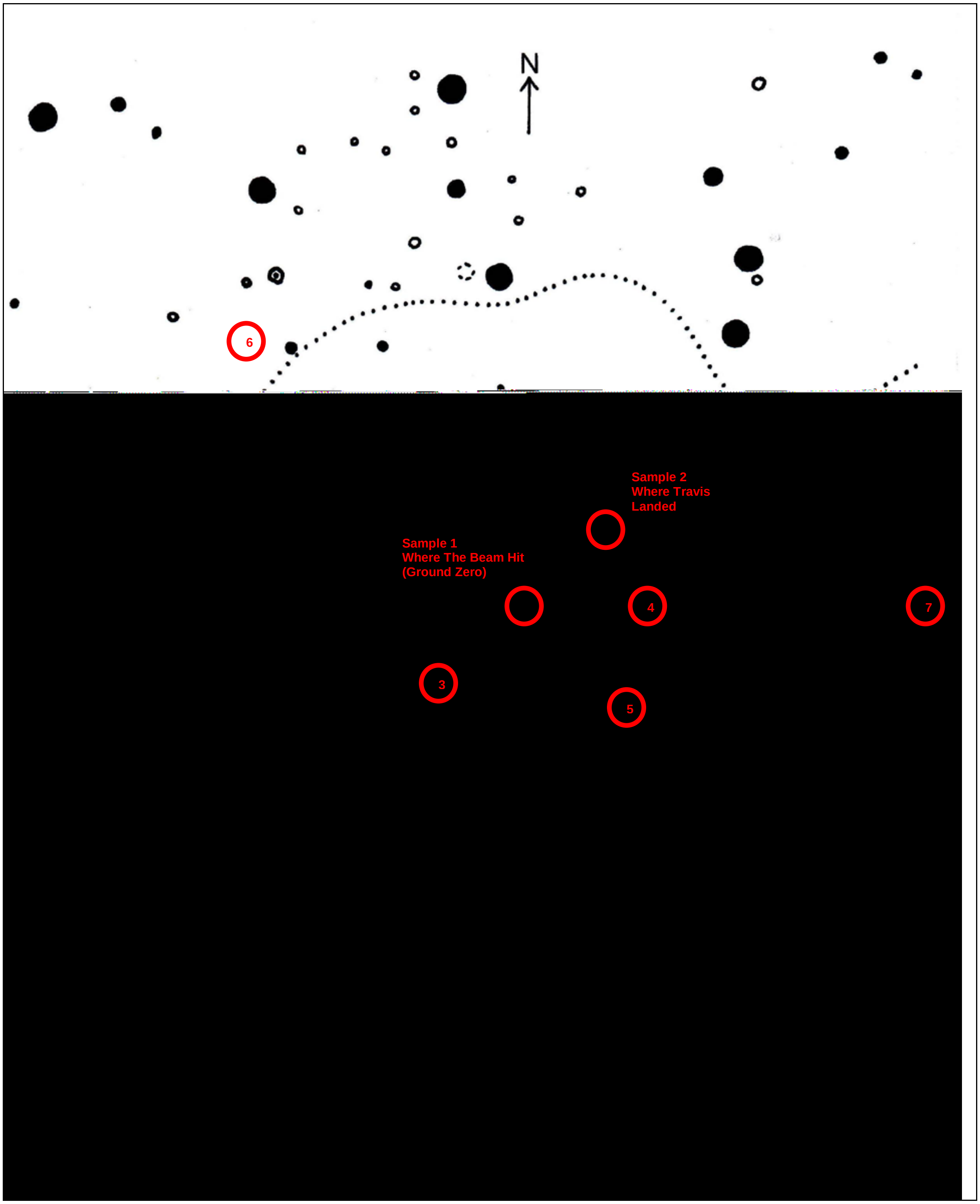
following: soil assay, elemental analysis by ICP, and “Magnetic Drag” analysis for metal particles. Thermoluminescence is also a possibility, though this test is quite expensive. It is important to sample the UFO site as soon as possible after the event.

<u>Procedure</u>:

Samples: Fourteen soil samples were collected by Bruce Budinger and Phyllis Budinger from the Travis Walton abduction site (Apache-Sitgreaves National forest) on November 8, 2015. Seven site locations were selected, and two samples per location were collected. At each location the soils are from the surface (0 to 2”) and deeper (2” to 5”). Approximately one cup of soil per sampling was obtained. Following are their identifications:

●Sample 1a (surface to 2” depth): designated ground zero which is where the beam hit Travis Walton.
●Sample 1b, (2” to 5” depth) ground zero.
●Sample 2a (surface to 2” depth): 15’ Northeast of ground zero; approximate area where Travis landed after being hit by the beam.
●Sample 2b (2” to 5” depth): 15’ Northeast of ground zero.
●Sample 3a (surface to 2” depth): 15’ Southwest of ground zero.
●Sample 3b (2” to 5” depth): 15’ Southwest of ground zero.
●Sample 4a (surface to 2” depth): 15’ East of ground zero.
●Sample 4b (2” to 5” depth): 15’ East of ground zero.
●Sample 5a (surface to 2” depth): 15’ Southeast of ground zero.
●Sample 5b (2” to 5” depth): (CONTROL) 50’ Northwest Southwest of ground zero.
●Sample 6a (surface to 2” depth): (CONTROL) 50’ Northwest of ground zero.
●Sample 6b (2” to 5” depth): (CONTROL) 50’ Northwest of ground zero.
●Sample 7a (surface to 2” depth): (CONTROL) 58’ East of ground zero.
●Sample 7b (2” to 5” depth): (CONTROL) 58’ East of ground zero.

The following site map shows the approximate locations of where the samples were obtained. They are probably within four feet of the illustration. More precise locations would have been desirable with Travis Walton’s guidance. Also, more time for sampling would have been desirable. (Unfortunately, time for the sample acquisition and Travis Walton’s presence was not possible.) This remarkable site map was drawn by Mike Rogers circa the winter of 1998/1999. It is reduced in scale from the original. The short dash-dot lines indicate the approximate position of the UFO, which hovered about 20 feet above the small trees in the opening between the larger trees. The ‘X’ indicates the approximate position where Walton was standing when he was struck by the energy beam, which lifted Walton up and blew him backwards. The large dotted circle indicates the area of accelerated tree growth believed to be due to the influence of the UFO.


N
6
Sample 2
Where Travis
Landed
Sample 1
Where The Beam Hit
(Ground Zero)
4
7
3
5

Procedure: The soil samples were allowed to dry in the laboratory at ambient temperature. This took several days. They were then ground and sieved through a screen to remove stones and other debris.

Infrared[6] spectra were obtained from all soil samples. They were acquired on the Thermo Electron Avatar 360 spectrometer using the Smart Herrick diamond sampling accessory.

All 50:50 mixes of top and bottom soil samplings from each site was sent to Brookside Laboratories, Inc. New Bremen, Ohio 45869 for soil assay and ICP (Inductively Coupled Plasma) elemental analysis[7] for specific elements which are: phosphorus, calcium, magnesium, potassium, sodium, sulfur, boron, iron, manganese, copper, zinc and aluminum. They were also sent for EDX elemental analysis[8] to Technology of Materials, Fullerton, CA 92835. Also, selected soil samplings of the 50:50 mixes (3 and 6) were sent to Technology of Materials for XRD analysis[9] for identification of crystalline components.

A procedure for isolating and measuring the concentration of metallic particles was developed by this laboratory and done on all 14 soil samples. It is called a “Magnetic Drag” test.[10] Method development had to be done by this laboratory to ensure reproducible and accurate results. (This involved removing the particulates with a magnet and then washing many times with water to remove residual dirt.)

The isolated metal particulates from the soils 1, 3, and 5 were combined and sent to Technology of Materials for EDX elemental analysis and XRD. Additionally, photographs were obtained from the isolated particulates using a Leica GZ6 stereomicroscope interfaced to a Canon A520 digital camera.

---

[6] **FT-IR (Fourier Transform Infrared Spectroscopy):** Infrared spectroscopy is used for the molecular structure identification and quantification of solids, liquids, and gases. An infrared spectrum is the result of light (in the 2 to 25 micron wavelength range) interacting with the vibrations of molecules. The particular set of vibrations of a molecule gives rise to specific spectral absorption bands, often referred to as the “fingerprint” spectrum.

[7] **ICP:** Inductively Coupled Plasma emission spectroscopy (ICP) is an analysis system in which the energy of a plasma excites the atoms of an injected sample causing the excited atoms to emit light at signature wavelengths. Three-dimensional computer-generated images are used to interpret the results. (Qualitative and quantitative information of the elements is obtained.)

[8] **EDX (Energy Dispersive X-ray Spectroscopy):** XRF identifies elements and their semi-quantitative amounts. Samples are stimulated with X-rays which causes them to emit X-ray fluorescence radiation. This emitted radiation is resolved into a spectrum characteristic of each element.

[9] **XRD (X-ray Diffraction):** X-ray Powder Diffraction is used for the identification and quantification of ***crystalline*** phases in solids and slurries. A diffraction pattern is obtained from a material by the interaction of very short wavelength light (X-rays) with the planes of atoms found in materials with long range order (crystalline matter). Constructive interference in three dimensions gives rise to the maxima found in diffractograms. Qualitative identifications can be made by computer matching the observed pattern with reference patterns in a database.

[10]This was informally named by W. C. Levengood , who did a similar test, and who first observed a preponderance of magnetic particles in crop circle sites.

<u>Results</u>:

The results of the individual tests done on the soils follow. These results are summarized in the conclusions section on page 2 of this report. The organization of the specific results is: the elemental results, followed by compositional (molecular) analysis of the soils. Next are the soil assay results, and finally the qualitative and quantification of the metal particulates.

Elemental Analysis of the Soils

SEM-EDX (Scanning Electron Microscope-Electron Diffraction X-ray Spectroscopy) Elemental Analysis

The values from the EDX elemental analysis of 50:50 blends of the top and bottom soil samples from each location are in relative percent (not absolute) and semi-quantitative at most, i.e. based on those elements <u>detected</u> by the instrument. Some elements definitely present, e.g. hydrogen, are not detected. There may some with overlapping peaks. The data follow.

Elemental Analysis (wt. %)
EDX

Sample ID	# 1 (wt.%)	#2 (wt.%)	# 3 (wt.%)	# 4 (wt.%)	# 5 (wt.%)	# 6 (wt.%)	# 7 (wt.%)
Carbon	21.8	24.0	42.8	21.4	26.7	25.7	43.5
Oxygen	30.6	36.5	30.7	37.0	35.0	35.8	33.3
Sodium	<0.2	0.3	0.1	0.2	<0.2	0.3	0.1
Magnesium	0.8	0.7	0.5	0.6	0.7	0.6	0.3
Aluminum	7.2	7.2	4.4	7.1	6.6	6.6	3.7
Silicon	26.6	22.9	15.3	25.4	21.5	23.7	14.5
Sulfur	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Potassium	2.3	2.1	1.3	2.2	1.8	2.2	1.4
Calcium	1.0	0.7	0.5	0.6	0.9	0.9	0.4
Titanium	0.8	0.6	0.2	0.5	0.5	0.4	0.3
Iron	9.1	5.1	4.1	4.9	6.1	3.9	2.4
Nickel	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

.

Much of the carbon and oxygen is from the humus and their values trend along with the humus content, i.e. the higher the carbon and hydrogen values correlate with the higher humus content. (See Soil Assay Section for the humus content.)

The amounts of elements of sodium, aluminum, silicon, potassium, calcium trend lower when the humus content is higher. These elements are from the soil minerals. The specific minerals are mostly quartz (SiO_2) with some feldspars (potassium aluminum silicate group) and mica. (See the Mineral Composition Section)

Iron, titanium and magnesium are from the mix of iron oxides identified as hematite (Fe_2O_3), ilmenite ($FeTiO_3$) and magnetite (Fe_3O_4), (See Analysis of Metal Particulates Section.) There is a high concentration of iron which is independent of the humus concentration and the wt.% values are higher than those of the control samples. Titanium and magnesium are in low amounts and trend the same direction as the iron. So these are associated with the iron (magnetite composition). This observation is further confirmed by the ICP elemental analysis of the metal particles below.

ICP (Inductively Coupled Plasma) Elemental Analysis

This elemental analysis was also done on 50:50 blends of the top and bottom samples from each location. Unlike the above EDX analysis this one provides absolute values of just the specific elements requested. The data follow.

Sample ID	**#1 (wt.%)**	**#2 (wt.%)**	**#3 (wt.%)**	**#4 (wt.%)**	**#5 (wt.%)**	**#6 (wt.%)**	**#7 (wt.%)**
Phosphorus	**0.025**	**0.025**	**0.025**	**0.014**	**0.021**	**0.015**	**0.017**
Calcium	**0.373**	**0.319**	**0.430**	**0.216**	**0.434**	**0.287**	**0.250**
Magnesium	**0.297**	**0.212**	**0.304**	**0.174**	**0.315**	**0.131**	**0.130**
Potassium	**0.226**	**0.189**	**0.282**	**0.144**	**0.235**	**0.134**	**0.136**
Sodium	**0.012**	**0.009**	**0.007**	**0.009**	**0.004**	**0.011**	**0.018**
Sulfur	**0.013**	**0.016**	**0.013**	**0.009**	**0.018**	**0.008**	**0.016**
Boron	**0.002**	**0.002**	**0.002**	**0.001**	**0.002**	**0.001**	**0.001**
Iron	**1.941**	**1.544**	**2.051**	**1.238**	**1.951**	**1.049**	**0.942**
Manganese	**0.019**	**0.022**	**0.025**	**0.015**	**0.022**	**0.027**	**0.015**
Copper	**0.002**	**0.002**	**0.002**	**0.001**	**0.002**	**0.001**	**0.001**
Zinc	**0.004**	**0.004**	**0.005**	**0.003**	**0.004**	**0.003**	**0.003**
Aluminum	**1.139**	**0.852**	**1.294**	**0.669**	**1.171**	**0.548**	**0.827**

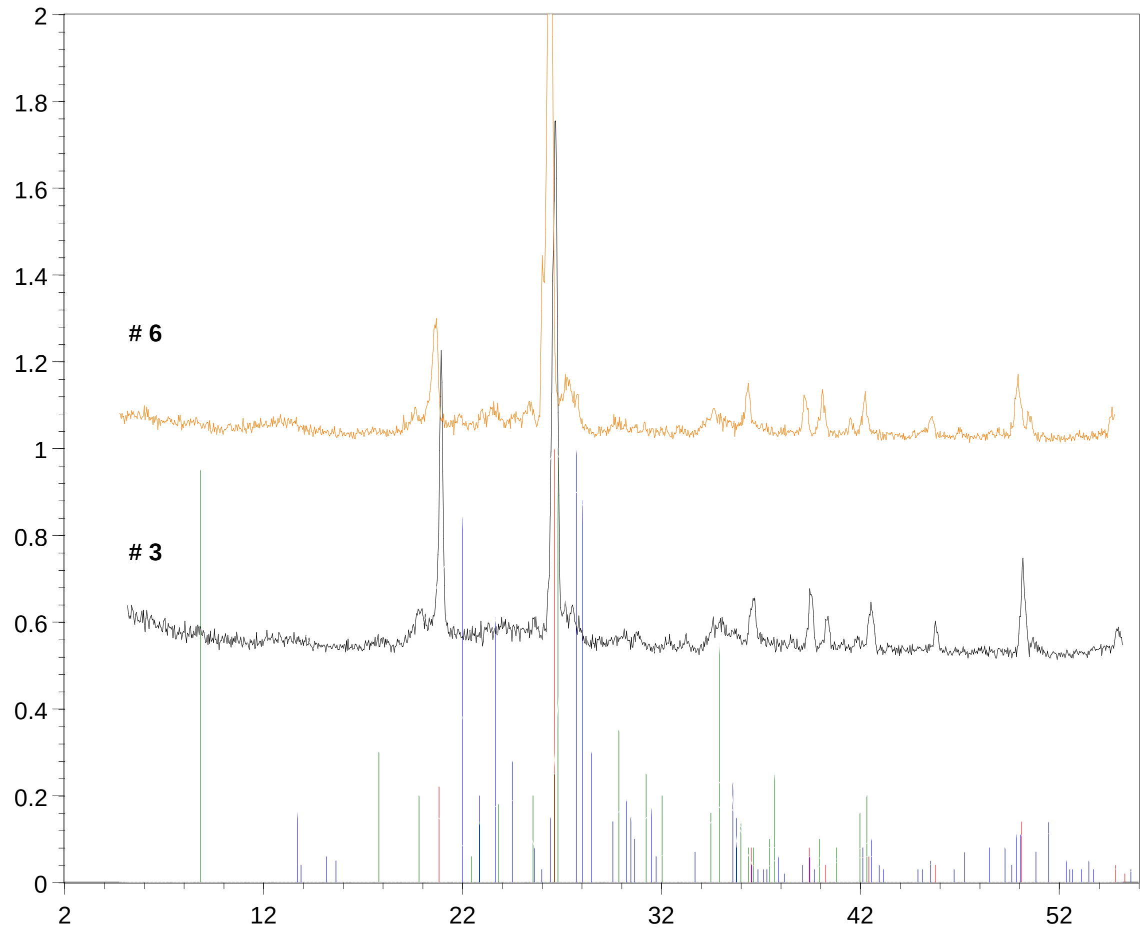
This analysis shows differences between site samples and controls. Most obvious is that the iron concentration predominates over the rest of the elements in the site and control samples. More importantly, all site samples contain more iron than the controls. We speculate that the reason is due to the influence of the UFO propulsion system. It acts like a powerful electromagnet attracting iron containing particulates in the soil.

Other elements (phosphorus, calcium, magnesium, potassium, boron, manganese, copper, zinc, aluminum) also trend higher for site samples 1, 2, 3 and 5. Site sample 4 appears to be an outlier with lesser amounts of phosphorus, calcium, manganese, copper, zinc and aluminum compared to the controls. Sodium and sulfur values are “all over the map”.

Compositional (Molecular) Analysis of Soils

XRD

XRD analysis was done on selected samples #3 (site) and #6 (control) for mineral identification. This is an excellent technique for identification of crystalline material. The mineral contents of both samples are the same. The results show they are primarily quartz (sand) followed by feldspars and mica. The spectra and stick references follow.



XRD patterns for soil samples with stick patterns for quartz (red), mica (green) and feldspars (blue)

Infrared Analysis

Infrared analysis presents more of the molecular composition of the soil. It supports the XRD analysis by detecting primarily quartz and a feldspar (specifically microcline[11]). Humate organics are additionally detected. The quantities of these substances seem to

[11] Microcline is a potassium aluminum silicate mineral.

vary from sample to sample but this is misleading. The sampling sizes for data acquisition are very small (sub milligram), so probably individual minerals were examined in some cases. Following is a table detailing the materials detected in each sample. The spectra can be found in the appendix.

Soil Sample	Top Identification	Bottom Identification
1	Quartz; Humates	Quartz; Humates
2	Quartz; Humates	Quartz; Humates
3	Quartz; Humates; Microcline	Quartz; Humates; Microcline
4	Quartz	Quartz; Humates
5	Quartz; Humates	Quartz; Humates
6	Quartz; Humates; Microcline	Quartz; Humates; Microcline
7	Quartz; Humates	Quartz; Humates; Microcline

Soil Assay

Various data/measurements were collected on1:1 blends of top and bottom samplings of all the soils. A table follows.

TEST	1 Ground 0	2 NE 15’	3 SW 15’	4 E 15’	5 SE 15’	6 NW 15’ CONTROL	7 E 58’ CONTROL
Total Exchange Capacity (ME/100g)	23.14	20.28	23.51	16.14	23.46	15.98	11.91
pH (H_2O 1:1)	6.1	6.0	5.7	6.0	6.3	6.3	4.9
Organic Matter (humus) %	4.96	4.99	7.45	4.32	7.32	3.80	15.20
Estimated Nitrogen Release lb/A	100	100	112	93	112	88	128
ANIONS							
Soluble Sulfur* ppm	8	7	7	6	7	6	5
Phosphorus							
MEHLICH III lb/A P as P_2O_5 ppm of P	60 13	73 16	156 34	37 8	37 8	69 15	55 12
BRAY II lb/A P as P_2O_5 ppm of P	37 8	55 12	179 39	23 5	23 5	50 11	46 10
EXCHANGEABLE CATIONS							
Calcium* lb/A ppm	4964 2482	4484 2242	4708 2354	3598 1799	5228 2614	4494 2247	1550 775

Magnesium* lb/A	1370	990	902	788	1426	400	276
ppm	685	495	451	394	173	200	138
Potassium* lb/A	464	574	644	392	556	398	242
ppm	232	287	322	196	278	199	121
Sodium* lb/A	46	34	48	30	34	34	34
ppm	23	17	24	15	17	17	17
BASE SATURATION PERCENT							
Calcium %	53.63	55.28	50.06	55.73	55.71	70.31	32.54
Magnesium %	24.67	20.34	15.99	20.34	25.33	10.43	9.66
Potassium %	2.57	3.63	3.51	3.11	3.04	3.19	2.61
Sodium %	0.43	0.36	0.44	0.40	0.32	0.46	0.62
Other Bases %	5.20	5.40	6.00	5.40	5.10	5.10	7.60
Hydrogen %	13.50	15.00	24.00	15.00	10.50	10.50	47.00
EXTRACTABLE MINORS							
Boron* (ppm)	0.50	0.49	0.54	0.33	0.63	0.34	<0.20
Iron* (ppm)	179	179	221	162	162	171	148
Manganese* (ppm)	12	23	29	10	14	18	22
Copper* (ppm)	1.61	1.85	1.57	1.28	1.55	1.94	0.67
Zinc* (ppm)	1.78	3.39	3.86	1.84	1.86	2.49	2.66
Aluminum* (ppm)	668	663	771	595	621	720	349
OTHER TESTS							
NO_3-N (ppm)	0.6	2.1	0.6	0.8	2.6	2.5	<0.5
NH_4-N (ppm)	4.0	3.3	5.7	2.9	4.4	2.9	3.9

*Mehlich III Extractable

The exchangeable cations (calcium, magnesium, potassium) are significantly higher in the site samples than the control samples. This would indicate some chemical changes in the site samples. The detection of the difference in cationic activity in the soil is intriguing. However, compositional differences, e.g. such as clay (microcline) content may affect the CEC values. (The amounts of minerals were not determined.) It very speculative that the effect is due to a UFO because the samples were collected 40 years after the event. But, it should be noted that this laboratory has analyzed substances from other events which were in proximity to a UFO. And, there is indication that while hovering an electronic force field surrounds the craft causing an ionizing effect to materials in close proximity. For example, in the famous Delphos Kansas event, a craft was observed depositing mostly fulvic acids which chemilumenesced for almost two days. In Poland, a hovering/landed craft deposited vitrified soil chunks which glowed for months.

Some of the measurements have values (pH, Estimated Nitrogen Release) that correlate with the Organic Matter (humus) content. Expectedly there is a lower pH (more acetic) and more nitrogen release with higher humus content. The phosphorus values are all over the place. Evaluation of the remaining data shows no conclusive correlation to the site samples. This is not surprising after 40 years. Still it was “worth a shot”. (We feel the results would have shown something if the soil samples had been collected right after the event.)

Metal Particulates Analysis

“Magnetic Drag”

The “Magnetic Drag” analysis for determining the amounts of metal particulates was very informative, and showed the site samples clearly contain more metal particulates than the controls. Furthermore the metal particulates trend to have higher concentrations in the surface soil (top 2 inches) than the bottom sampling. The amount of particulates in sample 2 is close to the two controls which suggest the possibility the craft was not influencing the metal content as much at this location. (Duplicates were run where the table shows two results.) The following table presents the results.

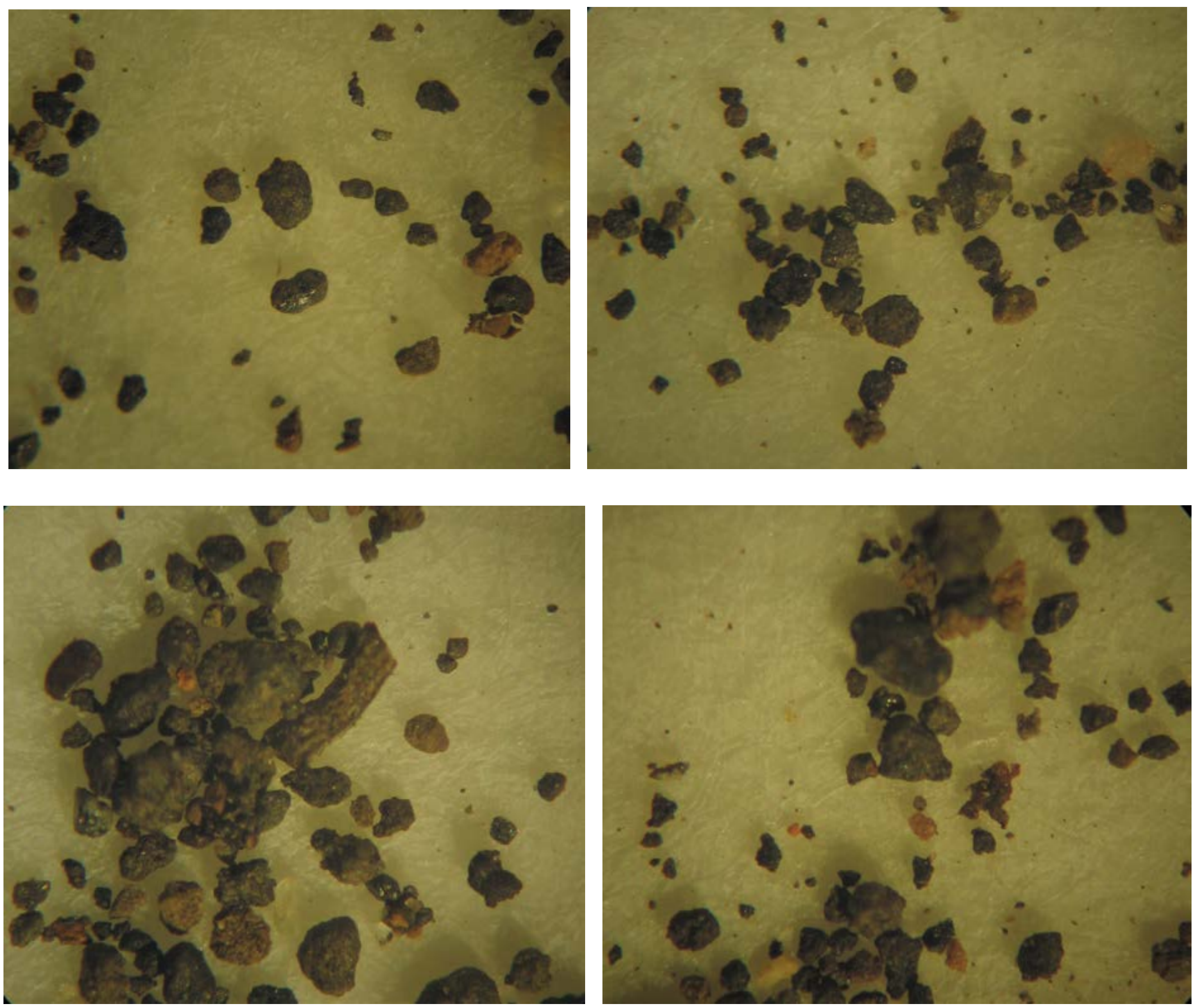
Sample	**1 Ground 0**	**2 15’ NE**	**3 15’ SW**	**4 15’ E**	**5 15’ SE**	**6 50’ NW (Control)**	**7 58’ E (Control)**
Mag. Part Top (mg/g)	5.5	2.5	All humus	7.1 6.5	3.0	2.1	All humus
Mag. Part. Bottom (mg/g)	2.2	1.1	12.2	4.9 3.2	1.3	1.1	0.9
Avg. Top and Bottom (mg/g)	3.9	1.8	(12.2)	6.0 4.9	2.2	1.6	(0.9)
Mag. Part. (1:1 Top and Btm. Mix) (mg/g)	2.2	1.5	(12.2)	6.9	3.1 1.4	3.2	1.6 Essentially Bottom
Iron (wt.%)[1]	1.94	1.54	2.05	1.23	1.95	1.05	0.94

[1]Wt% iron values are reproduced from page 8 for comparison purposes.

Analysis of Metal Particulates.

Microscope Examination

Following are microscope photographs of the isolated particulates. They appear as agglomerates of spherical, glassy particles. They seem to have been subjected to heat. This may be a natural evolution, perhaps involving volcanic activity, rather than a UFO exposure.

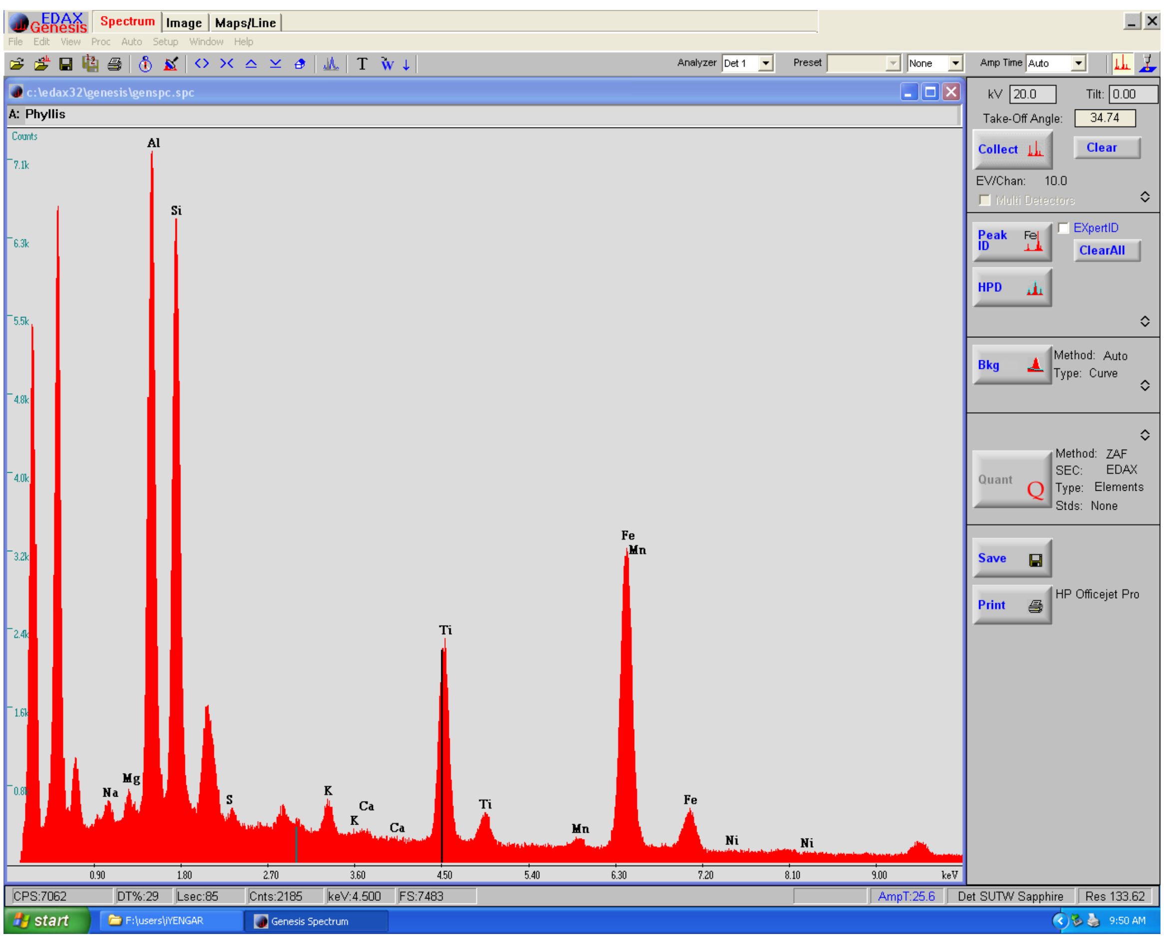


EDX Elemental Analysis

Elemental analysis of metal particulates which were isolated and combined from samples 1, 3, and 5 detects the following elements. Carbon and oxygen, though observed in the spectrum, were not included in the quantification. We were more interested in iron and other metals. (As reported previously this values are relative to each other for this test.) The results follow.

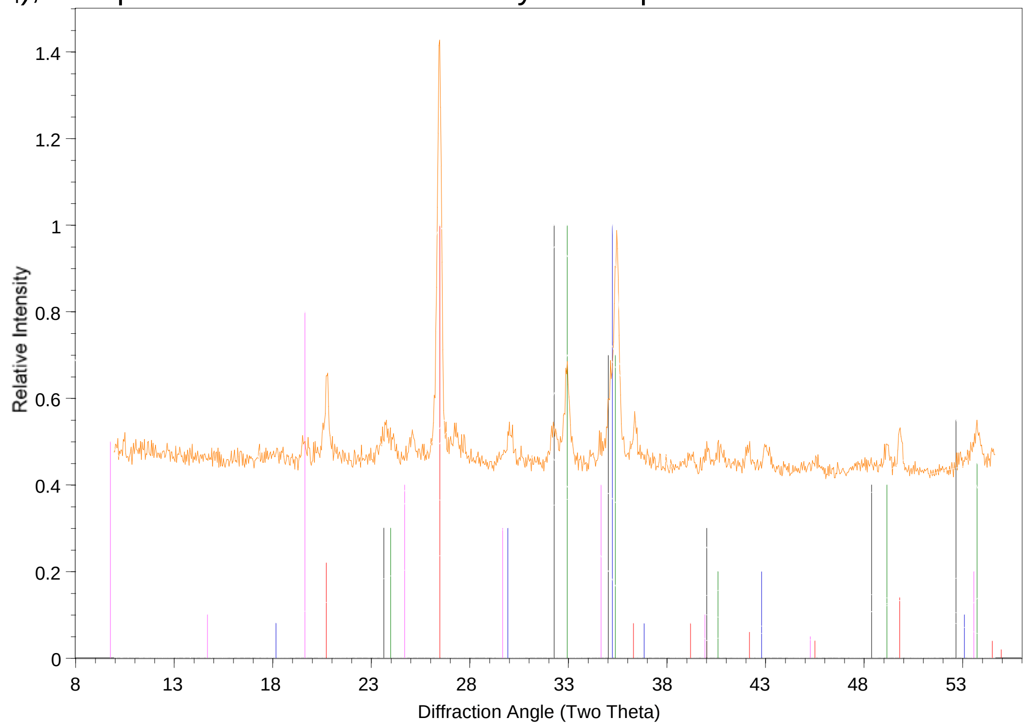
Elements	Arizona Metal Particulates (Wt.%)
Sodium	1.4
Magnesium	1.1
Aluminum	24.2
Silicon	22.2
Sulfur	0.3
Potassium	1.4
Calcium	0.3
Titanium	11.9
Manganese	1.1
Iron	35.7
Nickel	<0.1

The spectrum follows.



XRD Analysis

XRD shows that the particulates are composed of mostly quartz (SiO_2) and hematite (Fe_2O_3), followed by ilmenite ($FeTiO_3$). They also contain small amounts of magnetite (Fe_3O_4), feldspars and montmorillonite clay. The spectrum follows.



XRD pattern for metal particulates with stick patterns for quartz (red), Fe_2O_3 (green), Fe_3O_4 (blue), ilmenite (black) and montmorillonite (magenta)

Hematite (Fe_2O_3), ilmenite ($FeTiO_3$) and magnetite (Fe_3O_4), are all permutations of iron oxides, and are naturally found in soil. Magnetite, for example, is a common igneous accessory mineral and found in sedimentary banded iron formations.[12] According to the literature, other metal impurities in magnetite may be magnesium, zinc, manganese, nickel, chromium, titanium, vanadium and aluminum, depending on the location where it's found. It should be noted that residual minerals (quartz/clay (montmorillonite)) from the soil appear to be part of the metal particle composite, i.e. infused in the metal particulates. After all the washing, this analyst went over the particles, again and again, with a magnet. They were all attracted. No other particles were magnetic.

One analyst[13] offered that the metal particles originate from fly ash. He projected that this material would be expected to cover the Earth, especially starting from the introduction of the industrial era. The composition of these ashes varies depending on the processes that they originated from. Analyses reported in the literature for fly ash

---

[12]Magnetite mineral information and data, http://wwwmindat.org/min-2538.html.
[13] Nick Reiter, Personal Communication.

are not commensurate with this analysis.[14] A number of metal oxides are found in fly ashes which are not in the Travis Walton site particulates.

There is also some conjecture that metal particulates from sites exposed to UFO activity are of meteoric origin. There is a theory which involves a “descending ionosphere plasma”. The plasma, which originates in the ionosphere, brings meteoric dust to the ground. That is, this meteoric dust is drawn into the descending plasma system by strong magnetic fields. The strong magnetic field could be generated by a UFO propulsion system.[15] However, the elemental data of particulates from this analysis do not compare to those reported for most meteorites. For example, there is only a trace of nickel. This value should be much higher if the particulates were meteoric dust. [16] An excellent Washington University in St. Louis article reports, “About 95% of all meteorites contain iron-nickel (FeNi) metal. Iron-Nickel means that the metal is mostly iron, but it contains 4-30% nickel, as well as a few tenths of a percent cobalt. Iron-Nickel in meteorites also has high concentrations (by terrestrial standards) of rare metals like gold, platinum and iridium.” The common chondrite meteorites account for 86% of all meteorites recovered.[17]

File: UT095

____

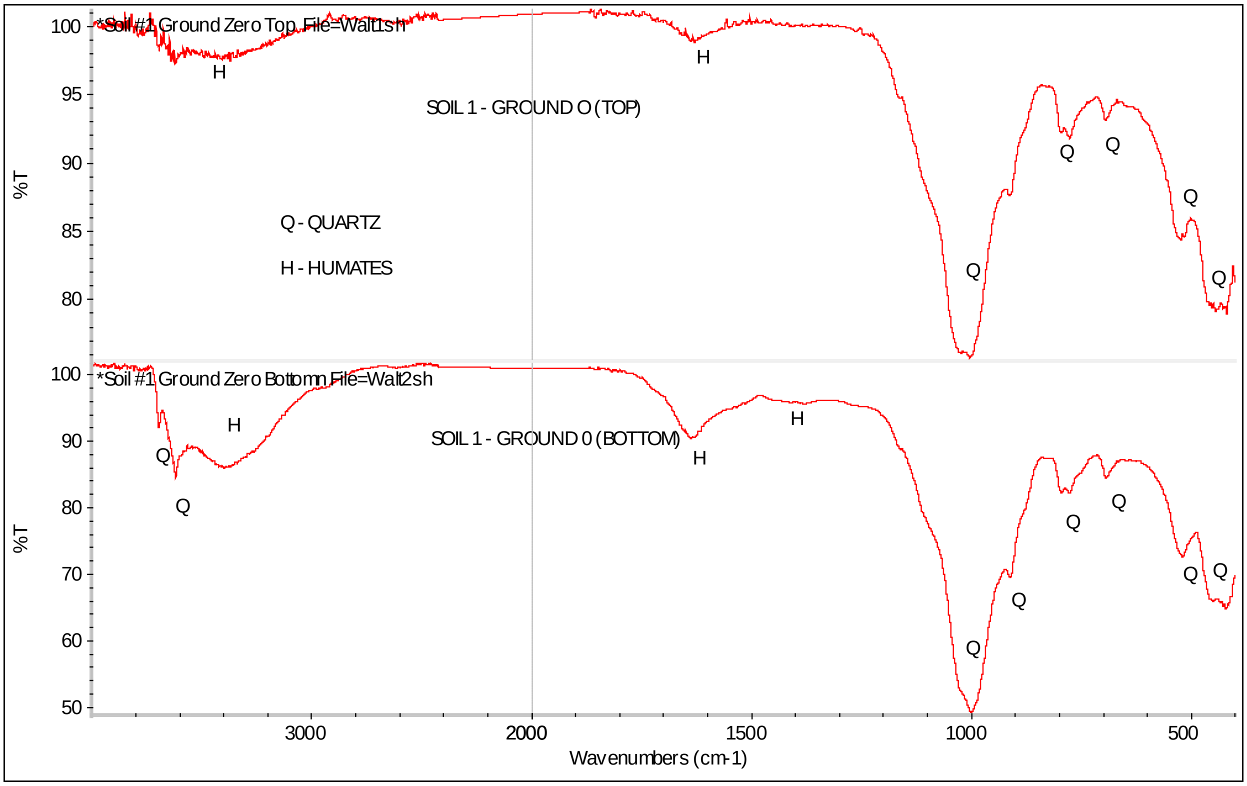
Phyllis A. Budinger

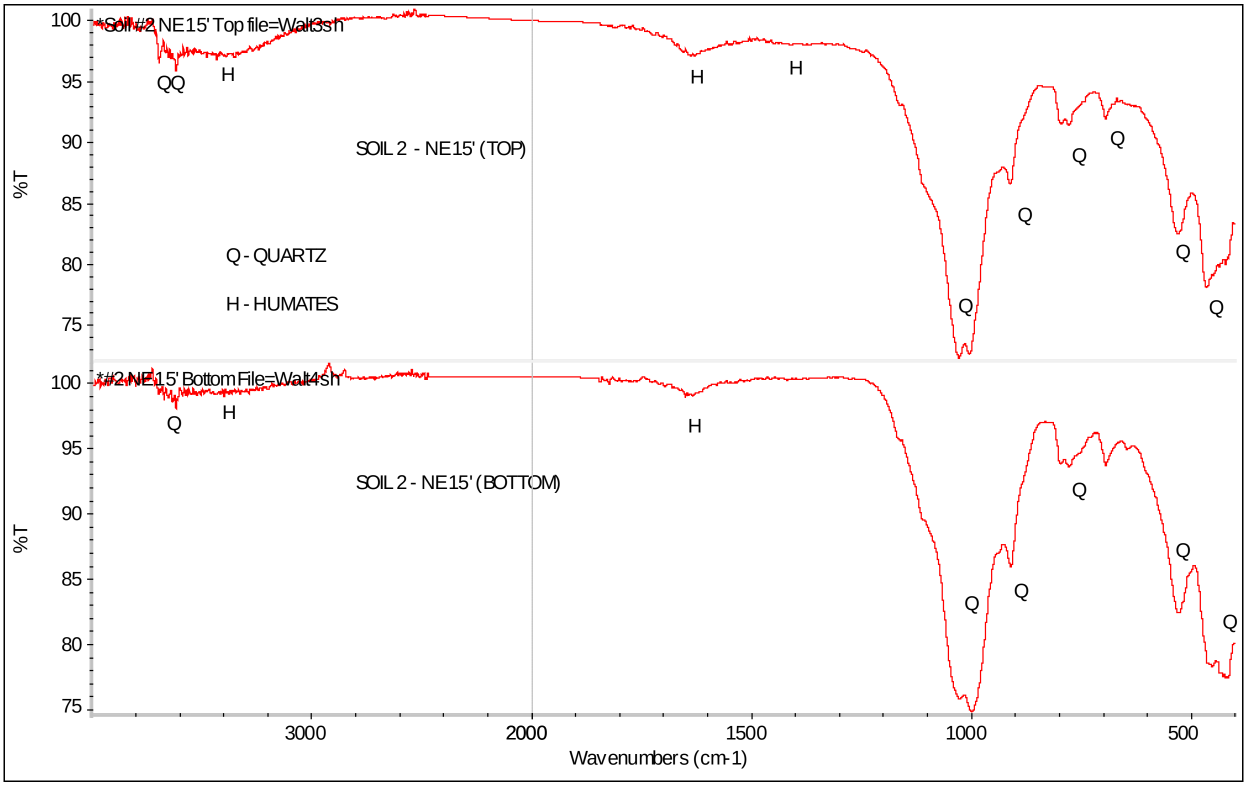
____

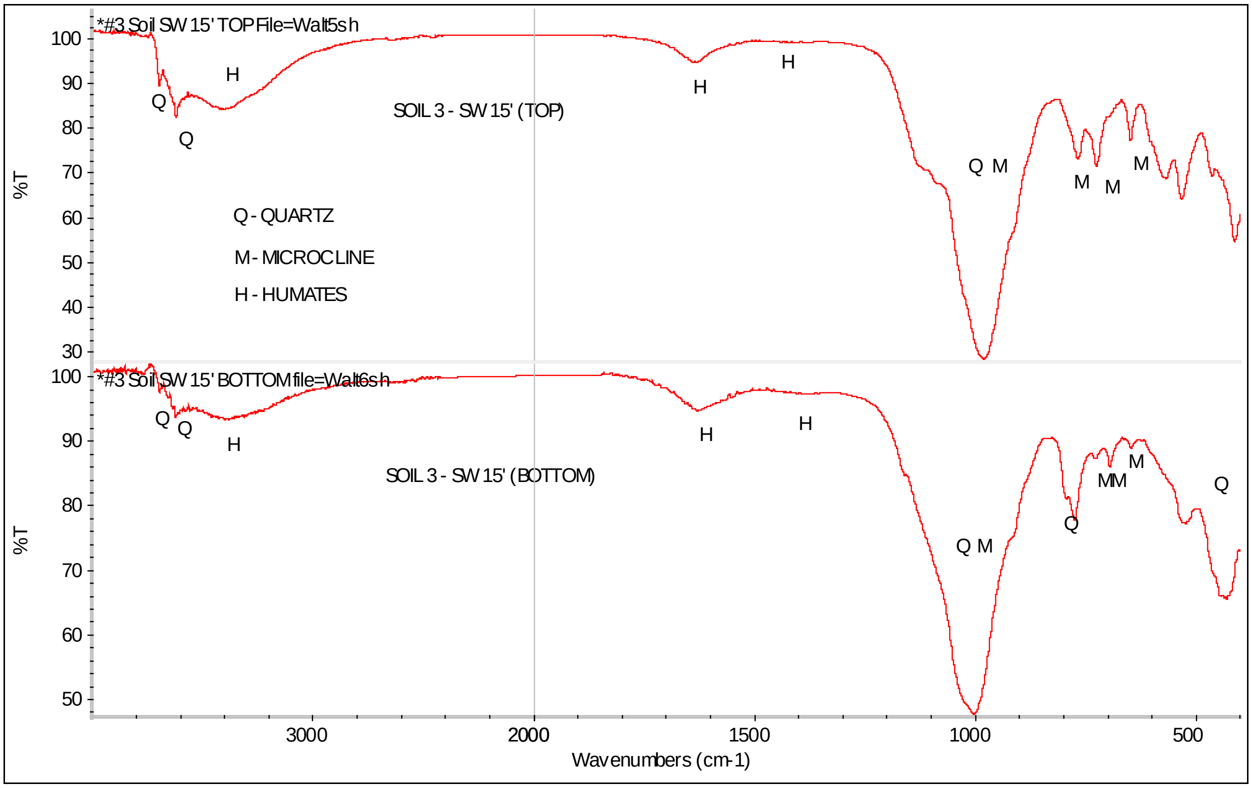
Bruce O. Budinger

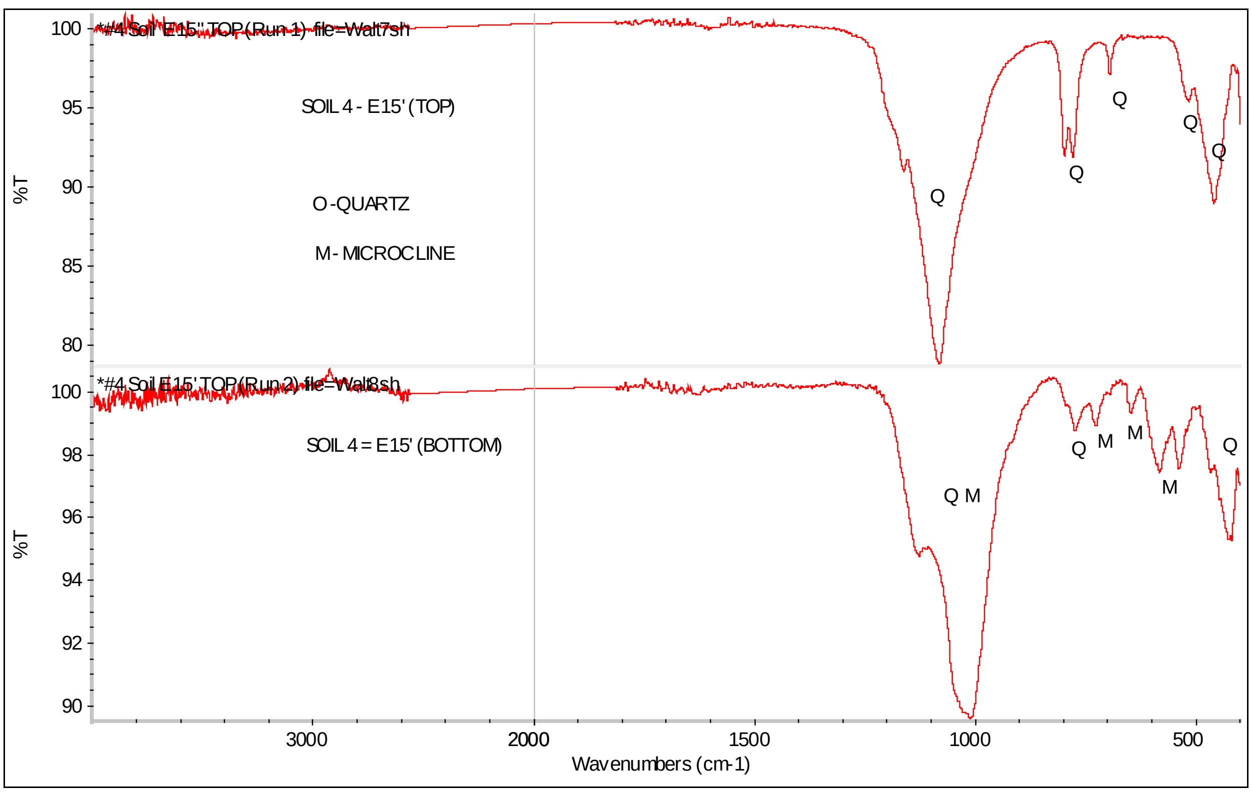
[14] Prakash Chand et al, “Asian Journal of Chemistry, Vol. 21, No. 10 (2009) S220-224. Elemental Analysis of Ash using X-Ray; Nikolaos Koukouzas et al. 2007 World of Coal Ash (W)CA), May 7-10, 2001, Northern Kentucky, USA. Definition of mineral and chemical composition of fly ash derived from CFB combustion of coal with biomass.
[15] W. C. Levengood. Personal Communication.
[16] http://meteorites.wustl.edu/id/metal4.htm
[17] https://meteorites.asu.edu/meteorites.meteorite-types/stony-meteorites/chondrites

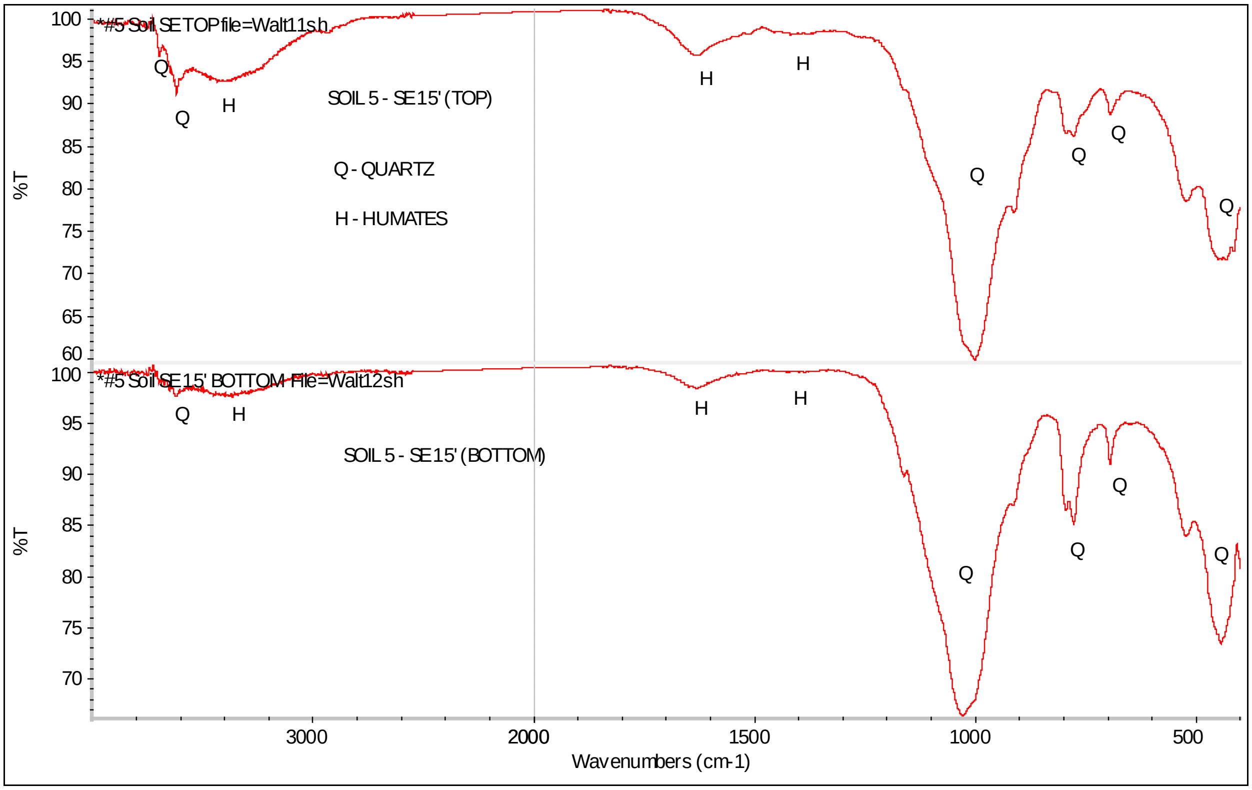
Appendix

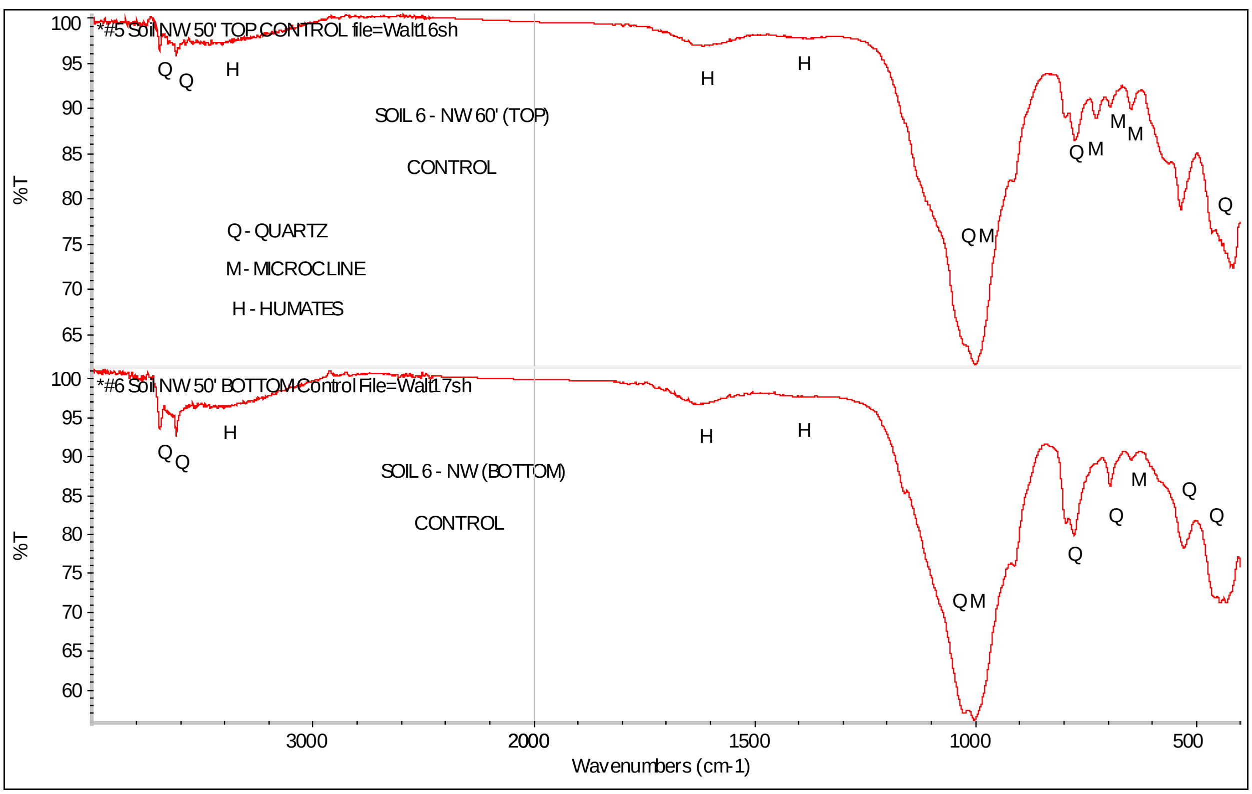

*Soil #1 Ground Zero Top File=Walt1sh
SOIL 1 - GROUND O (TOP)
Q - QUARTZ
H - HUMATES
*Soil #1 Ground Zero Bottom File=Walt2sh
SOIL 1 - GROUND 0 (BOTTOM)
%T
Wavenumbers (cm-1)

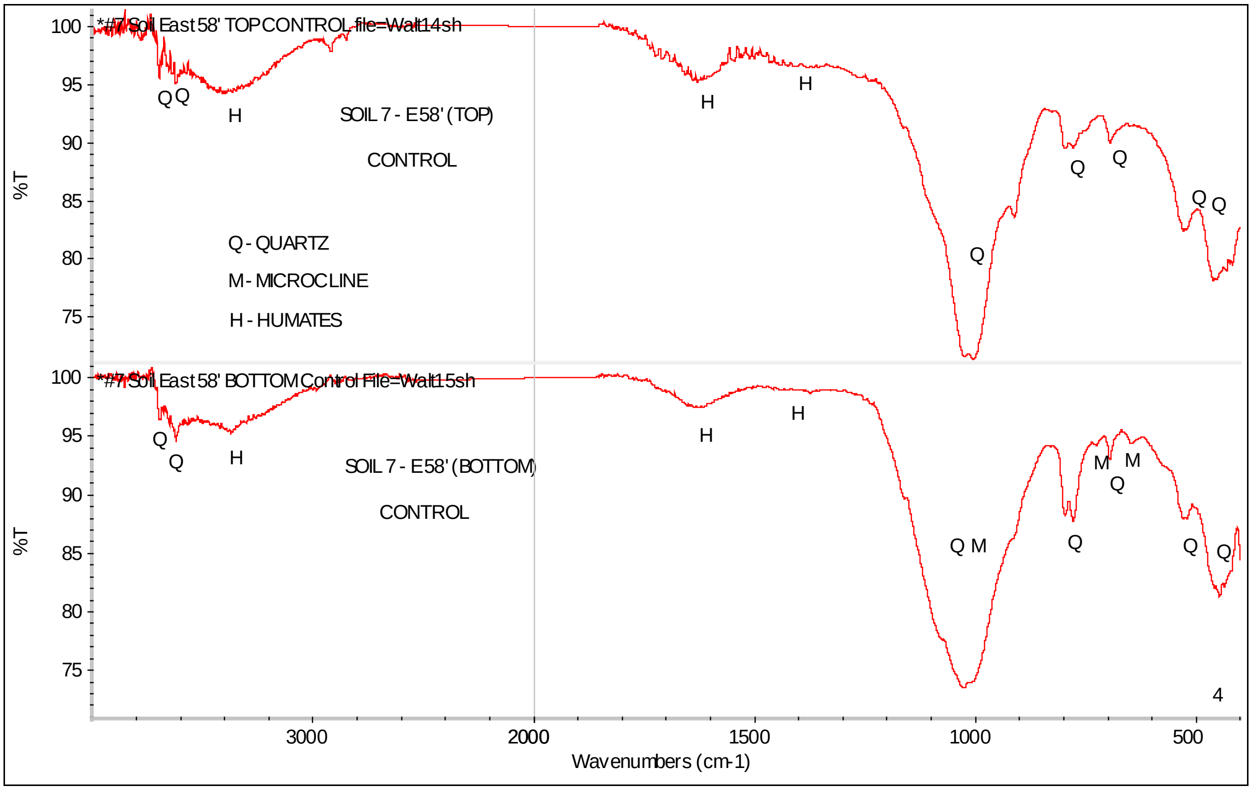

*Soil #2 NE15' Top file=Walt3sh
SOIL 2 - NE15' (TOP)
Q - QUARTZ
H - HUMATES
*#2 NE15' Bottom File=Walt4sh
SOIL 2 - NE15' (BOTTOM)
%T
Wavenumbers (cm-1)


*#3 Soil SW 15' TOP File=Walt5sh
SOIL 3 - SW 15' (TOP)
Q - QUARTZ
M - MICROCLINE
H - HUMATES
*#3 Soil SW 15' BOTTOM file=Walt6sh
SOIL 3 - SW 15' (BOTTOM)
%T
Wavenumbers (cm-1)


*#4 Soil E15' TOP (Run 1) file=Walt7sh
SOIL 4 - E15' (TOP)
O-QUARTZ
M - MICROCLINE
*#4 Soil E15' TOP (Run 2) file=Walt8sh
SOIL 4 = E15' (BOTTOM)
%T
Wavenumbers (cm-1)


*#5 Soil SE TOP file=Walt11sh
SOIL 5 - SE15' (TOP)
Q - QUARTZ
H - HUMATES
*#5 Soil SE15' BOTTOM File=Walt12sh
SOIL 5 - SE15' (BOTTOM)
%T
Wavenumbers (cm-1)


*#5 Soil NW 50' TOP CONTROL file=Walt16sh
SOIL 6 - NW 60' (TOP)
CONTROL
Q - QUARTZ
M - MICROCLINE
H - HUMATES
*#6 Soil NW 50' BOTTOM Control File=Walt17sh
SOIL 6 - NW (BOTTOM)
CONTROL
%T
Wavenumbers (cm-1)


*#7 Soil East 58' TOP CONTROL file=Walt14sh
SOIL 7 - E58' (TOP)
CONTROL
Q - QUARTZ
M - MICROCLINE
H - HUMATES
*#7 Soil East 58' BOTTOM Control File=Walt15sh
SOIL 7 - E58' (BOTTOM)
CONTROL
%T
Wavenumbers (cm-1)
4