APPENDICES:
Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada

Prepared by
Michael D. Cannon

Cultural Resource Series No. 19
2008

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
NEVADA

APPENDIX A. IMACS SITE FORMS FOR SITES 26EU1533, 26EU1539, 26EU1548, 26EU2064, AND 26EU2126

IMACS SITE FORM

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM
Form approved for use by
BLM - Utah, Idaho, Wyoming, Nevada
Division of State History - Utah, Wyoming
USFS - Intermountain Region
NPS - Utah, Wyoming

PART A

Administrative Data

***1. State No:** 26EU1533update
***2. Agency No:** CrNv - 12-7420
3. Temp. No:

4. State: Nevada **County:** Eureka

5. Project: Barrick 2007 Data Recovery

***6. Report No:** SWCA 2008-47

7. Site Name / Property Name:

8. Class: ☑ Prehistoric ☑ Historic ☐ Paleontologic ☐ Ethnographic

9. Site Type: Lithic scatter

***10. Elevation:** 5,640 **ft.**

***11. UTM Grid:** **#1 Zone:** 11 555680 **m E** 4538644 **m N** **#2 Zone:** **m E** **m N**

#3 Zone: **m E** **m N** **#4 Zone:** **m E** **m N**

***12. Legals:**

SE	**1/4 of**	SE	**1/4 of**	NE	**of Section**	17	**Township**	36 N	**Range** 50 E
	1/4 of		**1/4 of**		**of Section**		**Township**		**Range**
	1/4 of		**1/4 of**		**of Section**		**Township**		**Range**
	1/4 of		**1/4 of**		**of Section**		**Township**		**Range**

***13. Meridian:** Mt. Diablo (Nevada)

***14. Map Reference:** 7.5' Rodeo Creek NE, Nevada Quad, 1968

15. Aerial Photo:

16. Location and Access:

Site 26EU1533 is located along Brush Creek in the Little Boulder Basin. The site straddles a ridge that lies between Brush Creek and a smaller tributary. From the Barrick Goldstrike Mine front gate, travel north 1.70 miles until you reach a four-way intersection and park vehicle here. Walk 1,175 m north along the closed dirt access road until you reach an unnamed two-track leading east. Follow this for 431.4 m to the site boundary. The site datum is located at the UTM coordinates 4538644 N 555680 E.

***17. Land Owner:** Bureau of Land Management

***18. Federal Administrative Units:** Elko

***19. Location of Curated Materials:** Nevada State Museum (Carson City)

20. Description:

Site 26EU1533 (CRNV-12-7420) was originally recorded in 1988 by Desert Research Institute (DRI) as a sparse lithic scatter of 100 to 500 secondary and tertiary biface thinning flakes and one edge-ground cobble (Hicks 1988, 1989). A revisit to the site by P-III Associates (P-III) in 1992 (Newsome et al. 1992:15-16) identified a centrally-located concentration of debitage surrounded by a diffuse scatter of flakes. The edge-ground cobble was relocated during this visit, and an additional biface fragment was identified.

SWCA revisited the site on September 21, 2005 for the Barrick Cultural Sites Assessment project. Four SWCA archaeologists surveyed the site in 10-m transects to locate the previously placed datums and the artifact concentration. Neither the original DRI datum nor the P-III datum was located; therefore, SWCA established a new datum. The SWCA datum consists of rebar and an aluminum tag with site number, date, "SWCA", and the SWCA project number (5598-046) written on the tag. A rock cairn surrounds the rebar. A range fire may have burned through the site after the 1992 P-III revisit, since the tall sagebrush noted by both DRI and P-III was gone, and burned stumps were observed. DRI commonly used wooden stakes with attached aluminum tags as datums, so if a fire had swept through the site, the datum was most likely burned, explaining why SWCA was unable to relocate the datum. Neither DRI nor P-III noted the presence of crested wheat grass on-site, but during the 2005 SWCA revisit, the site was heavily vegetated with it. Small sagebrush was also beginning to grow. The site appears to have been re-seeded after the fire, accounting for the high density of crested wheat grass.

The site appears to have been impacted by erosion or sheetwash. As a result, SWCA was able to identify approximately 30 flakes outside of the central concentration. The moderately dense concentration reported by P-III appeared to have been deflated and possibly washed away toward Brush Creek. SWCA identified a small, dispersed concentration of approximately 66 flakes in the same general location of the concentration located by P-III. SWCA also identified an additional white Tosawihi Opalite biface fragment (CST-1) in the approximate center of the site. This biface is not the same as that recorded by P-III. One historic can fragment and a modern barrel were also identified on-site. A new site boundary was established by SWCA to include the deflated concentration that was identified, making a new site area of 11,114 m². SWCA also noted a spring approximately 600 m east of the site, draining into Brush Creek. The occupation of Site 26EU1533 may have been influenced by the proximity of the spring, but the dates of the site and of the spring are unknown, due to a lack of temporally diagnostic material for the prehistoric occupation.

* Encoded data items

During the 2005 visit, C-1 consisted of approximately 66 white Tosawihi Opalite flakes in a 2 m diameter area. Approximately 28% of the flakes were late-stage tertiary biface thinning flakes, while 29% were middle-stage tertiary biface thinning flakes. About 2% were primary core reduction, 9% were secondary biface thinning flakes, and 18% were of unknown flake type. The flakes were on the south side of the site, eroding into Brush Creek. (As part of subsequent data recovery efforts, complete surface collection of this concentration was completed).

In October of 2006, SWCA revisited Site 26EU1533 to conduct probing. Two new chipped stone tools were observed during this visit (CST-2 and FS# 1). CST-2 is a scraper and FS# 1 is an Elko Corner-notch projectile point, which dates to the James Creek phase, 1500 B.C. - A.D. 600 (Justice 2002). (This point was collected as part of later data recovery efforts in 2007). Two shovel tests (ST1 and ST2) and one test unit (TU1) were excavated at Site 26EU1533. ST1 was placed in C-1 and ST2 was placed outside of C-2; each was excavated to an approximate depth of 10 cm, for a total ST volume of 0.05 m3. ST1 was placed on the northern site boundary up-slope of C-1, and ST2 was placed down-slope of the southern boundary of C-1.

TU1 was placed in C-1 over the area with the highest quantity of flakes on the surface, down-slope and south of ST1. TU1 was excavated to a depth of 10 cm below ground surface, with a total excavated volume of 0.1 m^3. The unit was discontinued on the basis of a marked decrease in the quantity of cultural material. Most of the debitage recovered from TU1 was from 0-10 cm below ground surface. No faunal remains, pollen samples, macrobotanical material, ceramics, or material suitable for radiocarbon data was observed or collected.

In the summer and fall of 2007, as part of the BGMI Data Recovery Project, SWCA conducted fieldwork at Site 26EU1533, including complete surface collection, remote sensing and excavations. Collection of all artifacts on the surface of the site was completed prior to any other fieldwork (see Cannon et al 2008 for more details). After surface collection, remote sensing was conducted by Archaeo-Geophysical Associates (see Cannon et al 2008 for more details). Based on the results of the surface collection and remote sensing, fourteen 1 × 1-m units were excavated in five different areas of the site (Operations A through E). Operations A and B were placed in areas where remote sensing revealed magnetometer anomalies, and Operations C, D and E were placed in areas where remote sensing revealed areas of high conductivity. No archaeological features were uncovered in any of the units, and only rarely were artifacts encountered. The artifacts encountered were, for the most part, located on the ground surface; only a small quantity of artifacts was located in the uppermost centimeters of the units. Artifacts collected from excavation units consist of lithic debitage; no formal tools were recovered, nor were faunal remains, organic material, ceramics, or ground stone. The excavation units were dug in 10-cm increments, 2 levels down. In addition to the excavation units, 22 auger probes (APs) were dug, in order to evaluate the causes of patterning in the remote sensing data. No cultural material was encountered in any of the APs.

After excavation and auger probing were completed, Site 26EU1533 was stripped using a road grader. Two successive passes were made over the site, the first between 5 and 8 cm deep, and the second skimming an additional 5 to 8 cm. No archaeological features were observed at Site 26EU1533 as a result of this blading activity; however, one piece of groundstone (FS# 2000) was recovered. Approximately 143 flakes were recovered during surface collection, excavation and site blading activities, including 1 obsidian flake. One Elko series projectile point fragment (FS# 1) and one modified flake (FS# 53) were also observed.

Site 26EU1533 appears to date to the Archaic period. The presence of an Elko Corner-Notched projectile point at this site indicates a date range of 3200 - 1450 RCYBP (Justice 2002), which falls into the James Creek phase. A single obsidian flake from the Double H Mountain (NV) source was tentatively dated using obsidian hydration to the South Fork phase (Cannon et al 2008).

For shovel test, test unit, excavation unit, auger probe, artifact concentration, and individual artifact UTM coordinates, see attached table.

***21. Site Condition:** ☐ **Excellent** ☐ **Good** ☐ **Fair** ☐ **Poor** ☐ **Inundated** ☑ **Destroyed** ☐ **Unknown**

***22. Impact Agents:** Completed Excavation Erosion Demolition/Dismantling

***23. National Register Status:** Non-Significant (Professional Judgement)

Justify: Site 26EU1533 was originally recorded and recommended eligible for the NRHP under Criterion D by Desert Research Institute (DRI) in 1988 based on its potential to provide data relevant to land use patterning and lithic technology (Hicks 1988, 1989). The BLM later determined the site to be eligible for the NRHP. In 1992 P-III Associates (P-III) revisited the site and recommended the site retain its status as eligible for the NRHP, adding that the site might make a good candidate for site structure analysis and that artifacts observed indicated that specialized subsistence activities might have occurred (Newsome et al. 1992:15-16).

While the site concentration contained a relatively small number of artifacts, it included an Elko Corner-notched projectile point, which dates to the James Creek phase (1500 B.C. - A.D. 600). One of the research domains for the Little Boulder Basin Area (LBBA) is to identify deposits that might provide information about diachronic change. Site 26EU1533 held the possibility of dating to a discreet period of time, within the James Creek phase. In addition, shovel tests and one test unit excavated in 2006 revealed buried cultural deposits to a depth of at least 10 cm below ground surface. As such, Site 26EU1533 was considered a candidate to yield further information in the prehistory of the area and therefore was considered eligible for the NRHP under Criterion D.

SWCA revisited the site in 2005, and again in 2006 to conduct limited probing. In 2007, SWCA revisited Site 26EU1533 a third time to conduct data recovery in accordance with a treatment plan that had been approved by the BLM with NV SHPO concurrence (Cannon and Stettler 2007). Collection of all surface artifacts was completed, remote sensing data collected, and fourteen 1 × 1-m units were excavated in five different areas of the site. The locations of the excavation units were based on magnetometer anomalies or high conductivity revealed in remote sensing. In addition, 22 auger probes (APs) were dug in order to evaluate the causes of patterning in the remote sensing data. No features or diagnostic artifacts were encountered in any of the excavation units or APs. After completing excavation, the site surface was scraped using a grader. The grader made two successive passes, the first going down 5 to 8 cm and the second going down an additional 5 to 8 cm.

A single historic can was recovered during data recovery. By definition, the can is an isolate and not eligible for the NRHP.

Because the site no longer exists as a result of mitigation and site surface scraping, SWCA recommends the site be considered not eligible for the NRHP under any criteria.

24. Photos: Camera 4: 2595-2597, 2603-2605, 2607-2608. 2007: 557-560, 633-643, 706-715, 2826-2829, 2849-2865, 3320-3333, 3399-3408. Photos archived in the Salt Lake City SWCA office.

25. Recorded by: Mike Cannon

***26. Survey Organization:** SWCA Environmental Consultants

***28. Survey Date:** 07 - 21 - 07

27. Assisting Crew Members: V. Villagran, D. Heersink. C. Woodman, P. Morris

List of Attachments:

- [x] Part B
- [x] Part C
- [ ] Part E
- [x] Topo Map
- [x] Site Sketch
- [x] Photos
- [ ] Artifact/Feature Sketch
- [x] Continuation Sheets
- [ ] Other:___________________

Environmental Data

***29. Slope:** 10 **(Degrees)** 176 **Aspect (Degrees)**

***30. Distance to Permanent Water:** 0.2 **x 100 Meters**

***Type of Water Source:** Stream/River

Name of Water Source: Tributary to Brush Creek

***31. Geographic Unit:** Boulder Flat

***32. Topographic Location:** *- See Guide for additional information*

Primary Landform: Mountain Spine

Secondary Landform: Ridge/Knoll

Describe: The site is located on top of a south-facing ridge slope and overlooks a major spring-fed tributary of Brush Creek. The ridge leads into the Tuscarora Mountains.

***33. On-site Depositional Context** Residual

Describe: Sediments are very fine silt with angular to sub-rounded pebbles and cobbles of chert, silicified shale, and shale.

34. Vegetation

***a. Life Zone:** ☐ **Arctic-Alpine** ☐ **Hudsonian** ☐ **Canadian** ☐ **Transitional** ☑ **Upper Sonoran** ☐ **Lower Sonoran** ☐ **Unknown**

***b. Community:**

Primary On-Site: Shadscale Community

Secondary On-Site: Big Sagebrush

Surrounding Site: Shadscale Community

Describe: Vegetation on-site includes crested wheatgrass and small sagebrush. A range fire may have altered the original on-site vegetation recorded in 1988.

***35. Miscellaneous Text:** GPS data collected in NAD83.

36. Comments/Continuations

Report number(s): BLM1-1244 (1989, 1992), BLM 1-2502 (2005), BLM 1-2595 (2007).

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Cannon, Michael D. and Heather K. Stettler
2007 Data Recovery Plan for Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hicks, Pat
1988 IMACS Site Form: 26EU1533/CrNV 12-7420. Prepared by Desert Research Institute, University of Nevada, Reno. Copies available from Bureau of Land Management, Elko Field Office, Elko, NV. BLM 1-1244.
1989 A Class III Cultural Resource Inventory of 3698 Acres in Elko and Eureka Counties, Nevada. Prepared by Desert Research Institute, University of Nevada, Reno. Cultural Resource Short Report 88-6. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1244.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Holmer, Richard N.
1978 A Mathematical Typology for Archaic Projectile Points of the Eastern Great Basin. Unpublished Ph.D. dissertation, Department of Anthropology, University of Utah, Salt Lake City, UT.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Newsome, Daniel K.
1992 IMACS Site Form: 26EU1533/CrNV 12-7420. In National Register Evaluations of 30 Historic Properties Recorded by Desert Research Institute in Unnamed Parcels A and B within the South Block of Barrick Goldstrike Mines, Inc.'s Betze Project, Little Boulder Basin, Eureka County, Nevada, edited by Betsy L. Tipps and Gary M. Popek. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1244.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Thomas, David Hurst
1981 How to Classify the Projectile Points from Monitor Valley, Nevada. Journal of California and Great Basin Anthropology 3:7-43.

Tipps, Betsy L. and Gary M. Popek
1992 National Register Evaluations of 30 Historic Properties Recorded by Desert Research Institute in Unnamed Parcels A and B within the South Block of Barrick Goldstrike Mines, Inc.'s Betze Project, Little Boulder Basin, Eureka County, Nevada. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1244.

Part B - Prehistoric Sites

Site No: 26EU1533update

1. Site Type: Lithic scatter

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***2. Culture:**	Archaic (general)	Lithic Cross Dating	Archaic (general)	Obsidian Hydration

Describe: The presence of an Elko Corner-Notched projectile point at this site indicates a date range of 3200–1450 RCYBP (Justice 2002), which falls into the James Creek phase. In addition, a single obsidian flake was sourced and hydrated (Cannon et al. 2008), which dated to the south Fork Phase (3,200–1,500 B.C.). Additional chronological information was taken from Schmitt and Madsen (2005) and Hockett and Morgenstein (2003).

3. Site Dimensions: 192 **m X** 114 **m** ***Area:** 11,114 **sq. m** ☑ If checked, area was determined by GIS

***4. Surface Collection/Method** Complete Collection

Sampling Method: Seven artifacts were collected using a grab sample method in C-1 in association with probing activities performed in 2006. During 2007 fieldwork a complete collection was conducted. The collection consists of 189 flakes, a projectile point (FS# 1), and modified flake (FS# 53), a ground stone fragment (FS# 2000) and an antler that may or may not be archaeological (FS# 2001).

***5. Estimated Depth of Cultural Fill:** 0-20 cm

How Estimated: Two shovel tests, 1 test unit, and 14 excavation units dug by SWCA in 2006 and 2007 demonstrate cultural fill to this depth range.

(If Tested, show location on site map)

***6. Excavation Status:** Excavated

Testing Method: In 2006, SWCA conducted 2 shovel tests and excavated 1 test unit at Site 26EU1533, using 1/4-inch screens to sift the fill from each. ST1 was placed in C-1 and ST2 was placed outside of C-1; each was excavated to an approximate depth of 10 cm, for a total ST volume of 0.05 m3. ST1 was placed on the northern boundary, up-slope of C-1 and ST2 was placed down-slope of the southern boundary of C-1.

TU1 was placed in C-1 over the area with the highest quantity of flakes on the surface, down-slope and south of ST1. TU1 was excavated to a depth of 10 cm bgs, with a total excavated volume of 0.1 m3. The unit was discontinued on the basis of a marked decrease in the quantity of cultural material. Most of the debitage recovered from TU1 was from 0–10 cm bgs. No faunal remains, pollen samples, macrobotanical material, ceramics, or material suitable for radiocarbon data was observed or collected.

In the summer and fall of 2007, SWCA conducted surface collection, remote sensing, excavations, and surface blading at Site 26EU1533. Fourteen 1 × 1–m units were excavated in five different areas of the site (Operations A through E). Operations A and B were placed in areas indicated by surface collection data and magnetometer anomalies from the remote sensing data. Operations C, D, and E were placed in areas where remote sensing revealed areas of high conductivity.

Following excavation, the entire site was bladed with a grader. An archaeological monitor followed the grader the entire time.

For shovel test, test unit, and excavation unit UTM coordinates, see attached tables.

***7. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Lithic Scatter

Describe: During 2005 fieldwork, SWCA observed that Site 26EU1533 consisted of a small, dispersed lithic scatter in an area of 11,114.05 sq. m. Apart from the flake concentration, approximately 30 white Tosawihi Opalite flakes were observed on-site. Approximately 10 of these flakes were middle-stage tertiary biface thinning, and 20 were late-stage tertiary biface thinning. One flake concentration (C-1) and one biface (CST-1) were identified.

C-1 was comprised of approximately 66 flakes. All flakes observed were of white Tosawihi Opalite consisting of 1 primary core reduction flake, 6 secondary biface reduction flakes, 19 middle-stage tertiary biface reduction flakes, 28 late-stage tertiary biface reduction flakes, and 12 flakes of unknown type.

During probing in 2006, two new chipped stone tools were observed,consisting of a scraper (CST-2) and an Elko corner-notch projectile point (FS# 1). Debitage was recovered from C-1. The debitage consists of 40 pieces; all of which are various colors of chert. In all, 5% of the debitage exhibits cortex. One incomplete biface reduction flake of white chert was recovered outside the concentration. See Continuation Form for debitage summary.

During 2007 fieldwork, one piece of groundstone (FS# 2000) was recovered during site blading. A total of 189 flakes were recovered during excavation and site blading activities, including 1 obsidian flake. The Elko series projectile point fragment (FS# 1) recorded in 2006 and a modified flake (FS# 53) were also observed.

Site 26EU1533 appears to date to the Archaic period. The presence of an Elko Corner-Notched projectile point at this site indicates a date range of 3200 - 1450 RCYBP (Justice 2002), which falls into the James Creek phase. One obsidian flake, from the Double H Mountain (NV) source, was dated using obsidian hydration and dated tentatively to the South Fork phase (Cannon et al 2008).

For artifact concentration and artifact UTM coordinates, see attached tables.

***8. Lithic Tools:**

#	Type	#	Type
1	Biface	1	Elko Series
1	Scraper	1	Utilized/Modified Flake
1	Unknown Ground Stone		

Describe: A total of four chipped stone tools and one ground stone fragment were observed at 26EU1533.

During the 2005 site recordation, one chipped stone tool (CST-1) was observed. CST-1 is a white Tosawihi Opalite medial portion of a biface, measuring 3.9 cm long by 3.2 cm wide by 1.0 cm thick. This biface is not the artifact identified by P-III in 1992. This artifact may or may not have been collected during 2007 fieldwork.

During probing in 2006, two additional chipped stone tools were observed, consisting of a scraper (CST-2) and an Elko Corner-notched projectile point (FS #1).

CST-2 is a mottled tan and white chert scraper with pink inclusions measuring 2.8 by 2.2 by 0.8 cm. No use-wear was observed. This artifact was not collected in 2006 and was likely not collected in 2007, since no scrapers are present in the 2007 collection from this site.

FS #1 is an Elko Corner-notched projectile point fragment. The fragment is the proximal and lateral portion of the projectile point and one tang is missing. This point was collected during 2007 fieldwork.

During 2007 fieldwork two chipped stone tools and one piece of groundstone were observed.

FS #1 is a partial projectile point made from white chert. This projectile point was observed during 2006 probing at the site. It is a proximal fragment missing one tine. It measures 1.6 cm long by 1.8 cm wide by 1.1 cm thick. Using Justice's classification (2002), the point is an Elko Corner-notch, dating from 1500 B.C. – A.D. 600, which falls into the James Creek phase.

FS #53 is a complete modified flake made from light gray chert. It measures 5.6 cm long by 4.2 cm wide by 0.4 cm thick.

FS #2000 is an indeterminate piece of groundstone made of light brown and red sandstone. It is a rounded cobble with one ground surface and possible battering marks on one end. It measures 11.9 cm long by 9.0 cm wide by 4.9 cm thick.

For artifact UTM coordinates and additional details, see attached tables.

***9. Lithic Debitage - Estimated Quantity:** 25-100

Material Type: White Tosawihi Opalite

Flaking Stages: **(0) Not Present** **(1) Rare** **(2) Common** **(3) Dominant**

Decortication: 1 **Secondary:** 1 **Tertiary:** 1 **Shatter:** 3 **Core:** 1

10. Maximum Density - # / sq m (all lithics): 1

***11. Ceramics Artifacts:**

#	Type	#	Type

Part B - Prehistoric Sites

Site No: 26EU1533update

0	

Describe: SWCA did not observe any ceramic artifacts identified at this site.

12. Maximum Density - # / sq m (ceramics): 0

***13. Non-Architectural Features (locate on site map):** *- See Guide for additional categories*

#	Type	#	Type	#	Type
0					

Describe: SWCA did not observe any non-architectural features at this site.

***14. Architectural Features (located on site map):**

#	Material	Type	#	Material	Type
0					

Describe: SWCA did not observe any architectural features at this site.

15. Comments / Continuations:

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Part C - Historic Sites

Site No: 26EU1533update

1. Site Type: Historic Isolate

***2. Historic Themes:** Unknown

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***3. Culture:**	Unknown			

Describe: The cultural affiliation of the tin can is unknown.

***4. Oldest Date:** Unknown **Recent Date:** Unknown

How Determined: The age of the tin can is unknown.

5. Site Dimensions: 1 **m X** 1 **m *Area:** 1 **sq. m** ☑ If checked, area was determined by GIS

***6. Surface Collection/Method** Complete Collection

Sampling Method All artifacts were collected; see excacation report (Cannon et al. 2008).

***7. Estimated Depth of Cultural Fill:** Surface

How Estimated The tin can was observed entirely on the ground surface.

(If Tested, show location on site map)

***8. Excavation Status:** Excavated

Testing Method: Probing and excavation were conducted throughout the site, concentrated on areas of increased prehistoric occupation. No historic artifacts were found in any of the shovel tests or test units. See excavation report (Cannon et al. 2008).

***9. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Can-Utility

Describe: The historic isolate consists of one utility can.

10. Ceramic Artifacts:

a. Estimated Number of Ceramic Trademarks: 0

Describe: No ceramics were identified.

11. Glass:

Describe: No glass was identified.

12. Maximum Density - #/sq m (glass and ceramics): 0

13. Tin Cans:

Type	Opening	Size	Modified	Label/Mark	Function	Count
Utility Can	Unknown	Unknown	No	None	Unknown	1

Describe: Tin can artifacts consist of one utility can.

***14. Landscape and Constructed Features (locate on site map)** *- See Guide for additional categories*

#	Type
0	

Describe: No features were identified.

***15. Buildings and Structures (locate on site map):**

#	Material	Type	#	Material	Type
0					

Describe: No buildings or structures were identified.

16. Comments/Continuations - Please make note of any Historic Record searches performed *for example - (County Records, General Land Office, Historic Society, Land Management Agency Records, Oral Histories/Interviews)*

References:

Cannon, M. D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker.
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Salt Lake City, Utah.

1990

IMACS ENCODING FORM

Encoder's Name Mike Cannon

To be completed for each site form.
For instructions and codes, see IMACS Users Guide.

A

Field	Label	Value
1	State Site Number	26EU1533update
2	Agency Site Number	CrNv - 12-7420
6	Agency Report Number	SWCA 2008-47
10	Elevation	5,640
11	Zone / Easting / Northing	11 / 555680 / 4538644
12	1/4, 1/4, 1/4, Sec., T., R.	SE, SE, NE, 17, 36 N, 50 E
13	Merid.	7
14	USGS Map	7.5' Rodeo Creek NE, Nevada Quad, 1968
17	Owner	LM
18	Forest / Dist./Park	BB /
19	Loc. Cur. Materials	CSM
21	Cond.	6
22	Impacts	CE, ER, DM
23	N.R.	D
26	Organ.	ST
28	Survey Date	07 - 21 - 07
29	Slope / Aspect	10 / 176
30	Water: dstance/type	0.2 / B
31	Geog. Unit	BIT
32	Topographic Location (1st / 2st)	A / P
33	Dep.	U
34	Vegetation (1 / 2 / 3)	5; O / P / O
35	Misc. Text, Site Name	GPS data collected in NAD83.

B

Field	Label	Value
2	Culture/Dating Method	AR N, AR J
3	Area	11,114
4	Collect	D
5	Depth	B
6	Excav. Status	A
7	Prehistoric Artifacts	LS
8	Lithic Tools: # / type	1 IG; 1 CA; 1 IH; 1 IA; 1 MN
9	# / Flaking Stages	D / 1, 1, 1, 3, 1
11	Ceramics: #/type	0
13	Features: # / type	0
14	Architecture: # / material / type	0

C

Field	Label	Value
2	Historic Themes	ZZ
3	Culture/Dating Method	ZZ
4	Dates	Unknown, Unknown
5	Area	1
6	Collect	D
7	Depth	A
8	Excav. Status	A
9	Artifacts	CU
14	Features: # / type	0
15	Architecture: # / material / type	0

Printed on 8/12/2008 9:00:43 A

Table 1. UTM Coordinates (NAD83, Zone 11N) for Shovel Tests, Test Units, and Excavation Units at 26EU1533

Object	Northing	Easting
Shovel Test 1 (ST1), center	4538837	555596
Shovel Test 2 (ST2), center	4538832	555597
Test Unit 1 (TU1), center	4538834	555597
Operation A (Op A), SW corner	4538869	555626
Operation B (Op B), SW corner	4538864	555636
Operation C (Op C), SW corner	4538866	555602
Operation D (Op D), SW corner	4538840	555626
Operation E (Op E), SW corner	4538830	555600

Table 2. UTM Coordinates (NAD83, Zone 11N) for Projectile Point (CST-PP), Chipped Stone Tool (CST), Obsidian Debitage (CS-OBS), and Ground Stone Artifact (GS) from General Surface Collection and Mechanical Stripping at 26EU1533

Object	Northing	Easting
FS 1 (CST-PP)	4538828	555632
FS 11 (CS-OBS)	4538847	555628
FS 53 (CST)	4538854	555613
FS 2000 (GS)	4538854	555636

Table 3. Counts of Chipped Stone Artifacts at Site 26EU1533

	Debitage	Tools	Cores	Total
26EU1533	189	2	0	191

Table 4. Debitage Material Type at Site 26EU1533

	Obsidian		Tosawihi		
Site	Count	Percent	Count	Percent	Total
26EU1533	1	0.53%	188	99.47%	189

Table 5. Tool Material Type at Site 26EU1533

	Obsidian		Tosawihi		
Site	Count	Percent	Count	Percent	Total
26EU1533	0	0.00%	2	100.00%	2

Table 6. Counts of Ground Stone Tools by Type at Site 26EU1533

Site	Flat Metate	Rectangular Mano	Rectangular, One-Hand Mano	Hammer-stone	Unknown Grinding Tool	Indeterminate	Total
26EU1533	0	0	0	0	0	1	1

Table 7. Counts and Percentages of Flake Types at Site 26EU1533

	Core Reduction		Biface Reduction		Biface Thinning		Pressure Flakes		Bipolar Reduction		Indeterminate		Total Number of Proximal Flakes	Total Number of all Flakes
	n	%	n	%	n	%	n	%	n	%	n	%	n	N
26EU1533	1	2.22	6	13.33	3	6.67	0	0.00	0	0.00	35	77.78	45	189

Table 8. Counts and Percentage of Tool Types at Site 26EU1533

	Biface		Compound Tool		Knifelike Blade		Modified Flake		Projectile Point		Scraper		Total number of tools
	n	%	n	%	n	%	n	%	n	%	n	%	n
26EU1533	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00	0	0.00	2

Table 9. Chipped Stone Tools Recovered at Site 26EU1533During the 2007 BGMI Project and 2006 Probing

Site	FS#	Specimen#	Tool Type	Material	Completeness
26EU1533	1	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU1533	53	1	Modified Flake	CCS	Complete

Table 10. Ground Stone Artifact from Site 26EU1533

Site #	FS #	Artifact Type	Artifact Subtype	Length × Width × Thickness (mm)	Weight (g)	Material	Texture	Wear Level	Design	Primary Use	Secondary Use	Number of Battered Surfaces	Completeness
26EU1533	2000	Indeterminate	Indeterminate	119.03 × 90.32 × 49.02	738.7	Light brown and red arkosic sandstone	Intermediate	Light	Expedient	Abrading or grinding	Battering	1	Complete

Ground Stone

A single piece of ground stone (FS# 2000) was recovered at 26EU1533 during mechanical stripping. This artifact was recovered from the eastern portion of the site, just south of Operation B and near the eastern edge of the central surface artifact concentration observed during surface collection. This specimen is a rounded cobble with a single lightly ground surface and some possible pecking marks on one end. The material appears to be arkosic sandstone with an intermediate grain and naturally occurring pock marks; therefore, the possible pecking marks are equally likely to be natural. What this stone was used for is undetermined; it appears to be a grinding or abrading tool, possibly a hand stone. Because no modification other than use wear has been made to this artifact, it is classified as expedient. It was slightly damaged during surface blading: the ground surface has a long scrape made by the grader blade.

Table 11. Projectile Point From Site 26EU1533

Site Number	FS No.	Material	Holmer Classification	Thomas Classification	Justice Classification	Classification	Phase
26EU1533	1	White chert	San Rafael Side-notched point	Elko Series point	Elko Corner-notched point	Elko Corner-notched point	James Creek

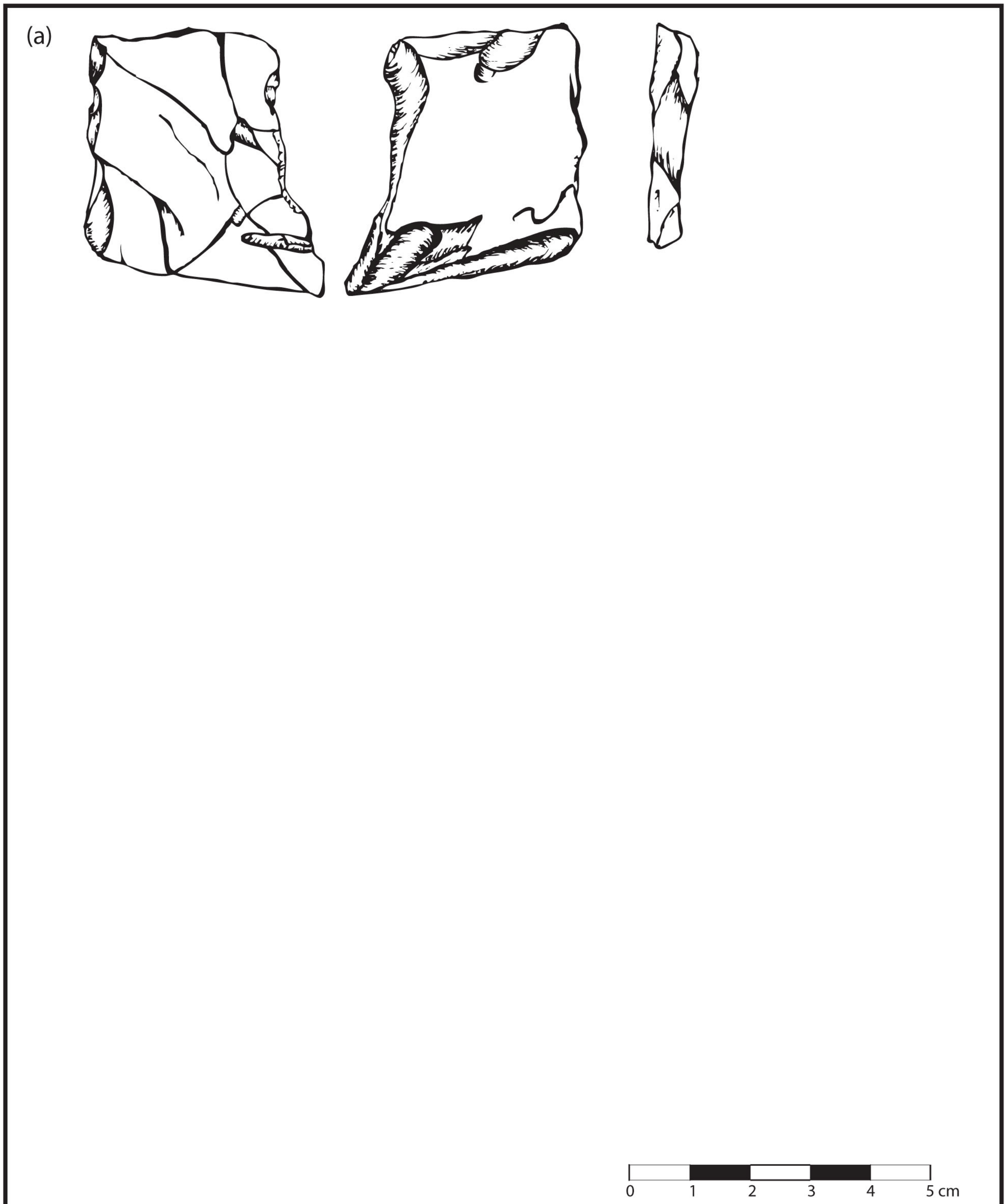
Projectile Points

One projectile point (FS# 1) from 26EU1533 was classified as an Elko Corner-notched point, a type that is generally considered to have been used as an atlatl dart tip. An Elko Corner-notched point that was recovered in Lincoln County, Nevada, was hafted to a dart foreshaft (Justice 2002:311). Use wear analysis on Gatecliff Shelter's Elko Corner-notched collection indicates these tools were used for multiple tasks, not just as projectile points (Justice 2002:311). Typical use fractures in the Elko series include impact and bending fractures, haft fractures, and the loss of one or both barbs (Justice 2002:299). The distinction between Elko Eared and Elko Corner-notched points is solely morphological, not temporal (Thomas 1981).

The point classified as an Elko Corner-notched type (FS# 1) from 26EU1533 is a basal fragment with a missing barb manufactured from white chert with evidence of heat treatment. Based on Holmer's statistical model, it was classified as a San Rafael Side-notched point. Thomas's angle analysis placed it in the Elko series, and a visual comparison to the typology provided by Justice narrowed it to an Elko Corner-notched point. The results of Holmer's statistical analysis model were discarded upon visual comparison; the San Rafael Side-notched examples from Holmer (Holmer 1978:52) are not similar in shape or form to this particular projectile point. However, comparison revealed that the point is similar to Holmer's Elko Corner-notched examples (Holmer 1978:39).

Figure 1. Photograph of Elko Corner-notched point (FS# 1) from 26EU1533.

Figure 2. Illustration of Elko Corner-notched point (FS# 1) from 26EU1533.

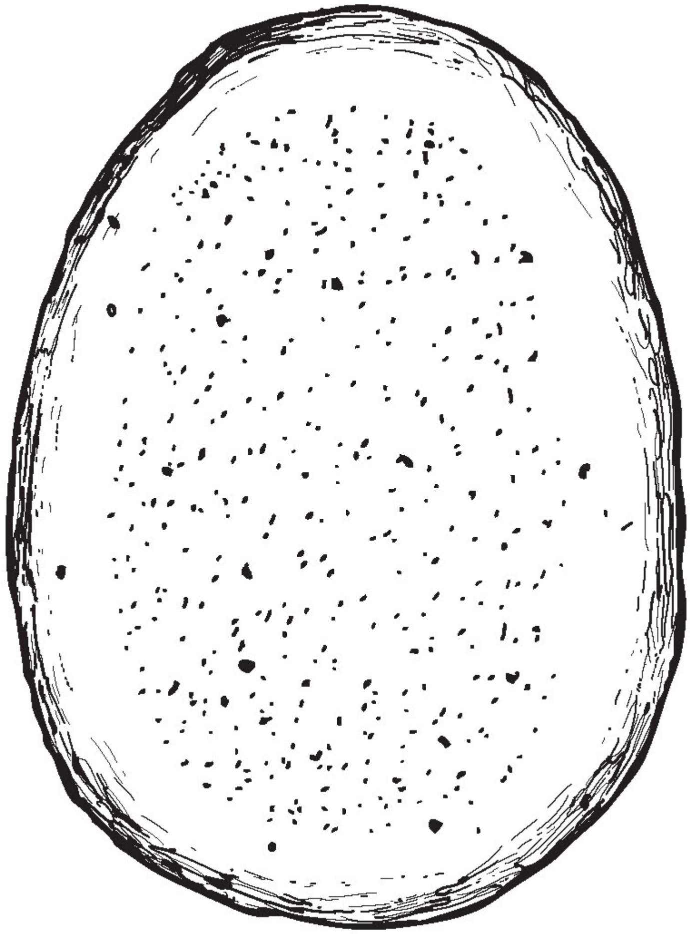


Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1533: (a) FS# 53.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 3. Illustration of utilized flake from 26EU1533.

Length: 11.5 cm
Width: 8.5 cm
Thickness: 4.0 cm



SIDE A

0 1 2 3 4 5 cm

Project Number: 5598
Site Number: 26EU1533
FS#: 2000
Drawn By: N.B.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 4. Illustration of side A of FS# 2000 from 26EU1533.

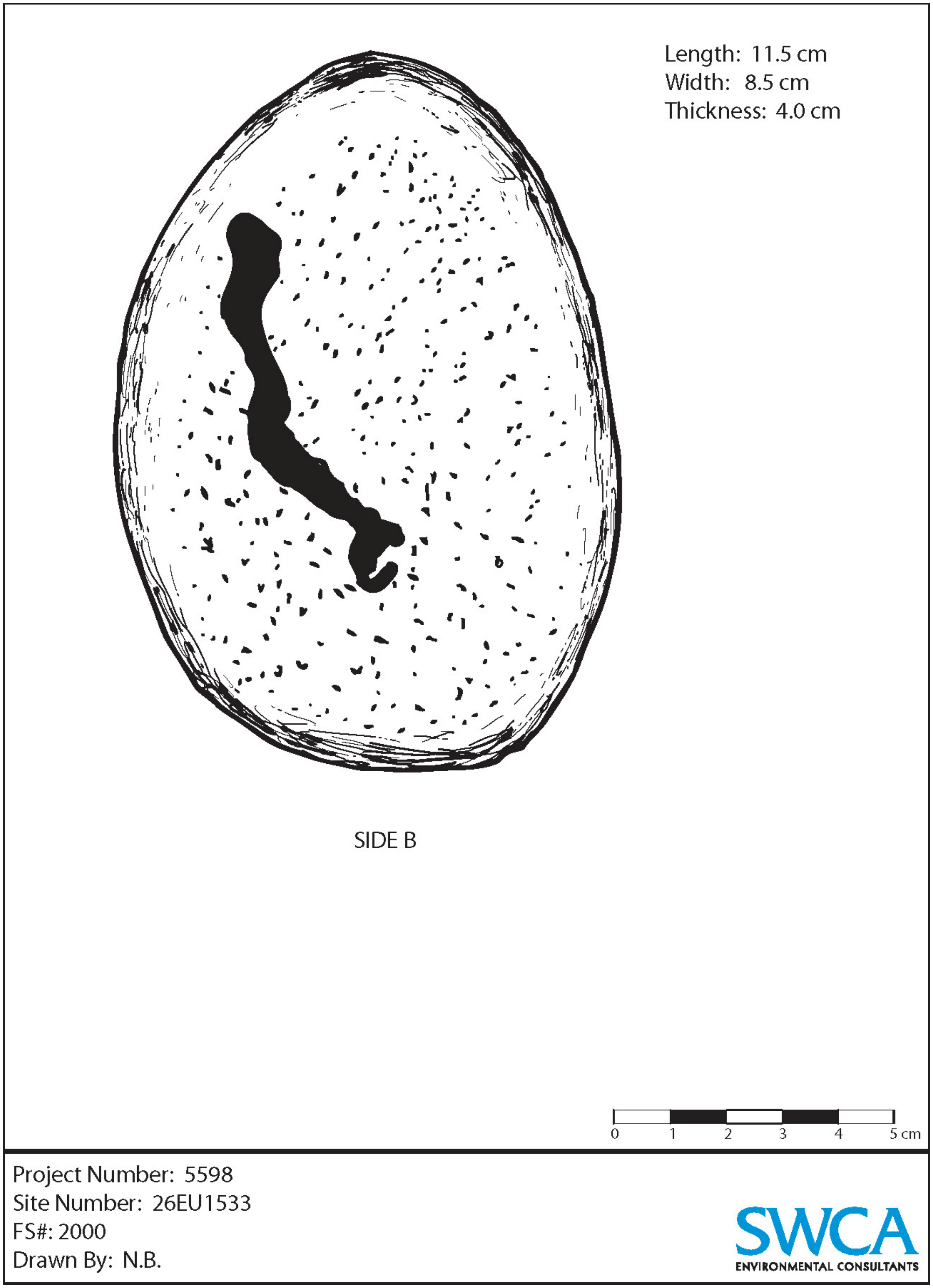
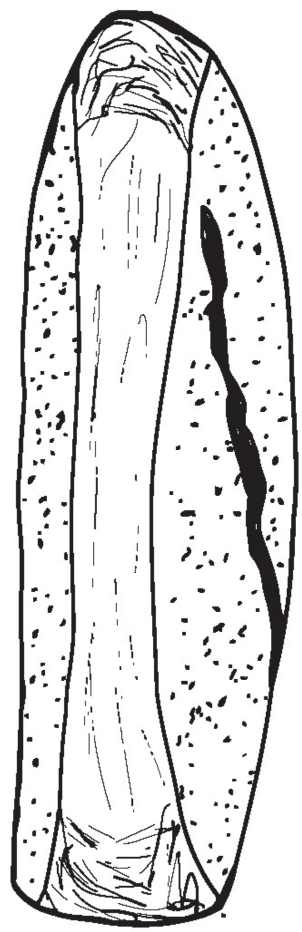


Figure 5. Illustration of side B of FS# 2000 from 26EU1533.

Length: 11.5 cm
Width: 8.5 cm
Thickness: 4.0 cm



Project Number: 5598
Site Number: 26EU1533
FS#: 2000
Drawn By: N.B.

SWCA ENVIRONMENTAL CONSULTANTS

Figure 6. Illustration of profile of FS# 2000 from 26EU1533.

Figure 7. Overview of site after mowing, staking, & flagging; from site datum facing southeast.

Figure 8. Overview of site after mowing, staking, & flagging; from site datum facing west.

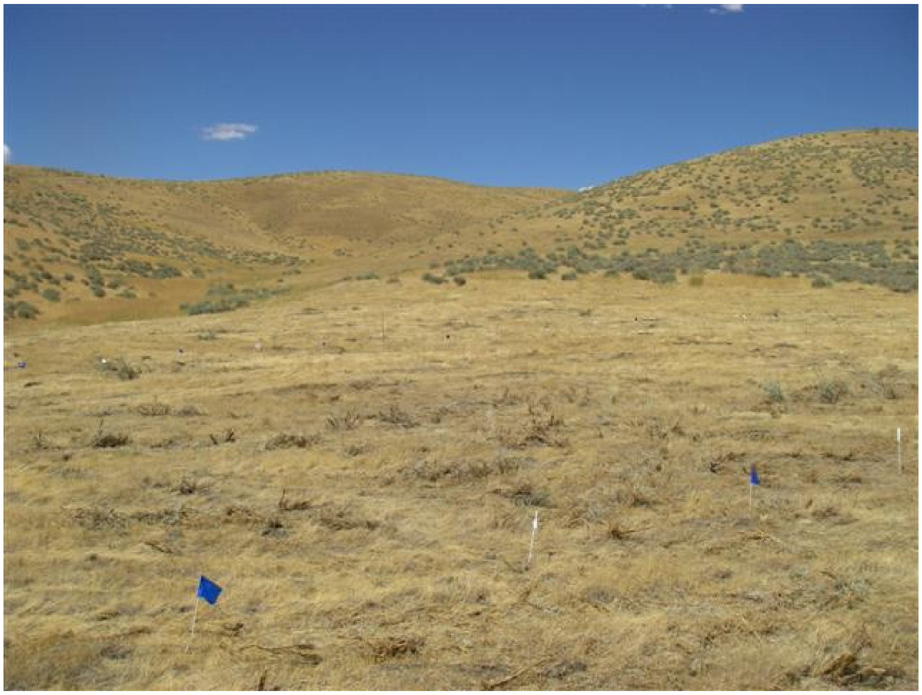


Figure 9. Overview of site after mowing, staking, & flagging; from site datum facing northeast.

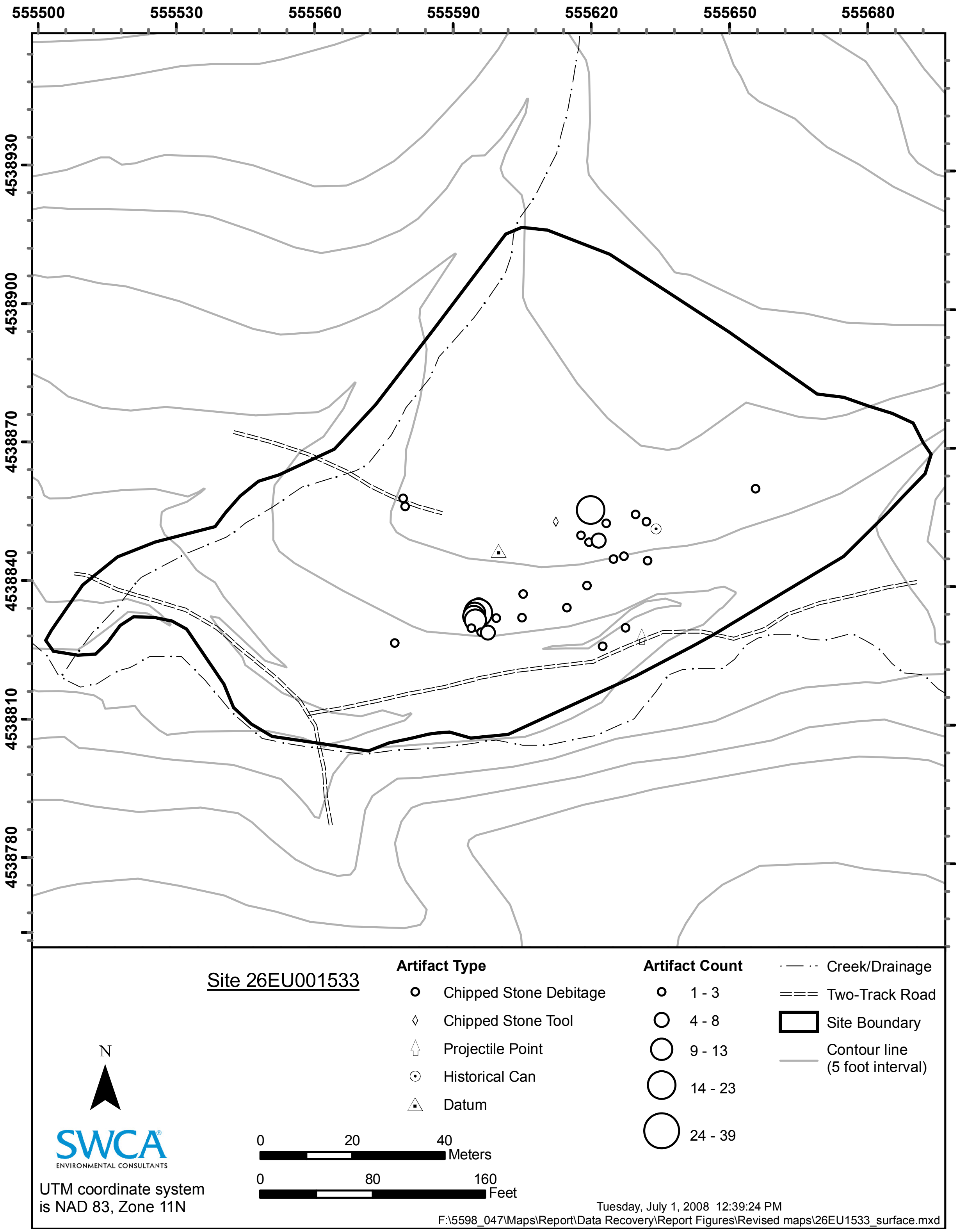


Figure 10. Results of surface artifact collection at 26EU1533.

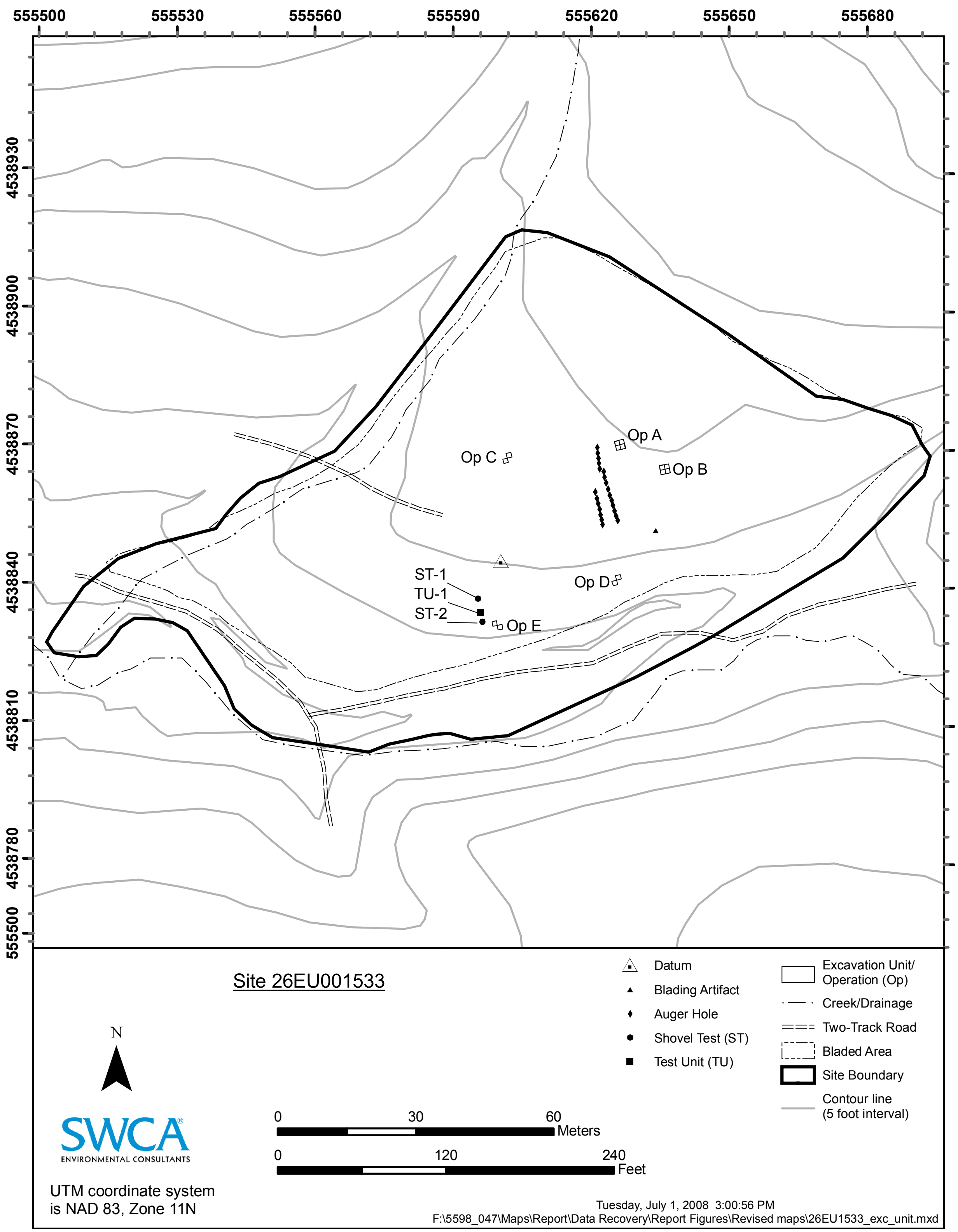


Figure 11. Locations of excavation units and extent of mechanical stripping at 26EU1533.

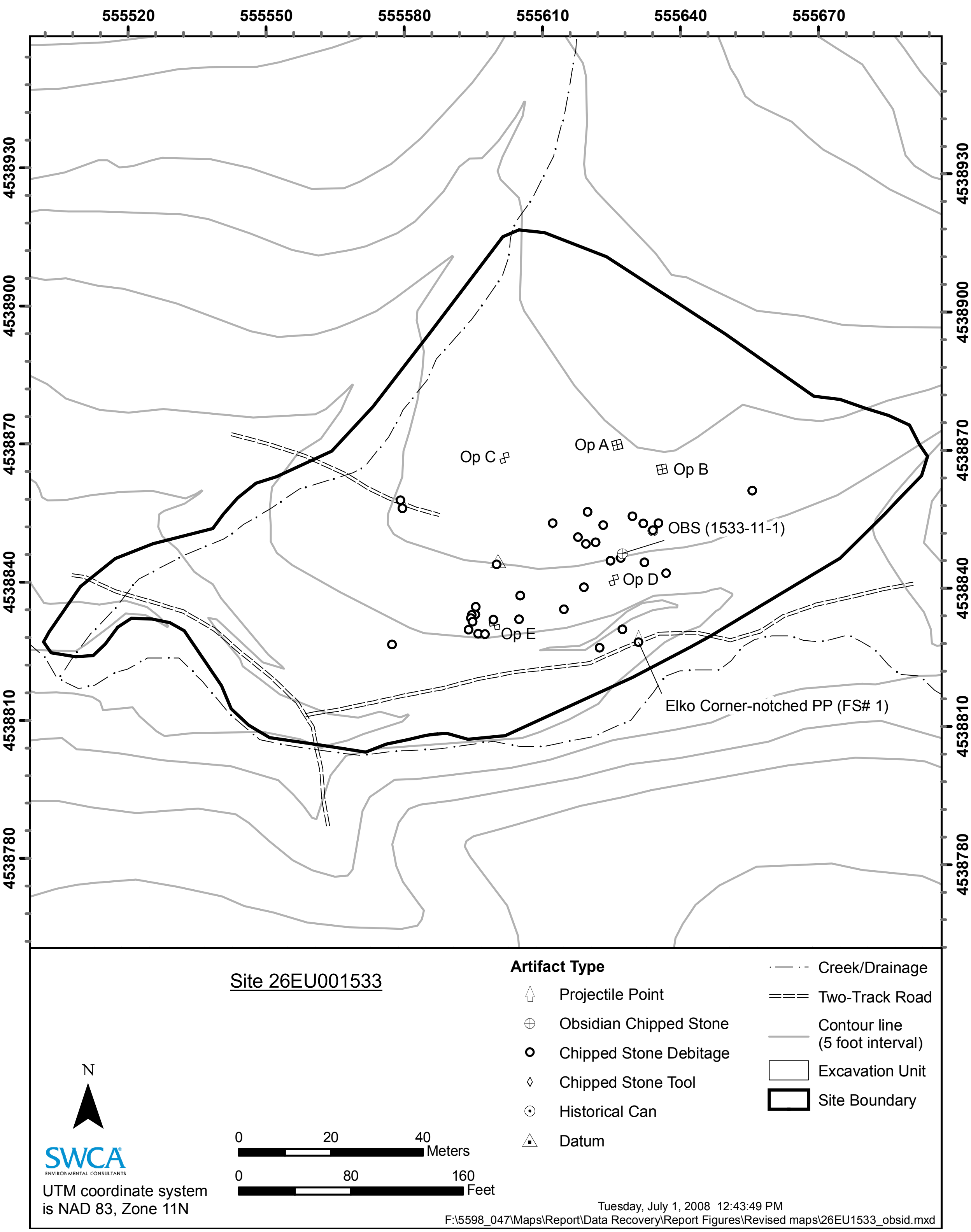


Figure 12. Location of obsidian artifact and projectile point recovered from 26EU1533.

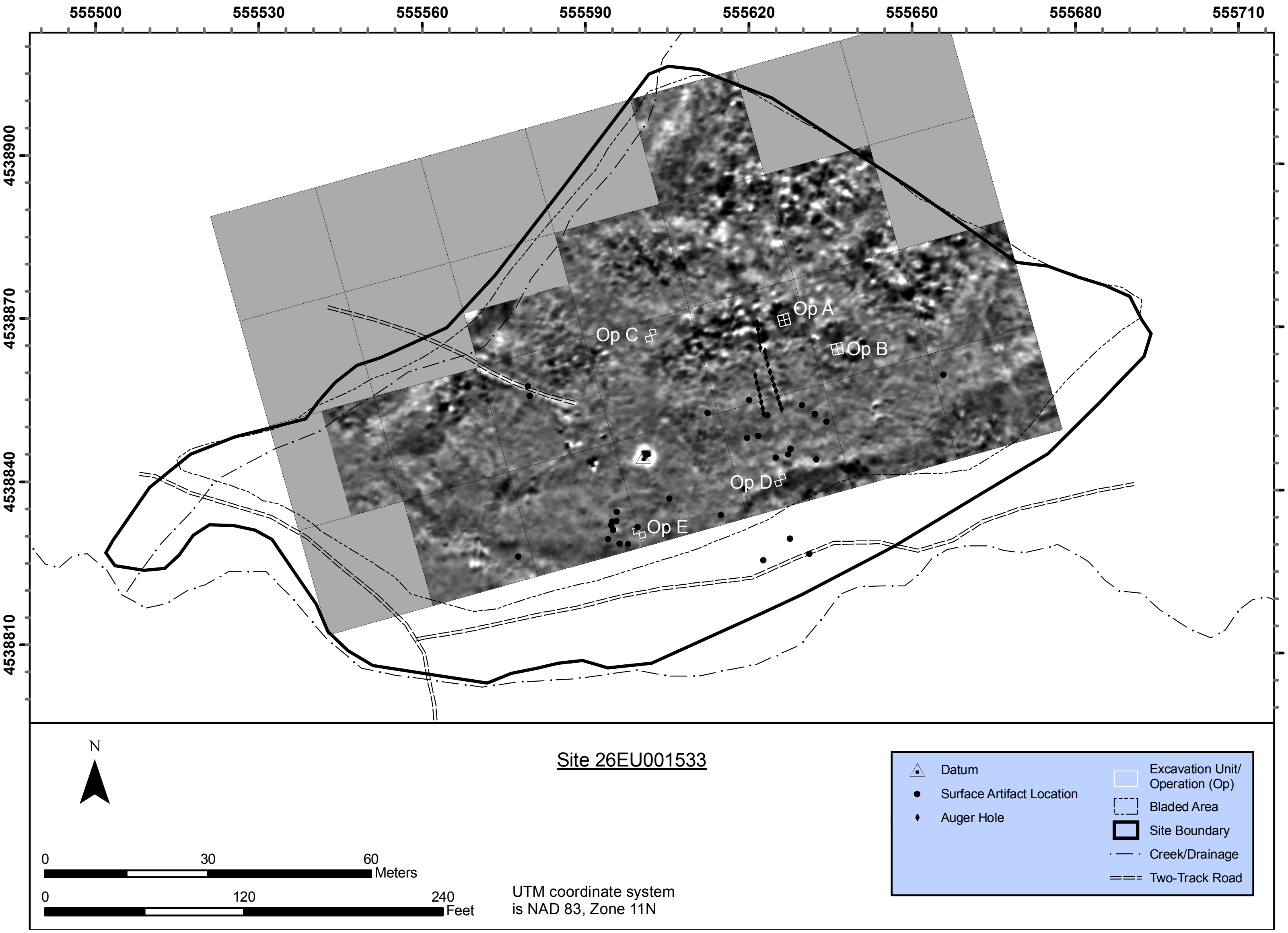


Figure 13. Magnetometer data from 26EU1533.

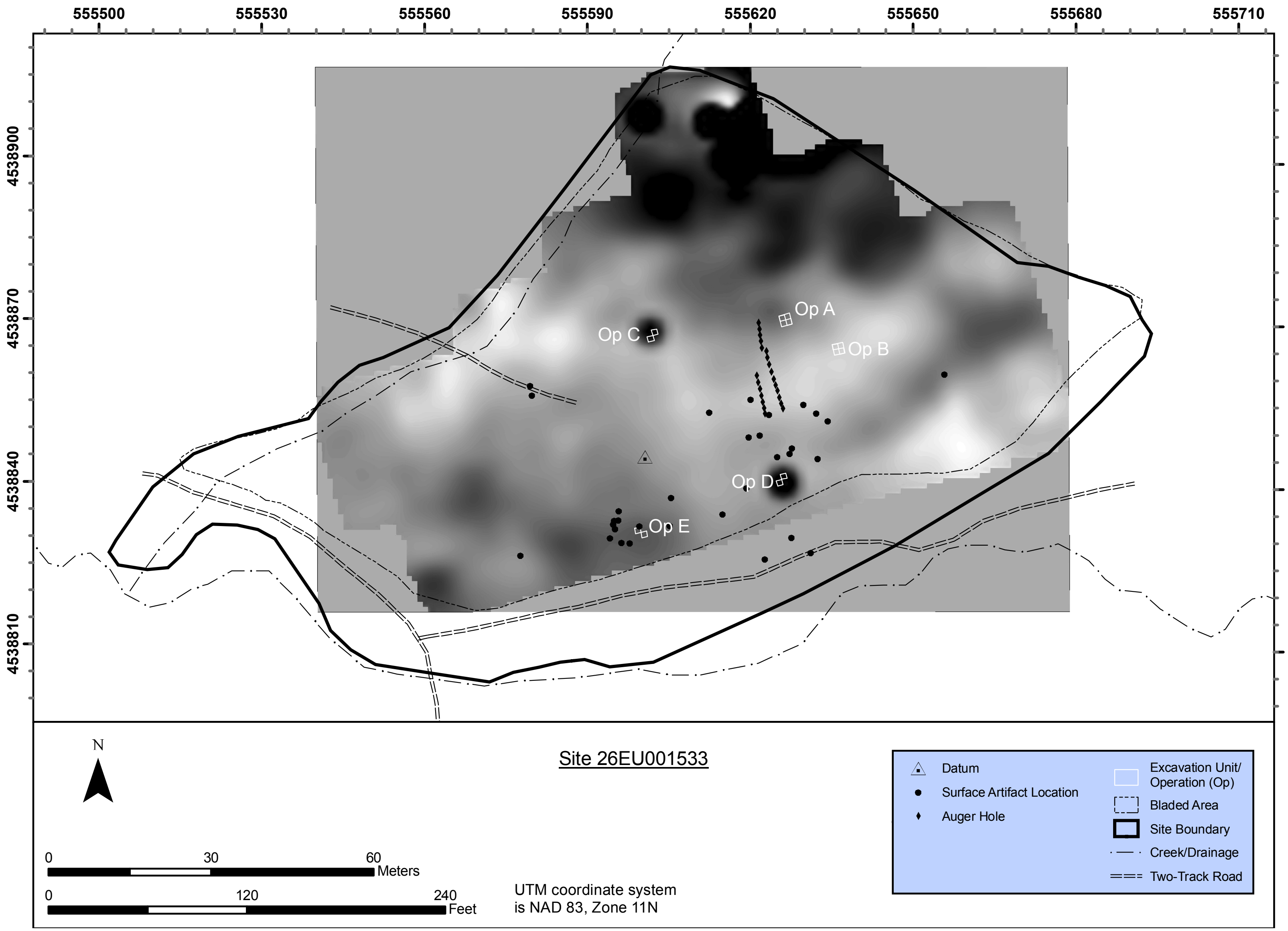


Figure 14. Conductivity data from 26EU1533.

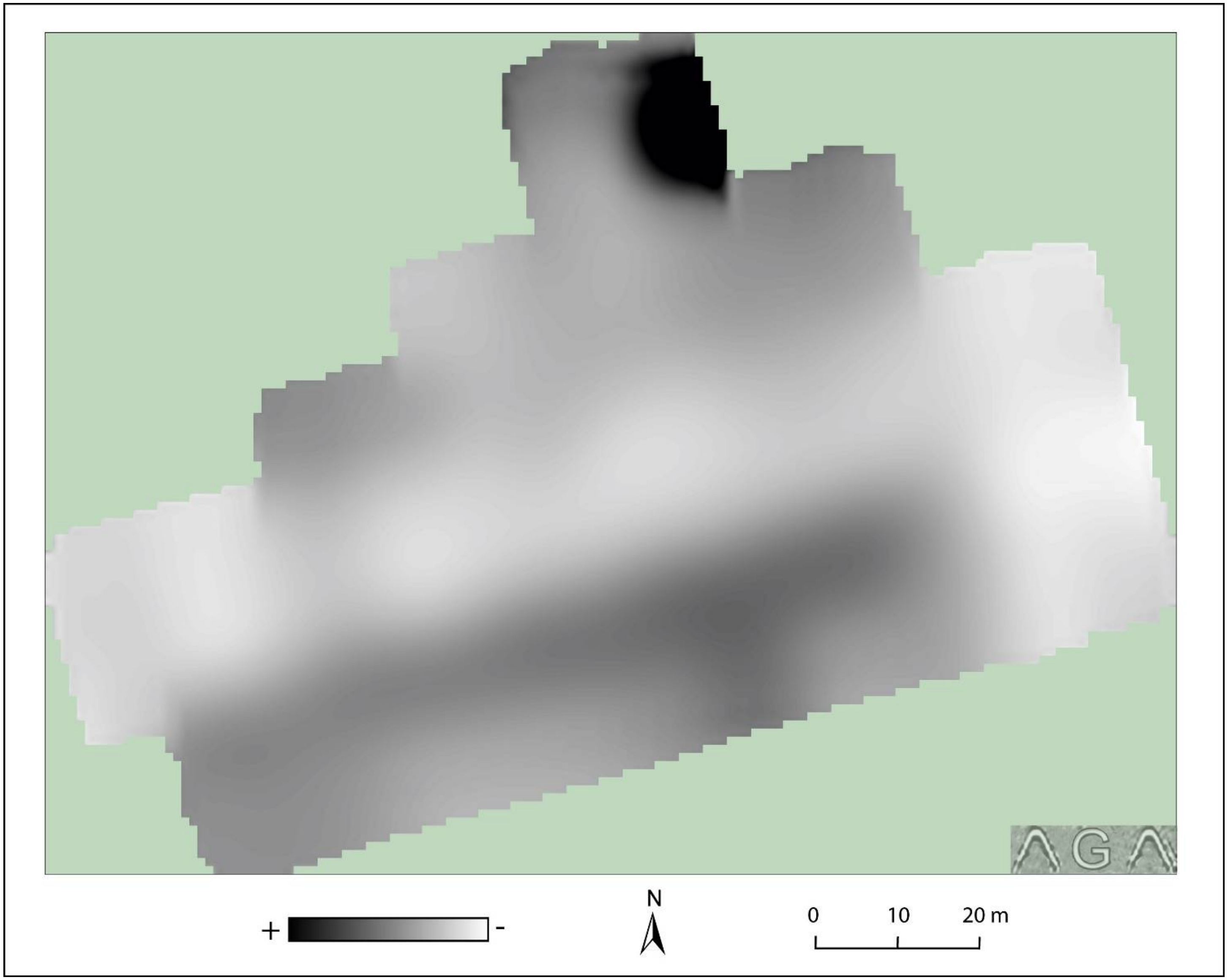


Figure 15. Magnetic susceptibility data from 26EU1533.

IMACS SITE FORM

PART A

Administrative Data

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM
Form approved for use by
BLM - Utah, Idaho, Wyoming, Nevada
Division of State History - Utah, Wyoming
USFS - Intermountain Region
NPS - Utah, Wyoming

***1. State No:** 26EU1539update
***2. Agency No:** CrNv - 12-7426
3. Temp. No:

4. State: Nevada **County:** Eureka
5. Project: Barrick 2007 Data Recovery
***6. Report No:** SWCA 2008-47
7. Site Name / Property Name:
8. Class: ☑ Prehistoric ☐ Historic ☐ Paleontologic ☐ Ethnographic
9. Site Type: Lithic scatter
***10. Elevation:** 5160 **ft.**
***11. UTM Grid:** **#1 Zone:** 11 548214 **m E** 4537113 **m N** **#2 Zone:** **m E** **m N**
#3 Zone: **m E** **m N** **#4 Zone:** **m E** **m N**

***12. Legals:**

NW	**1/4 of** SE	**1/4 of** NW	**of Section** 22	**Township** 36	N	**Range** 49	E
SW	**1/4 of** SE	**1/4 of** NW	**of Section** 22	**Township** 36	N	**Range** 49	E
	1/4 of	**1/4 of**	**of Section**	**Township**		**Range**	
	1/4 of	**1/4 of**	**of Section**	**Township**		**Range**	

***13. Meridian:** Mt. Diablo (Nevada)
***14. Map Reference:** USGS Rodeo Creek NW, Nevada 7.5' Quad
15. Aerial Photo:
16. Location and Access:

Site 26EU1539 is located along a low alluvial terrace on the east side of Boulder Creek. From the front gate of the Barrick Goldstrike Mine, travel north 1.70 miles until you reach a four-way intersection. Continue driving, going west/northwest at the intersection for 1.64 miles, ignoring all forks and intersections. At this point, you will reach the haul road. Cross the haul road, and continue on the dirt road, which runs parallel to the haul road. Follow this for 1.19 miles to an intersection. Turn south, and travel for 0.22 miles to where the road intersects with another road. Turn southwest on this new road, and travel for 0.53 miles to where it intersects with another road. At this road, turn northwest, and travel 1.32 miles to the site boundary. Site 26EU1539 is located at the UTM coordinates 4537113 N 548214 E.

***17. Land Owner:** Bureau of Land Management
***18. Federal Administrative Units:** Elko
***19. Location of Curated Materials:** Nevada State Museum (Carson City)
20. Description:

Site 26EU1539 (CRNV-12-7426) was originally recorded in 1988 by Desert Research Institute (DRI) as a low density lithic scatter with primarily tertiary thinning flakes, shatter, and some ground stone (Hicks 1988, 1989). Two concentrations of artifacts were noted at the north end of the site. During two revisits of the site by P-III Associates (P-III) in 1991 and 1993 (Popek and Newsome 1993; Schroedl 1993), the two concentrations were relocated, site boundaries were expanded, and more chipped stone tools were identified.

SWCA revisited this site on September 23, 2005 for the Barrick Cultural Sites Assessment project. The original DRI datum was not found and SWCA established a new datum during the revisit. The SWCA datum consists of a rebar post with an aluminum tag inscribed with the site number, date, "SWCA", and SWCA project number (5598-046). A rock cairn surrounds the rebar.

SWCA archaeologists surveyed Site 26EU1539 in 15-m transects, and identified two artifact concentrations, two chipped stone tools, and one piece of ground stone. None of these tools appear to have been previously recorded at this site. Approximately 100 flakes were observed throughout the 17,228-m² site. The majority of the flakes observed were secondary biface thinning debitage, with middle and late-stage bifacial thinning flakes and unidentified flakes in lower quantities. Material types include white, black, and red cherts. Two chipped stone artifacts (PP1 and CST1) and one groundstone artifact (GS1) were also observed. Sparse vegetation was observed on-site including low sagebrush, cheat grass, and wheat grass which covered approximately 50% of the site surface. Impacts to this site include erosion, as sediments have washed across the site toward Boulder Creek, and continued grazing of the area.

In September, 2006 SWCA again revisited Site 26EU1539 to conduct probing. Five new chipped stone artifacts and one new groundstone artifact were observed (PP1, CST2-CST5 and GS2). Three shovel tests (ST1 - ST3) and one test unit (TU1) were excavated. ST1 - ST3 were placed in C-1; each was excavated to an approximate depth of 10 cm, for a total ST volume of 0.075 m³.

* Encoded data items

BLM 8100-1
FS R-4 2300-2
3/90

Printed on 8/12/2008 9:01:54 A

To better understand the distribution of cultural material within C-1, the shovel tests were placed around the boundary of the concentration. ST-3 was located just outside of the northeastern boundary of the concentration.

TU1 was placed in C-1 over the area with the highest quantity of flakes on the surface. TU1 was excavated to a depth of 20 cm below ground surface, with a total excavated volume of 0.2 m^3. The unit was discontinued because of a marked decrease in cultural material. All debitage recovered from TU1 was from 0-10 cm below ground surface. No faunal remains, pollen samples, macrobotanical material, ceramics, or material suitable for radiocarbon data were observed or collected.

During the summer and fall of 2007 SWCA conducted surface collection, remote sensing, excavation, and site surface blading at Site 26EU1539 as part of the BGMI Data Recovery Project (Cannon et al 2008). After collection of all surface artifacts was completed, remote sensing was conducted. Subsequently, twenty-two 1 × 1-m excavation units were dug in eight different areas (Operations A through H).). Operations A and B were placed in areas where remote sensing revealed magnetometer anomalies. Operations C and D were placed in areas where remote sensing revealed areas of high conductivity, or near surface artifact concentrations. Operation E was placed at a location within a surface artifact concentration that included what appeared to be fire-altered rock. Operationss F and G were placed within a dense surface artifact concentration and Operation H was placed directly uphill of the location of a mano recovered during surface collection. Excavation units were dug in 10-cm increments, 2 levels down. One possible archaeological feature was encountered: a small, thin ash lens was observed in Operation G. Artifacts recovered from surface collection and the excavation units consist of approximately 4523 lithic flakes. Nine bifaces (FS#s 6, 44, 71, 122, 159, 166, 201, 292, and 1005), nine utilized flakes (FS#s 136-1, 136-2, 137-1, 137-2, 137-3, 139-1, 148-1, 148-2, and 148-3), two scrapers (FS#s 8 and 139-2), two cores (FS#s 246 and 1253), one compound tool (FS# 238), one hammerstone (FS# 51), one mano (FS# 107), and one grinding tool (FS# 294) were also observed.

In addition to the excavation units, 14 auger probes (APs) were dug at Site 26EU1539. The APs averaged 50 cm deep and were spaced at 5-m intervals across two transect lines in the northeast corner of the site. No cultural materials were identified.

After excavation and auger probing were completed, Site 26EU1539 was stripped using a road grader. Two successive passes were made over the site, the first between 5 and 8 cm deep, and the second skimming an additional 5 to 8 cm off. An archaeologist followed the road grader at all times while working on the site. No archaeological features were revealed. Eight flakes and a small number of tools were collected during the site blading; FS# 1254 is a biface, FS#s 1250 and 1251 are metate fragments, and FS# 1256 is a projectile point. The projectile point is classified as an Eastgate Expanding Stem, using Justice’s classification (Justice 2002), which dates to the Maggie Creek Phase (A.D. 700 - A.D. 1300).

An obsidian biface (FS# 159) collected in 2007 was sourced and dated using obsidian hydration. It was successfully identified from the Browns Bench (NV/ID) source; however, it was weathered and did not have a measurable hydration band, therefore it could not be dated.

***21. Site Condition:** ☐ **Excellent** ☐ **Good** ☐ **Fair** ☐ **Poor** ☐ **Inundated** ☑ **Destroyed** ☐ **Unknown**

***22. Impact Agents:** Completed Excavation Erosion Demolition/Dismantling

***23. National Register Status:** Non-Significant (Professional Judgement)

Justify: Site 26EU1539 was originally recorded and its eligibility evaluated by Desert Research Institute (DRI) in 1988. DRI recommended the site eligible under Criterion D due to its potential for subsurface cultural deposits, and recommended further evaluation (Hicks 1988, 1989). The BLM determined the site NRHP-eligible. In 1991 and 1993 P-III Associates revisited the site. They recommended the site retain its status as eligible for the NRHP, noting the presence of two artifact concentrations (Popek and Newsome 1993; Schroedl 1993).

Site 26EU1539 offered the greatest research potential in the domain of Criterion D, which states that the site yields or is likely to yield information important in prehistory or history. While the site concentrations contained a relatively small number of artifacts, as observed in 2005, they included three lithic tools and a good possibility for subsurface cultural deposits. In 2006, an additional four chipped stone tools and a piece of ground stone were observed. Because it appeared a good candidate for subsurface cultural deposits, and possibly represented a long-term habitation site, Site 26EU1539 was recommended eligible for the NRHP under Criterion D.

In 2007 SWCA revisited Site 26EU1533 a third time to conduct data recovery in accordance with a treatment plan that was approved by the BLM with NV SHPO concurrence (Cannon and Stettler 2007). Twenty-two 1 × 1-m units were excavated in eight different areas of the site. The placement of the units was based on magnetometer anomalies or high conductivity revealed in remote sensing, or within or close to artifact concentrations or artifacts. In addition, 14 auger probes (APs) were dug, in order to evaluate the causes of patterning in the remote sensing data. No features or temporally diagnostic artifacts were encountered in any of the excavation units or APs, although a biface (FS# 1005) was collected. After completing excavation the site’s surface was scraped using a grader. The grader made two successive passes, the first going down 5 to 8 cm and the second going down an additional 5 to 8 cm. A small number of artifacts were recovered during site blading, including a biface (FS# 1254), 2 metate fragments (FS#s 1250 and 1251), and an Eastgate projectile point (FS# 1256). The Eastgate point dates to the Maggie Creek phase (A.D. 66 - A.D. 1300). These impacts to the site were mitigated by recovering the information and data that had made 26EU1539 eligible for the NRHP under Criterion D.

Due to site excavation and site surface scraping conducted in order to recover any data or information Site 26EU1539 could yield, the site no longer exists and therefore is no longer eligible for the NRHP under Criterion D. Thus, in summary, SWCA recommends Site 26EU1539 as not eligible for the NRHP under any criteria.

24. Photos: Camera 3: 2042-2044, 2046-2047, 2049, 2051-2956. 2007: 549-556, 594-602, 683-695, 2830-2834, 2896-2906, 3299-3319, 3427-3436, 3485-3500, 4395-4407. Photos curated in the Salt Lake City SWCA office.

25. Recorded by: M. Cannon

***26. Survey Organization:** SWCA Environmental Consultants ***28. Survey Date:** 07 - 20 - 08

27. Assisting Crew Members: D. Heersink, V. Villagran, C. Woodman, P. Morris, H. Stettler

List of Attachments:

- ☑ Part B
- ☐ Part C
- ☐ Part E
- ☑ Topo Map
- ☑ Site Sketch
- ☑ Photos
- ☐ Artifact/Feature Sketch
- ☐ Continuation Sheets
- ☐ Other:___________________

Environmental Data

***29. Slope:** 1 **(Degrees)** 270 **Aspect (Degrees)**

***30. Distance to Permanent Water:** 1.2 **x 100 Meters**

***Type of Water Source:** Stream/River

Name of Water Source: Boulder Creek

***31. Geographic Unit:** Boulder Flat

***32. Topographic Location:** *- See Guide for additional information*

Primary Landform: Valley

Secondary Landform: Ridge/Knoll

Describe: The site is located on the southwest-facing slope of a low ridge within a valley west of Boulder Creek.

***33. On-site Depositional Context** Alluvial Plain

Describe: Sediments include colluvium on the slope and alluvium in the valley bottom. Sediments are very fine silt with less than 5 % pebbles of chert and silicified shale.

34. Vegetation

***a. Life Zone:** ☐ Arctic-Alpine ☐ Hudsonian ☐ Canadian ☐ Transitional ☑ Upper Sonoran ☐ Lower Sonoran ☐ Unknown

***b. Community:**

Primary On-Site: Big Sagebrush

Secondary On-Site: Big Sagebrush

Surrounding Site: Shadscale Community

Describe: Vegetation on-site includes sagebrush, rabbitbrush, wheat grass, and various grasses.

***35. Miscellaneous Text:** GPS data collected in NAD83.

36. Comments/Continuations

Report number(s): BLM 1-1244 (1988), BLM 1-1922 (1993), BLM 1-2502 (2005), BLM 1-2595 (2007).

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Cannon, Michael D. and Heather K. Stettler
2007 Data Recovery Plan for Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hicks, Pat
1988 IMACS Site Form: 26EU1539/CrNV 12-7426. Prepared by Desert Research Institute, University of Nevada, Reno. Copies available from Bureau of Land Managment, Elko Field Office, Elko, NV. BLM 1-1244.
1989 A Class III Cultural Resource Inventory of 3698 Acres in Elko and Eureka Counties, Nevada. Prepared by Desert Research Institute, University of Nevada, Reno. Cultural Resource Short Report 88-6. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1244.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Holmer, Richard N.

* Encoded data items

1978 A Mathematical Typology for Archaic Projectile Points of the Eastern Great Basin. Unpublished Ph.D. dissertation, Department of Anthropology, University of Utah, Salt Lake City, UT.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Popek, Gary M. and Daniel K. Newsome
1993 IMACS Site Form: 26EU1539/CRNV 12-7426. In Evaluation of Seven Cultural Resource Properties Recorded by Desert Research Institute In or Near Barrick Goldstrike's Clydesdale Parcel, Boulder Valley, Eureka County, Nevada, edited by Alan R. Schroedl. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1922.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Schroedl, Alan R.
1993 Evaluation of Seven Cultural Resource Properties Recorded by Desert Research Institute In or Near Barrick Goldstrike's Clydesdale Parcel, Boulder Valley, Eureka County, Nevada. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1922.

Thomas, David Hurst
1981 How to Classify the Projectile Points from Monitor Valley, Nevada. Journal of California and Great Basin Anthropology 3:7-43.

#14 Continued:

USGS Santa Renia Fields 7.5' Quad, Nevada

Part B - Prehistoric Sites

Site No: 26EU1539update

1. Site Type: Lithic scatter

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***2. Culture:**	Fremont	Lithic Cross Dating		

Describe: A projectile point that is classified as an Eastgate Expanding Stem, using Justice's classification (Justice 2002), was observed and collected from this site. This point dates to the Maggie Creek Phase (A.D. 700–A.D. 1300). Additional chronological information was taken from Schmitt and Madsen (2005) and Hockett and Morgenstein (2003). Additional chronological information was taken from Schmitt and Madsen (2005) and Hockett and Morgenstein (2003).

3. Site Dimensions: 81 **m X** 298 **m *Area:** 17,228 **sq. m** ☑ If checked, area was determined by GIS

***4. Surface Collection/Method** Complete Collection

Sampling Method: Artifacts were collected in association with probing activities conducted by SWCA in 2006. A complete collection was conducted by SWCA during 2007 fieldwork.

***5. Estimated Depth of Cultural Fill:** 0-20 cm

How Estimated: Depth is estimated based on testing and excavation conducted by SWCA in 2006 and 2007.
(If Tested, show location on site map)

***6. Excavation Status:** Excavated

Testing Method: In September, 2006 SWCA visited Site 26EU1539 to conduct probing. Four new chipped stone artifacts and one new groundstone were observed (CST2-CST5 and GS2). Three shovel tests and one test unit were excavated. ST1-ST3 were placed in C-1; each was excavated to an approximate depth of 10 cm, for a total ST volume of 0.075 m^3. To better understand the distribution of cultural material within C-1, the shovel tests were placed around the boundary of the concentration. ST-3 was located just outside of the northeastern boundary of the concentration.

TU1 was placed in C-1 over the area with the highest quantity of flakes on the surface. TU1 was excavated to a depth of 20 cm bgs, with a total excavated volume of 0.2 m^3. The unit was discontinued because of a marked decrease in cultural material. Most of the debitage recovered from TU1 was from 0–10 cm below ground surface. No faunal remains, pollen samples, macrobotanical material, ceramics, or material suitable for radiocarbon data were observed or collected. All STs and TUs were screened using a 1/4-inch screen.

In summer and fall of 2007, SWCA conducted excavations and auger probing at Site 26EU1539, followed by site surface blading. Twenty-two 1 × 1–m excavation units were dug in eight different areas (Operations A through H). Operations A and B were placed in areas where remote sensing revealed magnetometer anomalies. Operations C and D were placed in areas where remote sensing revealed areas of high conductivity, or near surface artifact concentrations. Operation E was placed at a location within a surface artifact concentration that included what appeared to be fire-altered rock. Operations F and G were placed within a dense surface artifact concentration and Operation H was placed directly uphill of the location of a mano recovered during surface collection. All excavation units were screened using a 1/4-inch screen.

For shovel test, test unit, and excavation unit UTM coordinates, see attached tables.

***7. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Lithic Scatter

Ground/Pecked Stone

Describe: In 2005, approximately 100 flakes were observed throughout the site. The majority of the flakes observed were secondary biface thinning debitage, with middle- and late-stage bifacial thinning flakes and unidentified flakes in lower quantities. Material types include white Tosawihi Opalite, and black and red cherts. Two artifact concentrations were observed on the eastern end of the site.

C-1 is an area of increased density, defined by a slight increase in density of artifacts within a defined area relative to overall site artifact density. This area consists of approximately 37 flakes diffusely scattered in an area 15 m (north-south) by 10 m (east-west). The concentration is located near the eastern end of the site. Material types present include white and red chert. Debitage in this concentration are secondary and late-stage biface thinning flakes. No chipped stone tools or other artifact types were observed in this concentration.

C-2 is an area of increased density that consists of approximately 25 flakes discretely scattered in an area 2 m in diameter. The concentration is located near the northeastern boundary of the site. Material types observed include white and red chert. Debitage in this concentration are secondary and mid-stage biface thinning flakes. One utilized flake (CST1) was also observed in this concentration.

Debitage observed on-site, but outside of concentrations includes about 40 flakes of white and red chert. About 50% are middle-stage tertiary biface thinning flakes, approximately 25% are late-stage tertiary biface thinning, and approximately 25% are of unknown type. One small side-notched projectile point (PP1) and one mano (GS1) were also observed outside of concentrations.

During probing in 2006, 5 new chipped stone artifacts and 1 new groundstone (GS2) were observed on the surface; the chipped stone artifacts were 4 bifaces (CST2-CST5) and a corner-notched projectile point (PP1). Debitage was recovered from C-1. The debitage consists of 157 pieces, of which 97% are chert, with the remaining 3% chalcedony. Cortex is present on 3% of the debitage. In all, 157 pieces of debitage were recovered from C-1. These flakes measure more than 1/4 inch and less than 2 inches in size; it appears that the middle stages of biface reduction and tool maintenance are represented in C-1. In all, 86% of the debitage was recovered from subsurface strata. See Continuation Form for debitage summary.

During 2007 surface collection and excavations approximately 4,523 flakes were recovered from the 22 units dug. Nine bifaces (FS#s 6, 44, 71, 122, 159, 166, 201, 292, and 1005), nine utilized flakes (FS#s 136-1, 136-2, 137-1, 137-2, 137-3, 139-1, 148-1, 148-2, and 154), two scrapers (FS#s 8 and 139-2), two cores (FS#s 246 and 1253), one compound tool (FS# 238), one hammerstone (FS# 51), one mano (FS# 107), and one grinding tool (FS#294) were also recovered. Eight additional flakes, one biface (FS# 1254), two metate fragments (FS#s 1250 and 1251) and an Eastgate Expanding Stem projectile point (FS# 1256) were recovered during site surface blading.

The obsidian biface (FS# 159) collected in 2007 was sourced and dated using obsidian hydration. It was successfully identified from the Browns Bench (NV/ID) source; however, it was weathered and could not be dated.

For artifact concentration and artifact UTM coordinates, see attached tables.

***8. Lithic Tools:**

#	Type	#	Type
1	Small Side-notched	1	Mano
9	Utilized/Modified Flake	10	Biface
2	Scraper	2	Metate
1	Eastgate Series	1	Unknown Ground Stone
1	Other Tool	2	Core
1	Hammerstone		

Describe: A total of 39 lithic tools were observed at 26EU1539 during SWCA's 2005, 2006, and 2007 visits to the site. Of the 39 tools observed, 30 were collected in 2007. With the exception of one projectile point observed in 2005, the remaining 8 observed tools may or may not have been collected during the 2007 fieldwork at the site. Since it is unclear whether or not these previously recorded artifacts are part of the 2007 artifact collection, they are not included in the total counts of tools at the site.

Three lithic tools were observed during the SWCA 2005 revisit of the site and do not appear to have been previously recorded by DRI or P-III.

PP1 is a small side-notched projectile point. It measures 3.0 cm long, 1.6 cm wide, and 0.4 cm in thickness, and has one tang missing. This artifact was not relocated during the 2006 and 2007 fieldwork at the site.

GS1 is a mano composed of a quartzite cobble that measures 10 cm long, 6.5 cm wide, and 5.4 cm thick. One side of the mano has been smoothed. This mano was not collected in 2006 but may be part of the 2007 artifact collection.

CST1 is a utilized flake located in C-2 on the northern side of the site. It is composed of red, white, and black mottled chert and measures 4.2 cm long, 2.7 cm wide, and 1.1 cm thick. This tool has been lightly flaked and retains some exterior cortex. This artifacts also was not collected in 2006, but may be part of the 2007 artifact collection.

Five new chipped stone artifacts and one new groundstone (GS2) were observed during the SWCA 2006 probing fieldwork (but not recovered during probing), consisting of four bifaces (CST2–CST5) and one corner-notched projectile point (PP1). All of the artifacts observed in 2006 may have been later collected as part of the 2007 fieldwork at the site.

GS2 is a coarse grained red sandstone two-hand mano, which measures approximately 14 cm long by 13 cm wide by 6 cm thick. GS2 exhibits minor use wear.

CST2 is a coarse grained, white chert, complete biface, which measures approximately 5.3 cm long by 4.2 cm wide by 0.6 cm thick. CST2 may be a projectile point preform with possible notching.

CST3 is a white and gray chert, lateral portion biface, which measures approximately 2.0 cm long by 1.6 cm wide by 0.4 cm thick. CST3 exhibits one utilized edge.

CST4 is a red and black chert, complete biface, which measures approximately 2.4 cm long by 1.4 cm wide by 0.4 cm thick. CST4 is a possible projectile point preform.

CST5 is a white chert, early stage biface, which measures approximately 4.2 cm long by 3.2 cm wide by 1.2 cm thick.

PP1 is coarse grained light pink chert unknown projectile point, which measures approximately 2.4 cm long by 2.2 cm wide by 0.4 cm thick. This artifact may be in the 2007 collection as a biface.

Twenty-three chipped stone tools, 2 cores, and 5 ground stone artifacts were collected during 2007 surface collections, excavations and site surface blading.

FS 6 is the midsection fragment of a stage 3 biface made from purple and dark red chert. It measures 3.4 cm long by 2.3 cm wide by 0.6 cm thick. It was collected from the ground surface.

FS 8 is a complete scraper of white chert material that exhibits perpendicular striations. It measures 3.8 cm long by 3.1 cm wide by 1.1 cm thick. It was collected from the ground surface.

FS 44 is the midsection or proximal end section of a biface made from white chert. It possibly represents a point perform. It measures 1.5 cm long by 1.1 cm wide by 0.3 cm thick. It was collected from the ground surface.

FS 51 is a hammerstone made from red, purple, and light brown mineralized arkosic sandstone. It displays moderate wear and battering marks. It measures 14.9 cm long by 13.5 cm wide by 6.1 cm thick. It was collected from the ground surface.

FS 71 is the midsection fragment of a biface made from pink and white chert. It measures 2.3 cm long by 1.9 wide by 0.5 cm thick. It was collected from the ground surface.

FS 107 is an incomplete, one-handed mano made from mottled red, pink, and white quartz and mica from a pegmatite vein. It exhibits moderate use wear. It measures 10.2 cm long by 7.1 cm wide by 6.3 cm thick. It was collected from the ground surface.

FS 122 is a fragment of a biface made from light gray chert. It measures 2.9 cm long by 1.6 cm wide by 0.5 cm thick. It was collected from the ground surface.

FS 136 consists of 2 modified flakes. One is a modified flakes made from white chert. It exhibits pressure flaking on its concave edge. It measures 3.1 cm long by 2.3 cm wide by 0.4 cm thick. The second is a modified flake made from white chert. It exhibits pressure flaking on one edge and use wear on the other. It measures 2.2 cm long by 1.3 cm wide by 0.3 cm thick. It was collected from the ground surface.

FS 137 consists of 3 modified flakes. The first is a modified flake made from white chert. It measures 3.3 cm long by 2.8 cm wide by 0.8 cm thick. The second is a modified flake made from white chert with red veins. It exhibits pressure flakes on its concave edge. It measures 2.7 cm long by 1.7 cm wide by 0.6 cm thick. The third is a modified flake made from white chert. It measures 2.2 cm long by 1.9 wide by 0.3 cm wide. It was collected from the ground surface.

FS 139 consists of a modified flake and a scraper. The modified flake is made from white chert. It measures 3 cm long by 2.2 cm wide by 0.4 cm thick. The scraper is made from white chert. It measures 2.8 long by 1.3 wide by 0.6 thick. It was collected from the ground surface.

FS 148 consists of 2 modified flakes. The first is made from brown and white chert. It measures 3.5 cm long by 1.7 cm wide by 0.4 cm thick. The second is made from white and brown chert. It measures 4.2 cm long by 3.7 cm wide by 0.9 cm thick. It was collected from the ground surface.

FS 154 is a modified flake made from pink and white chert. It measures 3.9 cm long by 2.3 cm wide by 0.7 cm thick. It was collected from the ground surface.

FS 159 is a biface fragment made from opaque black obsidian. It measures 1.3 cm long by 1.1 cm wide by 0.3 cm thick. It was collected from the ground surface.

FS 166 is a biface fragment made from white chert. It measures 3.7 cm long by 2.5 cm wide by 1.2 cm thick. It was collected from the ground surface.

FS 201 is the midsection or proximal end section of a biface made from dark gray and brown chert. It measures 3.4 cm long by 3.1 cm wide by 0.9 cm thick. It was collected from the ground surface.

FS 238 is a complete compound tool made from white chert with crystalline inclusions. It measure 5.2 cm long by 4.2 cm wide by 0.9 cm thick. It was collected from the ground surface.

FS 246 is a random/expedient core made of white chert. It measures 5.0 cm long by 2.9 cm wide by 1.6 cm thick.

FS 292 is a biface fragment made from white chert. It measures 2 cm long by 1.7 cm wide by 0.4 cm thick. It was collected from the ground surface.

FS 294 is a grinding tool made from dark red brown, light weight intermediate lava, possibly dacite. It exhibits moderate use wear, primarily along one edge of the stone. It measures 8.8 cm long by 8.4 cm wide by 5.7 cm thick. It was collected from the ground surface.

FS 1005 is the midsection fragment of a biface made from reddish-brown chert. It measures 1.9 cm long by 1.9 cm wide by 0.5 cm thick. It was collected from an excavation unit.

FS 1250 is a flat metate fragment made from light brown, brown-gray, orange, and red intermediate lava, possibly dacite. It exhibits moderate use wear on 3 separate surfaces, and has been used in a secondary context as a chopper. It measures 12.9 cm long by 8.8 cm wide by 4.3 cm thick. It was collected during site surface blading.

FS 1251 is a flat metate fragment made from orange and dark red intermediate lava, possibly dacite. It exhibits moderate use wear on 1 surface. It measures 9.8 cm long by 7.4 cm wide by 3.4 cm thick. It was collected during site surface blading.

FS-1253 is a random/expedient core made of white chert. It measures 5.6 cm long by 5.4 cm wide by 2.0 cm thick.

FS 1254 is a biface fragment made from white chert. It measures 2.9 cm long by 2.7 cm wide by 0.9 cm thick. It was collected during site surface blading.

FS 1256 is an incomplete projectile point made from white chert. It is classified as an Eastgate Expanding Stem, using Justice's classification (2002). Eastgate projectile points date from A.D. 700 to A.D. 1300, placing the occupation of Site 26EU1539 in the Maggie Creek phase. FS 1256 measure 2.1 cm long by 2.4 cm wide by 0.4 cm thick. It was collected from the ground surface. It was collected during site surface blading.

For artifact UTM coordinates and additional details, see attached tables.

***9. Lithic Debitage - Estimated Quantity:** 500+

Material Type: SWCA observed a variety of lithic material, including white, red, gray, black, pink, and mottled chert, red sandstone, and white Tosawihi Opalite.

Flaking Stages: **(0) Not Present** **(1) Rare** **(2) Common** **(3) Dominant**

Decortication: 1 **Secondary:** 3 **Tertiary:** 1 **Shatter:** 0 **Core:** 0

10. Maximum Density - # / sq m (all lithics): 8

***11. Ceramics Artifacts:**

#	Type	#	Type
0			

Describe: SWCA did not observed any ceramics at this site.

12. Maximum Density - # / sq m (ceramics): 0

***13. Non-Architectural Features (locate on site map):** *- See Guide for additional categories*

#	Type	#	Type	#	Type
0					

Describe: SWCA did not observe any non-architectural features at this site.

***14. Architectural Features (located on site map):**

Part B - Prehistoric Sites

Site No: 26EU1539update

#	Material	Type	#	Material	Type
0					

Describe: SWCA did not observe any architectural features at this site.

15. Comments / Continuations:

References cited:

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Part C - Historic Sites

Site No:

1. Site Type:

***2. Historic Themes:**

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***3. Culture:**				

Describe:

***4. Oldest Date:** **Recent Date:**

How Determined:

5. Site Dimensions: m **X** m ***Area:** sq. m ☐ If checked, area was determined by GIS

***6. Surface Collection/Method**

Sampling Method

***7. Estimated Depth of Cultural Fill:**

How Estimated

(If Tested, show location on site map)

***8. Excavation Status:**

Testing Method:

***9. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Describe:

10. Ceramic Artifacts:

a. Estimated Number of Ceramic Trademarks:

Describe:

11. Glass:

Describe:

12. Maximum Density - #/sq m (glass and ceramics):

13. Tin Cans:

Describe:

***14. Landscape and Constructed Features (locate on site map)** - *See Guide for additional categories*

#	Type

Part C - Historic Sites

Site No:

Describe:

***15. Buildings and Structures (locate on site map):**

#	Material	Type	#	Material	Type

Describe:

16. Comments/Continuations - Please make note of any Historic Record searches performed *for example - (County Records, General Land Office, Historic Society, Land Management Agency Records, Oral Histories/Interviews)*

1990

IMACS ENCODING FORM

Encoder's Name M. Cannon

To be completed for each site form.
For instructions and codes, see IMACS Users Guide.

A

Field	Value
1 State Site Number	26EU1539update
2 Agency Site Number	CrNv - 12-7426
6 Agency Report Number	SWCA 2008-47
10 Elevation	5160
11 Zone / Easting / Northing	11 / 548214 / 4537113
13 Merid.	7
14 USGS Map	USGS Rodeo Creek NW, Nevada 7.5' Quad
17 Owner	LM

12

1/4	1/4	1/4	Sec.	T.		R.	
NW	SE	NW	22	36	N	49	E
SW	SE	NW	22	36	N	49	E

Field	Value
18 Forest	BB
Dist./Park	
19 Loc. Cur. Materials	CSM
21 Cond.	6
22 Impacts	CE, ER, DM
23 N.R.	D
26 Organ.	ST
28 Survey Date	07 - 20 - 08
29 Slope / Aspect	1 / 270
30 Water: dstance/type	1.2 / B
31 Geog. Unit	BIT
32 Topographic Location (1st / 2st)	E / P
33 Dep.	H
34 Vegetation (1 / 2 / 3)	5 / P / P / O
35 Misc. Text, Site Name	GPS data collected in NAD83.

B

Field	Value
2 Culture/Dating Method	FR / N
3 Area	17,228
4 Collect	D
5 Depth	B
6 Excav. Status	A
7 Prehistoric Artifacts	LS, GS
9 # / Flaking Stages	F / 1 3 1 0 0
11 Ceramics: #/type	0
13 Features: # / type	0
14 Architecture: # / material / type	0

8 Lithic Tools: # / type

#	type	#	type
1	ZB	10	IG
1	NZ	2	IH
9	IA	2	MZ

C

2 Historic Themes | 3 Culture/Dating Method | 4 Dates | 5 Area | 6 Collect | 7 Depth | 8 Excav. Status | 9 Artifacts

14 Features: # / type | 15 Architecture: # / material / type

Printed on 8/12/2008 9:02:41 A

Table 1. UTM Coordinates (NAD83, Zone 11N) for Shovel Tests, Test Units, and Excavation Units at 26EU1539

Object	Northing	Easting
Shovel Test 1 (ST 1), center	4537311	548139
Shovel Test 2 (ST 2), center	4537321	548131
Shovel Test 3 (ST 3), center	4537321	548141
Test Unit 1 (TU 1), center	4537318	548132
Operation A (Op A), SW corner	4537220	548143
Operation B (Op B), SW corner	4537332	548157
Operation C (Op C), SW corner	4537211	548134
Operation D (Op D), SW corner	4537246	548135
Operation E (Op E), SW corner	4537242	548133
Operation F (Op F), SW corner	4537093	548134
Operation G (Op G), SW corner	4537099	548135
Operation H (Op H), SW corner	4537281	548126

Table 2. UTM Coordinates (NAD83, Zone 11N) for Projectile Point (CST-PP), Chipped Stone Tools (CST), Chipped Stone Cores (CSC), and Ground Stone Artifacts (GS) from General Surface Collection and Mechanical Stripping at 26EU1539

Object	Northing	Easting
FS 6 (CST)	4537252	548141
FS 8 (CST)	4537264	548140
FS 44 (CST)	4537210	548123
FS 51 (GS)	4537282	548126
FS 71 (CST)	4537305	548103
FS 107 (GS)	4537350	548170
FS 122 (CST)	4537333	548117
FS 136 (CST)	4537292	548148
FS 139 (CST)	4537272	548170
FS 166 (CST)	4537099	548128
FS 201 (CST)	4537247	548130
FS 238 (CST)	4537112	548121
FS 246 (CSC)	4537108	548124
FS 292 (CST)	4537078	548121
FS 294 (GS)	4537100	548127
FS 1250 (GS)	4537346	548159
FS 1251 (GS)	4537342	548169
FS 1253 (CSC)	4537097	548120
FS 1254 (CST)	4537093	548136
FS 1256 (CST-PP)	4537101	548130

Table 3. Provenience of Chipped Stone Tools (CST) and Obsidian Chipped Stone Tool (CST-OBS) from Surface Collection Grids and Excavation at 26EU1539

Object	Provenience
FS 137 (CST)	Collection Grid 1, Unit B2
FS 148 (CST)	Collection Grid 1, Unit B2
FS 154 (CST)	Collection Grid 1, Unit A3
FS 159 (CST-OBS)	Collection Grid 1, Unit C4
FS 1005 (CST)	Excavation Unit C3, Level 1

Table 4. Counts of Chipped Stone Artifacts at Site 26EU1539

	Debitage	Tools	Cores	Total
26EU1539	4531	23	2	4556

Table 5. Debitage Material Type at Site 26EU1539

	Obsidian		Tosawihi		
Site	Count	Percent	Count	Percent	Total
26EU1539	0	0.00%	4531	100.00%	4531

Table 6. Tool Material Type at Site 26EU1539

	Obsidian		Tosawihi		
Site	Count	Percent	Count	Percent	Total
26EU1539	1	4.35%	22	95.65%	23

Table 7. Core Material Type at Site 26EU1539

	Tosawihi		
Site	Count	Percent	Total
26EU1539	2	100.00%	2

Table 8. Counts of Ground Stone Tools by Type at Site 26EU1539

Site	Flat Metate	Rectangular Mano	Rectangular, One-Hand Mano	Hammer-stone	Unknown Grinding Tool	Indeterminate	Total
26EU1539	2	0	1	1	1	0	5

Table 9. Counts and Percentages of Flake Types at Site 26EU1539

	Core Reduction		Biface Reduction		Biface Thinning		Pressure Flakes		Bipolar Reduction		Indeterminate		Total Number of Proximal Flakes	Total Number of all Flakes
	n	%	n	%	n	%	n	%	n	%	n	%	n	N
26EU1539	39	4.69	112	13.48	120	14.44	17	2.05	0	0.00	543	65.34	831	3683

Table 10. Counts and Percentage of Tool Types at Site 26EU1539

	Biface		Compound Tool		Knifelike Blade		Modified Flake		Projectile Point		Scraper		Total number of tools
	n	%	n	%	n	%	n	%	n	%	n	%	n
26EU1539	10	43.48	1	4.35	0	0.00	9	39.13	1	4.35	2	8.70	23

Table 11. Chipped Stone Tools Recovered at Site 26EU1539 During the 2007 BGMI Project and 2006 Probing

Site	FS#	Specimen#	Tool Type	Material	Completeness
26EU1539	6	1	Biface (Stage 3)	CCS	Incomplete
26EU1539	8	1	Scraper	CCS	Complete
26EU1539	44	1	Biface (Stage 4)	CCS	Incomplete
26EU1539	71	1	Biface (Stage 4)	CCS	Incomplete
26EU1539	122	1	Biface (Stage 4)	CCS	Incomplete
26EU1539	136	1	Modified Flake	CCS	Complete
26EU1539	136	2	Modified Flake	CCS	Complete
26EU1539	137	1	Modified Flake	CCS	Complete
26EU1539	137	2	Modified Flake	CCS	Complete
26EU1539	137	3	Modified Flake	CCS	Complete
26EU1539	139	1	Modified Flake	CCS	Complete
26EU1539	139	2	Scraper	CCS	Complete
26EU1539	148	1	Modified Flake	CCS	Complete
26EU1539	148	2	Modified Flake	CCS	Complete
26EU1539	154	1	Modified Flake	CCS	Complete
26EU1539	159	1	Biface (Stage 5)	Obsidian	Incomplete
26EU1539	166	1	Biface (Stage 1)	CCS	Incomplete
26EU1539	201	1	Biface (Stage 2)	CCS	Incomplete
26EU1539	238	1	Compound Tool	CCS	Complete
26EU1539	292	1	Biface (Stage 3)	CCS	Incomplete
26EU1539	1005	1	Biface (Stage 3)	CCS	Incomplete
26EU1539	1254	1	Biface (Stage 2)	CCS	Incomplete
26EU1539	1256	1	Projectile Point (Stage 5)	CCS	Incomplete

Table 12. Compound Tool and Scraper Measurements

Site	FS#	Specimen#	Raw Material	Material Description	Tool Type	Usewear	Max. Length (mm)	Max. Width (mm)	Max. Thickness (mm)	Weight (g)
26EU1539	8	1	CCS	White	Scraper	Perpendicular Striations	38.28	30.76	10.63	14.38
26EU1539	139	2	CCS	White	Scraper	Perpendicular Striations	27.75	13.33	5.88	2.85
26EU1539	238	1	CCS	White	Compound Tool	Absent	51.68	42.15	8.67	16.68

Table 13. Cores Recovered During the 2007 BGMI Project and 2006 Probing at Site 26EU1539

Site	FS#	Specimen#	Raw Material	Material Description	Core Type	Usewear	Max. Length (mm)	Max. Width (mm)	Max. Thickness (mm)	Weight (g)
26EU1539	246	1	CCS	White	Random/ Expedient	Absent	49.66	28.63	15.76	17.16
26EU1539	1253	1	CCS	White	Random/ Expedient	Indeterminate	55.92	54.15	20.4	69.99

Figure 1. Photograph of compound tool (FS# 238) from 26EU1539.

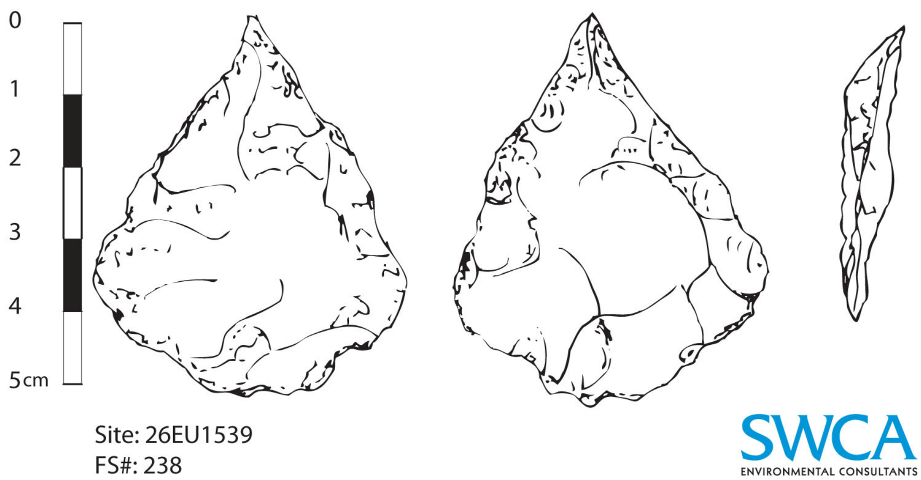


Figure 2. Illustration of compound tool (FS# 238) from 26EU1539.

Figure 3. Photograph of scraper (FS# 8) from 26EU1539.

Figure 4. Illustration of scraper (FS# 8) from 26EU1539.

Figure 5. Photograph of scraper (FS# 139) from 26EU1539.

Figure 6. Illustration of scraper (FS# 139) from 26EU1539.

Table 14. Ground Stone Artifacts from 26EU1539.

Site #	FS #	Artifact Type	Artifact Subtype	Length × Width × Thickness (mm)	Weight (g)	Material	Texture	Wear Level	Design	Primary Use	Secondary Use	Number of Battered Surfaces	Completeness
26EU1539	51	Percussion tool	Hammerstone	149.04 × 134.77 × 61.29	1477.9	Red, purple, and light brown mineralized arkosic sandstone	Intermediate	Moderate	Expedient	Battering	None	1	Complete
26EU1539	107	Grinding tool	Rectangular, one-hand mano	101.68 × 70.84 × 62.97	719.2	Mottled red, pink, and white pegmatite vein (quartz and mica)	Coarse	Moderate	Expedient	Grinding	Unknown	1	Incomplete
26EU1539	294	Grinding tool	Unknown	88.38 × 83.49 × 56.63	381.7	Dark red and brown, lightweight intermediate lava; possibly dacite	Smooth	Moderate	Expedient	Grinding	None	0	Incomplete
26EU1539	1250	Grinding tool / chopper	Flat metate	129.32 × 87.96 × 42.55	619.0	Light brown, brown-gray, orange, and red intermediate lava; possibly dacite	Smooth with small number of quartz inclusions	Moderate	Strategic	Grinding	Chopping	1	Incomplete
26EU1539	1251	Grinding tool	Flat metate	98.37 × 74.17 × 33.86	344.2	Orange and dark red intermediate lava; possibly dacite	Smooth	Moderate	Expedient	Grinding	None	0	Incomplete

GROUND STONE

Most of the ground stone artifacts collected during the 2007 BGMI project came from 26EU1539. Five were recovered from this site, three during surface collection and two during mechanical stripping. The ground stone artifacts from this site include two metate fragments, two manos, and one hammerstone.

A large, teardrop-shaped hammerstone (FS# 51) was recovered during surface collection approximately 20 m north of the road that crosses the site. The hammerstone displays percussion marks on one edge and is lightly ground on one side. It is a large rock; only a person with large hands could have effectively used it as a tool. There is a depression that could fit the thumb of a right-handed user; however, this appears to be natural. The material appears to be heavy, mineralized arkosic sandstone. Because no modification other than use wear has been made to this artifact, its design is classified as expedient.

A rectangular one-hand mano (FS# 107) was recovered during surface collection in the far northeastern corner of the site. The mano is almost complete, has been heavily ground on two sides, and displays pecking marks at one end. The material appears to be composed primarily of quartz crystals and mica, and is probably from a pegmatite vein. Because no modification other than use wear has been made to this artifact, its design is classified as expedient.

A one-hand mano fragment (FS# 294) was recovered during surface collection from the artifact concentration in the southern part of the site. It has been heavily ground on one side and along an edge, implying that it was modified by the user with a rocking stroke, rather than a flat stroke. It displays no obvious pecking marks and has a roughly wedge shape. The material appears to be lightweight intermediate lava of some sort, perhaps dacite. Because no modification other than use wear has been made to this artifact, its design is classified as expedient.

A metate fragment (FS# 1250) was recovered during blading in the far northeastern corner of the site, approximately 15 m west of the location where FS# 107 was found on the surface. The metate has been ground on two sides and on a third smaller surface adjacent at an oblique angle to one of the larger ground surfaces. No signs of pecking are present. One of the two large ground surfaces on this specimen is heavily polished and the other displays relatively deep striations. Although the fragment is too small for the original shape or size of the full metate to be determined, its thickness (more than 4.2 cm) indicates that it was a non-portable, flat metate. Non-portable metates are defined by Schmitt and Madsen (2005) as greater than 3.5 cm in thickness. The material appears to be intermediate lava. After breaking, this artifact was modified for a secondary use. A series of blows along the edge of one side, along with the small, angled ground surface, form a rough edge, indicating that the specimen was likely used as a chopper. This is the only tool in the 2007 BGMI project ground stone assemblage to display qualities of strategic design.

Finally, a metate fragment (FS# 1251) was recovered during blading in the far northeastern corner of the site, approximately 10 m south of the location where FS# 107 was found on the surface. The metate has been ground on one surface. No signs of pecking are present. The fragment is too small for the original size or shape of the metate to be determined. This specimen is 3.4 cm thick, just below Schmitt and Madsen's (2005) threshold for non-portable metates, but as such, and given its small size, it cannot be definitively considered to have come from a portable metate. The surface of the fragment suggests that it comes from a flat metate. The material appears to be intermediate lava. Because no modification other than use wear has been made to this artifact, its design is classified as expedient.

Table 15. Projectile Point from 26EU1539

Site Number	FS No.	Material	Holmer Classification	Thomas Classification	Justice Classification	Classification	Phase
26EU1539	1256	White chert	Elko Eared point	Rosegate Series point	Eastgate Expanding Stem point	Eastgate Expanding Stem point	Maggie Creek

PROJECTILE POINTS

One projectile point (FS# 1256) from 26EU1539 was classified as an Eastgate Expanding Stem point. Points of this type have been recovered from both Fremont- and non-Fremont-associated sites. Since Eastgate Expanding Stem points are not exclusively associated with the Fremont archaeological culture, they are not considered Fremont-style artifacts (Hockett and Morgenstein 2003; Justice 2002). The Eastgate Expanding Stem type is thought to have been an arrow point used in the hunting of both large and small game. The placement of the notch on the Eastgate points is at the base, which does not interrupt or change the original preform. In addition, the overall length of the point is not affected by the basal notch—unlike Rose Spring points, for example, which are side notched (Justice 2002:331).

The point classified as an Eastgate Expanding Stem type (FS# 1256) from 26EU1539 is a basal fragment manufactured from white chert with evidence of heat treatment. Based upon Holmer's statistical model, it classified as an Elko Eared point. Thomas's angle analysis placed this point in the Rosegate series, and a visual comparison with the typology provided by Justice narrowed it to the Eastgate Expanding Stem type. Results based on Holmer's statistical model were discarded upon visual comparison; Holmer's Elko Eared examples (Holmer 1978:33) are not similar in shape or form to this particular point. This point likely fell into the Elko Eared statistical range in Holmer's system by default because his system does not include the Rose Spring/Eastgate series.

In 2005, SWCA observed, but did not collect, a small side-notched point on the surface of 26EU1539 (Figure 7), suggesting that the site was occupied during the Eagle Rock Phase (Cannon and Stettler 2007). This point was not relocated during either 2006 or 2007, and for that reason it is not included in the analyses presented above. However, based on the photo and a visual comparison to the typology provided by Justice, it appears to be a Desert Side-notched point, a type that dates to the Eagle Rock Phase.

In 2007, SWCA collected an Eastgate Expanding Stem point (FS# 1256) found during mechanical stripping of 26EU1539 (Figure 8). This point suggests use of the site during the Maggie Creek Phase. Together, the two projectile points recovered at site 26EU1539 suggest that the site was occupied during both the Maggie Creek and Eagle Rock Phases.

Figure 7. Photograph of small side-notched point recorded at 26EU1539 in 2005.

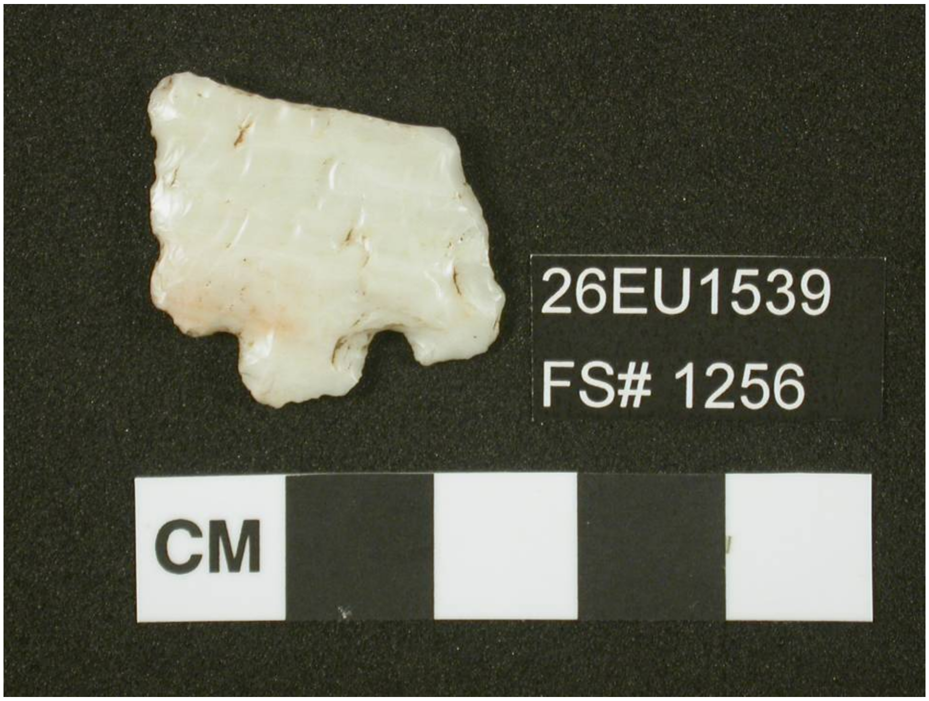
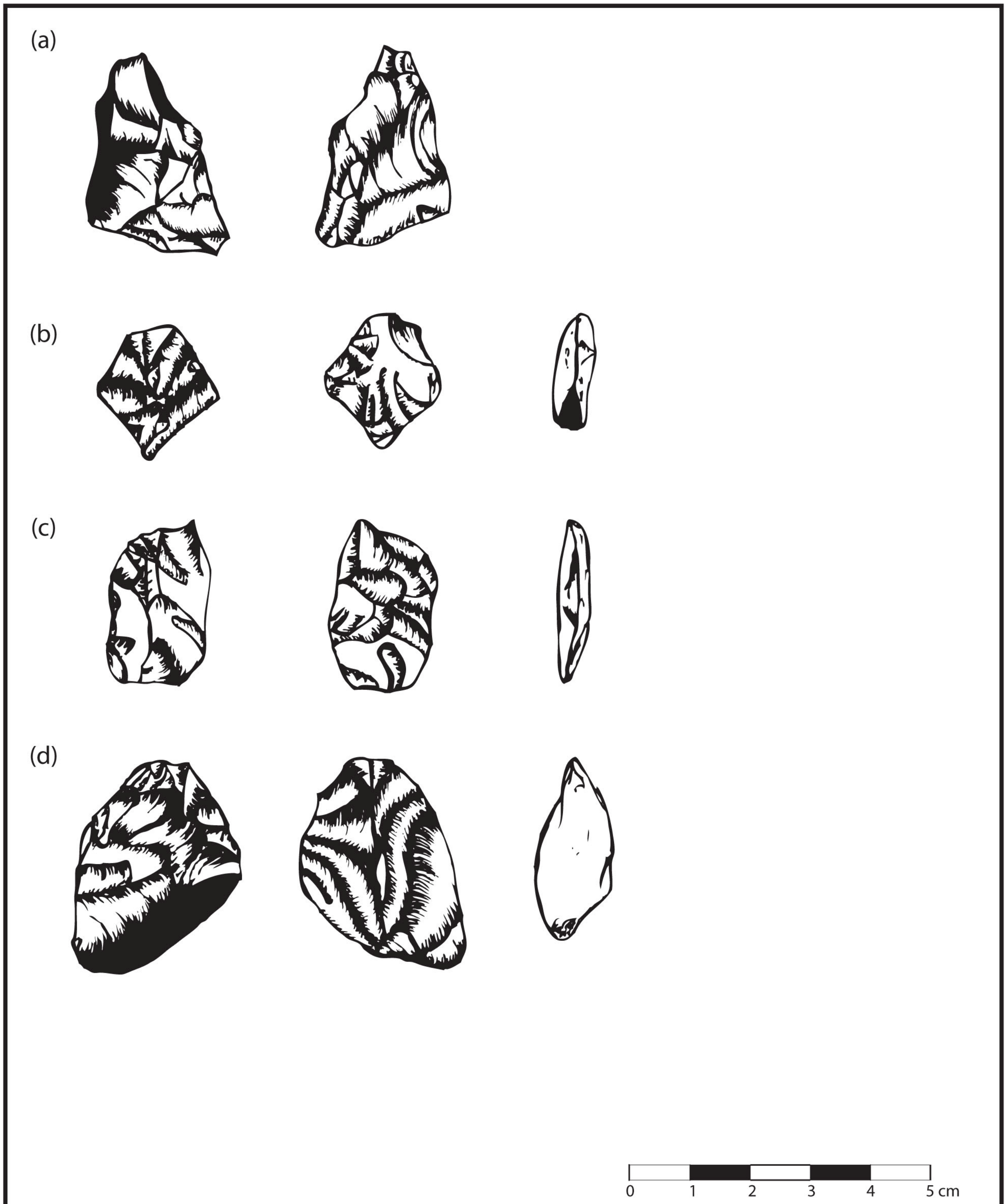


Figure 8. Photograph of Eastgate Expanding Stem point (FS# 1256) from 26EU1539.

Figure 9. Illustration of Eastgate Expanding Stem point (FS# 1256) from 26EU1539.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: Stage 4 bifaces (a) FS# 6, (b) FS# 71, (c) FS# 122; Stage 1 biface (d) FS# 166.

SWCA ENVIRONMENTAL CONSULTANTS

Figure 10. Illustrations of bifaces from 26EU1539.

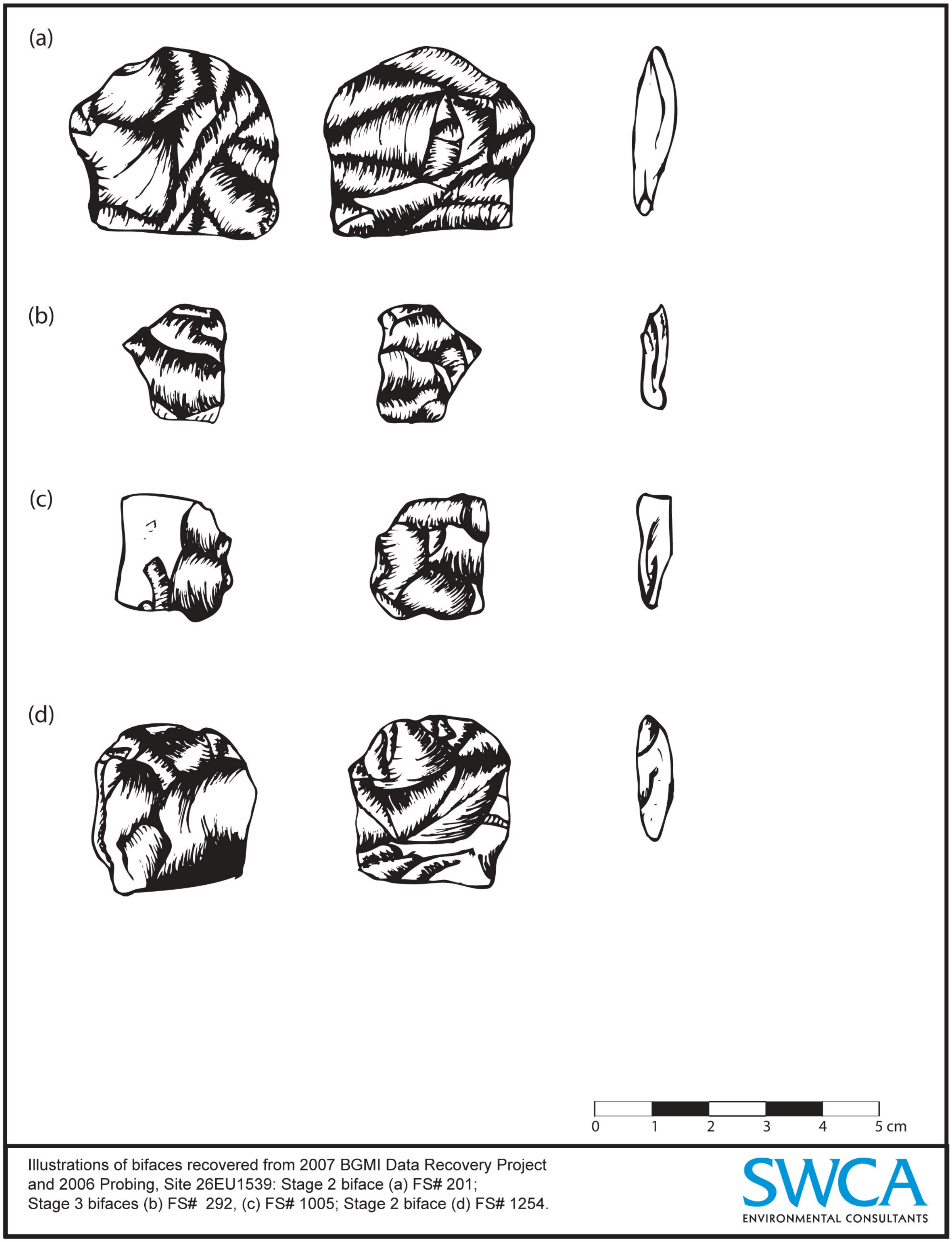
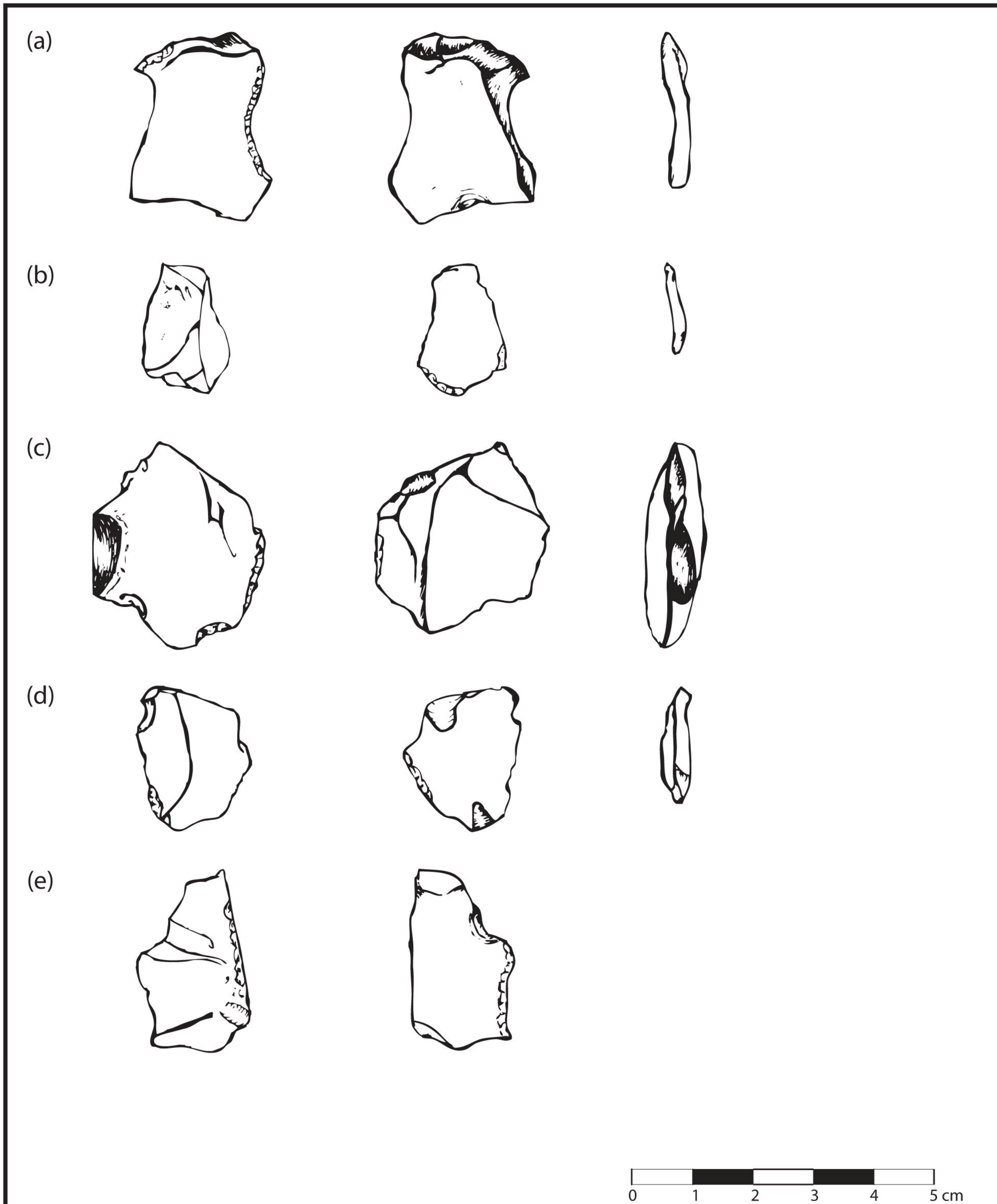


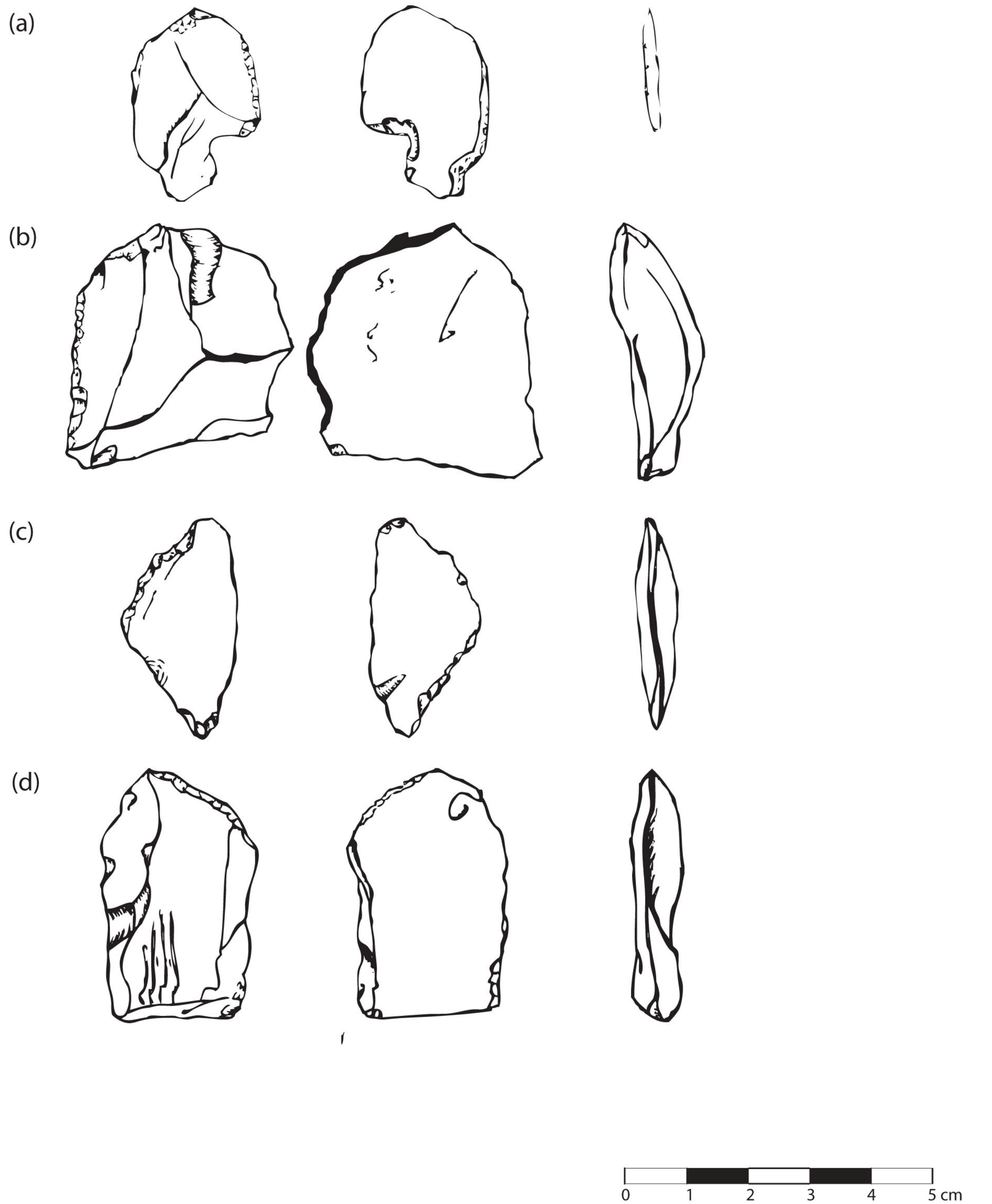
Figure 11. Illustrations of bifaces from 26EU1539.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: (a) FS# 136-1; (b) FS# 136-2; (c) FS# 137-1; (d) FS# 137-2; (e) FS# 137-3.

SWCA ENVIRONMENTAL CONSULTANTS

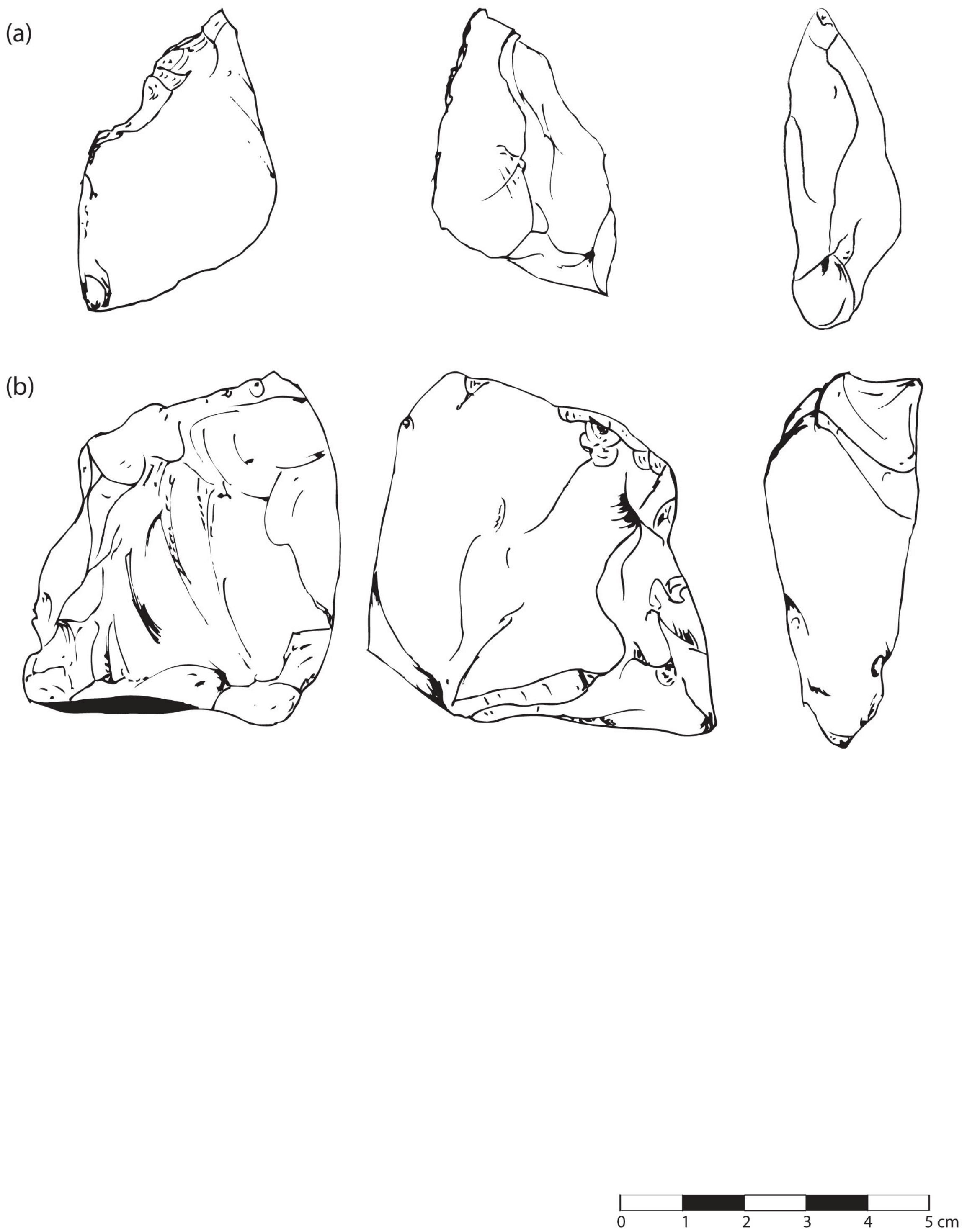
Figure 12. Illustrations of utilized flakes from 26EU1539.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: (a) FS# 139-1; (b) FS# 148-1; (c) FS# 148-2; (d) FS# 154.

SWCA ENVIRONMENTAL CONSULTANTS

Figure 13. Illustrations of utilized flakes from 26EU1539.



Illustrations of cores recovered from 2007 BGMI Data Recovery Project
and 2006 Probing, Site 26EU1539: (a) FS# 246, (b) FS# 1253.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 14. Illustrations of cores from 26EU1539.

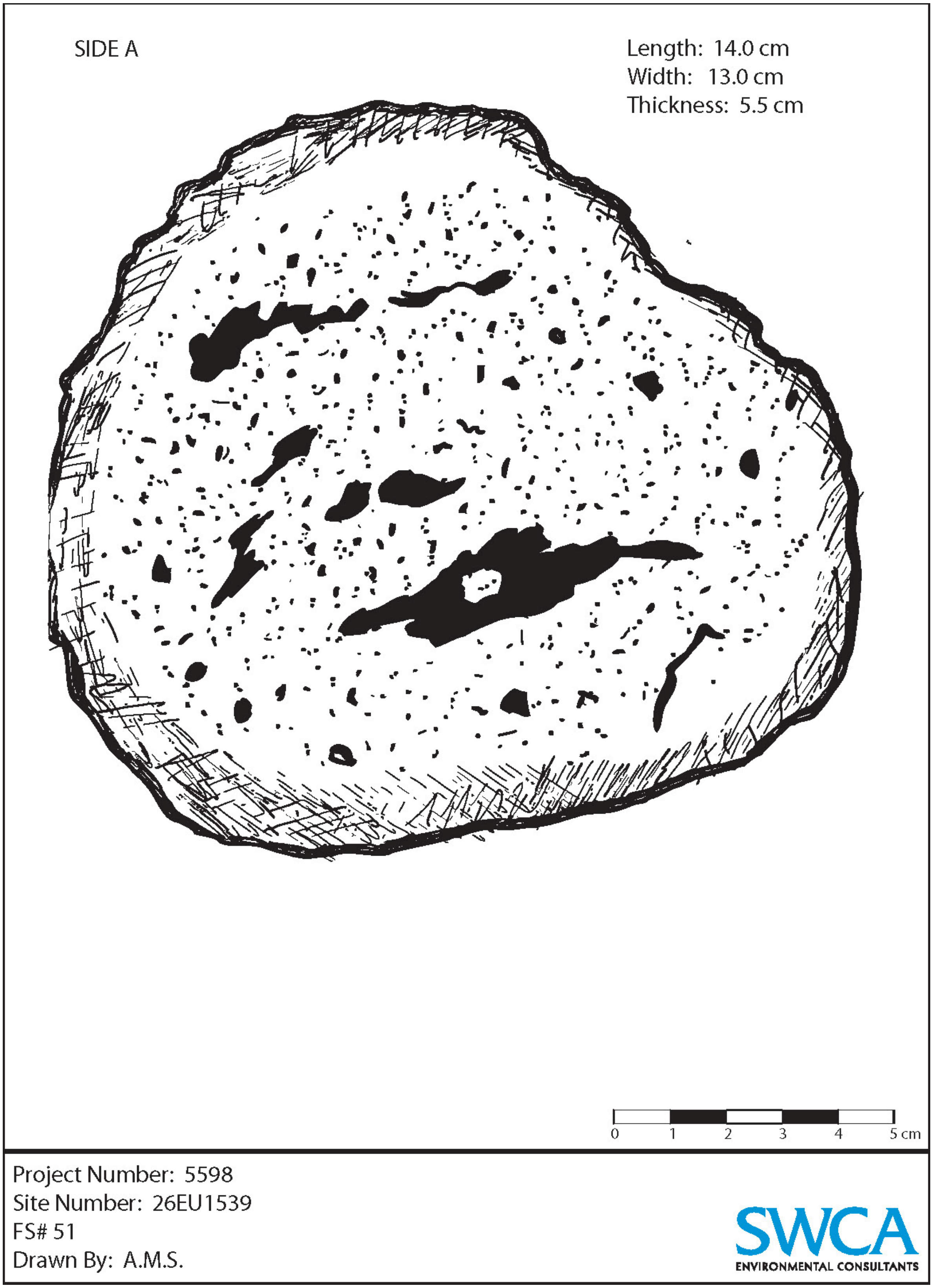


Figure 15. Illustration of side A of FS# 51 from 26EU1539.

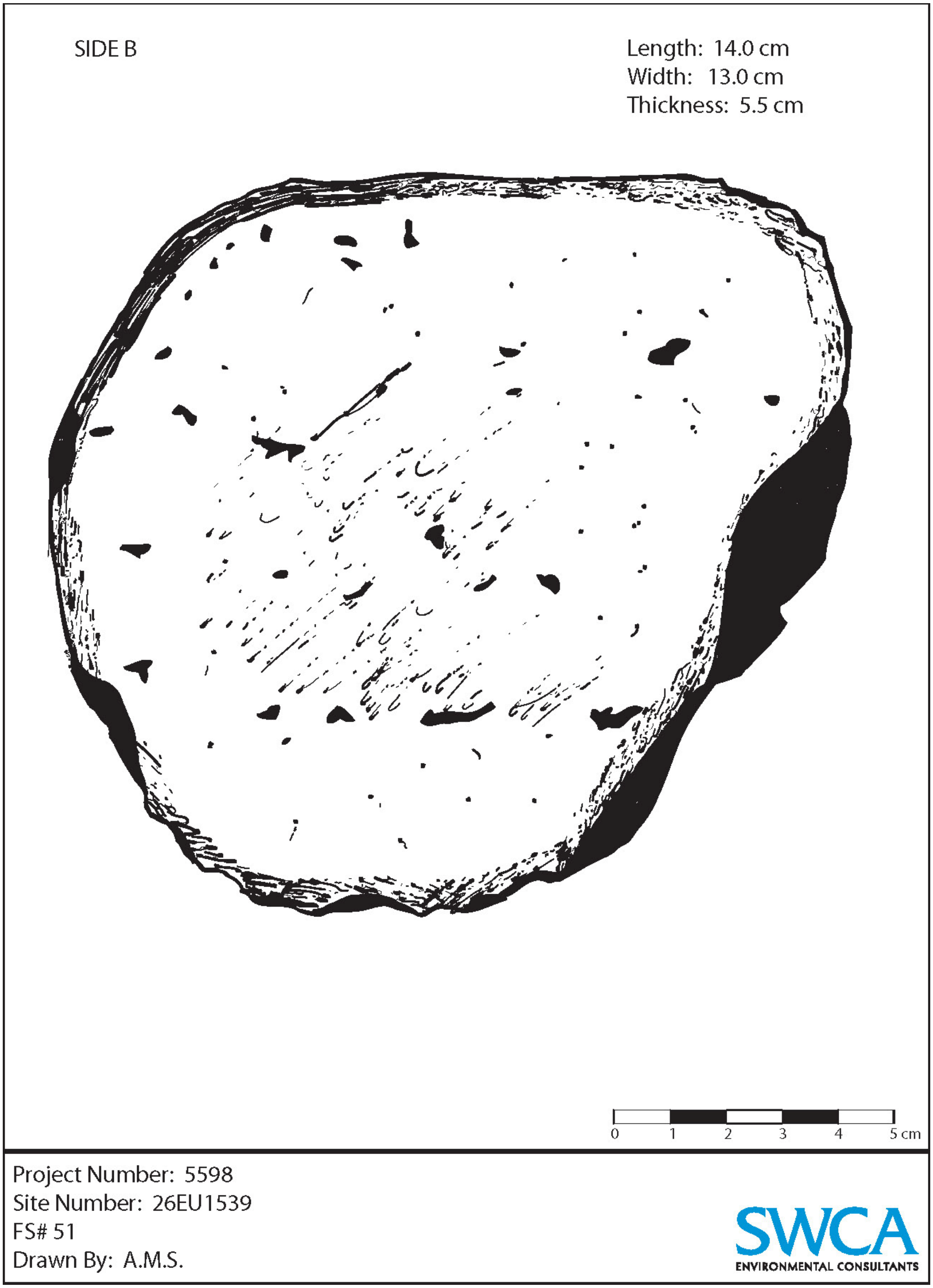


Figure 16. Illustration of side B of FS# 51 from 26EU1539.

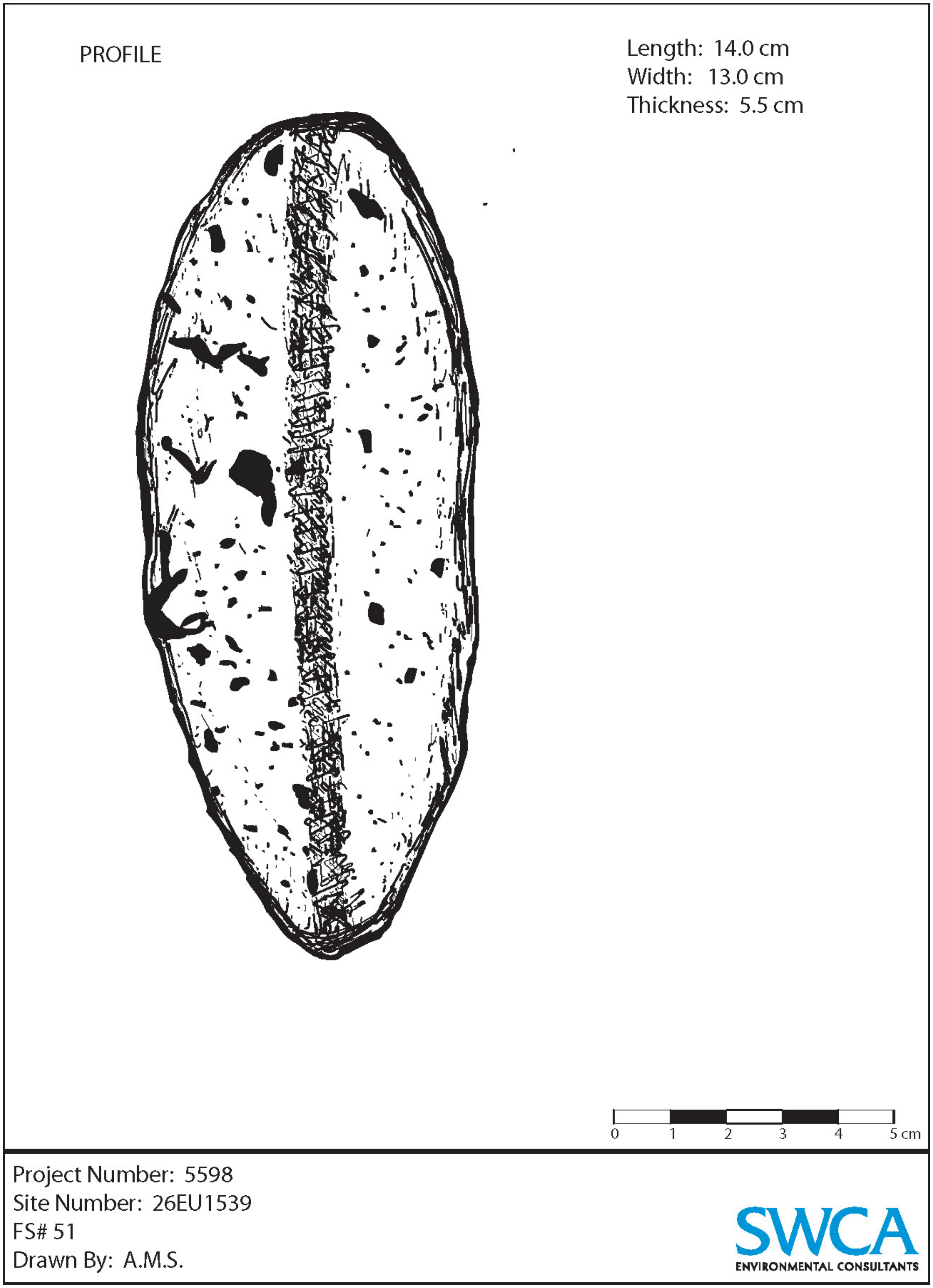


Figure 17. Illustration of profile of FS# 51 from 26EU1539.

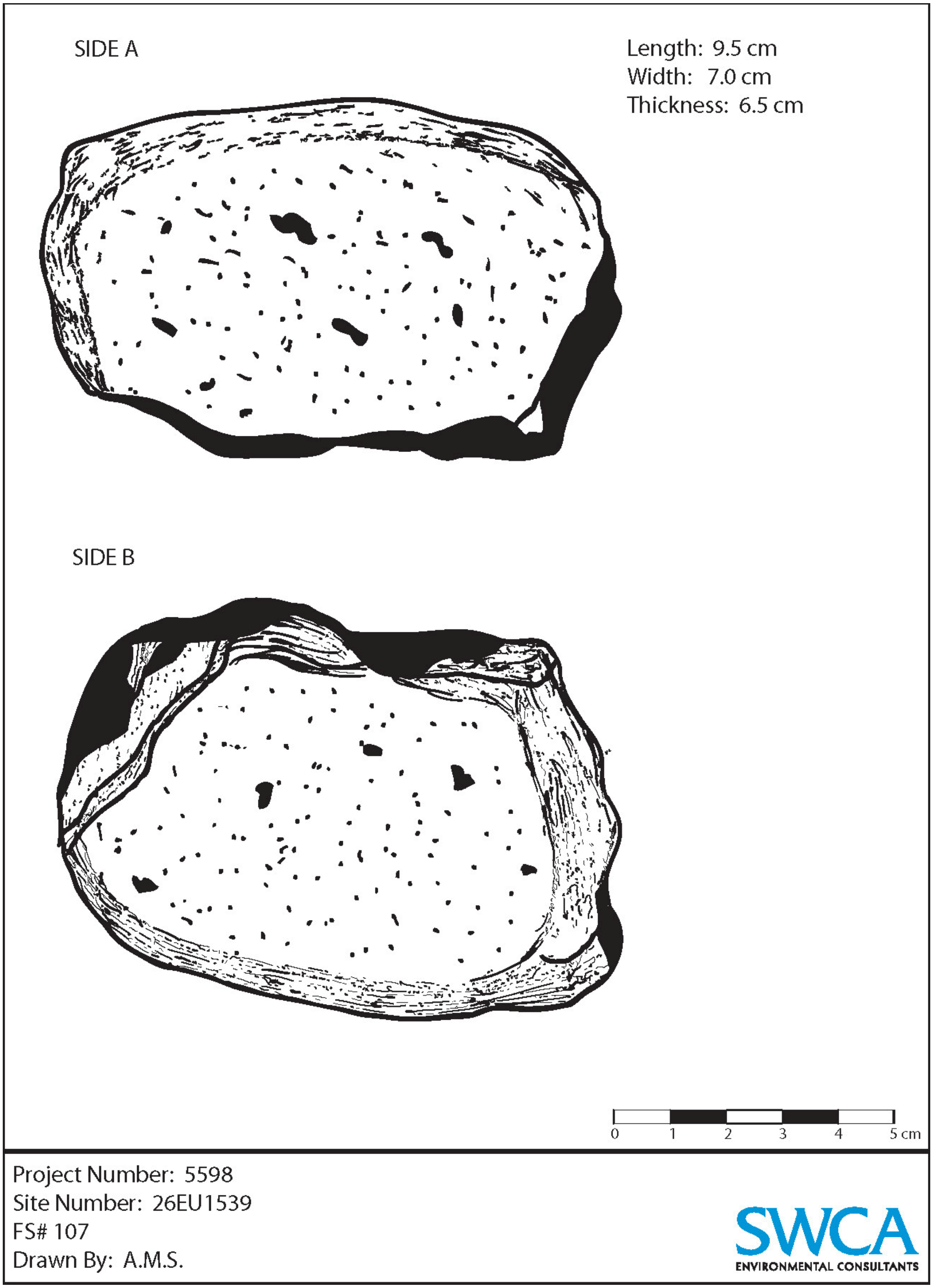
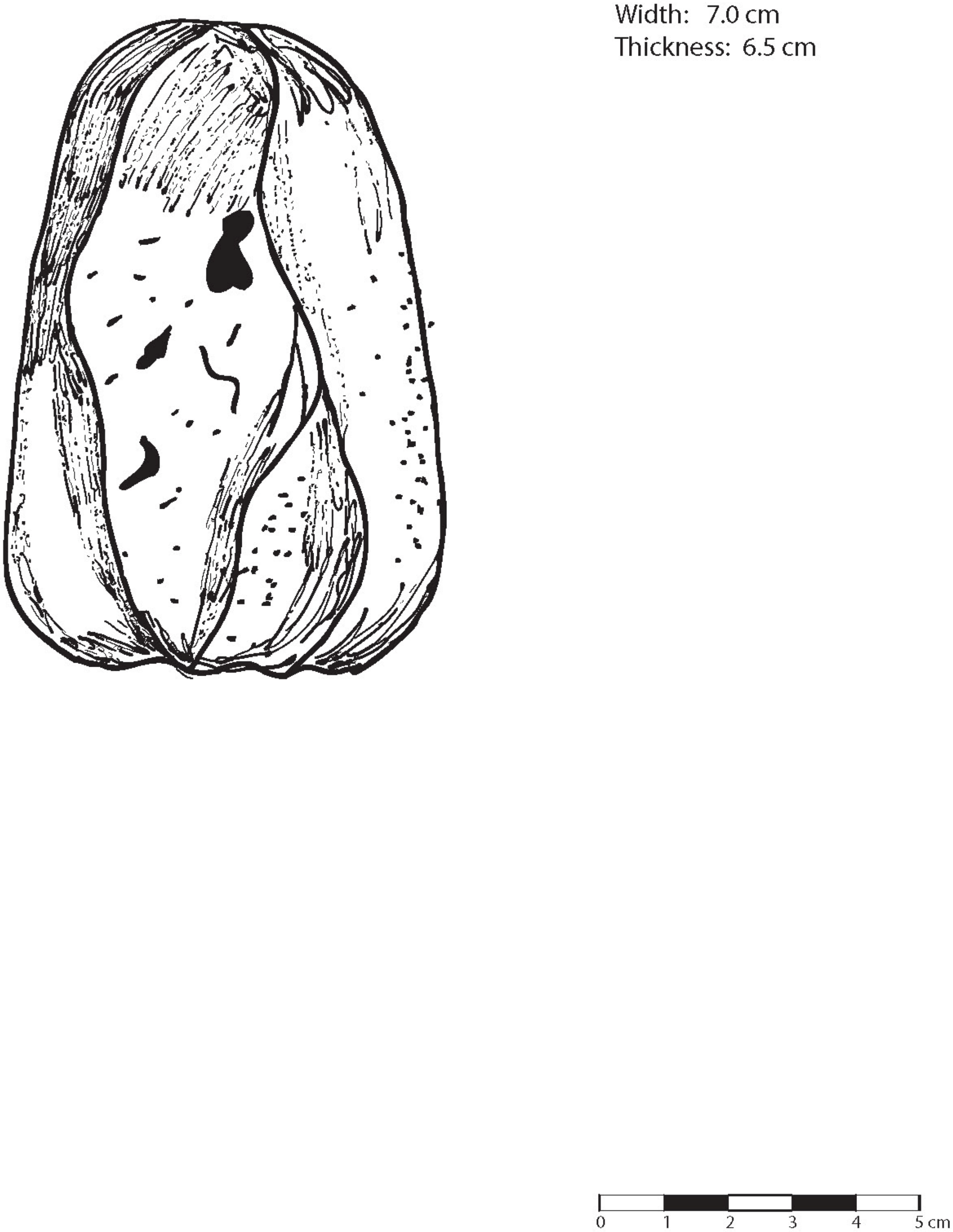


Figure 18. Illustrations of sides A and B of FS# 107 from 26EU1539.

PROFILE

Length: 9.5 cm
Width: 7.0 cm
Thickness: 6.5 cm



Project Number: 5598
Site Number: 26EU1539
FS# 107
Drawn By: A.M.S.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 19. Illustration of profile of FS# 107 from 26EU1539.

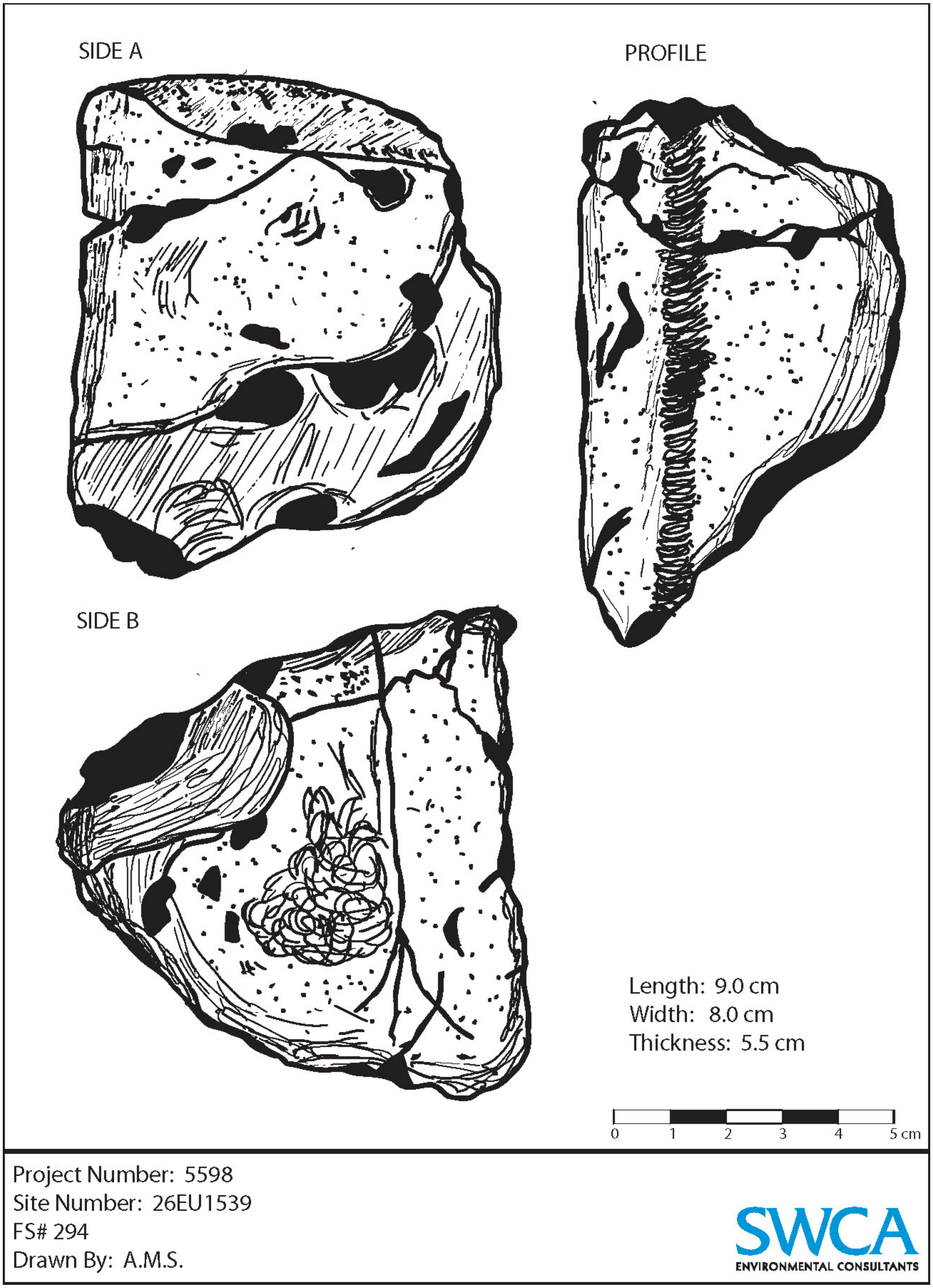


Figure 20. Illustrations of FS# 294 from 26EU1539.

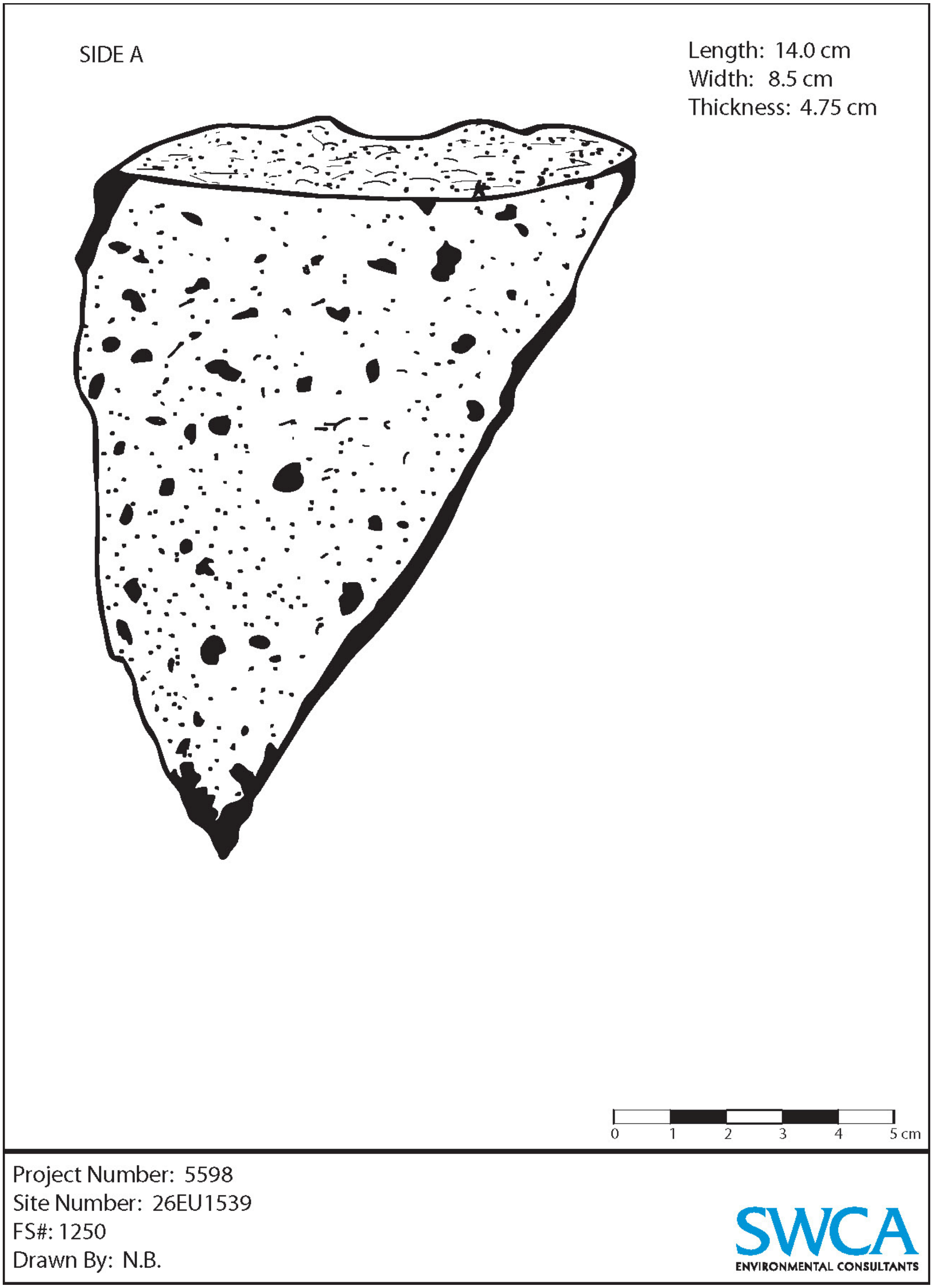


Figure 21. Illustration of side A of FS# 1250 from 26EU1539.

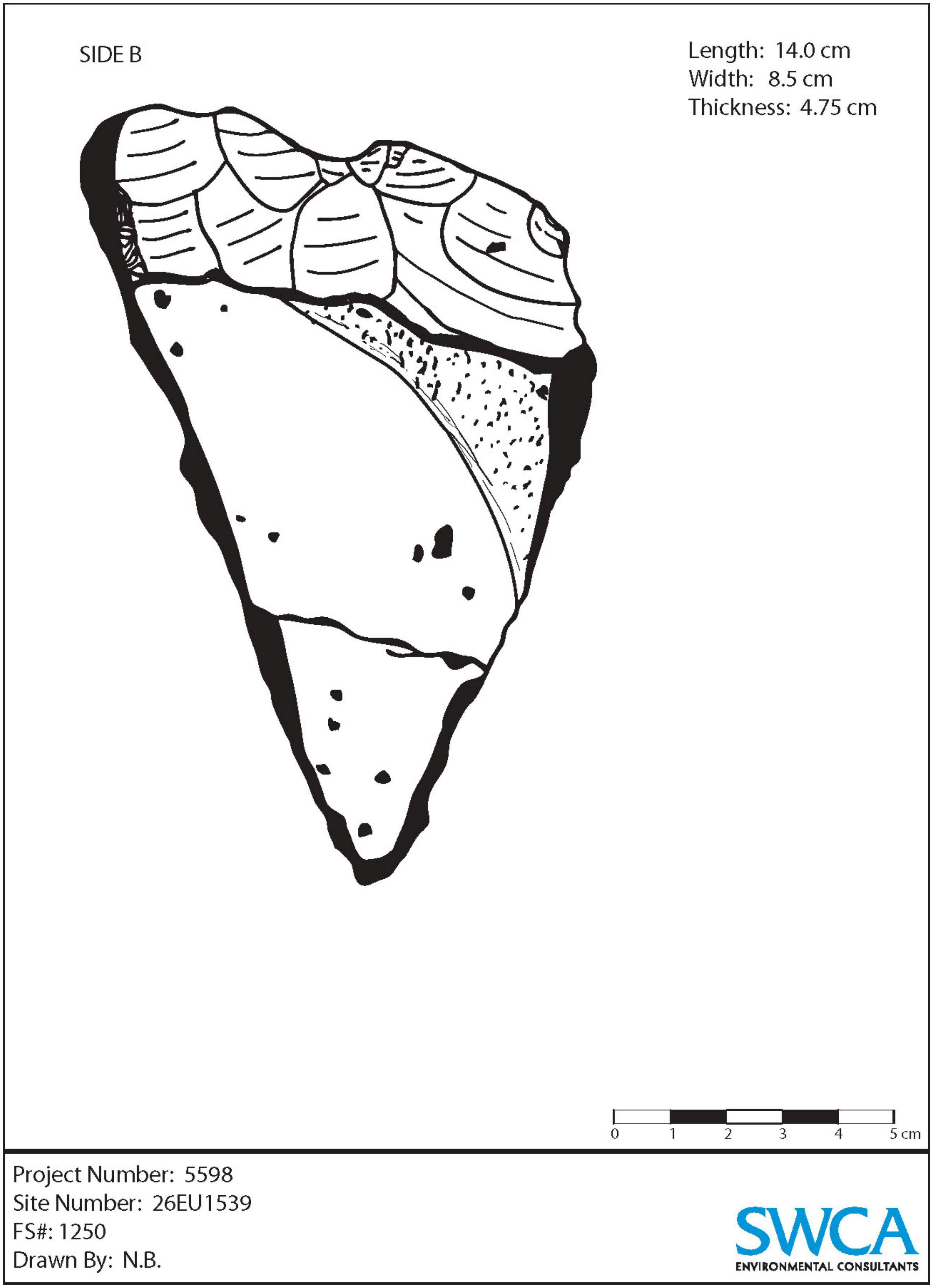


Figure 22. Illustration of side B of FS# 1250 from 26EU1539.

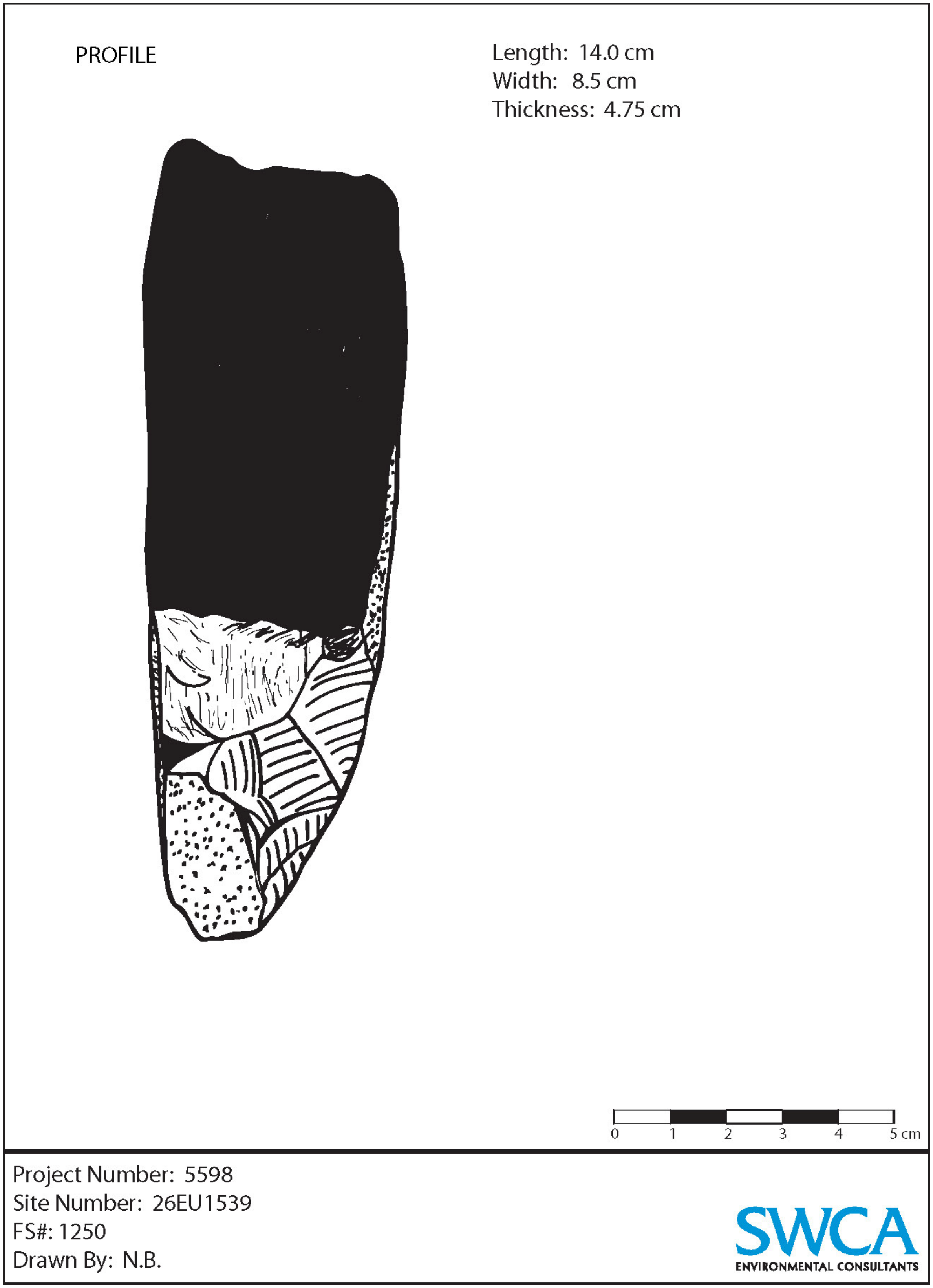
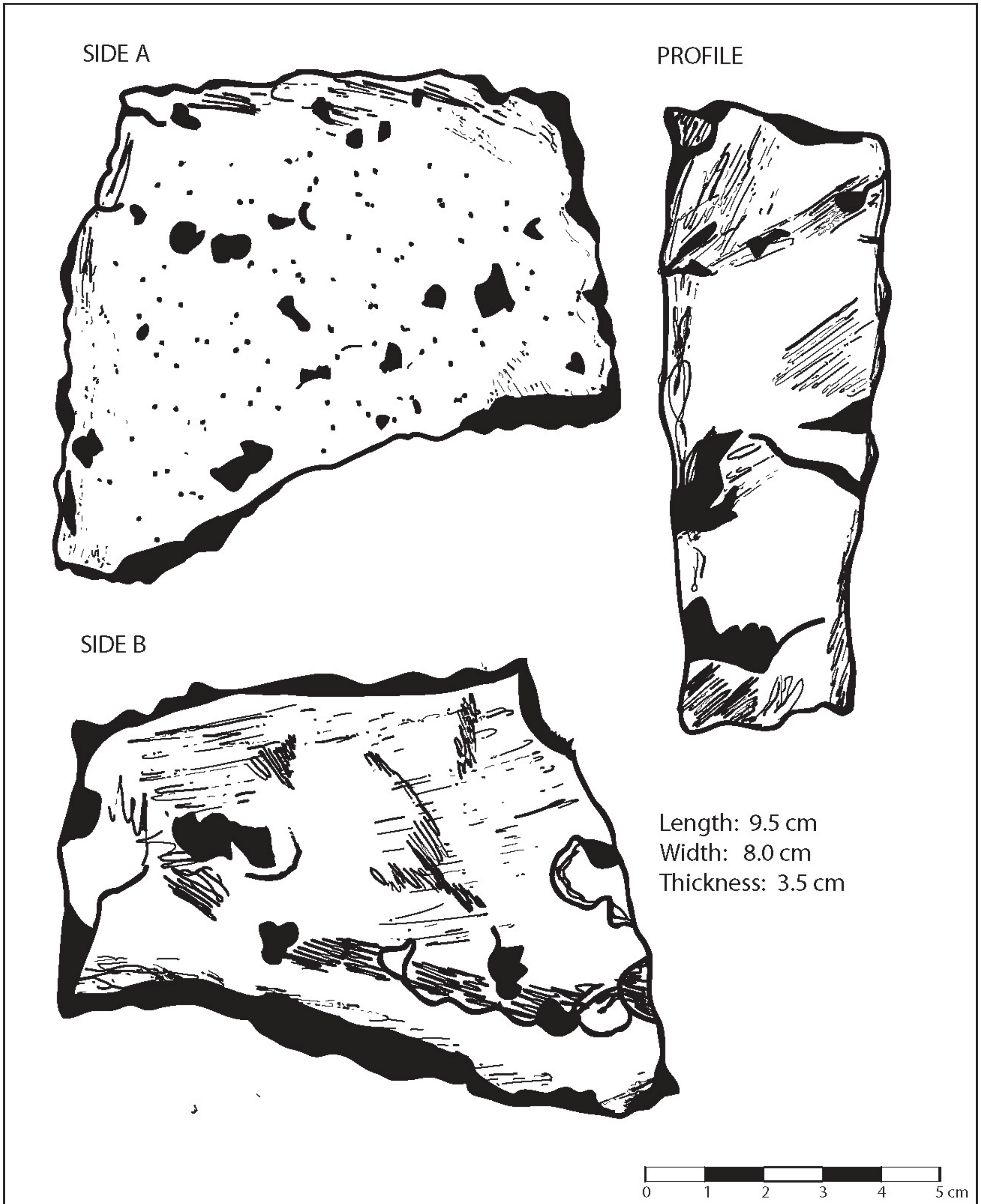


Figure 23. Illustration of profile of FS# 1250 from 26EU1539.



Project Number: 5598
Site Number: 26EU1539
FS# 1251
Drawn By: A.M.S.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 24. Illustrations of FS# 1251 from 26EU1539.

Figure 25. Overview of the site after mowing & staking for remote sensing; from road at east edge of site facing southwest.

Figure 26. Overview of the site after mowing & staking for remote sensing; from road at east edge of site facing west.

Figure 27. Overview of the site after mowing & staking for remote sensing; from road at east edge of site facing northwest.

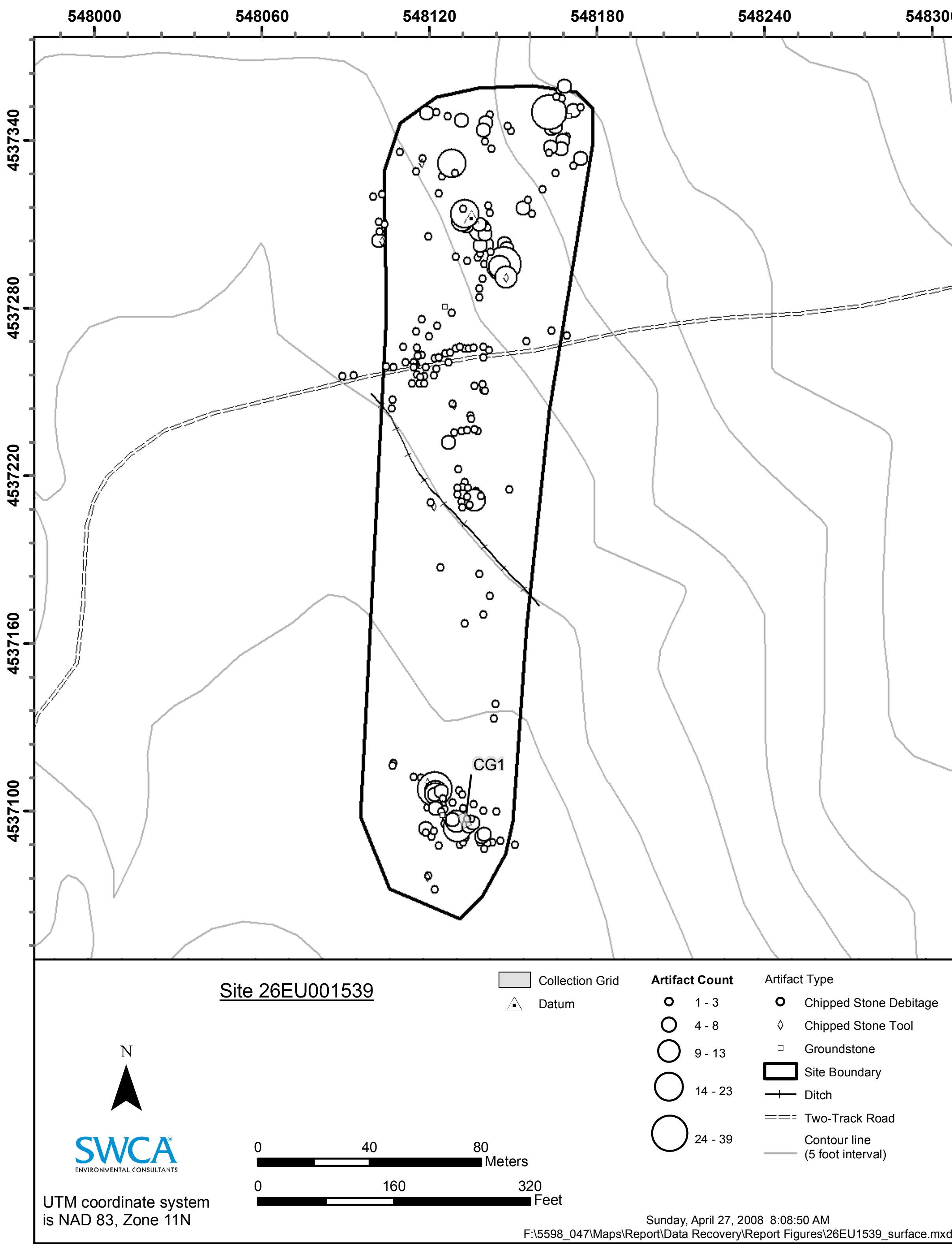


Figure 28. Results of surface artifact collection at 26EU1539.

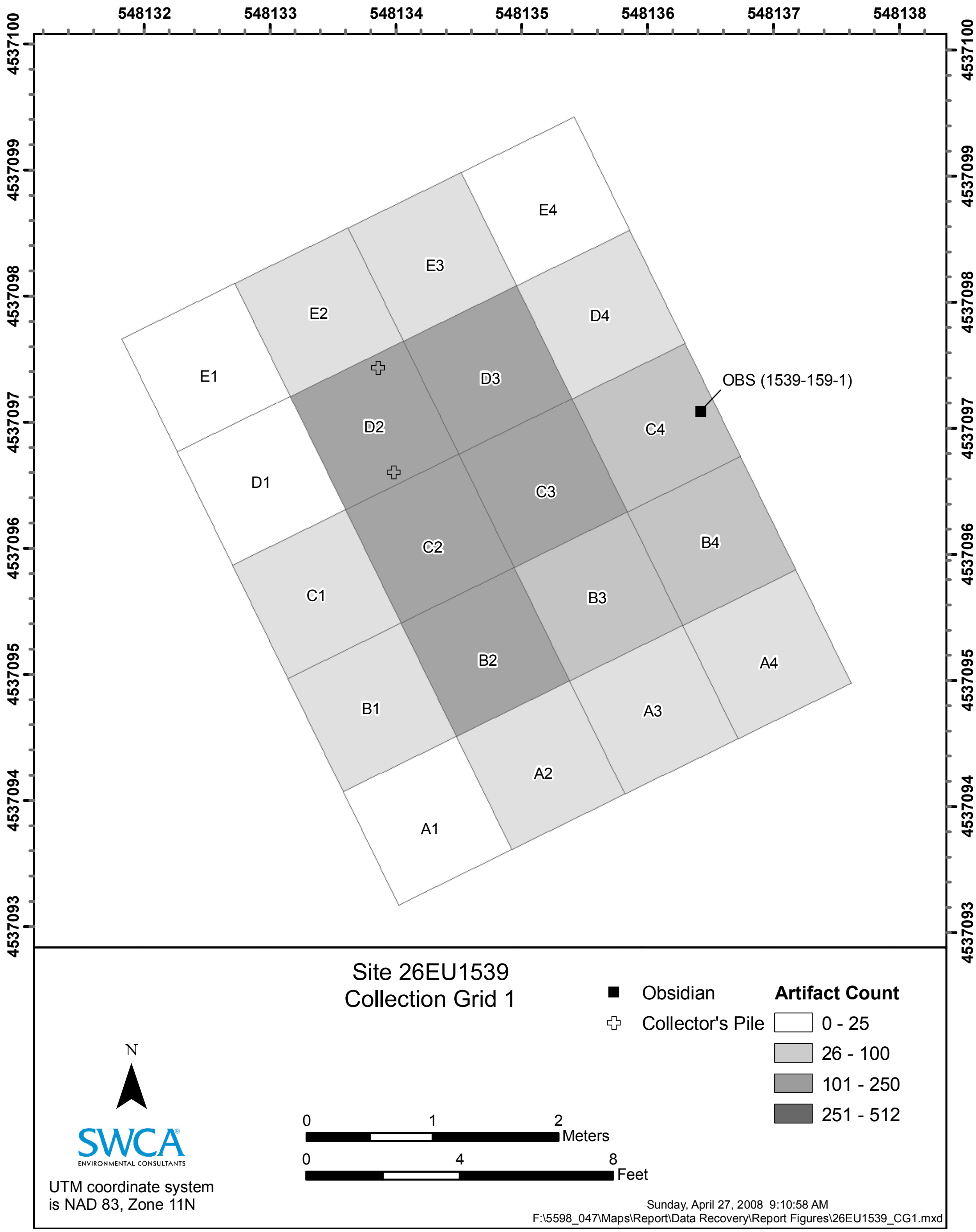


Figure 29. Collection Grid 1 at 26EU1539.

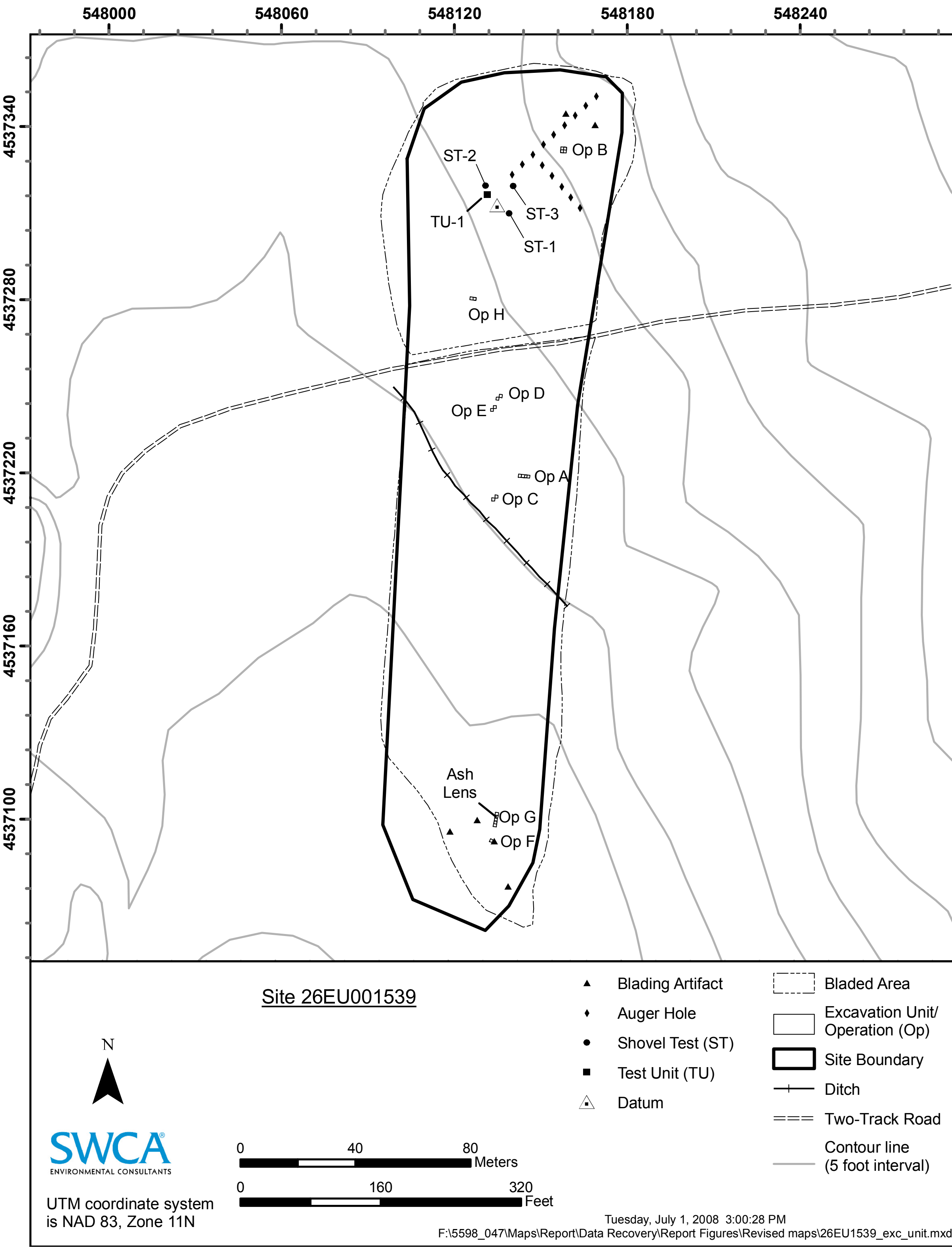


Figure 30. Locations of excavation units and extent of mechanical stripping at 26EU1539.

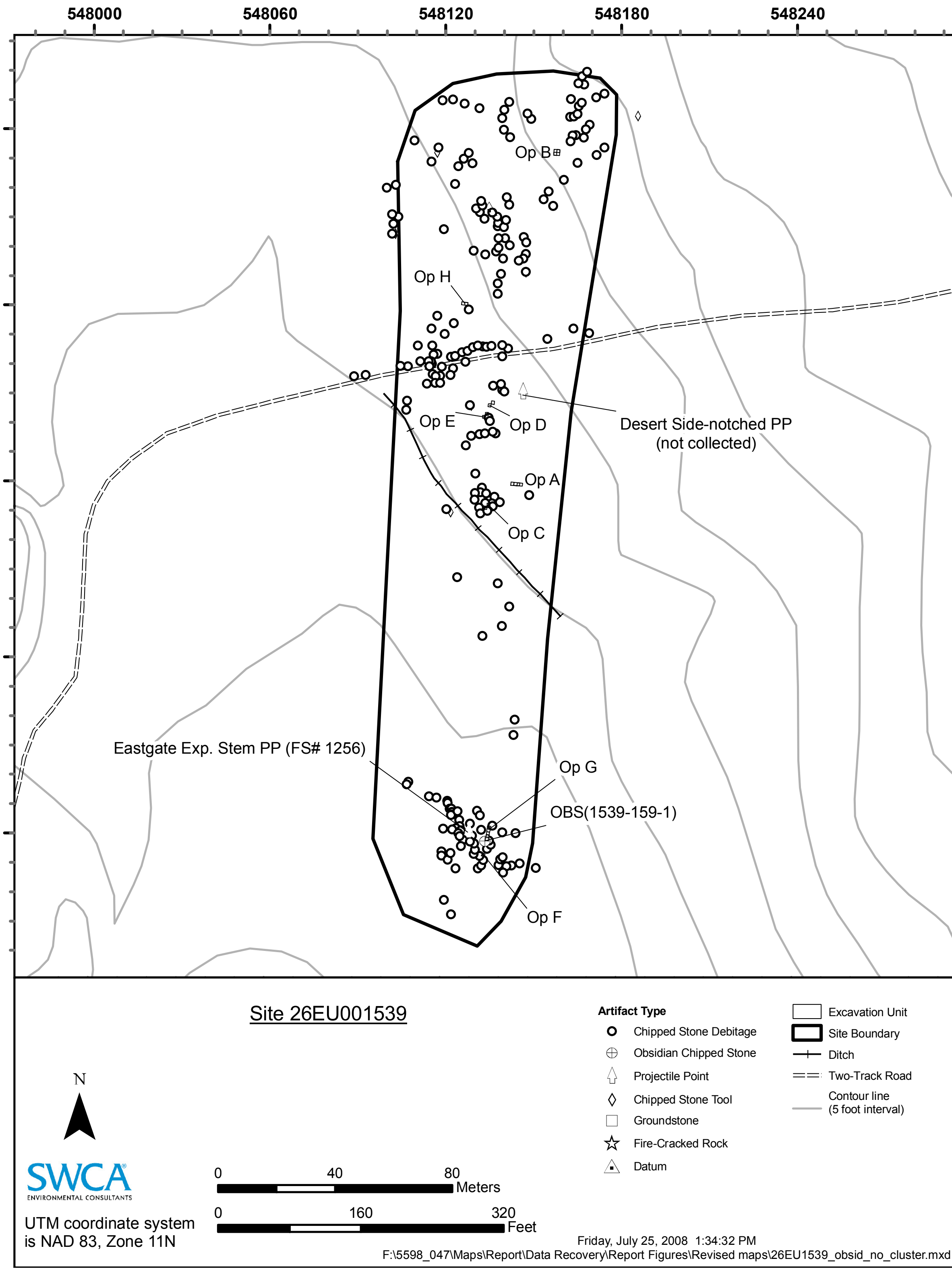


Figure 31. Location of the obsidian artifact and projectile points recovered from 26EU1539.

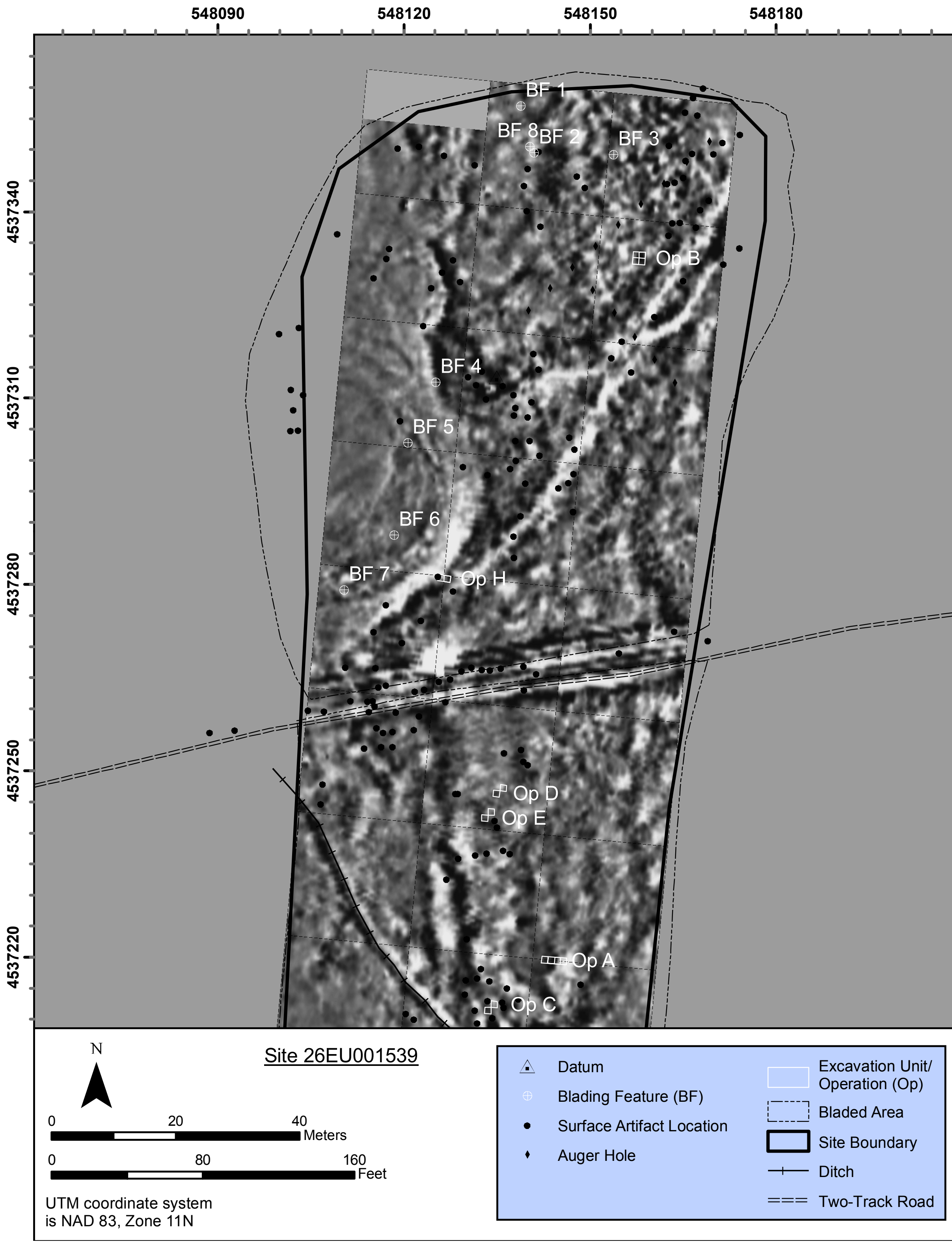


Figure 32. Magnetometer data from the northern portion of 26EU1539.

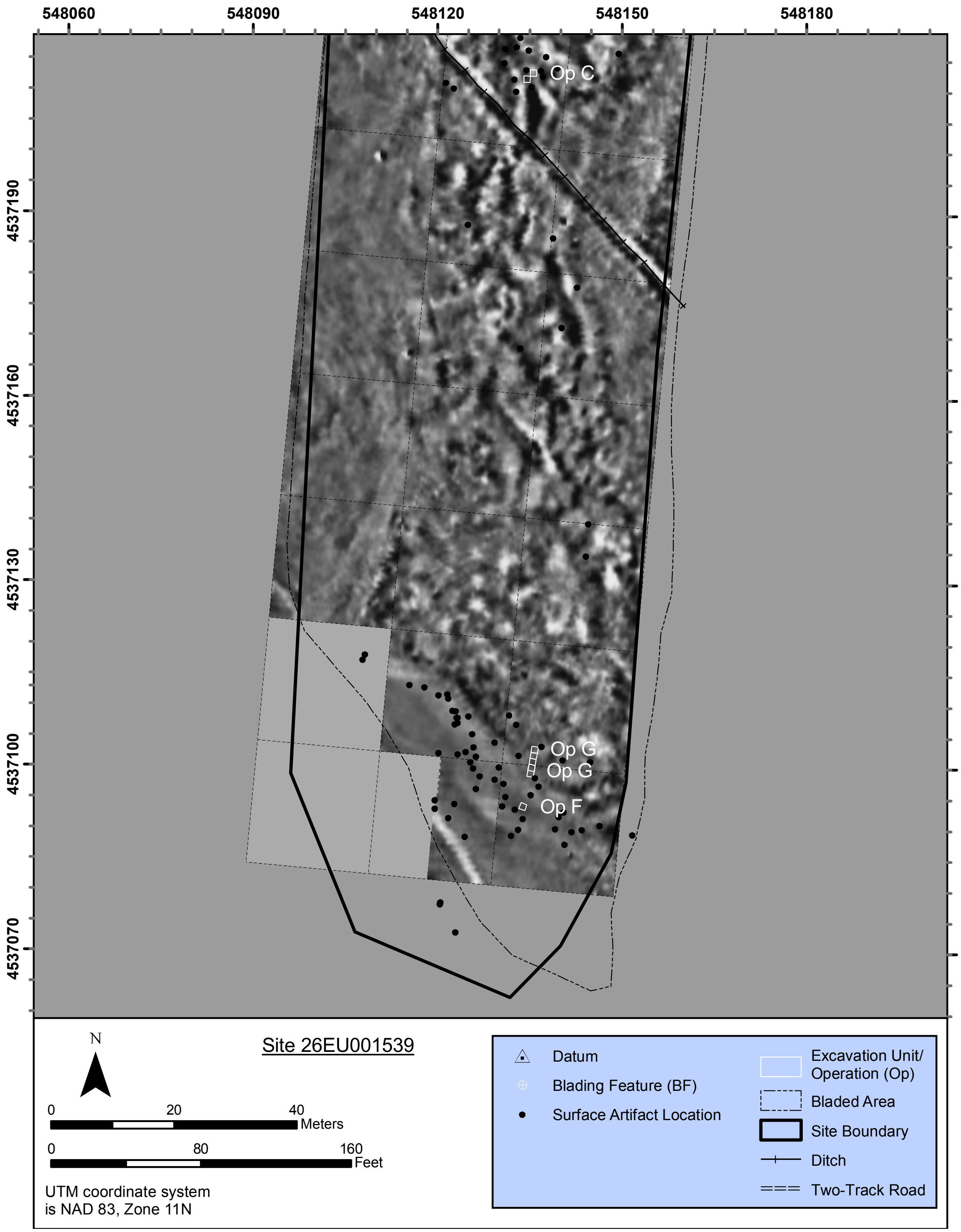


Figure 33. Magnetometer data from the southern portion of 26EU1539.

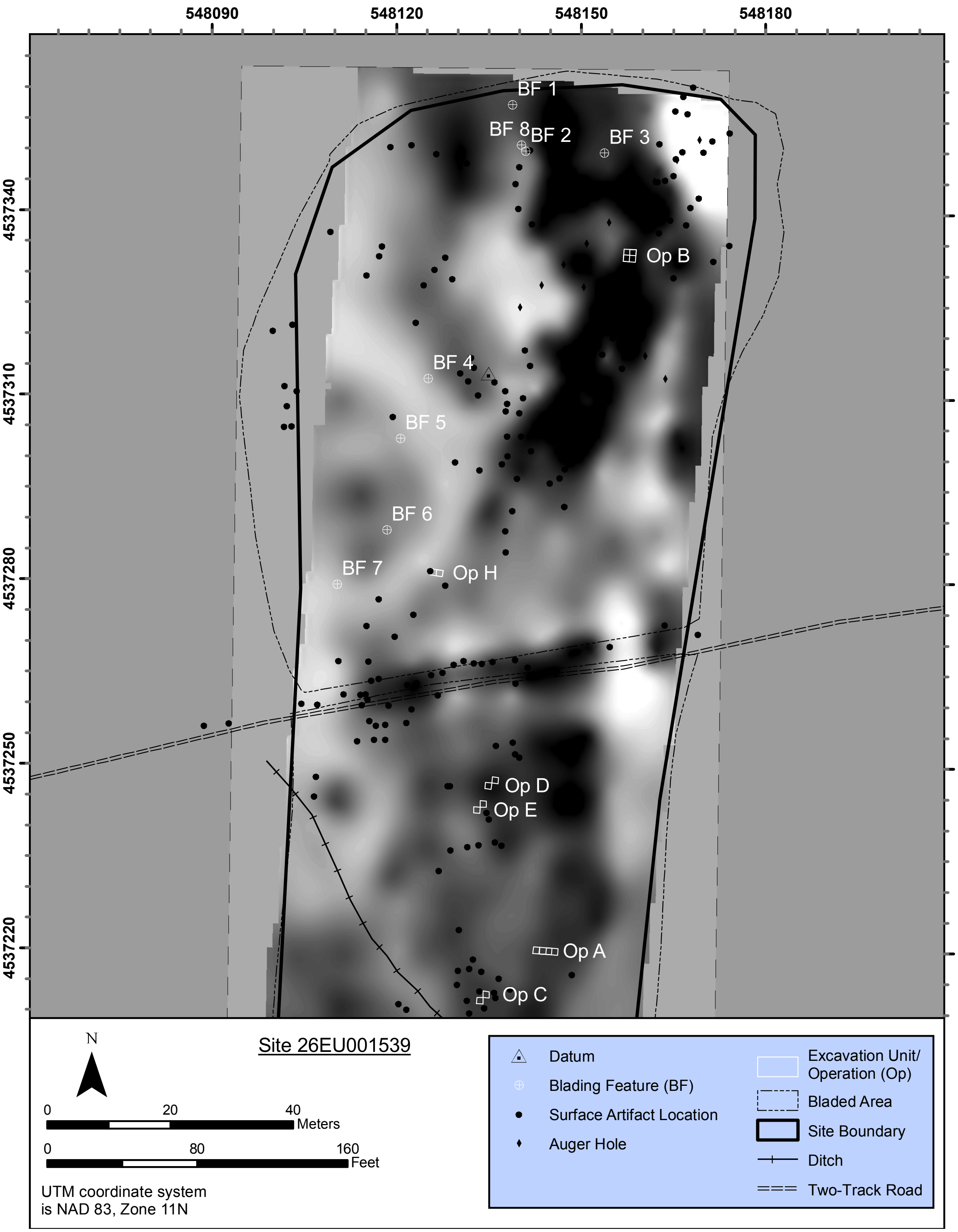


Figure 34. Conductivity data from the northern portion of 26EU1539.

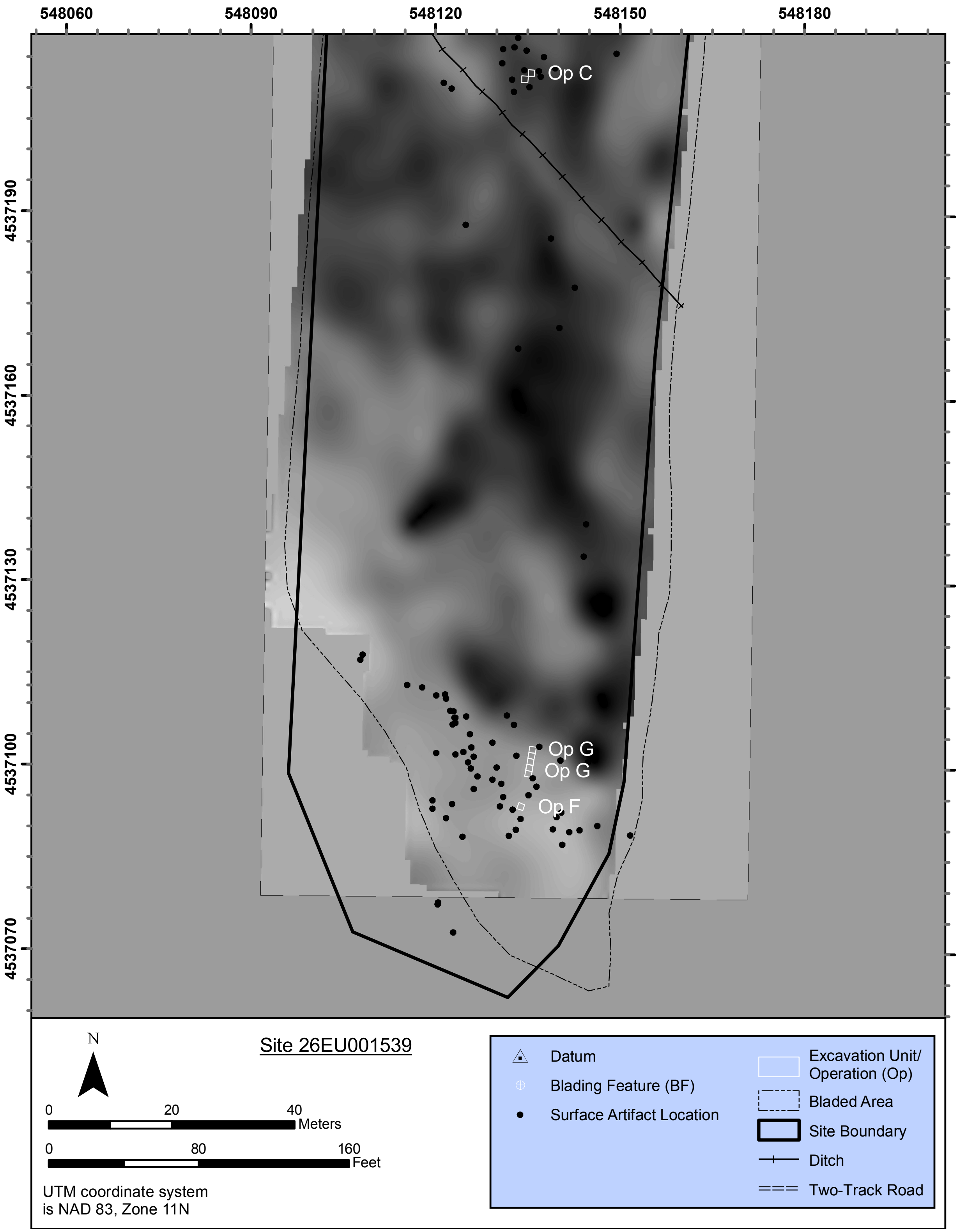


Figure 35. Conductivity data from the southern portion of 26EU1539.

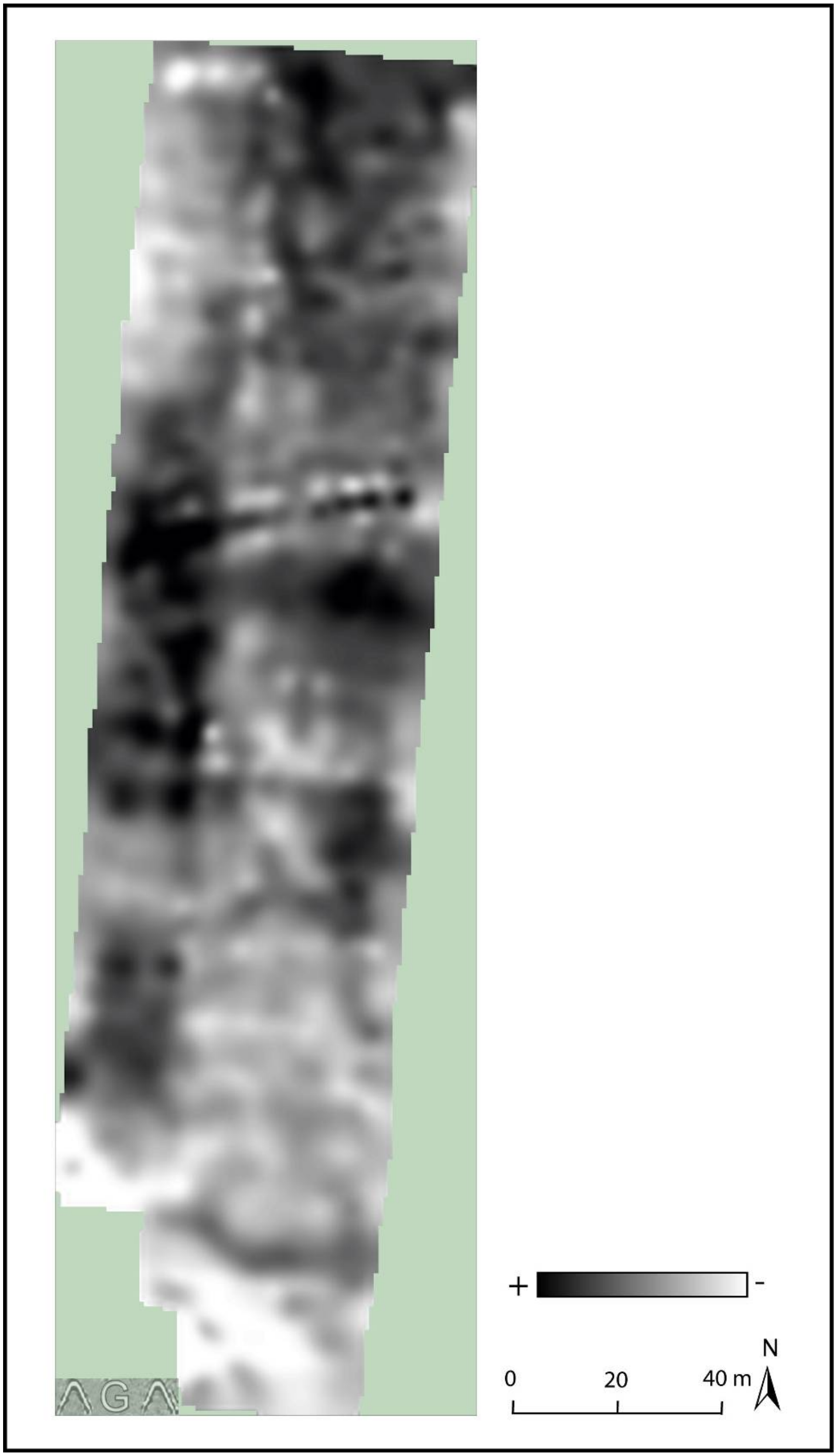


Figure 36. Magnetic susceptibility data from 26EU1539.

IMACS SITE FORM

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM
Form approved for use by
BLM - Utah, Idaho, Wyoming, Nevada
Division of State History - Utah, Wyoming
USFS - Intermountain Region
NPS - Utah, Wyoming

PART A

Administrative Data

***1. State No:** 26EU1548update
***2. Agency No:** CrNv - 12-7446
3. Temp. No:

4. State: Nevada **County:** Eureka
5. Project: Barrick 2007 Data Recovery
***6. Report No:** SWCA 2008-47
7. Site Name / Property Name:
8. Class: ☑ Prehistoric ☐ Historic ☐ Paleontologic ☐ Ethnographic
9. Site Type: Lithic scatter
***10. Elevation:** 5,200 **ft.**
***11. UTM Grid:** **#1 Zone:** 11 549704 **m E** 4537317 **m N** **#2 Zone:** **m E** **m N**
#3 Zone: **m E** **m N** **#4 Zone:** **m E** **m N**
***12. Legals:** SE **1/4 of** NW **1/4 of** NW **of Section** 23 **Township** 36 N **Range** 49 E
1/4 of **1/4 of** **of Section** **Township** **Range**
1/4 of **1/4 of** **of Section** **Township** **Range**
1/4 of **1/4 of** **of Section** **Township** **Range**
***13. Meridian:** Mt. Diablo (Nevada)
***14. Map Reference:** 7.5' Rodeo Creek NW Nevada Quad
15. Aerial Photo:
16. Location and Access:

Site 26EU1548 is located on the slope of a high alluvial terrace on the west side of Bell Creek. From the front gate of Barrick Goldstrike Mine, travel north 1.70 miles until you reach a four-way intersection. Continue driving, going west/northwest at intersection for 1.64 miles, ignoring all forks and intersections. At this point, you will reach the haul road. Cross the haul road, and continue on the dirt road, which runs parallel to the haul road. Follow this for 1.19 miles to an intersection. Turn south, and travel for 0.22 miles to where the road intersects with another road. Turn southwest on this new road, and travel for 0.53 miles to where it intersects with another road. At this road, turn northwest, and travel 0.37 miles to the site boundary. The site datum for Site 26EU1548 is located at the UTM coordinates 4537317 N 549704 E.

***17. Land Owner:** Bureau of Land Management
***18. Federal Administrative Units:** Elko
***19. Location of Curated Materials:** Nevada State Museum (Carson City)
20. Description:

Site 26EU1548 (CRNV-12-7446) was originally recorded by Desert Research Institute in 1988 as a low-to-moderate density lithic scatter of 100 to 500 flakes with 5 localized concentrations (Hicks 1988, 1989). P-III Associates (P-III) revisited the site in 1993 and noted no changes to the site description, but did observe a large biface (Newsome et al. 1993:28).

SWCA revisited the site on September 23, 2005 for the Barrick Cultural Sites Assessment project. SWCA archaeologists surveyed the site location in 10-m transects to relocate the datum and artifact concentrations. A rebar datum established by P-III was found, and SWCA attached an aluminum tag to their datum. The SWCA tag was written with site number, date, "SWCA", and SWCA project number (5598-046). A rock cairn surrounds the rebar.

SWCA's revisit to the site identified over 500 flakes and 2 artifact concentrations in a 6,143-m² area. One obsidian flake was collected for possible x-ray fluorescence testing and sourcing per the BLM-Elko field recording guidelines. Artifacts observed on-site include white Tosawihi Opalite, pink and white-purple chert, and obsidian flakes of mostly biface thinning and tertiary reduction stages. Two artifact concentrations were observed. No chipped stone tools, diagnostic artifacts, or features were identified on-site. SWCA observed a lower amount of debitage across the site than was observed by DRI, but vegetation on-site was heavy, thus decreasing ground visibility. Vegetation, such as sagebrush, crested wheat grass, and cheat grass, may have obscured some debitage and concentrations by up to 50%.

In September, 2006 SWCA again revisited Site 26EU1548 to conduct probing. Two new chipped stone tools were observed (CST1 and CST2). Five shovel tests (ST1 - ST5) and 1 test unit (TU1) were excavated on-site. ST1 - ST5 were placed in C-1 as well as outside of the concentrations; each was excavated to an approximate depth of 10 cm, for a total ST volume of 0.125 m3. To better understand the distribution of cultural material within C-1, ST1 was placed down-slope of the densest artifact concentration and ST2 was placed in the western portion of C-1. To better understand the distribution of cultural material outside of the concentrations, ST3 was placed in a wash, ST4 was placed near C-2, and ST5 was placed near the southeastern boundary of the site.

TU1 was placed in C-1 over the area with the highest quantity of flakes on the surface. TU1 was excavated to a depth of 30 cm below ground surface, with a total excavated volume of 0.3 m³. The unit was discontinued on the basis of a marked decrease in the quantity of cultural material. Most of the debitage recovered from TU1 was found from 0-10 cm below ground surface. No faunal remains, pollen samples, macrobotanical material, ceramics, or material suitable for radiocarbon data was observed or collected.

During the summer and fall of 2007 SWCA revisited Site 26EU1548 as part of the BGMI 2007 Data Recovery Project and conducted surface collection, remote sensing, excavation, and site surface blading. First, surface collection was conducted over the entire site and all visible artifacts were collected. Second, remote sensing was conducted. Subsequently, eleven 1 × 1-m excavation units were dug in seven different areas (Operations A through G). Operations A, B, and C were placed at locations at which remote sensing exhibited magnetometer anomalies, and Operations D, E, and F were placed in areas of high conductivity. Operation G was placed within a dense artifact concentration. Excavation units were dug in 10-cm increments, 2 levels deep.

After excavations were complete, the ground surface of Site 26EU1548 was stripped using a road grader. Two successive passes were made over the site, the first between 5 and 8 cm deep, and the second skimming an additional 5 to 8 cm off. Three possible archaeological features, termed blading features, (BF 3, 5, and 6), were revealed during blading. Two of these, BF 3 and BF 6, were small charcoal stains that were relatively thicker than additional charcoal stains observed at the site, which are believed to be caused by natural wildfire. BF 3 and BF 6 contained soot-covered rock, but no artifacts. BP 5 was a larger, thicker charcoal lens that contained numerous small chert flakes. Fire-cracked rock was recorded close to this feature during surface collection.

During the 2007 field work, approximately 829 flakes were observed and collected from the ground surface, excavation units, and site surface scraping. In addition, three bifaces (FS#s 100, 179, and 1000) and a scraper (FS# 233) were observed and collected. The site appears to be fairly recent; obsidian hydration conducted on two obsidian flakes excavated in 2006 and 2007 date to the Eagle Rock phase, A.D. 1300 - A.D. 1850+ (Cannon et al 2008).

For shovel test, test unit, excavation unit, artifact concentration, and individual artifact UTM coordinates, see attached tables.

***21. Site Condition:** ☐ Excellent ☐ Good ☐ Fair ☐ Poor ☐ Inundated ☑ Destroyed ☐ Unknown

***22. Impact Agents:** Road Demolition/Dismantling

***23. National Register Status:** Non-Significant (Professional Judgement)

Justify: Site 26EU1548 was originally recorded and its eligibility evaluated by Desert Research Institute (Hicks 1988, Hicks 1989). The site was recommended eligible for the NRHP under Criterion D due to its potential for subsurface cultural deposits, which could "increase knowledge of regional settlement patterns, and lithic technology" (Hicks 1988). In 1993 P-III Associates revisited the site. They observed no changes in the site description but did observe a previously unrecorded biface. P-III recommended the site retain its previous eligibility recommendation (Newsome et al. 1993:28).

In SWCA's 2005 and 2006 visits, Site 26EU1548 exhibited research potential (Criterion D), which states that the site yields or is likely to yield information important in prehistory or history. While the site concentrations contained a relatively small number of artifacts, it included two obsidian flakes that were submitted for obsidian hydration testing. One of the research domains for the Little Boulder Basin Area (LBBA) and a research emphasis for the current project is to identify deposits that might provide information about diachronic change. Since it was a relatively small site with an artifact assemblage of limited diversity, Site 26EU1548 held the possibility of dating to a discreet period of time. In addition, shovel tests and one test unit excavated in 2006 revealed buried cultural deposits to a depth of at least 10 cm bgs. As such, Site 26EU1548 was considered a candidate to yield further information in the prehistory of the area and therefore was considered eligible for the NRHP under Criterion D.

In 2007 SWCA revisited Site 26EU1548 a third time to conduct data recovery in accordance with a treatment plan that was approved by the BLM with NV SHPO concurrence (Cannon and Stettler 2007). Eleven 1 × 1-m units were excavated in seven different areas of the site, placed due to magnetometer anomalies or high conductivity revealed in remote sensing, or within an artifact concentration. No features or temporally diagnostic artifacts were encountered in any of the excavation units. After completing excavation, the site surface was scraped using a grader. Charcoal samples were collected from the three blading features that could be archaeological (BFs 3, 5 and 6). These samples yielded adiocarbon dates that fall within the Eagle Rock phase, from A.D. 1300 to A.D. 1850+ (Cannon 2008).

Due to implementation of the site treatment plane, including site excavation and site surface scraping, Site 26EU1548 has been completely removed and no longer exists. Therefore, SWCA recommends Site 26EU1548 be considered not eligible for the NRHP under any criteria.

24. Photos: Camera 2: 1508-1512; Camera 3: 1956-1962. 2007: 540-545, 603-612, 716-725, 2796-2807, 2888-2895, 3353-3371, 3441-3480. Photos curated at the Salt Lake City SWCA office.

25. Recorded by: M. Cannon

***26. Survey Organization:** SWCA Environmental Consultants ***28. Survey Date:** 07 - 18 - 07

27. Assisting Crew Members: D. Heersink, H. Stettler, C. Woodman

* Encoded data items

IMACS SITE FORM

PART A

***1. State No:** 26EU1548update

List of Attachments:

- [x] Part B
- [ ] Part C
- [ ] Part E
- [x] Topo Map
- [x] Site Sketch
- [x] Photos
- [ ] Artifact/Feature Sketch
- [ ] Continuation Sheets
- [ ] Other:___________________

Environmental Data

***29. Slope:** 5 **(Degrees)** 115 **Aspect (Degrees)**

***30. Distance to Permanent Water:** 1.7 **x 100 Meters**

***Type of Water Source:** Stream/River

Name of Water Source: Bell Creek

***31. Geographic Unit:** Boulder Flat

***32. Topographic Location:** *- See Guide for additional information*

Primary Landform: Valley

Secondary Landform: Ridge/Knoll

Describe: The site is located on a south-east facing slope of a low, north-south trending ridge overlooking Bell Creek to the east.

***33. On-site Depositional Context** Alluvial Plain

Describe: Sediments on-site include very fine silts with approximately 10 percent angular to sub-rounded pebbles of chert, silicified shale, and shale.

34. Vegetation

***a. Life Zone:** ☐ **Arctic-Alpine** ☐ **Hudsonian** ☐ **Canadian** ☐ **Transitional** ☑ **Upper Sonoran** ☐ **Lower Sonoran** ☐ **Unknown**

***b. Community:**

Primary On-Site: Big Sagebrush

Secondary On-Site: Shadscale Community

Surrounding Site: Big Sagebrush

Describe: Vegetation on-site includes big sagebrush, crested wheat grass, cheat grass, and other forbes.

***35. Miscellaneous Text:** GPS data collected in NAD83.

36. Comments/Continuations

Report number(s): BLM 1-1244 (1988), BLM 1-1800 (1993), BLM 1-2502 (2005), BLM 1-2595 (2007).

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Cannon, Michael D. and Heather K. Stettler
2007 Data Recovery Plan for Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hicks, Pat
1988 IMACS Site Form: 26EU1548/CrNV 12-7446. Prepared by Desert Research Institute, University of Nevada, Reno. Copies available from Bureau of Land Management, Elko Field Office, Elko, NV. BLM 1-1244.
1989 A Class III Cultural Resource Inventory of 3698 Acres in Elko and Eureka Counties, Nevada. Prepared by Desert Research Institute, University of Nevada, Reno. Cultural Resource Short Report 88-6. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1244.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Newsome, Daniel K., Gary M. Popek and Betsy L. Tipps
1993 Cultural Resource Inventory of Private and Public Lands Along and Near Bell, Boulder, and Rodeo Creeks in Northern Boulder

Valley, Eureka County, Nevada. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1800.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Part B - Prehistoric Sites

Site No: 26EU1548update

1. Site Type: Lithic scatter

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***2. Culture:**	Protohistoric/Contact (general)	Obsidian Hydration		

Describe: Obsidian hydration conducted on two obsidian flakes excavated in 2007 date to the Eagle Rock phase, A.D. 1300–A.D. 1850+ (Cannon et al 2008). Additional chronological information was provided by Shmitt and Madsen (2005) and Hockett and Morgenstein (2003).

3. Site Dimensions: 148 **m X** 56 **m *Area:** 6,143 **sq. m** ☑ If checked, area was determined by GIS

***4. Surface Collection/Method** Complete Collection

Sampling Method: Artifacts were collected in association with probing activities conducted by SWCA in 2006 and complete surface collection was conducted in 2007 as part of the Barrick 2007 Data Recovery Project.

***5. Estimated Depth of Cultural Fill:** 0-20 cm

How Estimated: Shovel tests, a test unit, and 11 excavation units dug by SWCA in 2006 and 2007 indicate that subsurface material is present from 0-20 cm below ground surface.

(If Tested, show location on site map)

***6. Excavation Status:** Excavated

Testing Method: In September, 2006 SWCA revisited Site 26EU1548 to conduct probing. Two new chipped stone tools were observed (CST1 and CST2). Five shovel tests and one test unit were excavated on-site. ST1-ST5 were placed in C-1 as well as outside of the concentrations; each was excavated to an approximate depth of 10 cm, for a total ST volume of 0.125 m³. To better understand the distribution of cultural material within C-1, ST1 was placed down-slope of the densest artifact concentration and ST2 was placed in the western portion of C-1. To better understand the distribution of cultural material outside of the concentrations, ST3 was placed in a wash, ST4 was placed near C-2, and ST5 was placed near the southeastern boundary of the site.

TU1 was placed in C-1 over the area with the highest quantity of flakes on the surface. TU1 was excavated to a depth of 30 cm below ground surface, with a total excavated volume of 0.3 m³. The unit was discontinued on the basis of a marked decrease in the quantity of cultural material. Most of the debitage recovered from TU1 was found from 0-10 cm below ground surface. No faunal remains, pollen samples, macrobotanical material, ceramics, or material suitable for radiocarbon data was observed or collected.

During the summer and fall of 2007 SWCA revisited Site 26EU1548 and conducted excavation and site surface blading. Eleven 1 × 1–m excavation units were dug in seven different areas (Operations A through G). Operations A, B, and C were placed at locations remote sensing exhibited magnetometer anomalies, and Operations D, E, and F were placed in areas of high conductivity. Operation G was placed within a dense artifact concentration.

For shovel test, test unit and excavation unit UTM coordinates, see attached tables.

***7. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Lithic Scatter

Describe: In 2005, Site 26EU1548 consisted of a low-to-moderate density lithic scatter of over 500 flakes in an area of 3,770 m². Lithic reduction stages were dominated by middle-stage and late-stage tertiary biface thinning, with secondary biface thinning common as well. One primary core reduction flake was identified. Material types included white Tosawihi Opalite, pink and white-purple chert, and obsidian (FS# 200615). Two artifact concentrations (C-1 and C-2) were also identified.

C-1 was a discrete scatter of more than 30 white Tosawihi Opalite and pink chert flakes in a 46-m² area. Approximately 68% of the flakes were middle-stage tertiary biface thinning flakes, while 16% were secondary biface thinning, and 16% were flakes of unknown type. This concentration appeared to be eroding downslope, which is about 3 degrees to the south.

C-2 consisted of more than 500 flakes in an area of approximately 140 m². There are two areas within the concentration that are higher in density; these are located on the north and south boundaries of the concentration. Approximately 80% of the assemblage consisted of late-stage tertiary biface thinning flakes, with secondary biface thinning flakes and primary core reduction flakes also present. White Tosawihi Opalite was the dominant material type, with white-purple chert in fewer quantities, and one obsidian flake (FS# 200615) also present. FS# 200615 was located within this concentration and was collected for possible X-ray fluorescence testing and sourcing. The P-III datum was located within the southern portion of the concentration near a high density area.

During the 2006 undertaking, two new chipped stone tools were observed: CST1 is a utilized flake and CST2 is a biface fragment. Debitage was collected from C-1 and from the area outside of the concentrations. The debitage consisted of 197 pieces; 98% of the debitage is chert and the remaining 2% is chalcedony and includes one obsidian flake (FS# 200601). In all, 1% of the debitage exhibits cortex. See Continuation Form for debitage summary.

During the 2006 undertaking, 182 pieces of debitage were recovered from C-1. These flakes measure more than 1/4 inch and less than 2 inches; it appears that the middle stages of biface reduction and tool maintenance are represented in C-1.

During the 2006 undertaking, 15 pieces of debitage were recovered from areas outside of the concentration. These flakes measure more than 1/4 inch and less than 2 inches. Although the sample is small, it appears that the middle stages of biface reduction and tool maintenance are represented in areas outside of the concentrations. In all, 67% of the debitage was recovered from the surface.

Durign the 2007 excavations and site surface scrapings, 633 additional flakes were collected from the ground surface, excavation units, and site surface scraping. In addition, three bifaces (FS#s 100, 179, and 1000) and a scraper (FS# 233) were observed and collected.

For artifact concentration and artifact UTM coordinates, see attached tables.

***8. Lithic Tools:**

#	Type	#	Type
3	Biface	1	Scraper

Describe: A total of four tools were collected from Site 26EU1548.

During the 2006 undertaking, two new chipped stone tools were observed: a utilized flake (CST1) and a biface fragment (CST2). Neither of these tools was collected at that time and they may or may not be included in the 2007 artifact collection.

CST1 is a White Opalite utilized flake, which measures approximately 3.3 cm long by 1.9 cm wide by 0.4 cm thick. CST1 also exhibits retouch.

CST2 is a Tosawihi gold chert biface fragment, which measures approximately 2.7 cm long by 2.7 cm wide by 0.5 cm thick.

During the 2007 excavations and site surface scraping, four tools were observed and collected.

FS 100 is an almost complete biface made from white chert with crystalline inclusions. The edges exhibit heavy use wear, and the tip is broken off. It measures 2.7 cm long by 1.3 cm wide by 0.3 cm thick.

FS 179 is a midsection fragment of a biface made from white and light brown chert. It measure 3.2 cm long by 2.3 cm wide by 0.5 cm thick.

FS 233 is a complete scraper made from white chert. It measures 3.5 cm long by 2 cm wide by 0.7 cm thick.

FS 1000 is a biface fragment of made from red and dark yellow chert. It measures 5.0 cm long by 3.4 cm wide by 1.1 cm thick.

For artifact UTM coordinates and additional details, see attached tables.

***9. Lithic Debitage - Estimated Quantity:** 500+

Material Type: White Tosawihi Opalite, pink chert, white-purple chert, obsidian.

Flaking Stages: **(0) Not Present** **(1) Rare** **(2) Common** **(3) Dominant**

Decortication: 1 **Secondary:** 2 **Tertiary:** 2 **Shatter:** 1 **Core:** 0

10. Maximum Density - # / sq m (all lithics): <1

Part B - Prehistoric Sites

Site No: 26EU1548update

***11. Ceramics Artifacts:**

#	Type	#	Type
0			

Describe: SWCA did not observe any ceramic artifacts at this site.

12. Maximum Density - # / sq m (ceramics): 0

***13. Non-Architectural Features (locate on site map):** *- See Guide for additional categories*

#	Type	#	Type	#	Type
3	Hearth/Firepit				

Describe: During the 2007 site surface scraping three features believed to be archaeological were observed, termed blading features. An additional 12 features were mapped at Site 26EU1548, but are believed to be natural.

BF 3 is a small charcoal lens that is relatively deeper than naturally-caused charcoal stains observed on-site. It contained soot-covered rocks, but no artifacts.

BF 5 is a larger, thicker charcoal lens than BF 3 and BF 6. It contained numerous small lithic flakes. During surface collection, fire-cracked rock was observed close to this feature.

BF 6 is a small charcoal lens that is relatively deeper than naturally-caused charcoal stains observed on-site. It contained soot-covered rocks, but no artifacts.

***14. Architectural Features (located on site map):**

#	Material	Type	#	Material	Type
0					

Describe: SWCA did not observe any architectural features at this site.

15. Comments / Continuations:

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Part C - Historic Sites

Site No:

1. Site Type: ______

***2. Historic Themes:** ______

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***3. Culture:**				

Describe:

***4. Oldest Date:** ______ **Recent Date:** ______

How Determined:

5. Site Dimensions: ______ **m** **X** ______ **m** ***Area:** ______ **sq. m** ☐ If checked, area was determined by GIS

***6. Surface Collection/Method** ______

Sampling Method

***7. Estimated Depth of Cultural Fill:** ______

How Estimated

(If Tested, show location on site map)

***8. Excavation Status:** ______

Testing Method:

***9. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Describe:

10. Ceramic Artifacts:

a. Estimated Number of Ceramic Trademarks: ______

Describe:

11. Glass:

Describe:

12. Maximum Density - #/sq m (glass and ceramics): ______

13. Tin Cans:

Describe:

***14. Landscape and Constructed Features (locate on site map)** *- See Guide for additional categories*

#	Type

Part C - Historic Sites

Site No:

Describe:

***15. Buildings and Structures (locate on site map):**

#	Material	Type	#	Material	Type

Describe:

16. Comments/Continuations - Please make note of any Historic Record searches performed *for example - (County Records, General Land Office, Historic Society, Land Management Agency Records, Oral Histories/Interviews)*

1990

IMACS ENCODING FORM

Encoder's Name M. Cannon

To be completed for each site form.
For instructions and codes, see IMACS Users Guide.

A

1 State Site Number: 26EU1548update

2 Agency Site Number: CrNv - 12-7446

6 Agency Report Number: SWCA 2008-47

10 Elevation: 5,200

11 Zone: 11 | Easting: 549704 | Northing: 4537317

12 1/4: SE | 1/4: NW | 1/4: NW | Sec.: 23 | T.: 36 . N | R.: 49 . E

13 Merid.: 7

14 USGS Map: 7.5' Rodeo Creek NW Nevada Quad

17 Owner: LM

18 Forest: BB | Dist./Park:

19 Loc. Cur. Materials: CSM

21 Cond.: 6

22 Impacts: RD | DM |

23 N.R.: D

26 Organ.: ST

28 Survey Date: 07 - 18 - 07

29 Slope: 5 | Aspect: 115

30 Water: dstance/type: 1.7 | B

31 Geog. Unit: BIT

32 Topographic Location: 1st: E | 2st: P

33 Dep.: H

34 Vegetation: 5 | 1: P | 2: O | 3: P

35 Misc. Text, Site Name: GPS data collected in NAD83.

B

2 Culture/Dating Method: PC | J

3 Area: 6,143

4 Collect: D

5 Depth: B

6 Excav. Status: A

7 Prehistoric Artifacts: LS

8 Lithic Tools: # / type

#	type
3	IG
1	IH

9 #: F | Flaking Stages: 1 | 2 | 2 | 1 | 0

11 Ceramics: #/type: 0

13 Features: # / type: 3 | HE

14 Architecture: # / material / type: 0

C

2 Historic Themes

3 Culture/Dating Method

4 Dates

5 Area

6 Collect

7 Depth

8 Excav. Status

9 Artifacts

14 Features: # / type

15 Architecture: # / material / type

Printed on 8/12/2008 9:03:46 A

Table 1. UTM Coordinates (NAD83, Zone 11N) for Shovel Tests, Test Units, and Excavation Units at 26EU1548

Object	Northing	Easting
Shovel Test 1 (ST1), center	4537444	549631
Shovel Test 2 (ST2), center	4537435	549627
Shovel Test 3 (ST3), center	4537465	549645
Shovel Test 4 (ST4), center	4537519	549606
Shovel Test 5 (ST5), center	4537444	549611
Test Unit 1 (TU1), center	4537445	549631
Operation A (Op A), SW corner	4537451	549610
Operation B (Op B), SW corner	4537493	549588
Operation C (Op C), SW corner	4537517	549626
Operation D (Op D), SW corner	4537526	549616
Operation E (Op E), SW corner	4537509	549612
Operation F (Op F), SW corner	4537464	549600
Operation G (Op G), SW corner	4537444	549610

Table 2. UTM Coordinates (NAD83, Zone 11N) for Chipped Stone Tools (CST) and Obsidian Debitage (CS-OBS) from General Surface Collection at 26EU1548

Object	Northing	Easting
FS 100 (CST)	4537448	549614
FS 165 (CS-OBS)	4537484	549610
FS 179 (CST)	4537486	549621
FS 233 (CST)	4537446	549634
FS 200615 (CS-OBS)	4537529	549629

Table 3. Provenience of Chipped Stone Tool (CST) and Obsidian Debitage (CS-OBS) from Excavation and Probing at 26EU1548

Object	Provenience
FS 1000 (CST)	Excavation Unit B2, Level 1
FS 200601 (CS-OBS)	Shovel Test 2

Table 4. Counts of Chipped Stone Artifacts at Site 26EU1548

	Debitage	Tools	Cores	Total
26EU1548	829	4	0	833

Table 5. Debitage Material Type at Site 26EU1548

	Obsidian		Tosawihi		
Site	**Count**	**Percent**	**Count**	**Percent**	**Total**
26EU1548	3	0.36%	826	99.64%	829

Table 6. Tool Material Type at Site 26EU1548

	Obsidian		Tosawihi		
Site	**Count**	**Percent**	**Count**	**Percent**	**Total**
26EU1548	0	0.00%	4	100.00%	4

Table 7. Counts and Percentages of Flake Types at Site 26EU1548

	Core Reduction		Biface Reduction		Biface Thinning		Pressure Flakes		Bipolar Reduction		Indeterminate		Total Number of Proximal Flakes	Total Number of all Flakes
	n	%	n	%	n	%	n	%	n	%	n	%	n	N
26EU1548	1	0.43	42	18.26	27	11.74	1	0.43	0	0.00	159	69.13	230	829

Table 8. Counts and Percentage of Tool Types at Site 26EU1548

	Biface		Compound Tool		Knifelike Blade		Modified Flake		Projectile Point		Scraper		Total number of tools
	n	%	n	%	n	%	n	%	n	%	n	%	n
26EU1548	3	75.00	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	4

Table 9. Chipped Stone Tools Recovered at Site 26EU1548 During the 2007 BGMI Project and 2006 Probing

Site	FS#	Specimen#	Tool Type	Material	Completeness
26EU1548	100	1	Biface (Stage 4)	CCS	Incomplete
26EU1548	179	1	Biface (Stage 4)	CCS	Incomplete
26EU1548	233	1	Scraper	CCS	Complete
26EU1548	1000	1	Biface (Stage 2)	CCS	Incomplete

Table 10. Scraper Measurements

Site	FS#	Specimen#	Raw Material	Material Description	Tool Type	Usewear	Max. Length (mm)	Max. Width (mm)	Max. Thickness (mm)	Weight (g)
26EU1548	233	1	CCS	White	Scraper	Indeterminate	34.46	20.17	7.42	5.16

Figure 1. Photograph of scraper (FS# 233) from 26EU1548.

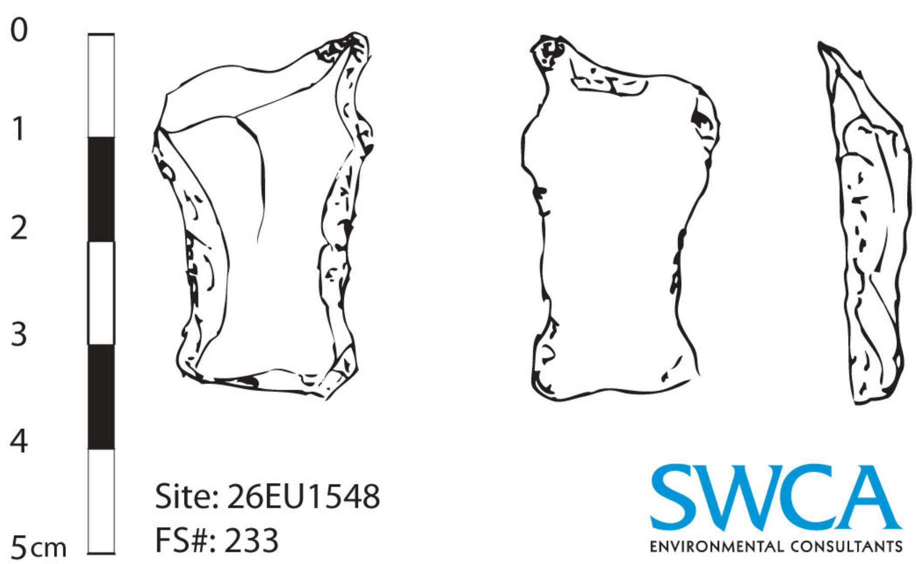
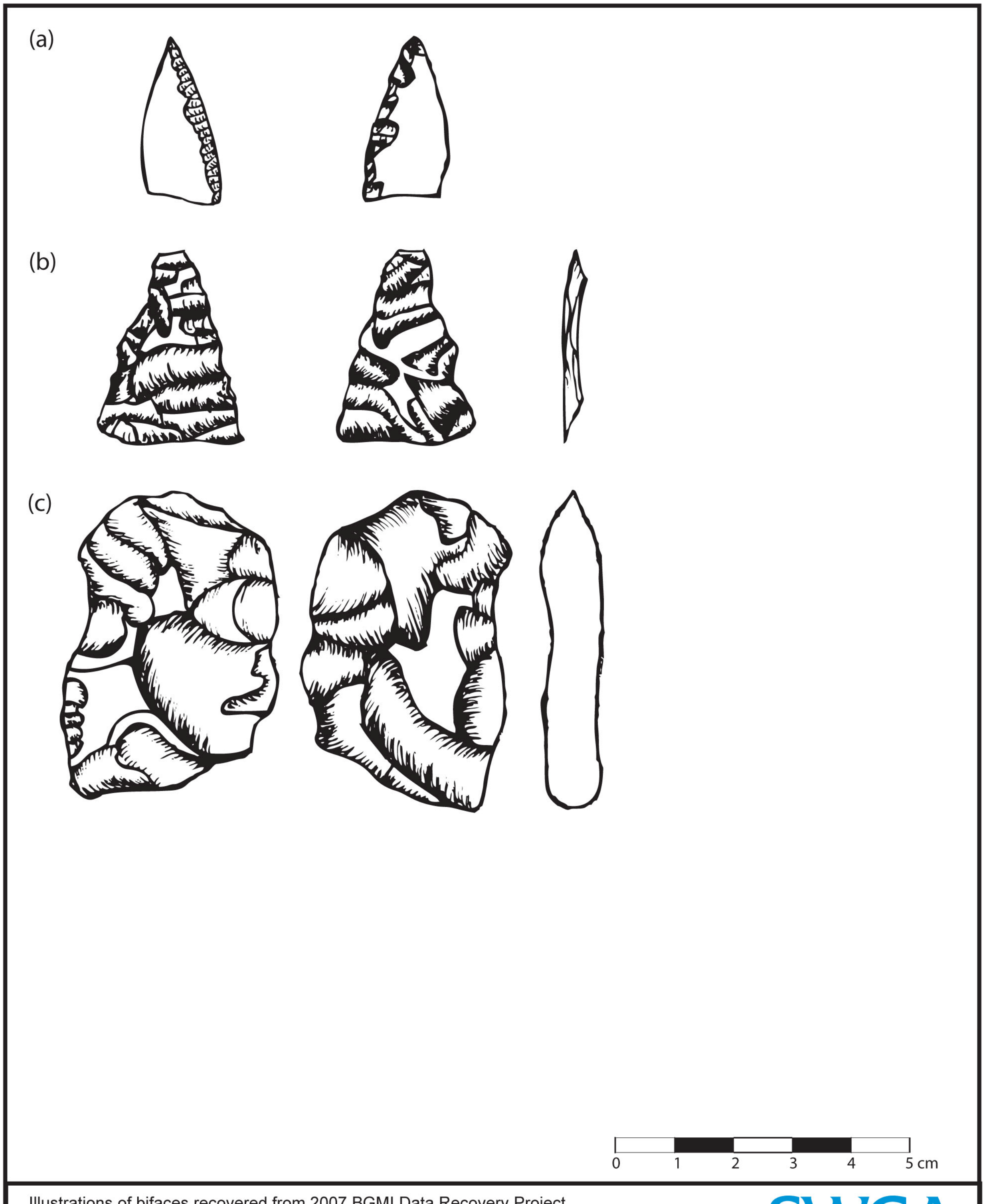


Figure 2. Illustration of scraper (FS# 233) from 26EU1548.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1548: Stage 4 bifaces (a) FS# 100, (b) FS# 179; Stage 2 biface (c) FS# 1000.

Figure 3. Illustrations of bifaces from 26EU1548.

Figure 4. Overview of site after mowing & staking for remote sensing; from remote sensing grid datum facing north.

Figure 5. Overview of site after mowing & staking for remote sensing; from remote sensing grid datum facing northwest.

Figure 6. Overview of site after mowing & staking for remote sensing; from remote sensing grid datum facing west.

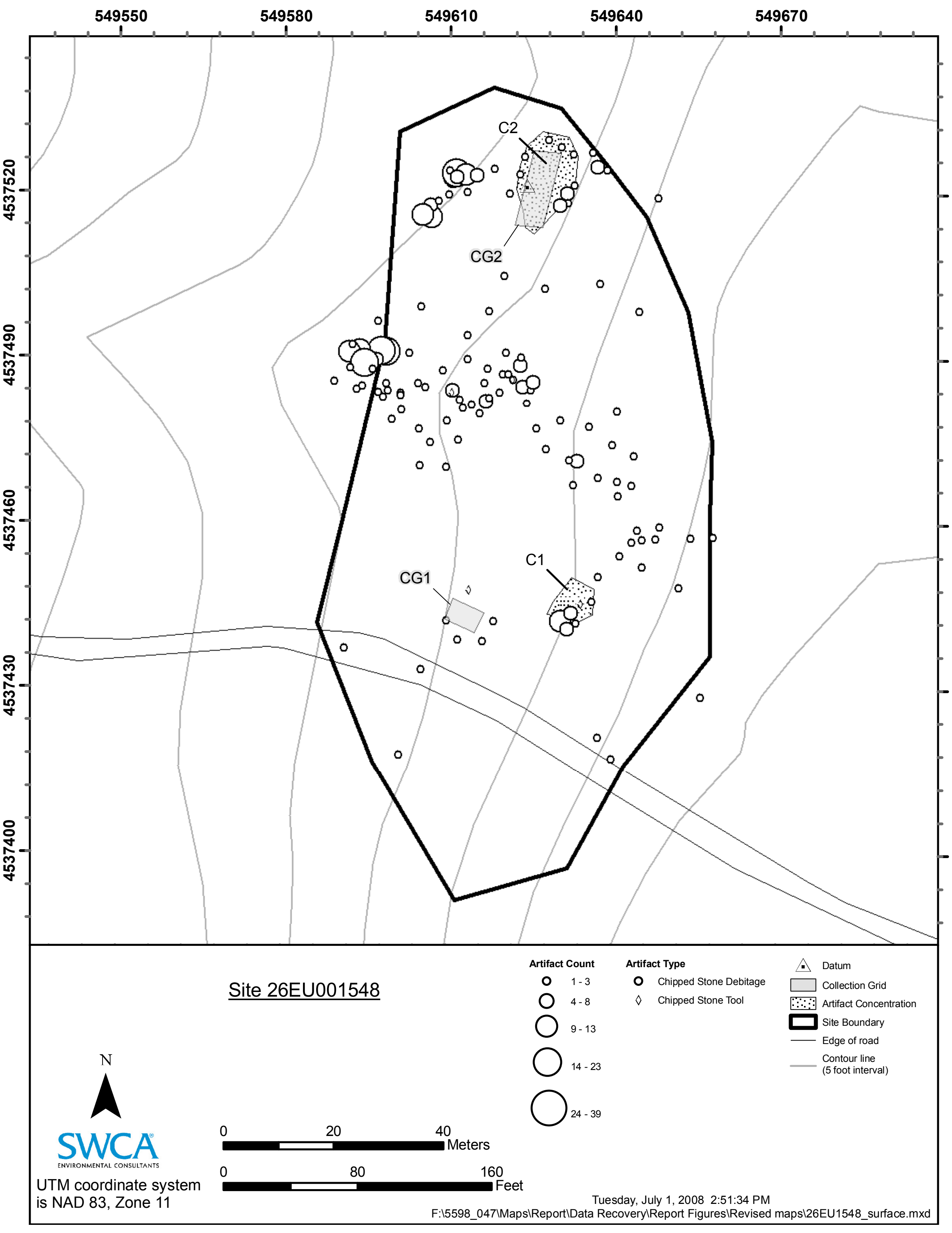


Figure 7. Results of surface artifact collection at 26EU1548.

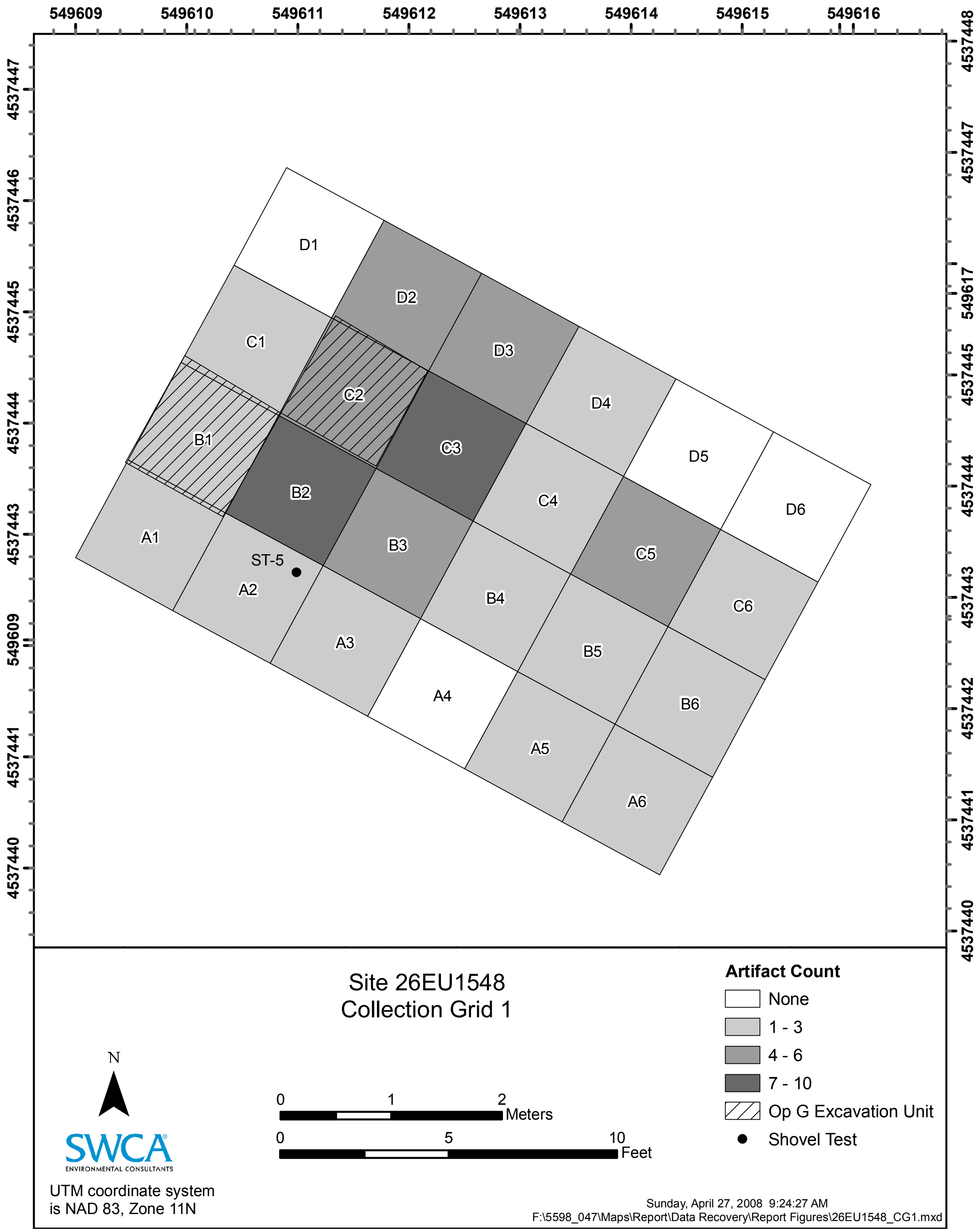


Figure 8. Collection Grid 1 at 26EU1548.

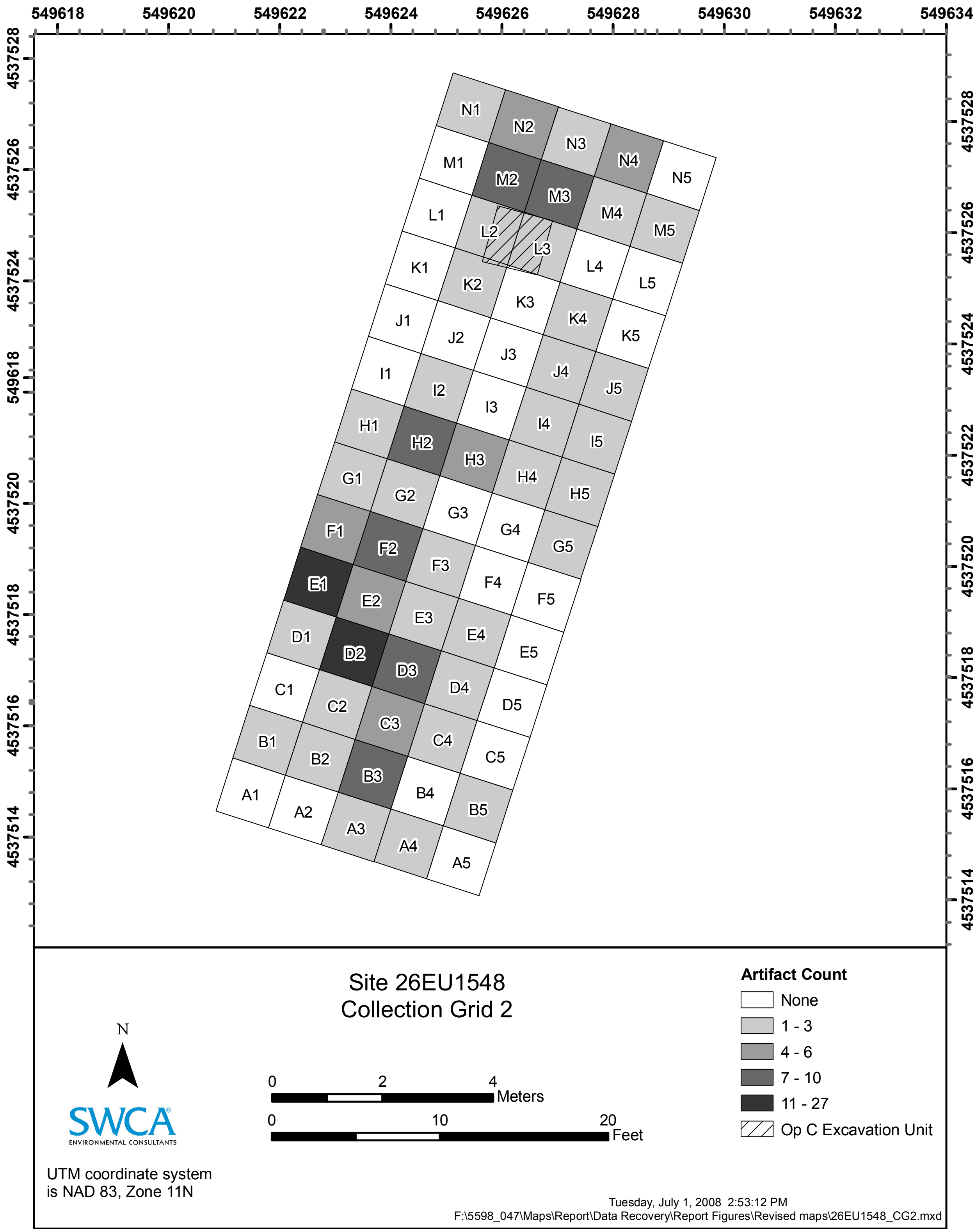


Figure 9. Collection Grid 2 at 26EU1548.

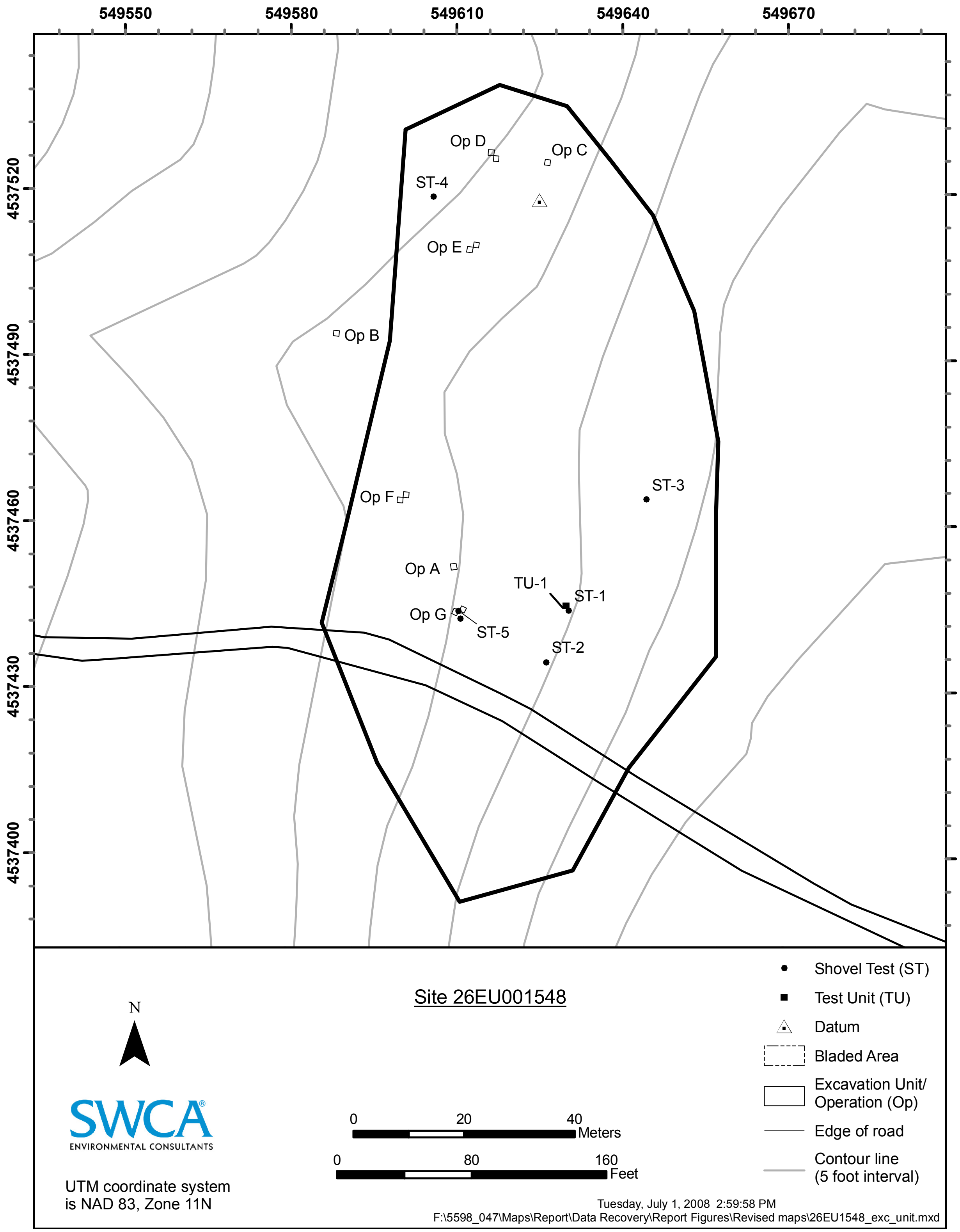


Figure 10. Locations of excavation units and extent of mechanical stripping at 26EU1548.

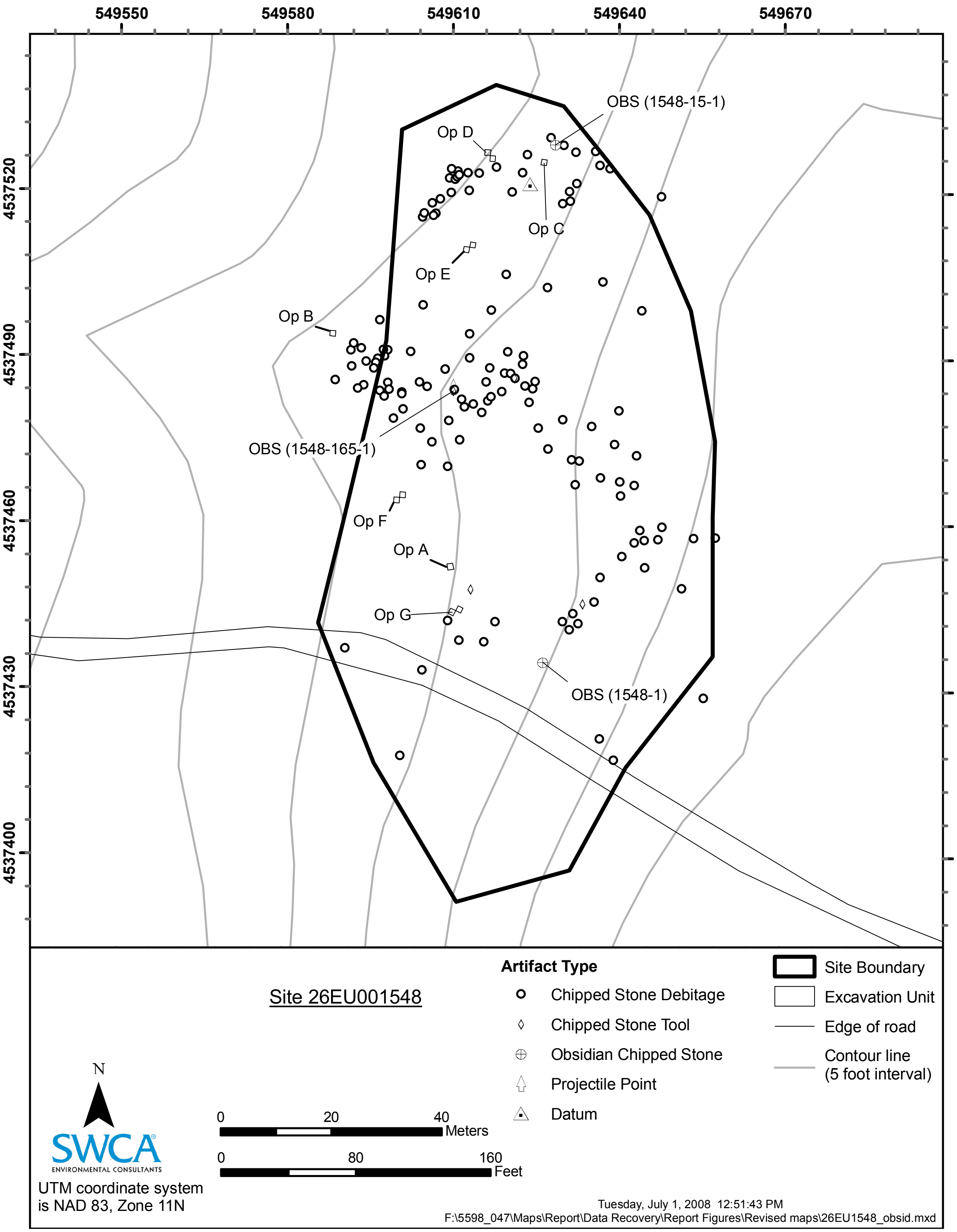


Figure 11. Location of obsidian artifacts recovered from 26EU1548.

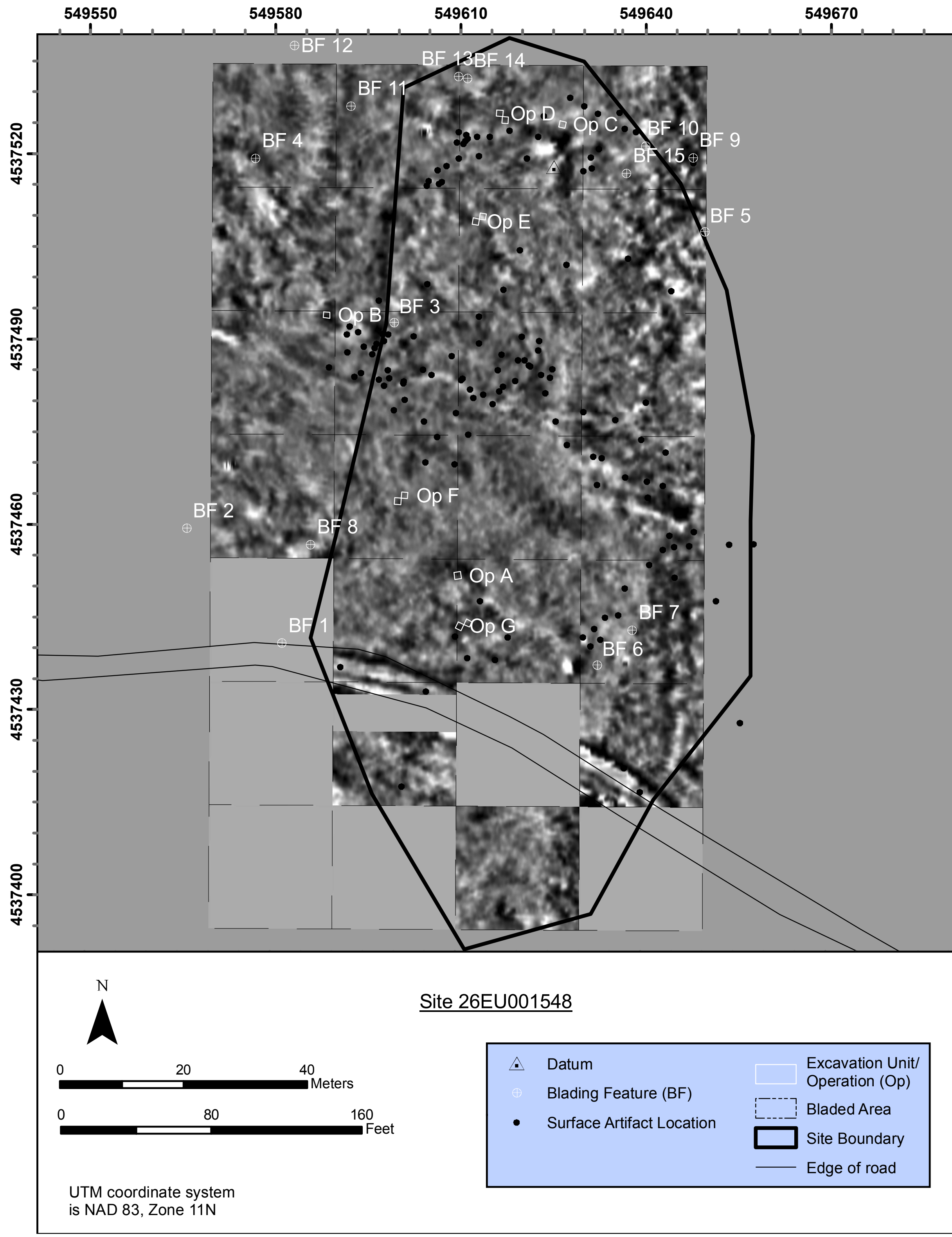


Figure 12. Magnetometer data from 26EU1548.

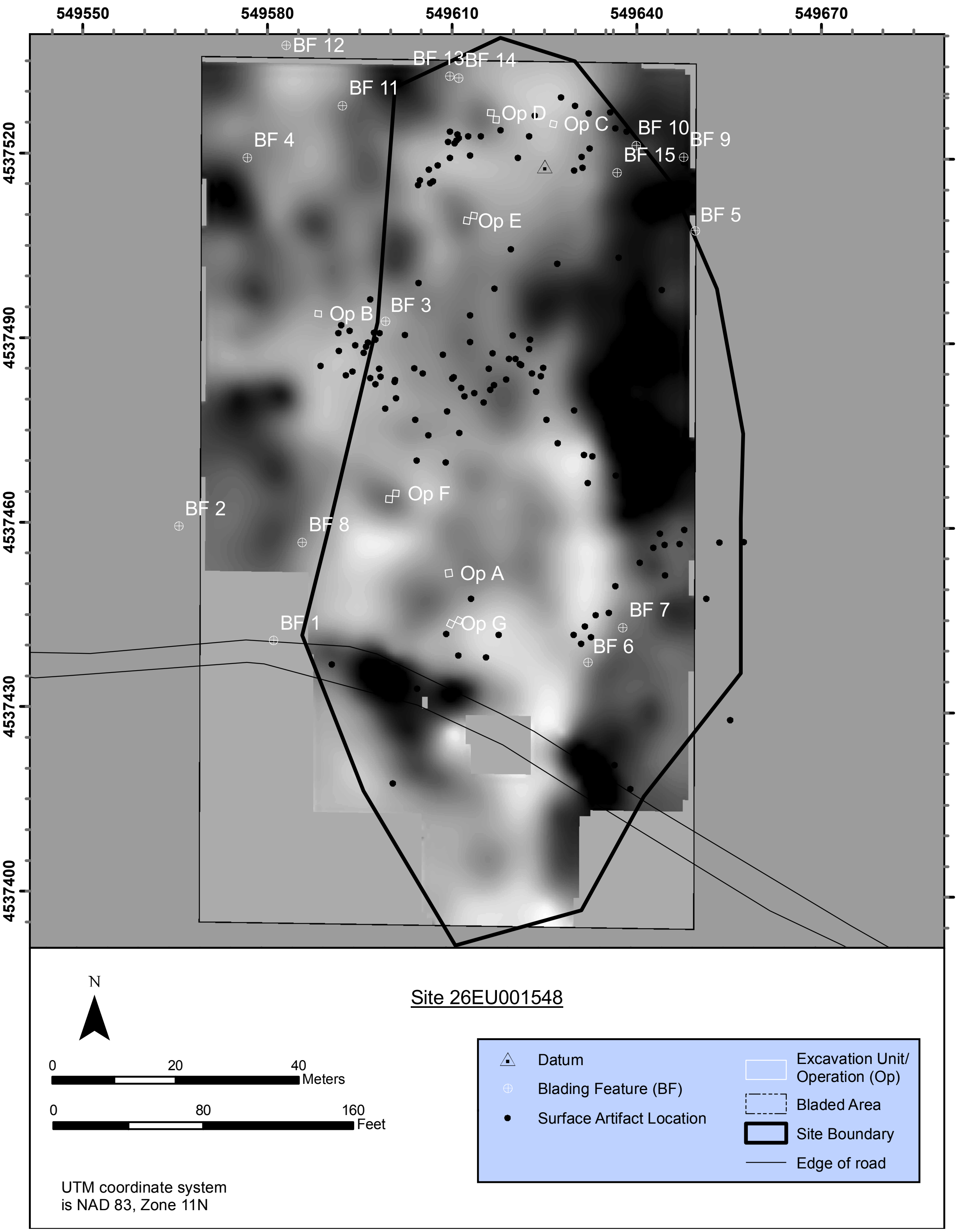


Figure 13. Conductivity data from 26EU1548.

Figure 14. Magnetic susceptibility data from 26EU1548.

IMACS SITE FORM

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM
Form approved for use by
BLM - Utah, Idaho, Wyoming, Nevada
Division of State History - Utah, Wyoming
USFS - Intermountain Region
NPS - Utah, Wyoming

PART A

Administrative Data

***1. State No:** 26EU2064update
***2. Agency No:** CrNv - 12-10507
3. Temp. No:

4. State: Nevada **County:** Eureka
5. Project: Barrick 2007 Data Recovery
***6. Report No:** SWCA 2008-47
7. Site Name / Property Name:
8. Class: ☑ Prehistoric ☑ Historic ☐ Paleontologic ☐ Ethnographic
9. Site Type: Lithic scatter
***10. Elevation:** 5560 **ft.**
***11. UTM Grid:** **#1 Zone:** 11 554961 **m E** 4537996 **m N** **#2 Zone:** **m E** **m N**
#3 Zone: **m E** **m N** **#4 Zone:** **m E** **m N**

***12. Legals:**

SE	**1/4 of**	NE	**1/4 of** SW	**of Section**	17	**Township**	36	N	**Range**	50 E
SW	**1/4 of**	NE	**1/4 of** SW	**of Section**	17	**Township**	36	N	**Range**	50 E
NE	**1/4 of**	SE	**1/4 of** SW	**of Section**	17	**Township**	36	N	**Range**	50 E
NW	**1/4 of**	SE	**1/4 of** SW	**of Section**	17	**Township**	36	N	**Range**	50 E

***13. Meridian:** Mt. Diablo (Nevada)
***14. Map Reference:** USGS Rodeo Creek NE 7.5' Quad, Nevada 1968
15. Aerial Photo:
16. Location and Access:

Site 26EU2064 is located along the top of a high ridge to the south of the confluence of Brush Creek and a smaller tributary. From the Barrick Goldstrike Mine front gate, travel north 1.70 miles until you reach a four-way intersection. Continue driving, going west/northwest at the intersection for 0.36 miles, and park the vehicle. Walk north 53.32 m to the site boundary. The site datum is located at the UTM coordinates 4537996 N 554961 E.

***17. Land Owner:** Bureau of Land Management
***18. Federal Administrative Units:** Elko
***19. Location of Curated Materials:** Nevada State Museum (Carson City)
20. Description:

Site 26EU2064 (CRNV-12-10507) was originally recorded by P-III in 1991as a large, dispersed lithic scatter of 100 to 500 flakes in an area of about 23,562 m² (Popek 1991; Newsome et al. 1992). Chipped stone tools included one Humboldt projectile point, one core, one utilized flake, and various biface fragments. All tools were collected.

SWCA revisited the site on September 23, 2005 for the Barrick Cultural Sites Assessment project. SWCA archaeologists surveyed the site location in 15-m transects to relocate the site datum. The original site datum was not located; therefore, SWCA established a new datum of rebar and attached an aluminum tag, written with site number, date, "SWCA", and SWCA project number (5598-047). A low rock cairn surrounds the rebar. Artifact density was low because of heavy vegetation on-site that obscured the surface. Visibility was approximately 50 to 70 percent. Vegetation included sagebrush, crested wheat grass, and cheat grass. Approximately 70 flakes were observed throughout the site, not including those within one of the four artifact concentrations. The majority of the flakes were white Tosawihi Opalite, with some quantities of orange chert and chalcedony. Most flakes were tertiary biface thinning, with some secondary biface thinning flakes also observed. The artifacts were generally observed along the edge of Brush Creek. Four artifact concentrations or areas of increased density (C-1 through C-4) were identified and recorded. Two biface fragments (CST-1 and CST-2) were also observed on-site.

In October 2006, SWCA excavated 27 shovel tests (STs) and 10 test units (TUs). Of these, 5 STs and 2 TUs did not contain any subsurface cultural material. Four TUs were excavated to 30 cm below the ground surface, with one of these four TUs excavated to 35 cm below the ground surface before excavation was terminated based on the quantity of disturbed sediment. The four remaining TUs had cultural deposits present to 10 cm below the ground surface. All of the STs from C- 1 and C-4 were positive, while C-2 had three negative STs and C-3 had two negative STs. Two STs from outside of the concentrations were negative, one from the area between C-1 and C-2 and the other from the area between C-3 and C-4. It was noted in many of the STs and TUs that most, if not all of the artifacts, came from the top 5 cm of the ground surface. The two artifacts observed in 2005 (CST1 and CST2), seven artifacts observed on the ground surface in 2006 (CST3 - CST9), and three artifacts recovered during probing (FS#s 200605, 200646, and 200680) were collected during this revisit. No faunal material, ceramics, or datable material was recovered.

* Encoded data items

BLM 8100-1
FS R-4 2300-2
3/90

Printed on 8/12/2008 9:04:34 A

IMACS SITE FORM

PART A

***1. State No:** 26EU2064update

In the summer and fall of 2007, as part of the BGMI Data Recovery Project, SWCA conducted surface collection, remote sensing, excavations, and surface blading at Site 26EU2064. Thirteen 1 × 1-m excavation units were dug in nine areas (Operations A through I). Operations A through G were placed at locations in which remote sensing revealed magnetometer anomalies, and Operation I was placed in an area with a strong conductivity anomaly. Operation H was placed near a surface artifact concentration. Excavation units were dug in 10-cm increments, down 2 to 3 levels. No archaeological features were revealed in any of the excavation units. A small number of lithic flakes were recovered from the units. Eight bifaces (FS#s 1, 114, 140, 230, 300, 303, 530, and 620), six utilized flakes (FS#s 128, 141, 210, 302, 518, and 2001), and four projectile points (FS#s 206, 207, 438, and 483) were recovered from this site.

After excavation was completed, Site 26EU2064 was stripped using a road grader. Two successive passes were made over the site, the first between 5 and 8 cm deep, and the second skimming an additional 5 to 8 cm off. No archaeological features or tools were recovered during blading, but several lithic flakes were recovered.

Site 26EU2064 appears to have been occupied during multiple phases. Of the 18 tools recovered during excavation and site blading, two (FS#s 206 and 207) projectile points are Desert Side-notched points (Justice 2002), which date to the Eagle Rock phase (A.D. 1300-- A.D. 1850+); one is a Gatecliff Contracting Stem (Justice 2002), which dates to the South Fork phase (3200 B.C.--1500 B.C.); and one is an Elko Eared point (Justice 2002), which dates to the James Creek phase (1500 B.C.--A.D. 600). These points, along with the Humboldt point (observed and collected by P-III Associates), indicate that Site 26EU2064 was occupied multiple times over a long period of time.

For shovel test, test unit, excavation unit, artifact concentration and individual artifact UTM coordinates, see attached tables.

***21. Site Condition:** ☐ Excellent ☐ Good ☐ Fair ☐ Poor ☐ Inundated ☑ Destroyed ☐ Unknown

***22. Impact Agents:** Completed Excavation Erosion Demolition/Dismantling

***23. National Register Status:** Non-Significant (Professional Judgement)

Justify: Site 26EU2064 was originally recorded and its eligibility evaluated by P-III Associates in 1991, who observed artifact concentrations and a Humboldt projectile point. The BLM determined the site eligible for the NRHP under Criterion D, since Humboldt points date to the South Fork phase (3200 B.C.-1500 B.C.), placing the site within the Archaic period, which is not well-documented in the area. In addition, "the site likely contains information pertaining to site function and the site appears to represent a site type which has yet to be investigated" (Popek 1991).

SWCA revisited the site in 2005, again in 2006 to conduct limited probing, and a third time in 2007 to conduct excavation and site surface scraping as part of the data recovery project.

During the 2007 project, SWCA conducted data recovery at Site 26EU2064 in accordance with a treatment plan that was approved by the BLM with NV SHPO concurrence (Cannon and Stettler 2007). Thirteen 1 × 1-m units were excavated in nine different area of the site, placed due to magnetometer anomalies or high conductivity revealed in remote sensing, or close to a surface artifact concentration. These impacts to the site were mitigated by recovering the information and data that had made 26EU1533 eligible for the NRHP under Criterion D.

Due to site excavation and site surface scraping conducted as part of the data recovery project, Site 26EU2064 no longer exists. Therefore, SWCA recommends that Site 26EU2064 be considered not eligible for the NRHP under any criteria.

24. Photos: 2007: 561-563, 623-632, 726-737, 2866-2875, 3334-3351, 3409-3426, 3437-3440, 3481-3483. Photos are curated at the SWCA SLC office.

25. Recorded by: M. Cannon

***26. Survey Organization:** SWCA Environmental Consultants ***28. Survey Date:** 07 - 22 - 07

27. Assisting Crew Members: D. Heersink, V. Villagran, C. Woodman, P. Morris, H. Stettler

List of Attachments:

☑ Part B ☑ Topo Map ☑ Photos ☐ Continuation Sheets
☑ Part C ☑ Site Sketch ☐ Artifact/Feature Sketch ☑ Other: artifact tables
☐ Part E

IMACS SITE FORM

PART A

***1. State No:** 26EU2064update

Environmental Data

***29. Slope:** 2 **(Degrees)** 306 **Aspect (Degrees)**

***30. Distance to Permanent Water:** 1.4 **x 100 Meters**

***Type of Water Source:** Stream/River

Name of Water Source: Brush Creek

***31. Geographic Unit:** Boulder Flat

***32. Topographic Location:** *- See Guide for additional information*

Primary Landform: Valley

Secondary Landform: Floodplain

Describe: The site is located on the top and opposing slopes of a large, northwest-southeast trending ridge, which is bounded by a small, intermittent drainage to the northeast and Brush Creek to the northwest.

***33. On-site Depositional Context** Alluvial Plain

Describe: Sediments on-site appear to be a combination of both residual and colluvial forces. The sediments are light grayish-brown mixed with numerous small, sub-angular to angular gravels.

34. Vegetation

***a. Life Zone:** ☐ **Arctic-Alpine** ☐ **Hudsonian** ☐ **Canadian** ☐ **Transitional** ☑ **Upper Sonoran** ☐ **Lower Sonoran** ☐ **Unknown**

***b. Community:**

Primary On-Site: Big Sagebrush

Secondary On-Site: Shadscale Community

Surrounding Site: Big Sagebrush

Describe: Vegetation on-site includes sagebrush, wheat grass, and cheat grass. Ground cover at the time of the revisit was between 50 and 70 percent, obscuring ground visibility.

***35. Miscellaneous Text:** GPS data collected in NAD83.

36. Comments/Continuations

Report number(s): BLM 1-1527 (1991), BLM 1-2502 (2005), BLM 1-2595 (2007).

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Cannon, Michael D. and Heather K. Stettler
2007 Data Recovery Plan for Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Holmer, Richard N.
1978 A Mathematical Typology for Archaic Projectile Points of the Eastern Great Basin. Unpublished Ph.D. dissertation, Department of Anthropology, University of Utah, Salt Lake City, UT.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Newsome, Daniel K., Kathleen M. Heath, Alan R. Schroedl, Betsy L. Tipps and David W. Zeanah
1992 An Assessment of National Register Eligibility of 29 Cultural Resource Properties Recorded by Desert Research Institute and P-III Associates, Inc., in the Eastern Portion of the North Block of Barrick Goldstrike Mine, Inc.'s Betze Project, Little Boulder Basin Area, Eureka County, Nevada. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1527.

Popek, Gary M.
1991 IMACS Site Form: 26EU2064/CrNV 12-10507. In An Assessment of National Register Eligibility of 29 Cultural Properties Recorded by Desert Research Institute and P-III Associates, Inc. in the Eastern Portion of the North Block of Barrick Goldstrike Betze Mine, edited by Daniel K. Newsome, Kathleen M. Heath, Alan R. Schroedl, Betsy L. Tipps and David W. Zeanah. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1527.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Thomas, David Hurst
1981 How to Classify the Projectile Points from Monitor Valley, Nevada. Journal of California and Great Basin Anthropology 3:7-43.

#14 Continued:

USGS Beaver Peak 7.5' Quad, Nevada

Part B - Prehistoric Sites

Site No: 26EU2064update

1. Site Type: Lithic scatter

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***2. Culture:**	Archaic (general)	Cross-Dating	Protohistoric/Contact (general)	Obsidian Hydration

Describe: A Humboldt projectile point from the archaic South Fork phase was identified in 1991 by P-III (Popek 1991). The site appears to have been occupied multiple times over a long period of time. Four additional projectile points recovered during 2007 consist of two Desert Side-notch points (Justice 2002), which date to the Eagle Rock phase (A.D. 1300–A.D. 1850+), one Gatecliff Contracting Stem (Justice 2002), which dates to the South Fork phase (3200 B.C.–1500 B.C.), and one Elko Eared point (Justice 2002), which date to the James Creek phase (1500 B.C.–A.D. 600). In addition, obsidian hydration tests date to the Eagle Rock phase (Cannon et al 2008). Additional chronological information was taken from Schmitt and Madsen (2005) and Hockett and Morgenstein (2003).

3. Site Dimensions: 357 **m X** 230 **m *Area:** 46,609 **sq. m** ☑ If checked, area was determined by GIS

***4. Surface Collection/Method** Complete Collection

Sampling Method: Artifacts were collected in association with probing activities conducted by SWCA in 2006. A complete collection was conducted by SWCA in 2007.

***5. Estimated Depth of Cultural Fill:** 20-100 cm

How Estimated: The majority of excavation units contained no cultural material deeper than 10 cm. Depth was estimated based on testing conducted in 2006, and on excavation conducted by SWCA in 2007.
(If Tested, show location on site map)

***6. Excavation Status:** Excavated

Testing Method: Limited probing was conducted by SWCA in 2005. A series of shovel tests and 1 x 1–m test units were placed both inside 4 defined concentrations (C-1 through C-4) and outside of the concentrations but within the site boundary.

In October 2006, SWCA excavated 27 shovel tests and 10 test units. See Continuation Form for probing description and results.

In the summer and fall of 2007 SWCA conducted excavations and surface blading at Site 26EU2064. Thirteen 1 × 1 m excavation units were dug in nine areas (Operations A through I). Ops A through G were placed at locations in which remote sensing revealed magnetometer anomalies, and Op I was placed in an area with a strong conductivity anomaly. Op H was placed near a surface artifact concentration.

All shovel tests, test units, and excavation units dug in 2005 - 2007 were screened using 1/4-inch screens.

For shovel test, test unit and excavation unit UTM coordinates, see attached tables.

***7. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Lithic Scatter

Describe: During the SWCA 2005 revisit, approximately 70 flakes were observed on-site, not including those within the 4 observed artifact concentrations (C-1 through C-4). The majority of flakes were white Tosawihi Opalite, with lesser quantities of orange chert and chalcedony. Of the estimated 70 flakes observed throughout the site, 30 were middle-stage tertiary biface thinning flakes and 30 were late-stage tertiary biface thinning flakes. The remaining 10 were secondary biface thinning flakes. About 95 percent of the site assemblage was white Tosawihi Opalite, while 4 percent was orange chert and 1 percent chalcedony. One biface fragment (CST-1) was identified within the site boundaries and one biface fragment (CST-2) was identified within Concentration 4. See Continuation Form for concentration descriptions.

During testing in 2006, 10 tools were observed from excavation of the STs and TUs. Artifacts CST3-CST9 were observed on the ground surface, and FS#s 200605, 200646, and 200680 were recovered during probing. C-1 contained three tools, two bifaces and one utilized flake. C-2 contained one utilized flake. C-3 contained two tools, both of which were utilized flakes. C-4 contained two tools, one biface and one utilized flake. All of the tools came from STs, with the exception of one utilized flake, which came from a TU outside of the concentrations. Debitage was recovered from all concentrations and from the area outside of the concentrations. Only the three tools recovered during probing were collected. See Continuation Form for debitage summary.

C-1 contained the highest quantity of flakes with 149 recovered. The majority of flakes are biface reduction (87), followed by non-identifiable flake fragments (42), angular debris (19), and core reduction flakes (1). Over 60 percent of the flakes came from level 1 (0 to 10 cm bgs), with the remainder from the surface, level 2 ,and level 3. It is important to note that artifacts from level 3 (between 20 and 30 cm bgs) have poor provenience, and only comprise 7 percent of the assemblage, or 11 total artifacts in all.

C-2 contained 33 flakes, which is the fewest of all of the concentrations. The majority of the flakes are biface reduction (19), followed by non-identifiable flake fragments (11), and angular debris (3). Sixty percent of these artifacts came from level 1, and the remaining were collected from the surface.

C-3 contained 52 total flakes. The majority of the flakes are angular debris (34), followed by non-identifiable flake fragments (10), biface reduction flakes (7), and angular debris (1). Sixty percent of these artifacts came from level 1, and the remaining were collected from the surface.

C-4 contained 117 flakes. The majority of the flakes are biface reduction (71), followed by non-identifiable flake fragments (33), angular debris (10), and core reduction flakes (3). The distribution of artifacts throughout the excavated levels is different from all of the other concentrations, with about 40 percent from level 1; slightly less that 30 percent of the artifacts recovered from the surface as well as from level 2; 4 percent, or 5 total, artifacts were recovered from level 3. Artifacts recovered from level 3 have poor provenience, with a high amount of bioturbation throughout the lower portions of the TUs.

Outside of the concentrations, a total of 75 flakes were recovered. The majority of flakes are biface reduction (30), followed by non-identifiable flake fragments (25), angular debris (19), and core reductions flakes (1). Sixty-five percent of the flakes came from level 1 and the remaining came from the surface.

During the 2007 fieldwork, approximately 1,328 flakes were collected from the ground surface and excavation units, and during site surface blading. Eight bifaces (FS#s 1, 114, 140, 230, 300, 303, 530, and 620), six utilized flakes (FS#s 128, 141, 210, 302, 518, and 2001), and four projectile points (FS#s 206, 207, 438, and 483) were also observed. The site appears to to have been occupied multiple times, during several different phases. Temporally diagnostic artifacts include a Humboldt projectile point (observed and collected by P-III Associates) from the archaic South Fork phase, two Desert Side-notch points, which date to the Eagle Rock phase (A.D. 1300–A.D. 1850+), one Gatecliff Contracting Stem, which dates to the South Fork phase (3200 B.C.–1500 B.C.), and one Elko Eared point, which date to the James Creek phase (1500 B.C.–A.D. 600) (Justice 2002). In addition, obsidian hydration tests date to the Eagle Rock phase (Cannon et al 2008).

For artifact concentration and artifact UTM coordinates, see attached tables.

***8. Lithic Tools:**

#	Type	#	Type
10	Biface	7	Utilized/Modified Flake
1	Gatecliff	1	Elko Series
2	Desert Side-notched		

Describe: In 2005 two bifaces were observed on the surface, CST-1 and CST-2. These tools were not collected in 2005 but may be part of the 2007 artifact collection.

CST-1 is a White Opalite proximal portion of a biface. The biface measures 2.7 by 2.3 by 0.6 cm.

CST-2 is the lateral portion of a White Opalite biface. This biface measures 3.7 by 1.3 by 0.7 cm.

During testing in 2006, seven additional tools were observed on the surface (CST3-CST9), and three tools were recovered from shovel test units (FS#s 200605, 200646, 200680). Only the three tools from the shovel test units were collected.

CST-3 is the medial portion of an obsidian/black chert biface. This biface measures 1.4 by 1.6 by 0.6 cm.

CST-4 is the distal portion of an orange and pink mottled chert biface. This biface measures 3.2 by 1.9 by 0.6 cm.

CST-5 is the distal portion of a red chert utilized flake. This utilized flake measures 4.8 by 2.7 by 0.3 cm.

CST-6 is the distal portion of a yellow and white mottled chert biface. This biface measures 2.5 by 1.5 by 0.3 cm.

CST-7 is the medial portion of a utilized flake made of white chert with inclusions. This utilized flake measures 3.5 by 2.4 by 0.7 cm. Both edges are sharpened and edge grinding is present.

Part B - Prehistoric Sites

Site No: 26EU2064update

CST-8 is the lateral portion of a white chert scraper. This scraper measures 3.8 by 2.2 by 0.2 cm.

CST-9 is the lateral portion of a white chert utilized flake. This utilized flake measures 3.6 by 2.5 by 0.2 cm.

FS 200605 is the distal end and midsection of a biface made from semi-translucent orange chert. It measures 3.1 cm long by 1.6 cm wide by 0.5 cm thick.

FS 200646 is the distal end and midsection of a biface made from white chert. It has been worked heavily on the dorsal side, and less on the ventral side. It measures 3 cm long by 1.6 cm wide by 0.4 thick.

FS 200680 is an incomplete modified flake made from white chert. It measures 2.2 cm long by 1.6 cm wide by 0.5 cm thick.

During 2007 fieldwork, an additional 18 tools were collected during surface collection, excavation, and site surface blading.

FS 1 is a biface fragment made from white chert. It measures 3.1 cm long by 2.5 cm wide by 0.6 cm thick.

FS 114 is a biface fragment made from white chert. It measures 3 cm long by 3.4 cm wide by 0.8 cm thick.

FS 128 is an incomplete modified flake made from light red chert. It measures 2.6 cm long by 1.7 cm wide by 0.6 cm thick.

FS 140 is a biface fragment made from translucent and dark red chert. It measures 1.5 cm long by 2.5 cm wide by 0.4 cm thick.

FS 141 is an incomplete modified flake made from translucent and orange chert that exhibits parallel striations. It measures 1.7 cm long by 2.2 cm wide by 0.5 cm thick.

FS 206 is the proximal fragment of a projectile point made from white chert. It measures 1.5 cm long by 1.2 cm wide by 0.3 cm thick. The point is a Desert Side-notched, using Justice's classification (2002), which dates from A.D. 1250 to A.D. 1850+, placing it within the Eagle Rock phase.

FS 207 is a nearly complete projectile point made from white chert, missing the tip and small portions of both tines. It measures 1.9 cm long by 1.3 cm wide by 0.2 cm thick. The point is a Desert Side-notched, using Justice's classification (2002), which dates from A.D. 1250 to A.D. 1850+, placing it within the Eagle Rock phase.

FS 210 is a complete modified flake made from white chert. It measures 4.5 cm long by 3.4 cm wide by 1.2 cm thick.

FS 230 is a biface fragment made from white chert. It measures 2.6 cm long by 2 cm wide by 0.7 cm thick.

FS 300 is a biface fragment made from white chert. It measures 2.5 cm long by 2.6 cm wide by 0.5 cm thick.

FS 302 is an incomplete modified flake made from white chert that exhibits parallel striations. It measures 4.4 cm long by 2.5 cm wide by 0.7 cm thick.

FS 303 is a biface fragment made from white chert. It measures 1.7 cm long by 1 cm wide by 0.3 cm thick.

FS 438 is the proximal fragment of a projectile point made from white chert. It measures 1.4 cm long by 1.8 cm wide by 0.5 cm thick. The point is a Gatecliff Contracting Stem, using Justice's classification (2002). It dates from 3500 B.C. to 650 B.C., which places it within the South Fork phase.

FS 483 is a partial projectile point made from red, white, and tan chert. It measures 2.9 cm long by 22.4 cm wide by 0.5 cm thick. The point is an Elko Eared point, using Justice's classification (2002). It dates from 1500 B.C. to A.D. 600, which places it within the James Creek phase.

FS 518 is a complete modified flake made from white chert. It measures 3.6 cm long by 2.5 cm wide by 0.5 cm thick.

FS 530 is a biface fragment made from white chert. It measures 2.9 cm long by 2.6 cm wide by 0.6 cm thick.

FS 620 is a biface fragment made from white chert that is possibly a projectile point fragment. It measures 1.8 cm long by 1.7 cm wide by 0.6 cm thick.

FS 2001 is an incomplete modified flake made from white chert. It measures 3.3 cm long by 2.1 cm wide by 0.5 cm thick.

For artifact UTM coordinates and additional details, see attached tables.

***9. Lithic Debitage - Estimated Quantity:** 500+

Material Type: White Tosawihi Opalite, orange chert, chalcedony, red chert, yellow and white chert, orange and pink chert, and obsidian.

Flaking Stages: **(0) Not Present** **(1) Rare** **(2) Common** **(3) Dominant**

Decortication: 1 **Secondary:** 3 **Tertiary:** 1 **Shatter:** 1 **Core:** 0

10. Maximum Density - # / sq m (all lithics): <1

***11. Ceramics Artifacts:**

#	Type	#	Type
0			

Describe: SWCA did not observe any ceramic artifacts at this site.

12. Maximum Density - # / sq m (ceramics):

***13. Non-Architectural Features (locate on site map):** *- See Guide for additional categories*

#	Type	#	Type	#	Type
0					

Describe: SWCA did not observe any non-architectural features at this site.

***14. Architectural Features (located on site map):**

#	Material	Type	#	Material	Type
0					

Describe: SWCA did not observe any architectural features at this site.

15. Comments / Continuations:

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Popek, Gary M.
1991 IMACS Site Form: 26EU2064/CrNV 12-10507. In An Assessment of National Register Eligibility of 29 Cultural Properties Recorded by Desert Research Institute and P-III Associates, Inc. in the Eastern Portion of the North Block of Barrick Goldstrike Betze Mine, edited by Daniel K. Newsome, Kathleen M. Heath, Alan R. Schroedl, Betsy L. Tipps and David W. Zeanah. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1527.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Part C - Historic Sites

Site No: 26EU2064update

1. Site Type: Historic Isolate

***2. Historic Themes:** Unknown

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***3. Culture:**	Unknown			

Describe: The cultural affiliation of the tin can is unknown.

***4. Oldest Date:** 1904 **Recent Date:** Present

How Determined: Sanitary cans have been manufactured from 1904 to present (Rock 1984).

5. Site Dimensions: 1 **m X** 1 **m *Area:** 1 **sq. m** ☑ If checked, area was determined by GIS

***6. Surface Collection/Method** Complete Collection

Sampling Method All artifacts were collected; see excavation report (Cannon et al. 2008)

***7. Estimated Depth of Cultural Fill:** Surface

How Estimated The tin can was observed entirely on the ground surface.

(If Tested, show location on site map)

***8. Excavation Status:** Excavated

Testing Method: Probing and excavation were conducted throughout the site, concentrated on areas of increased prehistoric occupation. No historic artifacts were found in any of the shovel tests or test units. See excavation report (Cannon et al. 2008).

***9. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Tin Can-Sanitary

Describe: The historic isolate consists of a highly weathered sanitary can.

10. Ceramic Artifacts:

a. Estimated Number of Ceramic Trademarks: 0

Describe: No ceramics were identified.

11. Glass:

Describe: No glass was identified

12. Maximum Density - #/sq m (glass and ceramics): 0

13. Tin Cans:

Type	Opening	Size	Modified	Label/Mark	Function	Count
Sanitary	Can Opener	4-5/8"-x-4"	None	None	Soup/Food	1

Describe: Tin can artifacts consists of one smashed and weatherd sanitary can

***14. Landscape and Constructed Features (locate on site map)** *- See Guide for additional categories*

#	Type
0	

Describe: No features were identified.

***15. Buildings and Structures (locate on site map):**

#	Material	Type	#	Material	Type
0					

Describe: No buildings or structures were identified.

16. Comments/Continuations - Please make note of any Historic Record searches performed *for example - (County Records, General Land Office, Historic Society, Land Management Agency Records, Oral Histories/Interviews)*

References:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Rock, James T.
1984 Cans in the Countryside. Historical Archaeology 18(2):98-111.

1990

IMACS ENCODING FORM

Encoder's Name M. Cannon

To be completed for each site form.
For instructions and codes, see IMACS Users Guide.

A

Field	Value
1 State Site Number	26EU2064update
2 Agency Site Number	CrNv - 12-10507
6 Agency Report Number	SWCA 2008-47
10 Elevation	5560
11 Zone / Easting / Northing	11 / 554961 / 4537996

12

1/4	1/4	1/4	Sec.	T.		R.	
SE	NE	SW	17	36	N	50	E
SW	NE	SW	17	36	N	50	E
NE	SE	SW	17	36	N	50	E
NW	SE	SW	17	36	N	50	E

Field	Value
13 Merid.	7
14 USGS Map	USGS Rodeo Creek NE 7.5' Quad, Nevada 196
17 Owner	LM
18 Forest	BB
Dist./Park	
19 Loc. Cur. Materials	CSM
21 Cond.	6
22 Impacts	CE, ER, DM
23 N.R.	D
26 Organ.	ST
28 Survey Date	07 - 22 - 07
29 Slope / Aspect	2 / 306
30 Water: dstance/type	1.4 / B
31 Geog. Unit	BIT
32 Topographic Location (1st / 2st)	E / J
33 Dep.	H
34 Vegetation (1 / 2 / 3)	5 / P / O / P
35 Misc. Text, Site Name	GPS data collected in NAD83.

B

Field	Value
2 Culture/Dating Method	AR F / PC J
3 Area	46,609
4 Collect	D
5 Depth	C
6 Excav. Status	A
7 Prehistoric Artifacts	LS
9 # / Flaking Stages	F / 1 3 1 1 0
11 Ceramics: #/type	0
13 Features: # / type	0
14 Architecture: # / material / type	0

8 Lithic Tools: # / type

#	type	#	type
10	IG	1	CA
7	IA	2	EC
1	C5		

C

Field	Value
2 Historic Themes	ZZ
3 Culture/Dating Method	ZZ
4 Dates	1904 / Present
5 Area	1
6 Collect	D
7 Depth	A
8 Excav. Status	A
9 Artifacts	TC
14 Features: # / type	0
15 Architecture: # / material / type	0

Printed on 8/12/2008 9:04:52 A

Table 1. UTM Coordinates (NAD83, Zone 11N) for Shovel Tests, Test Units, and Excavation Units at 26EU2064

Object	Northing	Easting
Shovel Test 1 (ST1), center	4538220	554860
Shovel Test 2 (ST2), center	4538224	554856
Shovel Test 3 (ST3), center	4538227	554852
Shovel Test 4 (ST4), center	4538229	554855
Shovel Test 5 (ST5), center	4538281	554777
Shovel Test 6 (ST6), center	4538285	554780
Shovel Test 7 (ST7), center	4538286	554783
Shovel Test 8 (ST 8), center	4538290	554781
Shovel Test 9 (ST9), center	4538298	554755
Shovel Test 10 (ST10), center	4538302	554758
Shovel Test 11 (ST11), center	4538303	554757
Shovel Test 12 (ST12), center	4538303	554759
Shovel Test 13 (ST13), center	4538346	554717
Shovel Test 14 (ST14), center	4538346	554720
Shovel Test 15 (ST15), center	4538350	554721
Shovel Test 16 (ST16), center	4538341	554727
Shovel Test 17 (ST17), center	4538343	554716
Shovel Test 18 (ST 18), center	4538354	554711
Shovel Test 19 (ST19), center	4538332	554712
Shovel Test 20 (ST20), center	4538351	554712
Shovel Test 21 (ST21), center	4538351	554666
Shovel Test 22 (ST22), center	4538335	554689
Shovel Test 23 (ST23), center	4538346	554700
Shovel Test 24 (ST24), center	4538312	554749
Shovel Test 25 (ST25), center	4538266	554813
Shovel Test 26 (ST26), center	4538250	554827
Shovel Test 27 (ST27), center	4538290	554773
Test Unit 1 (TU1), center	4538229	554855
Test Unit 2 (TU2), center	4538224	554855
Test Unit 3 (TU3), center	4538286	554781
Test Unit 4 (TU4), center	4538287	554781
Test Unit 5 (TU5), center	4538302	554759
Test Unit 6 (TU6), center	4538301	554757
Test Unit 7 (TU7), center	4538346	554719
Test Unit 8 (TU8), center	4538347	554718
Test Unit 9 (TU9), center	4538207	554869
Test Unit 10 (TU10), center	4538273	554653
Operation A (Op A), SW corner	4538261	554623
Operation B (Op B), SW corner	4538334	554697
Operation C (Op C), SW corner	4538302	554722

Operation D (Op D), SW corner	4538237	554729
Operation E (Op E), SW corner	4538221	554763
Operation F (Op F), SW corner	4538219	554810
Operation G (Op G), SW corner	4538212	554857
Operation H (Op H), SW corner	4538283	554788
Operation I (Op I), SW corner	4538280	554794

Table 2. UTM Coordinates (NAD83, Zone 11N) for Projectile Points (CST-PP), Chipped Stone Tools (CST), and Obsidian Debitage (CS-OBS) from General Surface Collection and Mechanical Stripping at 26EU2064

Object	Northing	Easting
FS 1 (CST)	4538231	554824
FS 77 (CS-OBS)	4538252	554821
FS 114 (CST)	4538214	554870
FS 128 (CST)	4538227	554853
FS 140 (CST)	4538226	554851
FS 141 (CST)	4538231	554851
FS 206 (CST-PP)	4538319	554609
FS 207 (CST-PP)	4538324	554610
FS 210 (CST)	4538316	554627
FS 230 (CST)	4538373	554662
FS 300 (CST)	4538231	554825
FS 302 (CST)	4538223	554833
FS 303 (CST)	4538310	554735
FS 401 (CS-OBS)	4538253	554823
FS 438 (CST-PP)	4538288	554775
FS 483 (CST-PP)	4538322	554722
FS 518 (CST)	4538351	554712
FS 530 (CST)	4538312	554735
FS 620 (CST)	4538336	554707
FS 2001 (CST)	GPS data lost	

Table 3. Provenience of Chipped Stone Tools (CST) from Probing at 26EU2064

Object	Provenience
FS 200605 (CST)	Shovel Test 4
FS 200646 (CST)	Shovel Test 20
FS 200680 (CST)	Shovel Test 12

Table 4. Counts of Chipped Stone Artifacts at Site 26EU2064

	Debitage	Tools	Cores	Total
26EU2064	1763	21	0	1784

Table 5. Debitage Material Type at Site 26EU2064

	Obsidian		Tosawihi		
Site	Count	Percent	Count	Percent	Total
26EU2064	3	0.17%	1760	99.83%	1763

Table 6. Tool Material Type at Site 26EU2064

	Obsidian		Tosawihi		
Site	Count	Percent	Count	Percent	Total
26EU2064	0	0.00%	21	100.00%	21

Table 7. Counts and Percentages of Flake Types at Site 26EU2064

	Core Reduction		Biface Reduction		Biface Thinning		Pressure Flakes		Bipolar Reduction		Indeterminate		Total Number of Proximal Flakes	Total Number of all Flakes
	n	%	n	%	n	%	n	%	n	%	n	%	n	N
26EU2064	25	5.18	129	26.71	127	26.29	7	1.45	0	0.00	195	40.37	483	1763

Table 8. Counts and Percentage of Tool Types at Site 26EU2064

	Biface		Compound Tool		Knifelike Blade		Modified Flake		Projectile Point		Scraper		Total number of tools
	n	%	n	%	n	%	n	%	n	%	n	%	n
26EU2064	10	47.62	0	0.00	0	0.00	7	33.33	4	19.05	0	0.00	21

Table 9. Chipped Stone Tools Recovered at Site 26EU2064 During the 2007 BGMI Project and 2006 Probing

Site	FS#	Specimen#	Tool Type	Material	Completeness
26EU2064	1	1	Biface (Stage 5)	CCS	Incomplete
26EU2064	114	1	Biface (Stage 3)	CCS	Incomplete
26EU2064	128	1	Modified Flake	CCS	Incomplete
26EU2064	140	1	Biface (Stage 4)	CCS	Incomplete
26EU2064	141	1	Modified Flake	CCS	Incomplete
26EU2064	206	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2064	207	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2064	210	1	Modified Flake	CCS	Complete
26EU2064	230	1	Biface (Stage 4)	CCS	Incomplete
26EU2064	300	1	Biface (Stage 3)	CCS	Incomplete
26EU2064	302	1	Modified Flake	CCS	Complete
26EU2064	303	1	Biface (Stage 4)	CCS	Incomplete
26EU2064	438	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2064	483	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2064	518	1	Modified Flake	CCS	Complete
26EU2064	530	1	Biface (Stage 4)	CCS	Incomplete
26EU2064	620	1	Biface (Stage 4)	CCS	Incomplete
26EU2064	2001	1	Modified Flake	CCS	Incomplete
26EU2064	200605	1	Biface (Stage 3)	CCS	Incomplete
26EU2064	200646	1	Biface (Stage 4)	CCS	Incomplete
26EU2064	200680	1	Modified Flake	CCS	Incomplete

Table 10. Projectile Points from 26EU2064

Site Number	FS Number	Material	Holmer Classification	Thomas Classification	Justice Classification	Classification	Phase
26EU2064	206	White chert	San Rafael Side-notched point	Rosegate Series point	Desert Side-notched point	Desert Side-notched point	Eagle Rock
26EU2064	207	White chert	San Rafael Side-notched point	Elko Series point	Desert Side-notched point	Desert Side-notched point	Eagle Rock
26EU2064	438	White chert	Gypsum point	Gatecliff Contracting Stem point	Gatecliff Contracting Stem point	Gatecliff Contracting Stem point	South Fork
26EU2064	483	Dark red mottled chert	Sudden Side-notched point	Elko Eared point	Elko Eared point	Elko Eared point	James Creek

PROJECTILE POINTS

In 1991 and 1992, P-III recorded and collected a Humboldt projectile point, suggesting South Fork Phase use of the site (Popek 1991a; Tipps and Popek 1992). In 2007, SWCA collected four diagnostic projectile points from the site surface: two Desert Side-notched points (FS# 206 and FS# 207), suggesting occupation during the Eagle Rock Phase, one Gatecliff Contracting Stem point (FS# 438), suggesting occupation during the South Fork Phase, and one Elko Eared point (FS# 483), suggesting occupation during the James Creek Phase (Figure 1 through Figure 7).

GATECLIFF SERIES

One projectile point (FS# 438) from 26EU2064 was classified in the Gatecliff series. This is a spear-point type identified by Thomas at the Gatecliff Shelter site; the series includes both a split stem and a contracting stem form (Thomas 1981:23). The distinction between split stem and contracting stem is strictly morphological, not temporal (Thomas 1981:21). It has been proposed the shape of the hafting element was a function of the hunting equipment. The spear shaft and hafting element were designed so the stone tip would detach from the haft, making it easier to retrieve from a wounded animal except the stone tip (Justice 2002:292).

FS# 438 is most likely a Gatecliff Contracting Stem point, also known as a Gypsum point (Thomas 1981:23). The point is a basal fragment manufactured from white chert with evidence of heat treatment. Based upon Holmer's statistical model it was classified as a Gypsum point. Thomas's angle analysis classified this point as a Gatecliff Contracting Stem point, while the visual comparison using Justice's typology confirms Thomas's classification. All three classification systems placed this point within the Gypsum/Gatecliff Contracting Stem morphological type.

ELKO SERIES

Two projectile points were classified in the Elko series, which includes Elko Eared and Elko Corner-notched points. One projectile point (FS# 483) from 26EU2064 was classified as an Elko Eared point, a type considered to be used for hunting small ungulates and as a light cutting tool (Justice 2002:305). One projectile point (FS# 1) from 26EU1533 was classified as an Elko Corner-notched point, a type that is generally considered to have been used as an atlatl dart tip. An Elko Corner-notched point that was recovered in Lincoln County, Nevada, was hafted to a dart foreshaft (Justice 2002:311). Use wear analysis on Gatecliff Shelter's Elko Corner-notched collection indicates these tools were used for multiple tasks, not just as projectile points (Justice 2002:311). Typical use fractures in the Elko series include impact and bending fractures, haft fractures, and the loss of one or both barbs (Justice 2002:299). The distinction between Elko Eared and Elko Corner-notched points is solely morphological, not temporal (Thomas 1981).

The point classified as an Elko Eared type (FS# 483) from 26EU2064 is a midsection and basal fragment manufactured from mottled dark red chert. Based upon Holmer's statistical model, the point was classified as a Sudden Side-notched point. Thomas's angle analysis classified this point as an Elko Eared type, while the visual comparison using Justice's typology confirms Thomas's classification. Results based on Holmer's statistical analysis model were discarded upon visual comparison; Holmer's Sudden Side-notched examples are not similar in shape or form to this particular projectile point (Holmer 1978:52). However, a comparison with Holmer's Elko Eared examples proved to be similar to the projectile point (Holmer 1978:39).

DESERT SIDE-NOTCHED

Two projectile points from 26EU2064 (FS# 206 and FS# 207) were classified as Desert Side-notched points. These are associated with the bow and arrow and are often cited as a representation of the spread of bow and arrow technology (Justice 2002:384). Desert Side-notched points were suitable for the hunting of small and large game. Many Native American groups in the West used Desert Side-notched points; therefore they cannot be associated with one particular group (Justice 2002).

FS# 206 from 26EU2064 is a basal fragment manufactured from white chert. Holmer's statistical model classified this as a San Rafael Side-notched point. Thomas's angle analysis methodology classified this point in the Rosegate series, and a visual comparison of the typology provided by Justice classified this as a Desert Side-notched point. The classifications based on the work of Holmer and Thomas are questionable because of the small size of this point fragment. The San Rafael Side-notched type is similar in shape, but not in size, to this projectile point; San Rafael Side-notched points are considerably larger than Desert Side-notched points. The classification based on Holmer's methodology is also questionable because Holmer did not conduct statistical analysis for the Desert Side-notched type.

FS# 207 from 26EU2064 is a whole point manufactured from white chert with evidence of heat treatment. Holmer's statistical model classified this point as a San Rafael Side-notched point. Thomas's angle analysis methodology classified this point in the Elko series, and a visual comparison to the typology provided by Justice classified the point as a Desert Side-notched. The classifications based on the work of Holmer and Thomas are suspect for the same reasons discussed for the previous specimen. In addition, although use of Thomas's angle analysis method placed this point in the Elko series, it does not visually compare to any Elko series point. Rather, visual inspection places this point firmly with the Desert Side-notched category.

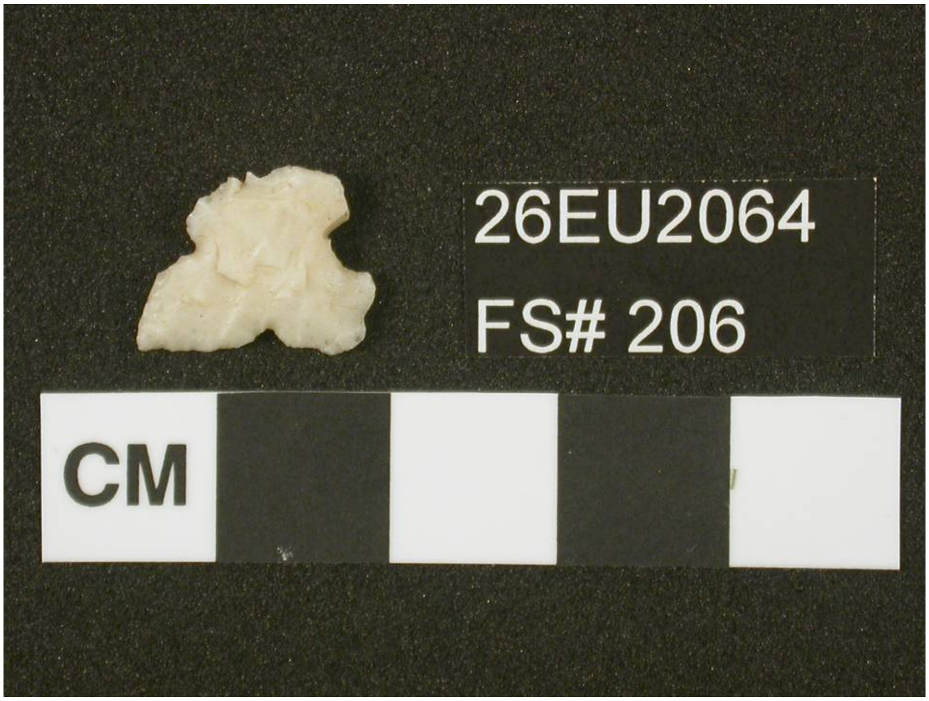


Figure 1. Photograph of Desert Side-notched point (FS# 206) from 26EU2064.

Figure 2. Illustration of Desert Side-notched point (FS# 206) from 26EU2064.

Figure 3. Photograph of Desert Side-notched point (FS# 207) from 26EU2064.

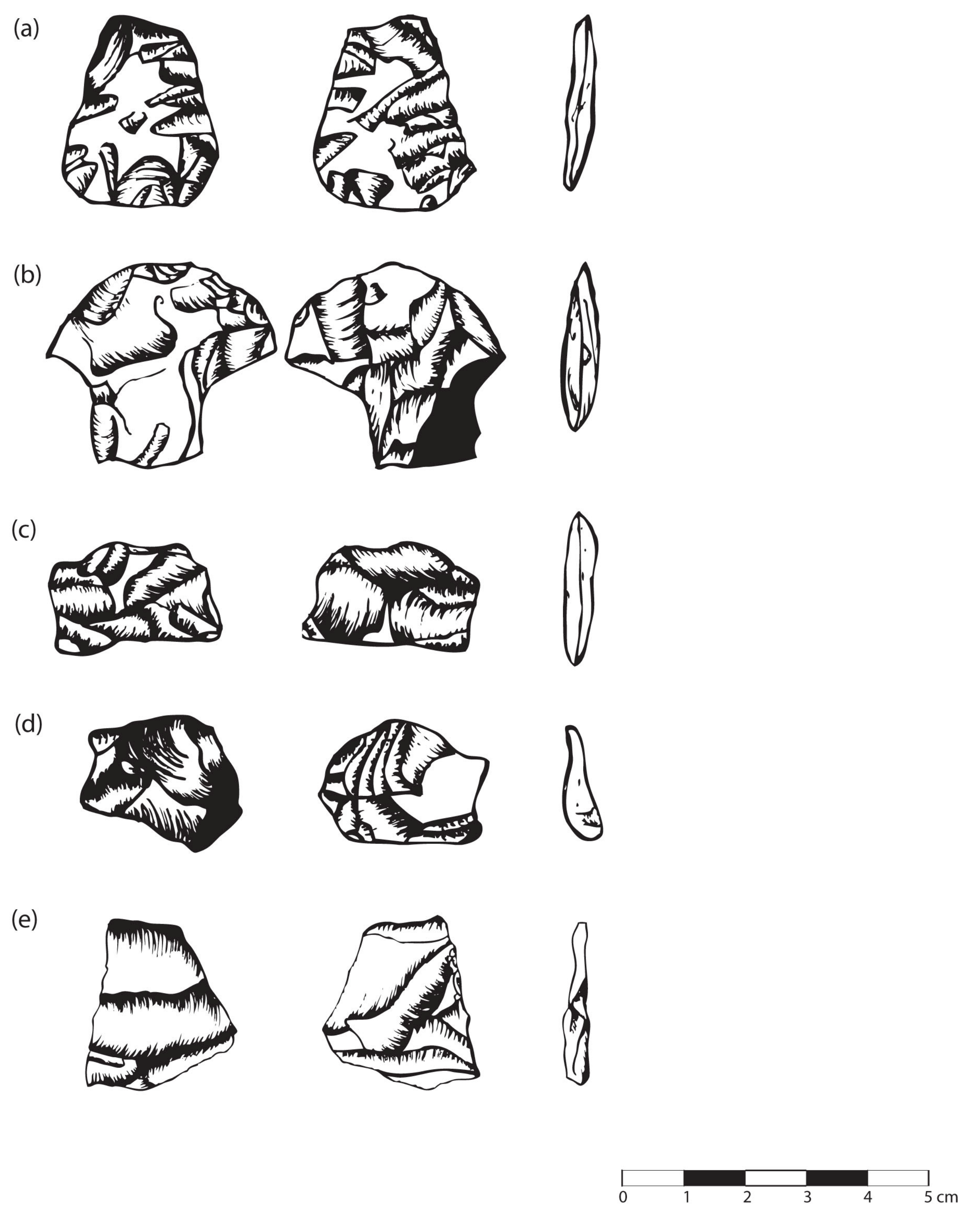
Figure 4. Illustration of Desert Side-notched point (FS# 207) from 26EU2064.

Figure 5. Photograph of Gatecliff Contracting Stem point (FS# 438) from 26EU2064.

Figure 6. Illustration of Gatecliff Contracting Stem point (FS# 438) from 26EU2064.

Figure 7. Photograph of Elko Eared point (FS# 483) from 26EU2064.

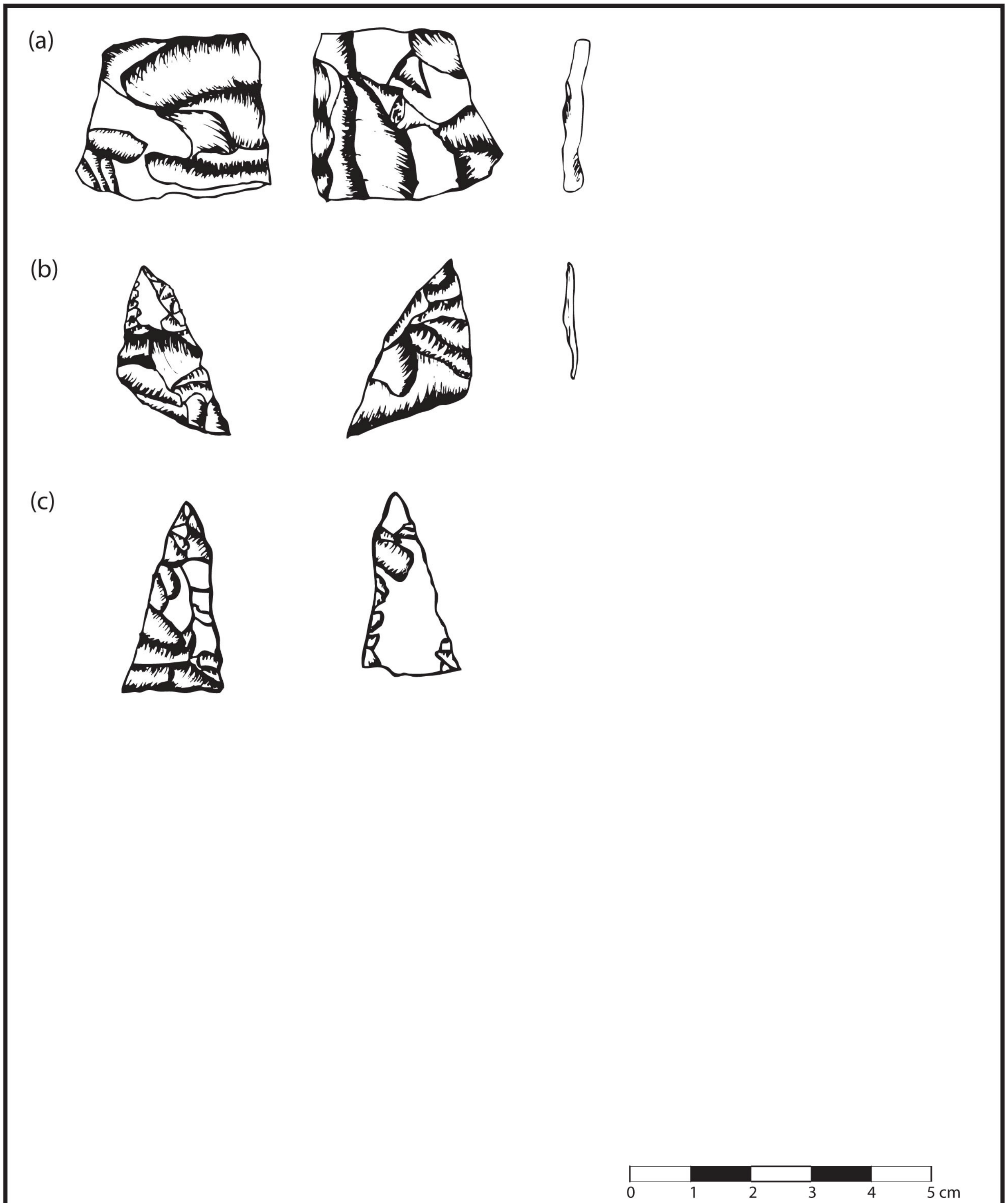
Figure 8. Illustration of Elko Eared point (FS# 483) from 26EU2064.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: Stage 1 biface (a) FS# 1; Stage 3 biface (b) FS# 114; Stage 4 bifaces (c) FS# 140, (d) FS# 230; Stage 3 biface (e) FS# 300.

SWCA ENVIRONMENTAL CONSULTANTS

Figure 9. Illustrations of bifaces from 26EU2064.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: Stage 4 biface (a) FS# 530; Stage 3 biface (b) FS# 2006-05; Stage 4 biface (c) FS# 2006-46.

SWCA ENVIRONMENTAL CONSULTANTS

Figure 10. Illustrations of bifaces from 26EU2064.

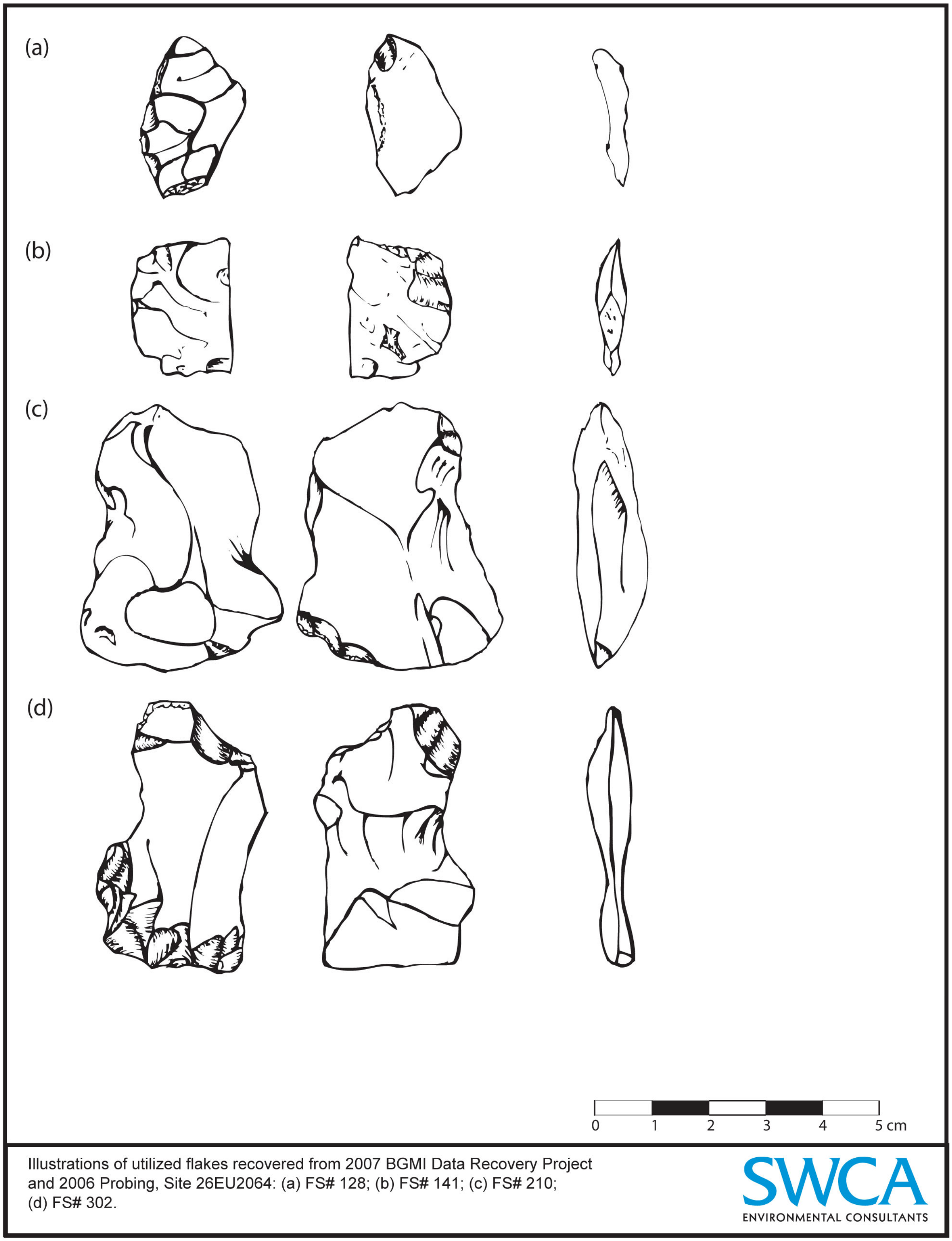
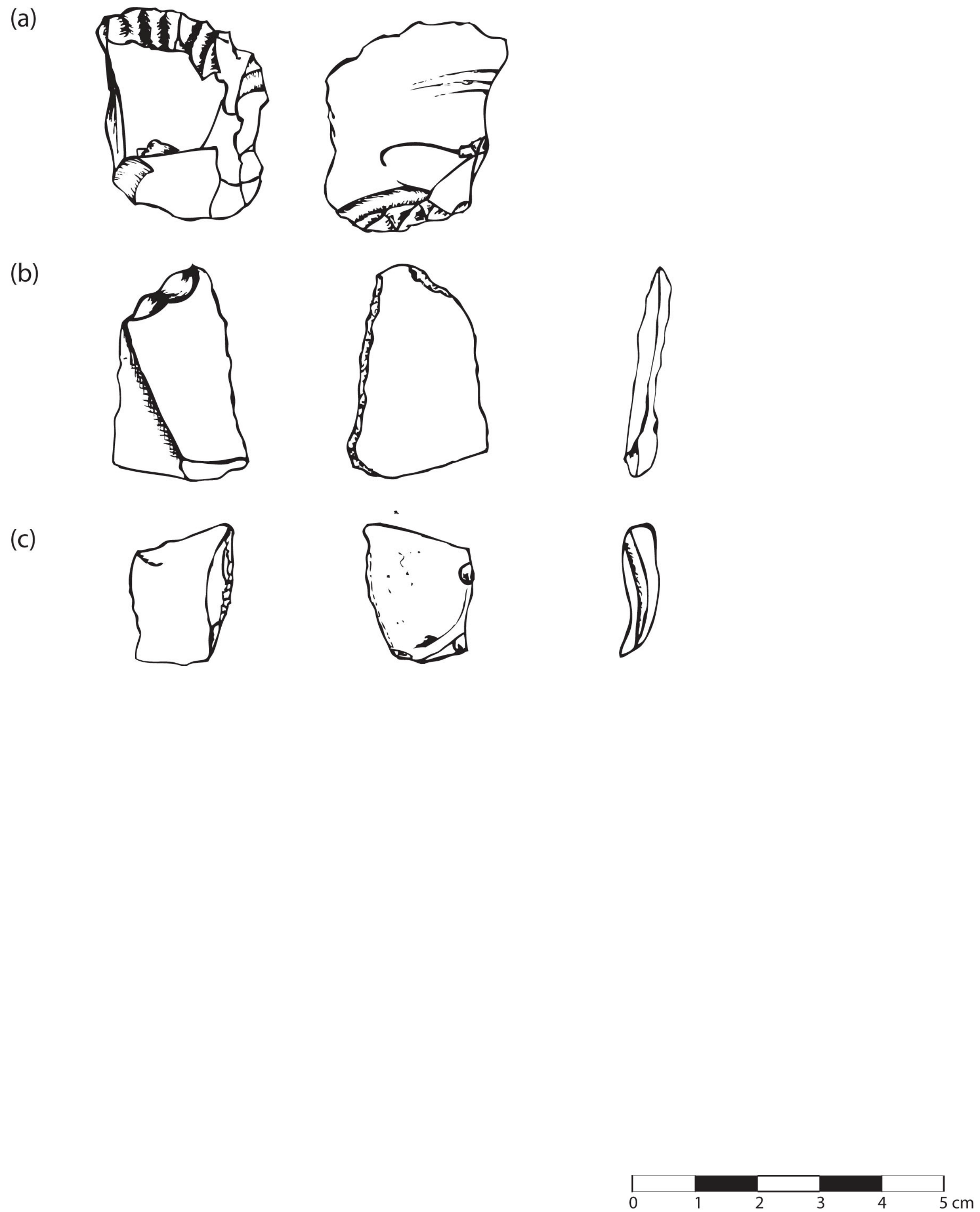


Figure 11. Illustrations of utilized flakes from 26EU2064.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: (a) FS# 518; (b) FS# 2001; (c) FS# 2006-80.

SWCA ENVIRONMENTAL CONSULTANTS

Figure 12. Illustrations of utilized flakes from 26EU2064.

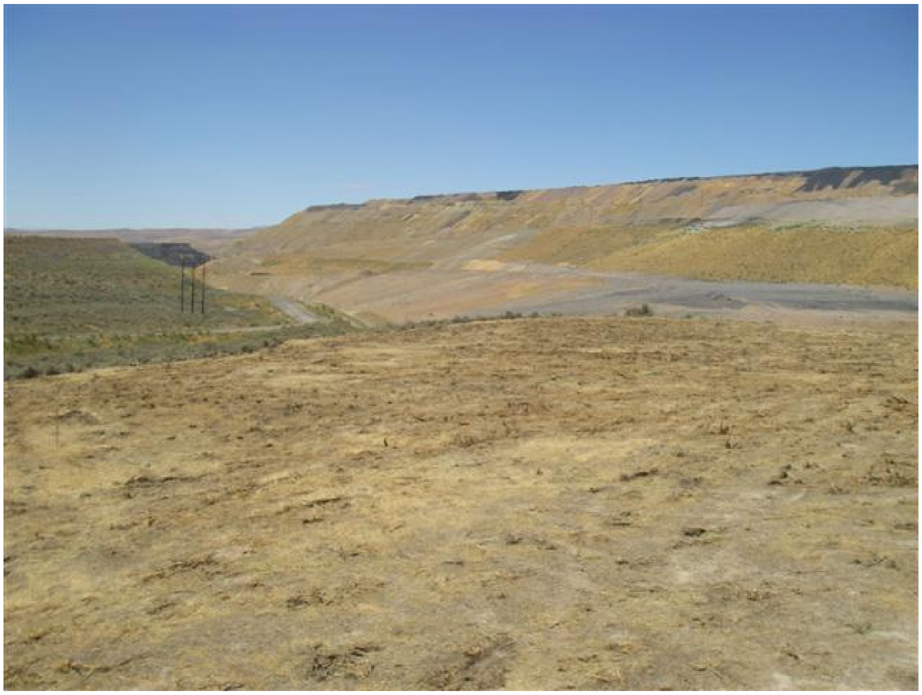


Figure 13. Overview of site after mowing & staking for remote sensing; from southern boundary of site facing northwest.

Figure 14. Overview of site after mowing & staking for remote sensing; from southern boundary of site facing east-southeast.

Figure 15. Overview of site after mowing for remote sensing; from road up hill from site facing southwest.

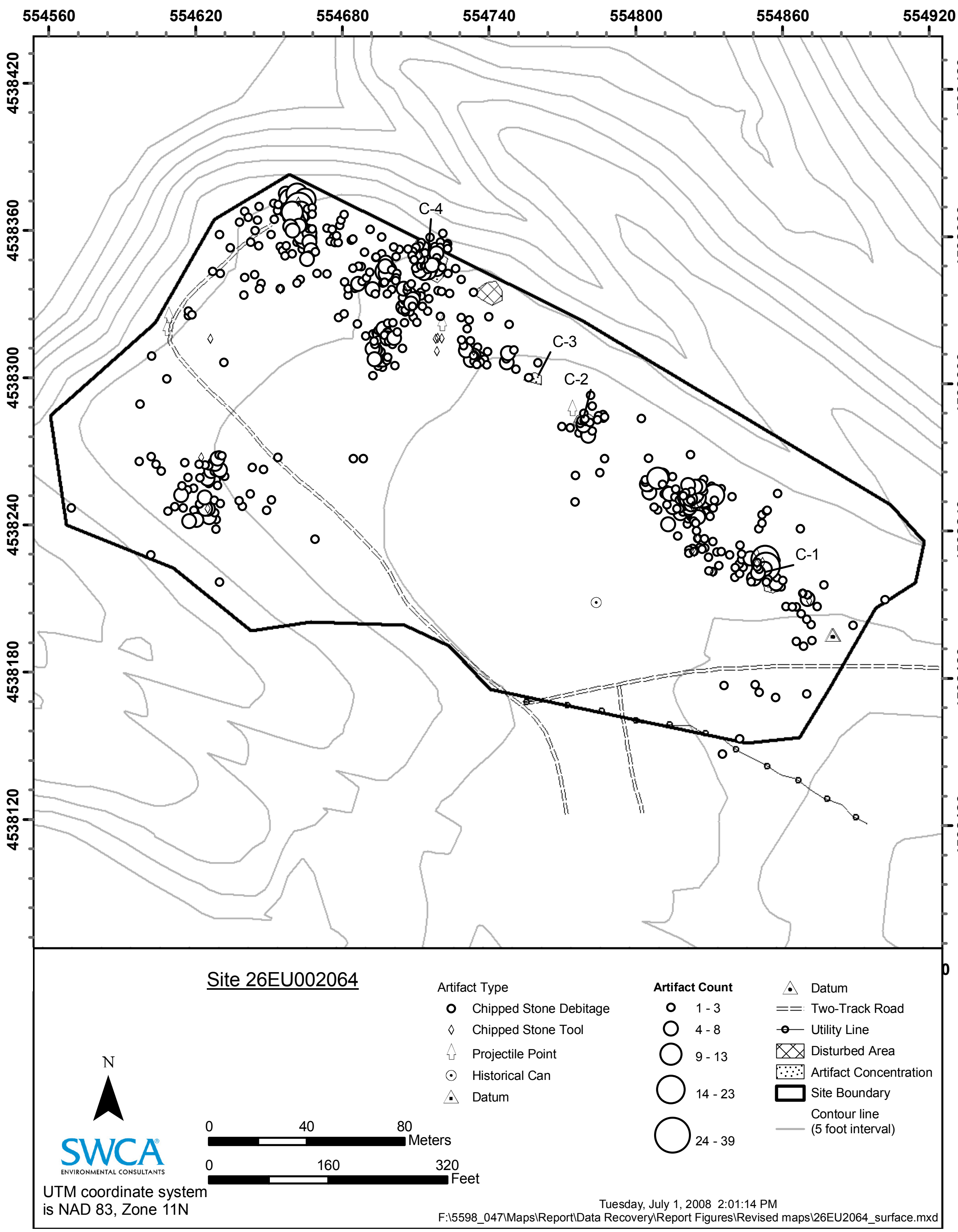


Figure 16. Results of surface artifact collection at 26EU2064.

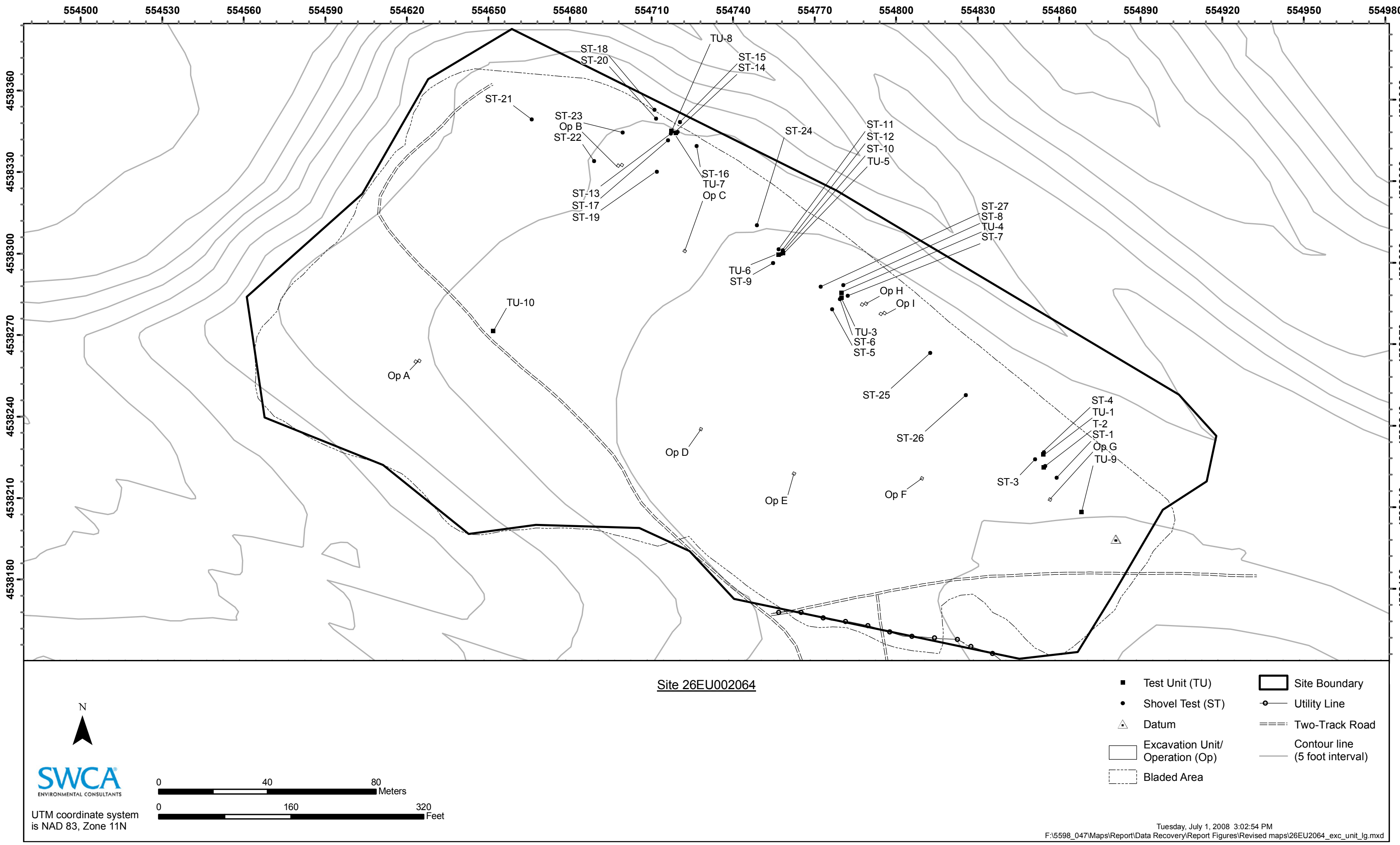


Figure 17. Locations of excavation units and extent of mechanical stripping at 26EU2064.

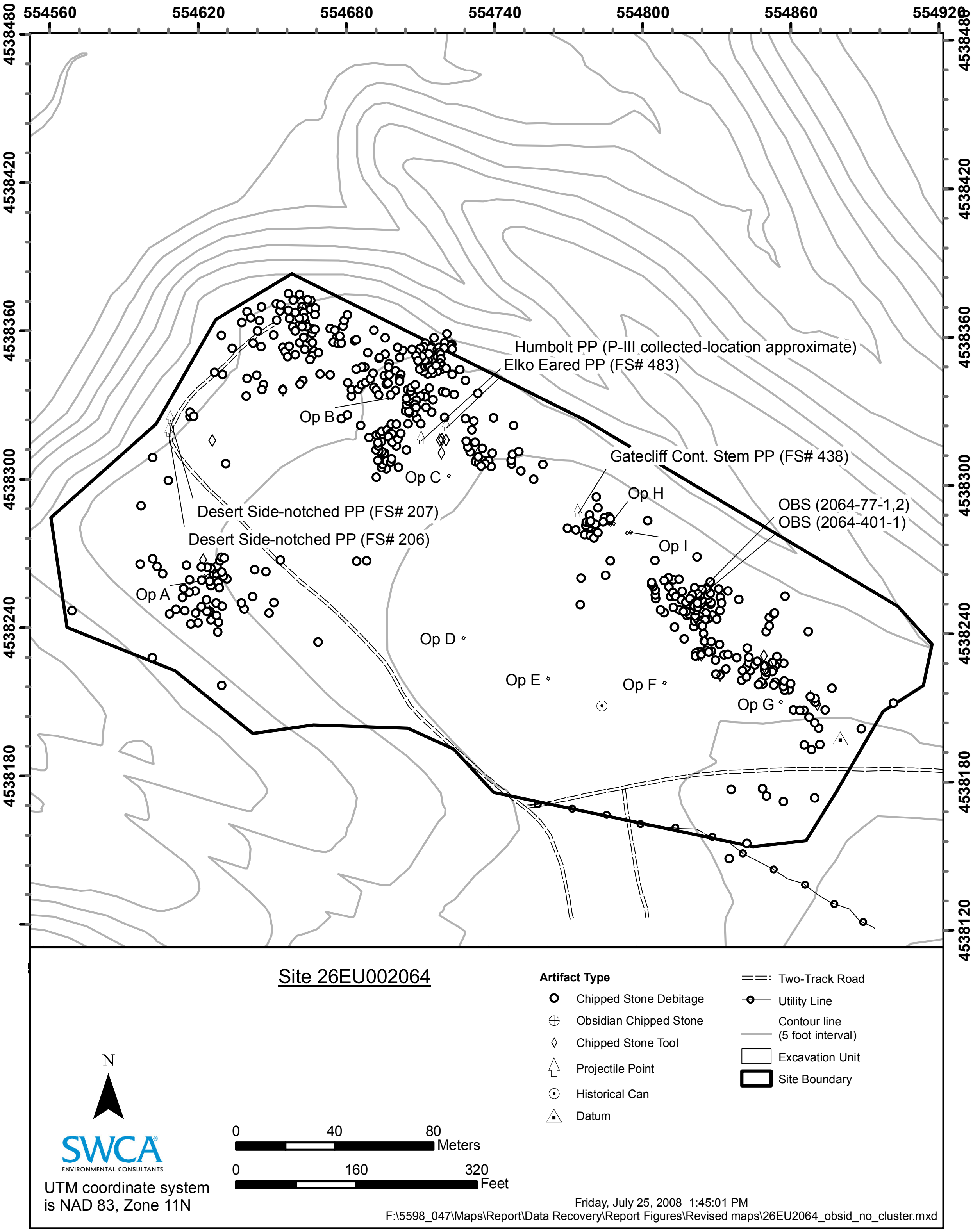


Figure 18. Location of obsidian artifacts and projectile points recovered from 26EU2064.

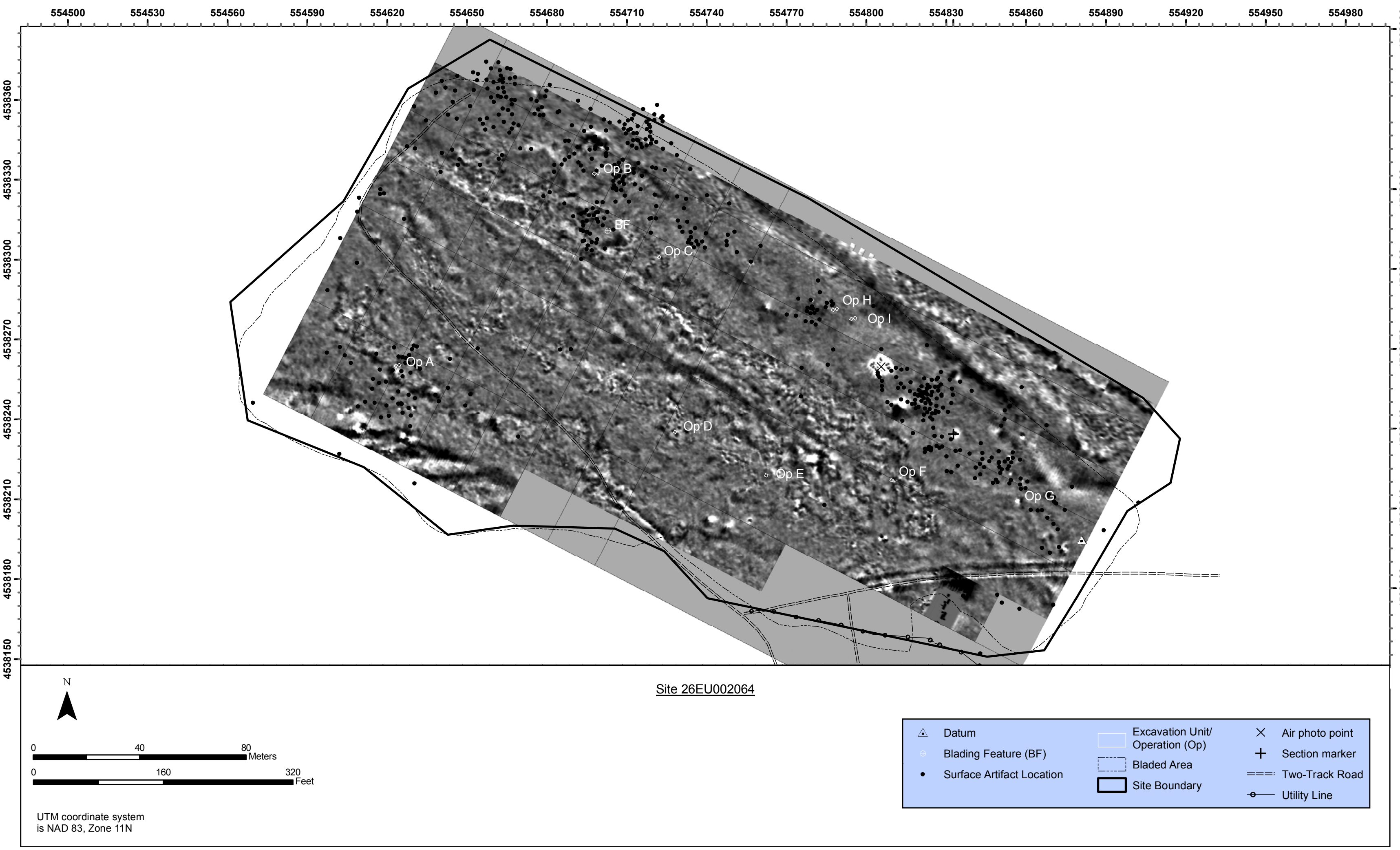


Figure 19. Magnetometer data from 26EU2064.

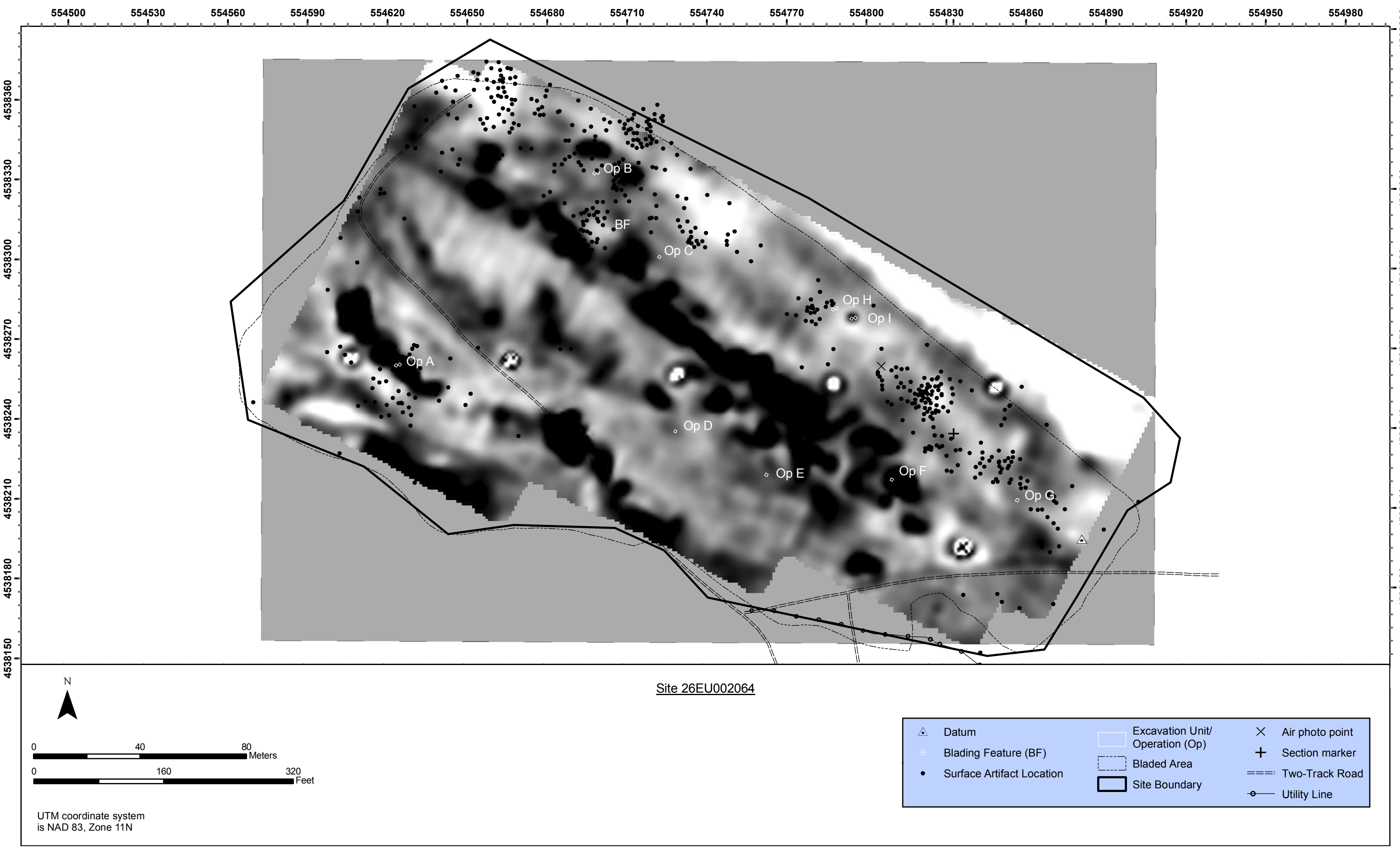


Figure 20. Conductivity data from 26EU2064.

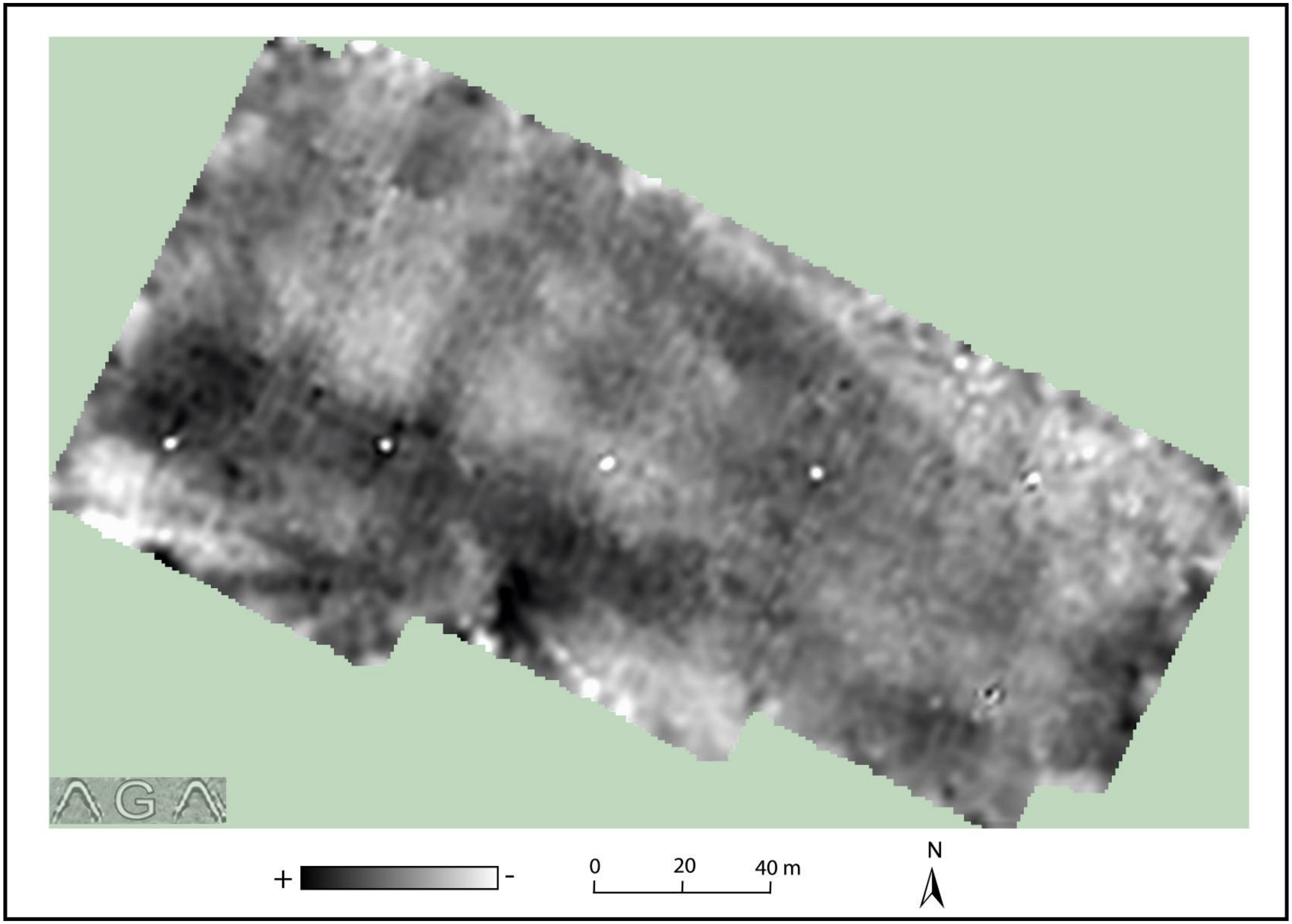


Figure 21. Magnetic susceptibility data from 26EU2064.

IMACS SITE FORM

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM
Form approved for use by
BLM - Utah, Idaho, Wyoming, Nevada
Division of State History - Utah, Wyoming
USFS - Intermountain Region
NPS - Utah, Wyoming

PART A

Administrative Data

***1. State No:** 26EU2126 update
***2. Agency No:** CrNv - 12-11124
3. Temp. No:

4. State: Nevada **County:** Eureka
5. Project: Barrick 2007 Data Recovery
***6. Report No:** SWCA 2008-47
7. Site Name / Property Name:
8. Class: ☑ Prehistoric ☐ Historic ☐ Paleontologic ☐ Ethnographic
9. Site Type: Lithic scatter
***10. Elevation:** 5240 **ft.**
***11. UTM Grid:** **#1 Zone:** 11 551107 **m E** 4537350 **m N** **#2 Zone:** **m E** **m N**
#3 Zone: **m E** **m N** **#4 Zone:** **m E** **m N**

***12. Legals:**

1/4	1/4 of	1/4 of	of Section	Township	Range
SW	NW	NW	24	36 N	49 E
SE	NW	NW	24	36 N	49 E

***13. Meridian:** Mt. Diablo (Nevada)
***14. Map Reference:** USGS Rodeo Creek NW 7.5' Quad, Nevada 1968
15. Aerial Photo:
16. Location and Access:

Site 26EU2126 is located in the floodplain of Rodeo Creek. From the front gate of the Barrick Goldstrike Mine, travel north 1.70 miles until you reach a four-way intersection. Continue driving, going west/northwest at intersection for 1.64 miles, ignoring all forks and intersections. At this point, you will reach the haul road. Cross the haul road, and continue on the dirt road, which runs parallel to the haul road. Follow this for 1.19 miles to an intersection. Turn south, and follow the road, which curves to the east, 0.33 miles. Park vehicle, and walk 15.08 m north to the site boundary. The site datum is located at the UTM coordinates 4537350 N 551107 E.

***17. Land Owner:** Bureau of Land Management
***18. Federal Administrative Units:** Elko
***19. Location of Curated Materials:** Nevada State Museum (Carson City)
20. Description:

Site 26EU2126 was originally documented by P-III Associates (P-III) as two lithic concentrations, surrounded by a discreet scatter of lithic debitage, located in an old floodplain of Rodeo Creek (Popek 1991; Tipps and Popek 1992). Between 100 and 500 flakes were observed throughout the entire site. Tools observed across the site consist of a Cottonwood projectile point fragment (which dates to the Eagle Rock phase), four biface fragments, and one basin milling stone fragment. All tools noted during the initial site visit by P-III were collected.

SWCA archaeologists revisited the site on September 25, 2005. After thorough and controlled inventory of the site, SWCA identified the two concentrations (C-1 and C-2) noted during the P-III original site documentation. Flake density was considerably less than originally recorded, with less than 50 flakes observed. The original site datum was not relocated and a new SWCA datum (rebar, cap, and cairn) was placed at C-2. C-2 was observed just outside of the original site boundary, requiring the site boundary to be extended 20 m to the southeast.

During the 2005 revisit, it was determined that the artifact concentrations originally identified were not necessarily concentrations; rather, they appeared to be areas of increased density, with fewer than 50 artifacts in areas of 10 m or less in diameter. Flakes numbered between 20 and 24, dominated by late-stage thinning flakes, with fewer pressure flakes and flakes of unknown types. Overall flake densities for the areas range from 1 to 2 per m^2. Material types include mostly white Tosawihi Opalite and one quartzite. A two-track road bisected the site, with C-1 located within the road cut.

In September, 2006, SWCA again revisited Site 26EU2126, this time to conduct probing at the site. Three shovel tests and one test unit were excavated. Two tools were recovered during probing in 2006, both from C-2. FS# 200602 is a chert core collected from the surface of the site. FS# 200613 is an obsidian biface collected between 20 and 30 cm below the modern ground surface. Neither tool is temporally diagnostic. In all, 94% of the debitage was recovered from subsurface strata.

The site was heavily overgrown with vegetation that consists of sagebrush, wheat grass, and cheat grass at the time of the revisit, obscuring approximately 70 to 85% of the site surface. Impacts to the site include general erosion and a road which runs through the site.

In the summer and fall of 2007, as part of the BGMI Data Recovery Project, SWCA conducted surface collection, remote sensing, excavations, and surface blading at Site 26EU2126. Fifty-six excavation units were dug in fifteen different areas (Operations A through O). Operationss A and B were placed at locations where remote sensing revealed magnetometer anomalies, Operation C was placed in an area of high conductivity near a surface artifact concentration, and Operations D and E were placed in areas of high conductivity. Operation F was centered on a 1 × 1-m test unit from 2006 that produced abundant artifacts and burned artiodactyls bones. Operations G through N were placed as a series of units intended to explore the area between Operation F and Operation C. Operation O was placed at a location where a burned jackrabbit bone was observed on the ground surface. The excavation units were dug in 10-cm intervals, 2 to 3 levels deep.

The most productive units at the site were in Operations C and F, which were accordingly opened into relatively large excavation blocks (10 m² in the case of Operation C and 24 m², including the 2006 test unit, in the case of Operation F). The density of artifacts and burned bone was high in the initial units excavated in Operation F, particularly in the unit that abutted the 2006 test unit to the west, which was consequently dug to 30 cm below surface rather than to the 20 cm depth that was standard for the project. Further expansion of Operation F led to the discovery of a thick ash lens, clearly a hearth feature, to the southwest of the 2006 test unit; this feature was recorded and collected following the procedures outlined in the treatment plan, and charcoal was recovered from it. Throughout Operation F, but particularly in the units to the northeast of the hearth feature, artifacts and burned bone were abundant, and sediments were ashy and exhibited a texture characteristic of midden deposits. In Operation C, a concentration of fire-cracked rock (FCR) ca. 50 cm in diameter and 10-15 cm in thickness was found in excavation unit C4, and pieces of FCR were encountered scattered throughout other units. The FCR concentration had no fill, and consequently could not be collected following the feature collection procedures outlined in the treatment plan (Cannon and Stettler 2007), but it was photographed, and three charcoal samples (discussed further below under dating results) were collected from underneath it. The bottom of the FCR concentration was at ca. 20 cm below surface, and a third 10-cm level was dug in unit C4 to explore whether archaeological materials were present below it; however, this third level proved to be sterile. In all areas other than Operations C and F, subsurface artifacts were either rare and occurred only in the uppermost few centimeters or were not present.

Two bulk soil samples were collected at Site 26EU2126 in 2007; one from an excavation unit in Op C (TF 2) and one during site surface blading (TF 2). Approximately 6,293 flakes were recovered during surface collection, excavation, and site surface blading, including 7 obsidian flakes. The majority of flakes recovered from excavation units came from Operations C and F. In addition, 31 tools were recovered during the 2007 fieldwork, including 5 projectile points (FS#s 1051, 1069, 1074, 1085, and 1096) dating from A.D. 1250 to A.D. 1850+, 14 bifaces (FS#s 1, 33-2, 34-2, 35, 1071-1, 1071-2, 1073, 1091, 1094, 1122, 1129, 1148-1, 1150, and 1155), 7 modified flakes (FS#s 33-1, 34-1, 36, 37, 301 and 1011), 3 cores (FS#s 9, 1063, and 1300), 1 piece of ground stone (FS# 1001), and 1 blade (FS# 1086).

Site 26EU2126 appears to date to the Eagle Rock phase (A.D. 1300 - A.D. 1850+) (Justice 2002). A series of projectile points were observed and collected at this site by SWCA in 2007, consisting of four Cottonwood Triangular points and one Desert Side-notched point. Both of these types date to the Eagle Rock phase. In addition, eight pieces of obsidian were dated; seven date to the Eagle Rock phase, and one dated to the Maggie Creek phase (Cannon et al 2008). However, five charcoal smaples dated using Carbon-14 presented an earlier date range. Three samples produced similar date ranges: 1620 ± 40 14C yrs B.P. (A.D. 350-540 cal 2 sigma), 1630 ± 40 14C yrs B.P. (A.D. 340-540 cal 2 sigma), and 1640 ± 40 14C yrs B.P. (A.D. 330-540 cal 2 sigma). A fourth charcoal sample, collected from the fill of the hearth (Feature 2) discovered in Operation F, returned a corrected radiocarbon date of 1160 ± 40 14C yrs B.P. (A.D. 770-980 cal 2 sigma). A fifth radiocarbon date, obtained from a charcoal sample recovered beneath a second FCR concentration (Feature 3), returned a radiocarbon date of 1390 ± 40 14C yrs B.P. (A.D. 600-680 cal 2 sigma) (Cannon et al 2008).

After completing excavation the site's surface was scraped using a grader. The grader made two successive passes, the first going down 5 to 8 cm and the second going down an additional 5 to 8 cm. An archaeologist followed behind the grader at all times, monitoring the uncovered surface.

***21. Site Condition:** ☐ **Excellent** ☑ **Good** ☐ **Fair** ☐ **Poor** ☐ **Inundated** ☐ **Destroyed** ☐ **Unknown**

***22. Impact Agents:** Erosion Road Demolition/Dismantling

***23. National Register Status:** Non-Significant (Professional Judgement)

Justify: Site 26EU2126 was originally recorded and its eligibility evaluated by P-III Associates in 1991. The site was recommended eligible for the NRHP under Criterion D, due to potential subsurface cultural deposits, artifact concentrations that indicated site structure data were intact, and the presence of ground stone, which indicates plant processing and subsistence data might be available (Popek 1991).

SWCA revisited the site in 2005, again in 2006 to conduct limited probing, and a third time in 2007 to conduct surface collection, remote sensing, excavation, and site surface scraping as part of the BGMI 2007 Data Recovery Project in accordance with a treatment plan that was approved by the BLM with NV SHPO concurrence (Cannon and Stettler 2007). Fifty-six 1 × 1-m units were excavated in fifteen different areas of the site, placed due to magnetometer anomalies or high conductivity revealed in remote sensing, or close to a surface artifact concentration.

IMACS SITE FORM **PART A** ***1. State No:** 26EU2126 update

Due to site excavation and site surface scraping conducted as part of the data recovery project, Site 26EU2126 no longer exists. Therefore, SWCA recommends Site 26EU2126 be considered not eligible for the NRHP under any criteria..

24. Photos: Camera 3: 1980-1990. 2007: 546-548, 613-622, 679-682, 2808-2816, 2822-2825, 2876-2887, 3282-3298, 3372-3398, 4313-4394, 4408-4421. Photos curated at the Salt Lake City SWCA office.

25. Recorded by: M. Cannon

***26. Survey Organization:** SWCA Environmental Consultants ***28. Survey Date:** 07 - 19 - 08

27. Assisting Crew Members: D. Heersink, C. Woodman, P. Morris, V. Villagran, H. Stettler

List of Attachments:
- [x] Part B
- [ ] Part C
- [ ] Part E
- [x] Topo Map
- [x] Site Sketch
- [x] Photos
- [ ] Artifact/Feature Sketch
- [ ] Continuation Sheets
- [ ] Other:___________________

Environmental Data

***29. Slope:** 1 **(Degrees)** 208 **Aspect (Degrees)**

***30. Distance to Permanent Water:** .71 **x 100 Meters**

***Type of Water Source:** Stream/River

Name of Water Source: Rodeo Creek

***31. Geographic Unit:** Boulder Flat

***32. Topographic Location:** *- See Guide for additional information*

Primary Landform: Valley

Secondary Landform: Floodplain

Describe: The site is located on the floodplain of Rodeo Creek north of the Tuscarora Spur. The southern boundary is bordered by Rodeo Creek and an unnamed, intermittant drainage bounds the northern portion of the site.

***33. On-site Depositional Context** Alluvial Plain

Describe: Sediments on-site include a light grayish brown silt mixed with numerous small, subangular gravels.

34. Vegetation

***a. Life Zone:** ☐ **Arctic-Alpine** ☐ **Hudsonian** ☐ **Canadian** ☐ **Transitional** ☑ **Upper Sonoran** ☐ **Lower Sonoran** ☐ **Unknown**

***b. Community:**

Primary On-Site: Big Sagebrush

Secondary On-Site: Shadscale Community

Surrounding Site: Big Sagebrush

Describe: Vegetation includes sagebrush, rabbitbrush, wheat grass, and cheat grass.

***35. Miscellaneous Text:** GPS data collected in NAD83.

36. Comments/Continuations

Report number(s): BLM 1-1643 (1991), BLM 1-2502 (2005), BLM 1-2595 (2007).

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Cannon, Michael D. and Heather K. Stettler
2007 Data Recovery Plan for Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Holmer, Richard N.
1978 A Mathematical Typology for Archaic Projectile Points of the Eastern Great Basin. Unpublished Ph.D. dissertation, Department of Anthropology, University of Utah, Salt Lake City, UT.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Popek, Gary M.

1991 IMACS Site Form: 26EU2126/CrNV 12-11124. In Class III Cultural Resource Inventory of Portions of Sections 13 and 24, T. 36 N., R. 49 E., Eureka County, Nevada, edited by Betsy L. Tipps and Gary M. Popek. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1643.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Thomas, David Hurst
1981 How to Classify the Projectile Points from Monitor Valley, Nevada. Journal of California and Great Basin Anthropology 3:7-43.

Tipps, Betsy L. and Gary M. Popek
1992 Class III Cultural Resource Inventory of Portions of Sections 13 and 24, T. 36 N., R. 49 E., Eureka County, Nevada. Prepared by P-III Associates, Inc., Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-1643.

#14 Continued:

USGS Rodeo Creek NE 7.5' Quad, Nevada

USGS Santa Renia Fields 7.5' Quad, Nevada

USGS Beaver Peak 7.5' Quad, Nevada

Part B - Prehistoric Sites

Site No: 26EU2126 update

1. Site Type: Lithic scatter

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***2. Culture:**	Protohistoric/Contact (general)	Lithic Cross Dating	Late Prehistoric (general)	Obsidian Hydration

Describe: A series of projectile points were observed and collected at this site by SWCA in 2007, consisting of four Cottonwood Triangular point and one Desert Side-notched point. Both of these types date to the Eagle Rock phase, from A.D. 1250 to A.D. 1850+ (Justice 2002). In addition, eight pieces of obsidian were dated; seven date to the Eagle Rock phase, and one dates to the Maggie Creek phase (Cannon et al 2008). Five pieces of charcoal returned radiocarbon dates from the James Creek and early Maggie Creek phases. However, radiocarbon dates from two pieces of bone date to the Maggie Creek/Eagle Rock transition, and suggest that the earlier dates from charcoal samples may be due to "old wood" effects (Cannon et al. 2008). Additional chronological information was taken from Schmitt and Madsen (2005) and Hockett and Morgenstein (2003).

3. Site Dimensions: 106.63 **m X** 110.01 **m *Area:** 7,480.77 **sq. m** ☑ If checked, area was determined by GIS

***4. Surface Collection/Method** Complete Collection

Sampling Method: Artifacts were recovered by SWCA during testing in 2006. A complete collection was conducted by SWCA during excavation and site scraping in 2007.

***5. Estimated Depth of Cultural Fill:** 20-100 cm

How Estimated: Depth was estimated based on testing conducted by SWCA in October of 2006, as well as excavations in 2007.
(If Tested, show location on site map)

***6. Excavation Status:** Excavated

Testing Method: In September of 2006 SWCA revisited Site 26EU2126 to conduct probing at the site. Three shovel tests and one test unit were excavated at 26EU2126. ST1, ST2, and ST3 were placed in C-2 and excavated to an approximate depth of 10 cm, for a total ST volume of 0.075 m^3. To better understand the distribution of cultural material within C-2 ST1 was placed on the concentration's western boundary, ST2 was placed on the concentration's western boundary, and ST3 was placed at the center of the concentration.

TU1 was placed in C-2 over the area with the highest quantity of quartzite flakes on the surface. TU1 was excavated to a depth of 30 cm below ground surface, with a total excavated volume of 0.3 m^3. The unit was discontinued on the basis of a marked decrease in the quantity of cultural material. Most of the debitage recovered from TU1 was from 0–10 cm below ground surface. Approximately 19 fragments of bone were recovered between 0–30 cm below ground surface. No pollen samples, macrobotanical material, ceramics, or material suitable for radiocarbon data was observed or collected.

In the summer and fall of 2007 SWCA conducted surface collection, remote sensing, excavations, and surface blading at Site 26EU2126. Fifty-six excavation units were dug in fifteen different areas (Operations A through O). Operations A and B were placed at locations where remote sensing revealed magnetometer anomalies, Operation C was placed in an area of high conductivity near a surface artifact concentration, and Operations D and E were placed in areas of high conductivity. Operation F was centered on a 1 × 1–m test unit from 2006 that produced abundant artifacts and burned artiodactyls bones. Operations G through N were placed as a series of units intended to explore the area between Operation F and Operation C. Operation O was placed at a location where a burned jackrabbit bone was observed on the ground surface.

For shovel test, test unit and excavation unit UTM coordinates, see attached tables.

***7. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Lithic Scatter

FCR / Burned Stone

Describe: Artifacts observed on Site 26EU2126 consist of lithic debris observed within two concentrations (C-1 and C-2). Artifact frequencies observed during the 2005 SWCA revisit were considerably lower than the 100-500 flakes noted during the P-III, 1991 original documentation.

C-1 was located on the northeast site boundary and is 6 m in diameter. Artifacts observed within C-1 consist of 20 diffusely scattered, late-stage biface reduction and pressure flakes. Lithic material types are primarily white Tosawihi Opalite with a minimal amount of gray quartzite observed. C-1 is located in a road cut with several flakes observed in the road berm itself.

C-2 was observed on the eastern site boundary and is 10 m in diameter. Artifacts observed consist of 29 white Tosawihi Opalite middle-stage bifacial thinning flakes. A small number of these (n=5) were pressure flakes. No tools or temporally diagnostic artifacts were observed in C-2.

Two tools were recovered during probing, both from C-2: one core (FS# 200602) and one biface (FS# 200613). Neither tool is temporally diagnostic.

Thirty-five faunal specimens were recovered from probing at Site 26EU2126, all from C-2. In all, 17 of these are from FS 8, including 1 elk-sized (size class 6) artiodactyl cervical vertebra fragment and 16 unidentified specimens, most or all of which are likely part of the cervical vertebra although they do not refit. Additionally, 12 specimens were recovered from FS 10, including 1 artiodactyl tooth enamel fragment and 11 unidentified (size class 4 or 5) specimens. Other specimens include five unidentified (size class 5) specimens recovered from FS 11, and one size class 2 rodent sacrum recovered from FS 15.

Eighteen of the specimens recovered from this site are burned. These include the artiodactyl vertebra specimen and twelve of the unidentified specimens from FS 8, three of the unidentified specimens from FS 10, and two of the unidentified specimens from FS 15. This may indicate human subsistence use of vertebrates at this site. In turn, although the faunal assemblage recovered from testing at this site is far too small to use for drawing conclusions about human subsistence, the presence of burned bone may indicate that the site has the potential to answer subsistence-related research questions, provided that sufficient buried deposits remain.

During 2007 fieldwork, approximately 6,293 flakes were recovered during surface collection, excavation, and site surface blading, including 7 obsidian flakes. The majority of flakes recovered from excavation units came from Ops C and F. In addition, 31 tools were recovered during the 2007 fieldwork, including 5 projectile points (FS#s 1051, 1069, 1074, 1085, and 1096) dating from A.D. 1250 to A.D. 1850+, 14 bifaces (FS#s 1, 33-2, 34-2, 35, 1071-1, 1071-2, 1073, 1091, 1094, 1122, 1129, 1148-1, 1150, 1155), 7 modified flakes (FS#s 33-1, 34-1, 36, 37, 301, 1011, 1148-2), 3 cores (FS#s 9, 1063, and 1300), 1 piece of ground stone (FS# 1001), and 1 blade (FS# 1086).

Additional artifacts recovered during 2007 fieldwork include 363 pieces of faunal bone. A small portion of the faunal inventory is identified to three genera: Lepus, Cervus, and Spermophilus. The remaining specimens from the faunal inventory not specifically identified to genus represent additional animal taxa. These consist of specimens identified as Aves, Artiodactyla, Cervidae, Leporidae, Rodentia, and Arvicolinae. When possible, more specific identifications were made for these specimens not identified to genera. One size category, Very Large/Large Mammal, dominates the overall assemblage, and one genus, Lepus (jackrabbit), dominates the identified specimens. The Very Large/Large Mammals were recovered from Operations F and C, and Lepus remains were found only in Operation O. The remaining taxa are uncommon and found within Operations O and F. These are class Aves and orders Artiodactyla and Rodentia, and family Leporidae. No reptiles, amphibians, or fish were recovered during excavations.

Site 26EU2126 appears to date to the Eagle Rock phase (A.D. 1300–A.D. 1850+) (Justice 2002). A series of projectile points were observed and collected at this site by SWCA in 2007, consisting of 4 Cottonwood Triangular points and 1 Desert Side-notched point. Both of these types date to the Eagle Rock phase. In addition, 8 pieces of obsidian were dated; 7 dated to the Eagle Rock phase, and 1 dated to the Maggie Creek phase (Cannon et al 2008).

Five charcoal samples dated using Carbon-14 presented an earlier date range. Three samples produced similar date ranges: 1620 ± 40 14C yrs B.P. (A.D. 350–540 cal 2 sigma), 1630 ± 40 14C yrs B.P. (A.D. 340–540 cal 2 sigma), and 1640 ± 40 14C yrs B.P. (A.D. 330–540 cal 2 sigma). A fourth charcoal sample, collected from the fill of the hearth (Feature 2) discovered in Operation F, returned a corrected radiocarbon date of 1160 ± 40 14C yrs B.P. (A.D. 770–980 cal 2 sigma). A fifth radiocarbon date, obtained from a charcoal sample recovered beneath a second FCR concentration (Feature 3), returned a radiocarbon date of 1390 ± 40 14C yrs B.P. (A.D. 600–680 cal 2 sigma).

Two bone specimens, both of which were recovered from the vicinity of the hearth (Feature 2), returned dates that are much later than all of the dates on charcoal; the radiocarbon ages are 710 ± 40 14C yrs B.P. (A.D. 1260–1310 cal 2-sigma) and 750 ± 40 14C yrs B.P. (A.D. 1220–1290 cal 2-sigma). The radiocarbon dates obtained from the two pieces of bone falls very late in the Maggie Creek Phase or at the transition between the Maggie Creek and Eagle Rock Phases. The discrepancy in age between these bone dates and the charcoal dates suggests that the charcoal dates are erroneously old due to "old wood" effects (Cannon et al 2008).

For artifact concentration and artifact UTM coordinates see attached table.

***8. Lithic Tools:**

#	Type	#	Type
7	Utilized/Modified Flake	1	Blade
4	Cottonwood Triangular	1	Desert Side-notched
15	Biface	4	Core

Part B - Prehistoric Sites

Site No: 26EU2126 update

1 Mano, Single-handed

Describe: In 2006, two tools were recovered during probing, both from C-2: one core (FS# 200602) and one biface (FS# 200613). Neither tool is temporally diagnostic. While neither of these tools show use patterns, they do have some microfractures along their edges, which likely came from use. FS# 200602 came from the surface of the site, while FS# 200613 came from between 20 and 30 cm below the ground surface.

FS 200602 is a random/expedient core made of white chert. It measures 5.0 cm long by 3.5 cm wide by 2.0 cm thick.

FS 200613 is a complete biface made from black obsidian. It measures 6.4 cm long by 2.5 cm wide by 0.9 cm thick.

During the 2007 fieldwork, an additional 31 tools were recovered from the ground surface and excavation units, and during site surface scraping.

FS 1 is a biface fragment made from white chert. It measures 3.7 cm long by 2 0.cm wide by 6.0 cm thick.

FS 9 is a random/expedient core made of white chert. It measures 5.9 cm long by 3.2 cm wide by 2.1 cm thick.

FS 33 consists of a biface fragment and a modified flake. The biface fragment is made of white chert. It measures 4.9 cm long by 2.8 cm wide by 0.7 cm thick. The modified flake is made of white chert, exhibits perpendicular striations, and is incomplete. It measures 3.0 cm long by 1.7 cm wide by 0.3 cm thick.

FS 34 consists of a biface fragment and a modified flake. The biface fragment is made of purple chert. It measures 1.9 cm long by 0.9 cm wide by 0.2 cm thick. The modified flake is made from white chert and is incomplete. It measures 2.9 cm long by 1.9 cm wide by 0.4 cm thick.

FS 35 is a biface fragment made of white chert. It measures 1 cm long by 0.9 cm wide by 0.2 cm thick.

FS 36 is a complete modified flake made of white chert. It measures 2.5 cm long by 1.6 cm wide by 0.2 cm thick.

FS 37 is a complete modified flake made of light red chert. It exhibits a serrated edge. It measures 2.9 cm long by 2.1 cm wide by 0.3 cm thick.

FS 301 is an incomplete modified flake made from light red chert. It exhibits a serrated edge. It measures 1.6 cm long by 1.5 cm wide by 0.2 cm thick.

FS 1001 is a one-hand, rectangular mano made from gray sandstone. It measures 4.9 cm long by 5.5 cm wide by 4 cm thick.

FS 1011 is a complete modified flake made of red, brown and gray chert. It measures 4.8 cm long by 3.4 cm wide by 1.6 cm thick.

FS 1051 is an incomplete projectile point made of white chert. It measures 1.8 cm long by 0.9 cm wide by 0.2 cm thick. Using Justice's classification (2002) the point is categorized as a Cottonwood Triangular dating from A.D. 1250 to A.D. 1850+, placing it into the Eagle Rock phase.

FS 1063 is a random/expedient core made of white chert. It measures 5.6 cm long by 4.3 cm wide by 1.9 cm thick.

FS 1069 is an incomplete projectile point made of white chert. It measures 1.1 cm long by 1.3 cm wide by 0.3 cm thick. Using Justice's classification (2002) the point is categorized as a Cottonwood Triangular dating from A.D. 1250 to A.D. 1850+, placing it into the Eagle Rock phase.

FS 1071 consists of 2 biface fragments. The first is a biface fragment made from white chert. It measures 3.9 cm long by 3.1 cm wide by 1.6 cm thick. The other is a biface fragment made from white chert. It measures 4.6 cm long by 2.8 cm wide by 1.3 cm thick.

FS 1073 is a biface fragment made of white and light brown chert. It measures 6 cm long by 3.1 cm wide by 0.9 cm thick.

FS 1074 is an incomplete projectile point made of white chert. It measures 2.0 cm long by 1.1 cm wide by 0.2 cm thick. Using Justice's classification (2002) the point is categorized as a Cottonwood Triangular dating from A.D. 1250 to A.D. 1850+, placing it into the Eagle Rock phase.

FS 1085 is an incomplete projectile point made of light red chert. It measures 1.7 cm long by 1.3 cm wide by 0.3 cm thick. Using Justice's classification (2002) the point is categorized as a Cottonwood Triangular dating from A.D. 1250 to A.D. 1850+, placing it into the Eagle Rock phase.

FS 1086 is the distal end and midsection fragment of a chipped stone blade that appears to be a knife blade, made of white chert. It is smooth on one edge and worked on the other edge. It measures 5 cm long by 3.5 cm wide by 1.1 cm thick.

Part B - Prehistoric Sites

Site No: 26EU2126 update

FS 1091 is a biface fragment made from white chert. It measures 4.5 cm long by 2.4 cm wide by 1 cm thick.

FS 1094 is the distal fragment of a biface made from white chert. It measures 2.7 cm long by 1.6 cm wide by 0.5 cm thick.

FS 1096 is a complete projectile point made of white and light red chert. It measures 2.3 cm long by 1.4 cm wide by 0.3 cm thick. Using Justice's classification (2002) the point is categorized as a Desert Side-notched, which dates from A.D. 1250 to A.D. 1850+, placing it into the Eagle Rock phase.

FS 1122 is the midsection fragment of a biface made of white chert. It measures 2 cm long by 1.2 cm wide by 0.3 cm thick.

FS 1129 is the base fragment from a biface or a projectile point, made of gray and white chert. It measures 1 cm long by 1.4 cm wide by 0.3 cm thick.

FS 1148 consists of a biface fragment and a modified flake. The biface fragment is made of white and pink chert. It measures 5.4 cm long by 3.3 cm wide by 1.3 cm thick. The modified flake is made from white chert with red veins and is incomplete. It measures 4.1 cm long by 2.8 cm wide by 1.0 cm thick.

FS 1150 is a biface fragment made of white chert. It measures 4 cm long by 2.8 cm wide by 1.1 cm thick.

FS 1155 is a biface fragment made from white chert. It measures 5.1 cm long by 4 1.cm wide by 5 cm thick.

FS 1300 is a random/expedient core made of white chert. It measures 5.2 cm long by 3.8 cm wide by 2.3 cm thick.

For artifact UTM coordinates and additional details, see attached table.

***9. Lithic Debitage - Estimated Quantity:** 500+

Material Type: The majority of material types observed on Site 26EU2126 consist of white, Tosawihi opalite. A small quantity of gray quartzite was observed in C1.

Flaking Stages: **(0) Not Present** **(1) Rare** **(2) Common** **(3) Dominant**

Decortication: 0 **Secondary:** 2 **Tertiary:** 3 **Shatter:** 1 **Core:** 0

10. Maximum Density - # / sq m (all lithics): <1

***11. Ceramics Artifacts:**

#	Type	#	Type
0			

Describe: SWCA did not observe any ceramic artifacts at this site.

12. Maximum Density - # / sq m (ceramics): 0

***13. Non-Architectural Features (locate on site map):** *- See Guide for additional categories*

#	Type	#	Type	#	Type
0					

Describe: SWCA did not observe any non-architectural features at this site.

***14. Architectural Features (located on site map):**

#	Material	Type	#	Material	Type
0					

Describe: SWCA did not observe any architectural features at this site.

15. Comments / Continuations:

Site No: 26EU2126 update

References cited:

Cannon, Michael D., N. Barger, K. Boatman, G. Cox, S. Grant, S. Meess, E. Root-Garey, A. Spurling, A. Tews, A. Twist, V. Villagran, and C. Walker
2008 Data Recovery Excavations at Five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada. Prepared by SWCA Environmental Consultants, Salt Lake City, UT. Copies available from Bureau of Land Management, Elko, NV. BLM 1-2595.

Hockett, Bryan and Maury Morgenstein
2003 Ceramic Production, Fremont Foragers, and the Late Archaic Prehistory of the North-Central Great Basin. Utah Archaeology 16:1-36.

Justice, Noel D.
2002 Stone Age Spear and Arrow Points from California and the Great Basin. Indiana University Press, Bloomington, Indiana.

Schmitt, Dave N. and David B. Madsen
2005 Camels Back Cave. University of Utah Anthropological Papers Number 125. University of Utah Press, Salt Lake City.

Part C - Historic Sites

Site No:

1. Site Type:

***2. Historic Themes:**

	CULTURAL AFFILIATION	DATING METHOD	CULTURAL AFFILIATION	DATING METHOD
***3. Culture:**				

Describe:

***4. Oldest Date:** **Recent Date:**

How Determined:

5. Site Dimensions: m X m ***Area:** sq. m ☐ If checked, area was determined by GIS

***6. Surface Collection/Method**

Sampling Method

***7. Estimated Depth of Cultural Fill:**

How Estimated

(If Tested, show location on site map)

***8. Excavation Status:**

Testing Method:

***9. Summary of Artifacts and Debris:** *(Refer to Guide for additional categories)*

Describe:

10. Ceramic Artifacts:

a. Estimated Number of Ceramic Trademarks:

Describe:

11. Glass:

Describe:

12. Maximum Density - #/sq m (glass and ceramics):

13. Tin Cans:

Describe:

***14. Landscape and Constructed Features (locate on site map)** *- See Guide for additional categories*

#	Type

Part C - Historic Sites

Site No:

Describe:

***15. Buildings and Structures (locate on site map):**

#	Material	Type	#	Material	Type

Describe:

16. Comments/Continuations - Please make note of any Historic Record searches performed *for example - (County Records, General Land Office, Historic Society, Land Management Agency Records, Oral Histories/Interviews)*

1990

IMACS ENCODING FORM

Encoder's Name M. Cannon

To be completed for each site form.
For instructions and codes, see IMACS Users Guide.

A

Field	Value
1 State Site Number	26EU2126 update
2 Agency Site Number	CrNv - 12-11124
6 Agency Report Number	SWCA 2008-47
10 Elevation	5240
11 Zone / Easting / Northing	11 / 551107 / 4537350

12

1/4	1/4	1/4	Sec.	T.		R.	
SW	NW	NW	24	36	N	49	E
SE	NW	NW	24	36	N	49	E

Field	Value
13 Merid.	7
14 USGS Map	USGS Rodeo Creek NW 7.5' Quad, Nevada 196
17 Owner	LM
18 Forest	BB
Dist./Park	
19 Loc. Cur. Materials	CSM
21 Cond.	2
22 Impacts	ER, RD, DM
23 N.R.	D
26 Organ.	ST
28 Survey Date	07 - 19 - 08
29 Slope	1
Aspect	208
30 Water: dstance/type	.71 / B
31 Geog. Unit	BIT
32 Topographic Location (1st / 2st)	E / J
33 Dep.	H
34 Vegetation (1 / 2 / 3)	5 — P / O / P
35 Misc. Text, Site Name	GPS data collected in NAD83.

B

Field	Value
2 Culture/Dating Method	PC N, LP J
3 Area	7,480.77
4 Collect	D
5 Depth	C
6 Excav. Status	A
7 Prehistoric Artifacts	LS, BS
9 # / Flaking Stages	F / 0 2 3 1 0
11 Ceramics: #/type	0
13 Features: # / type	0
14 Architecture: # / material / type	0

8 Lithic Tools: # / type

#	type	#	type
7	IA	1	EC
1	IC	15	IG
4	DJ	4	ID

C

2 Historic Themes | 3 Culture/Dating Method | 4 Dates | 5 Area | 6 Collect | 7 Depth | 8 Excav. Status | 9 Artifacts

14 Features: # / type | 15 Architecture: # / material / type

Printed on 8/12/2008 9:05:38 A

Table 1. UTM Coordinates (NAD83, Zone 11N) for Shovel Tests, Test Units, and Excavation Units at 26EU2126

Object	Northing	Easting
Shovel Test 1 (ST1), center	4537550	551022
Shovel Test 2 (ST2), center	4537548	551024
Shovel Test 3 (ST3), center	4537551	551026
Test Unit 1 (TU1), center	4537552	551027
Operation A (Op A), SW corner	4537554	551037
Operation B (Op B), SW corner	4537551	551015
Operation C (Op C), SW corner*	4537594	551028
Operation D (Op D), SW corner	4537564	550997
Operation E (Op E), SW corner	4537548	550997
Operation F (Op F), SW corner**	4537547	551025
Operation G (Op G), SW corner	4537555	551025
Operation H (Op H), SW corner	4537560	551026
Operation I (Op I), SW corner	4537566	551026
Operation J (Op J), SW corner	4537570	551026
Operation K (Op K), SW corner	4537575	551026
Operation L (Op L), SW corner	4537580	551026
Operation M (Op M), SW corner	4537584	551025
Operation N (Op N), SW corner	4537590	551026
Operation O (Op O), SW corner	4537572	551010

*Southern corner of Unit C1.
**Southwest corner of Unit F18.

Table 2. UTM Coordinates (NAD83, Zone 11N) for Chipped Stone Tool (CST) and Chipped Stone Cores (CSC) from General Surface Collection and Mechanical Stripping at 26EU2126

Object	Northing	Easting
FS 1 (CST)	4537573	550976
FS 9 (CSC)	4537547	551021
FS 1300 (CSC)	4537544	551024

Table 3. Provenience of Projectile Points (CST-PP), Chipped Stone Tools (CST), Obsidian Chipped Stone Tools (CST-OBS), Chipped Stone Cores (CSC), and Ground Stone Artifacts (GS) from Excavation at 26EU2126

Object	Provenience
FS 33 (CST)	Excavation Unit F2, Level 1
FS 34 (CST)	Excavation Unit F1, Level 1
FS 35 (CST)	Excavation Unit F21, Level 1
FS 36 (CST)	Excavation Unit F12, Level 1
FS 37 (CST)	Excavation Unit F2, Level 3
FS 301 (CST)	Excavation Unit F6, Level 1
FS 1001 (GS)	Excavation Unit C1, Level 1
FS 1011 (CST)	Excavation Unit C2, Level 1
FS 1051 (CST-PP)	Excavation Unit B3, Level 1
FS 1063 (CSC)	Excavation Unit F1, Level 1
FS 1069 (CST-PP)	Excavation Unit F2, Level 1
FS 1070 (CS-OBS)	Excavation Unit F2, Level 1
FS 1071 (CST)	Excavation Unit F2, Level 1
FS 1073 (CST)	Excavation Unit F2, Level 2
FS 1074 (CST-PP)	Excavation Unit F2, Level 2
FS 1078 (CS-OBS)	Excavation Unit F3, Level 1
FS 1085 (CST-PP)	Excavation Unit F4, Level 1
FS 1086 (CST)	Excavation Unit F4, Level 1
FS 1091 (CST)	Excavation Unit F5, Level 1
FS 1094 (CST)	Excavation Unit F6, Level 1
FS 1096 (CST-PP)	Excavation Unit F6, Level 2
FS 1122 (CST)	Excavation Unit C6, Level 1
FS 1129 (CST)	Excavation Unit C8, Level 1
FS 1148 (CST)	Excavation Unit F17, Level 1
FS 1150 (CST)	Excavation Unit F18, Level 1
FS 1155 (CST)	Excavation Unit F21, Level 1
FS 1161 (CS-OBS)	Excavation Unit F17, Level 1
FS 1173 (CS-OBS)	Excavation Unit F2, Level 2
FS 1174 (CS-OBS)	Excavation Unit F5, Level 1
FS 200602 (CSC)	Shovel Test 2
FS 200613 (CST-OBS)	Test Unit 1

Table 4. Counts of Chipped Stone Artifacts at Site 26EU2126

	Debitage	Tools	Cores	Total
26EU2126	6697	28	4	6729

Table 5. Debitage Material Type at Site 26EU2126

Site	Obsidian Count	Obsidian Percent	Tosawihi Count	Tosawihi Percent	Total
26EU2126	7	0.10%	6690	99.90%	6697

Table 6. Tool Material Type at Site 26EU2126

Site	Obsidian Count	Obsidian Percent	Tosawihi Count	Tosawihi Percent	Total
26EU2126	1	3.57%	27	96.43%	28

Table 7. Core Material Type at Site 26EU2126

Site	Tosawihi Count	Tosawihi Percent	Total
26EU2126	4	100.00%	4

Table 8: Counts of Ground Stone Types at Site 26EU2126

Site	Flat Metate	Rectangular Mano	Rectangular, One-Hand Mano	Hammer-stone	Unknown Grinding Tool	Indeterminate	Total
26EU2126	0	1	0	0	0	0	1

Table 9. Counts and Percentages of Flake Types at Site 26EU2126

	Core Reduction		Biface Reduction		Biface Thinning		Pressure Flakes		Bipolar Reduction		Indeterminate		Total Number of Proximal Flakes	Total Number of all Flakes
	n	%	n	%	n	%	n	%	n	%	n	%	n	N
26EU2126	9	0.91	76	7.69	125	12.65	20	2.02	0	0.00	758	76.72	988	4173

Table 10. Counts and Percentage of Tool Types at Site 26EU2126

	Biface		Compound Tool		Knifelike Blade		Modified Flake		Projectile Point		Scraper		Total number of tools
	n	%	n	%	n	%	n	%	n	%	n	%	n
26EU2126	15	53.57	0	0.00	1	3.57	7	25.00	5	17.86	0	0.00	28

Table 11. Chipped Stone Tools Recovered at Site 26EU2126 During the 2007 BGMI Project and 2006 Probing

Site	FS#	Specimen#	Tool Type	Material	Completeness
26EU2126	1	1	Biface (Stage 3)	CCS	Incomplete
26EU2126	33	1	Modified Flake	CCS	Incomplete
26EU2126	33	2	Biface (Stage 4)	CCS	Incomplete
26EU2126	34	1	Modified Flake	CCS	Incomplete
26EU2126	34	2	Biface (Stage 5)	CCS	Incomplete
26EU2126	35	1	Biface (Stage 5)	CCS	Incomplete
26EU2126	36	1	Modified Flake	CCS	Complete
26EU2126	37	1	Modified Flake	CCS	Complete
26EU2126	301	1	Modified Flake	CCS	Incomplete
26EU2126	1011	1	Modified Flake	CCS	Complete
26EU2126	1051	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2126	1069	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2126	1071	1	Biface (Stage 2)	CCS	Incomplete
26EU2126	1071	2	Biface (Stage 2)	CCS	Incomplete
26EU2126	1073	1	Biface (Stage 2)	CCS	Incomplete
26EU2126	1074	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2126	1085	1	Projectile Point (Stage 5)	CCS	Incomplete
26EU2126	1086	1	Knifelike Biface (Stage 2)	CCS	Incomplete
26EU2126	1091	1	Biface (Stage 3)	CCS	Incomplete
26EU2126	1094	1	Biface (Stage 4)	CCS	Incomplete
26EU2126	1096	1	Projectile Point (Stage 5)	CCS	Complete
26EU2126	1122	1	Biface (Stage 5)	CCS	Incomplete
26EU2126	1129	1	Biface (Stage 5)	CCS	Incomplete
26EU2126	1148	1	Biface (Stage 1)	CCS	Incomplete
26EU2126	1148	2	Modified Flake	CCS	Incomplete
26EU2126	1150	1	Biface (Stage 1)	CCS	Incomplete
26EU2126	1155	1	Biface (Stage 2)	CCS	Incomplete
26EU2126	200613	1	Biface (Stage 2)	Obsidian	Complete

Table 12. Knifelike Biface Measurements

Site	FS#	Specimen#	Raw Material	Material Description	Tool Type	Usewear	Max. Length (mm)	Max. Width (mm)	Max. Thickness (mm)	Weight (g)
26EU2126	1086	1	CCS	White	Knifelike Biface	Absent	49.95	35.16	10.56	21.37

Figure 1. Photograph of knifelike biface (FS# 1086) from 26EU2126.

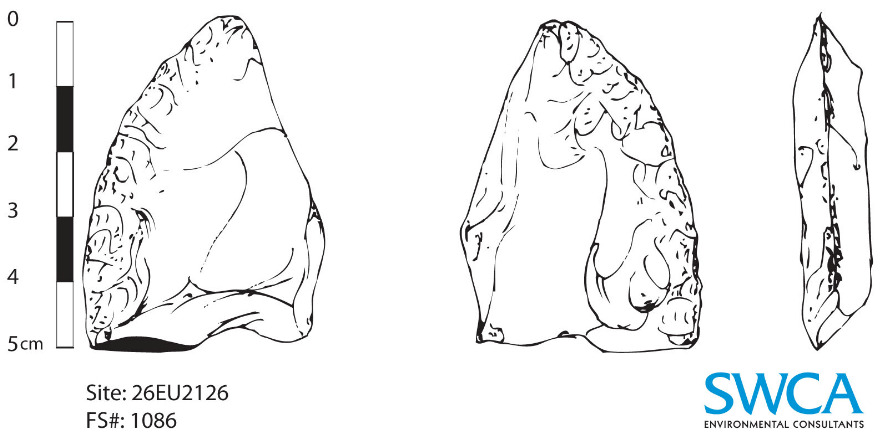


Figure 2. Illustration of knifelike biface (FS# 1086) from 26EU2126.

Table 13. Cores Recovered During the 2007 BGMI Project and 2006 Probing at Site 26EU2126

Site	FS#	Specimen#	Raw Material	Material Description	Core Type	Usewear	Max. Length (mm)	Max. Width (mm)	Max. Thickness (mm)	Weight (g)
26EU2126	9	1	CCS	White	Random/ Expedient	Absent	58.54	32.14	20.76	34.47
26EU2126	1063	1	CCS	White	Random/ Expedient	Absent	49.79	35.48	20.48	34.71
26EU2126	1300	1	CCS	White	Random/ Expedient	Absent	55.74	42.85	19.35	62.18
26EU2126	200602	1	CCS	White	Random/ Expedient	Indeterminate	51.81	38.41	22.87	48.13

Table 14. Ground Stone Artifact from 26EU2126

Site #	FS #	Artifact Type	Artifact Subtype	Length × Width × Thickness (mm)	Weight (g)	Material	Texture	Wear Level	Design	Primary Use	Secondary Use	Number of Battered Surfaces	Completeness
26EU2126	1001	Grinding tool	Rectangular mano	48.82 × 54.81 × 39.78	138.5	Gray sandstone	Smooth	Moderate	Expedient	Grinding	Unknown	0	Incomplete

Ground Stone

26EU2126

Although 26EU2126 produced the highest quantity of prehistoric artifacts of any site involved in the 2007 BGMI project—including lithic flakes, chipped stone tools, burned faunal bone, and FCR—only a single piece of ground stone was recovered from it during the project[1]. This artifact (FS# 1001) was found in Operation C, in Level 1 of Unit C1, approximately 2 m south of the location of the FCR concentration designated Feature 1. This specimen is a small mano fragment that appears to be from a rectangular-shaped mano, and it has been ground smooth on two sides. It displays no pecking marks. Because of its small size, it is difficult to estimate the original size of this specimen. The material is gray sandstone with a smooth texture. Because no modification other than use wear has been made to this artifact, its design is classified as expedient, but this determination is not definitive due to the small size of the specimen.

[1] P-III collected an additional ground stone artifact, described as a basin milling stone fragment, from the surface of site in 1991, but their site form from this recordation (Popek 1991b) does not describe the location where this artifact was found, nor is it shown on the site map that accompanies the form.

Table 15. Projectile Points from 26EU2126

Site Number	FS Number	Material	Holmer Classification	Thomas Classification	Justice Classification	Classification	Phase
26EU2126	1051	White/gray mottled chert	San Rafael Side-notched point	Unshouldered point	Cottonwood Series point	Cottonwood Triangular point	Eagle Rock
26EU2126	1069	White and light red chert	San Rafael Side-notched point	Unshouldered point	Cottonwood Series point	Cottonwood Triangular point	Eagle Rock
26EU2126	1074	White chert with crystalline inclusions	San Rafael Side-notched point	Unshouldered point	Cottonwood Series point	Cottonwood Triangular point	Eagle Rock
26EU2126	1085	Light red chert	San Rafael Side-notched point	Unshouldered point	Cottonwood Series point	Cottonwood Triangular point	Eagle Rock
26EU2126	1096	White and light red chert	San Rafael Side-notched point	Desert Side-notched point	Desert Side-notched point	Desert Side-notched point	Eagle Rock

PROJECTILE POINTS

In 1991 and 1992, P-III recorded and collected a Cottonwood Triangular point fragment, suggesting use of the site during the Eagle Rock Phase (Popek 1991b; Tipps and Popek 1992); the precise location at which this point was found is unknown because it was not shown on the map in P-III's site form. In 2007, SWCA collected five diagnostic projectile points at the site, including one Desert Side-notched point (FS# 1096) and four Cottonwood Triangular points (FS# 1051, FS# 1069, FS# 1074, and FS# 1085), all of which suggest that the site was occupied during the Eagle Rock Phase (Figure 3 through Figure 11). All five of these points were recovered during excavation. Four are from Operation F: one Cottonwood Triangular point (FS# 1069) was found in Level 1 of Unit F2, another Cottonwood Triangular point (FS# 1074) was found in Level 2 of Unit F2, a third Cottonwood Triangular point (FS# 1085) was found in Level 1 of Unit F4, and a Desert Side-notched point (FS# 1096) was found in Level 2 of Unit F6. The fifth point (FS# 1051) was a Cottonwood Triangular point found in Level 1 of Unit B3, located in Operation B.

COTTONWOOD TRIANGULAR

Four projectile points (FS# 1051, FS# 1069, FS# 1074, and FS# 1085) from 26EU2126 were classified to the Cottonwood Triangular type. Cottonwood Triangular points are relatively small, lightweight, un-notched, triangular arrow points that were widely used throughout the West (Justice 2002:367). Although the Cottonwood Triangular is considered an arrow point, its shape is similar to that of a knife blade or harpoon point (Justice 2002:368). Because this point type is found in several different cultural assemblages, it is not associated with any one group of people.

FS# 1051 from 25EU2126 is a whole projectile point manufactured from mottled white/gray chert with evidence of heat treatment. FS# 1069 from 26EU2126 is a basal fragment manufactured from white and light red chert. FS# 1074 from 26EU2126 is a whole projectile point manufactured from white chert with crystalline inclusions and evidence of excessive heat treatment. Finally, FS# 1085 from 26EU2126 is a midsection and basal fragment manufactured from light red chert with evidence of heat treatment.

Holmer's statistical model classified all of these points to the San Rafael Side-notched type. Thomas's angle analysis methodology could not be applied to these points because they lack notching. A visual comparison of the typology provided by Justice identified these points as Cottonwood Triangular. Results based on Holmer's statistical model were discarded upon visual comparison; the San Rafael Side-notched examples from Holmer are not similar in shape or form to these particular projectile points (Holmer 1978:52). These four points may have fallen into Holmer's San Rafael Side-notched statistical range simply because he did not conduct statistical analysis for the Cottonwood Triangular point type.

DESERT SIDE-NOTCHED

One projectile point from 26EU2126 (FS# 1096) was classified as Desert Side-notched points. These are associated with the bow and arrow and are often cited as a representation of the spread of bow and arrow technology (Justice 2002:384). Desert Side-notched points were suitable for the hunting of small and large game. Many Native American groups in the West used Desert Side-notched points; therefore they cannot be associated with one particular group (Justice 2002).

FS# 1096 from 26EU2126 is a whole point manufactured from white and light red chert with evidence of heat treatment. Holmer's statistical model classified this point as a San Rafael Side-notched point. Thomas's angle analysis methodology classified this point in the Desert Side-notched, and a visual comparison to the typology provided by Justice confirmed this classification. The classification based on the work of Holmer classification is suspect for the same reasons discussed for the previous specimens.

Figure 3. Photograph of Cottonwood Triangular point (FS# 1051) from 26EU2126.

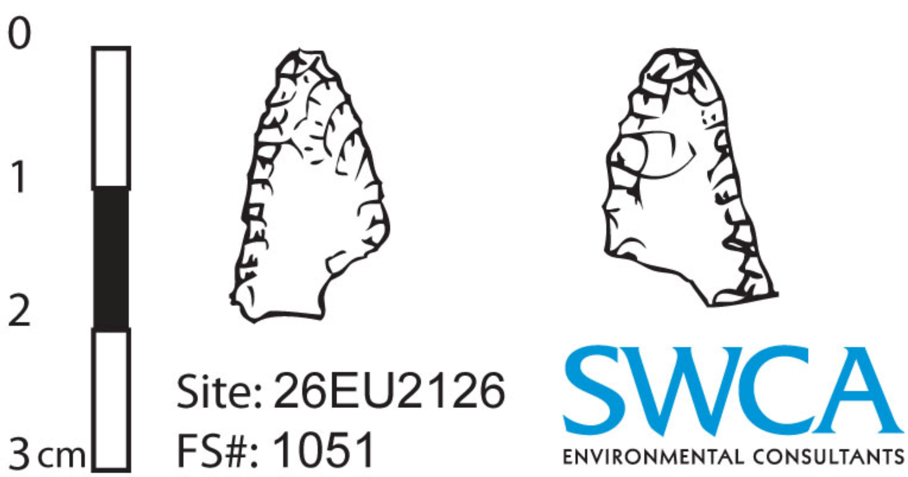


Figure 4. Illustration of Cottonwood Triangular point (FS# 1051) from 26EU2126.

Figure 5. Photograph of Cottonwood Triangular point (FS# 1069) from 26EU2126.

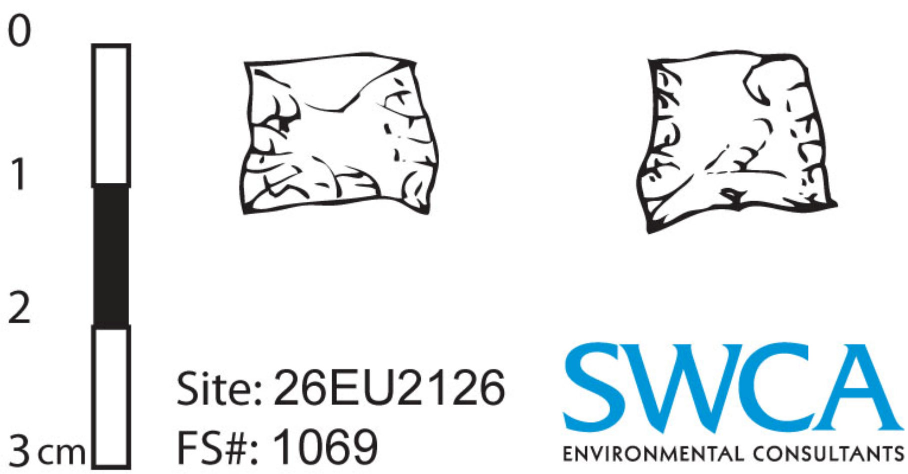


Figure 6: Illustration of Cottonwood Triangular point (FS# 1069) from 26EU2126.

Figure 7. Photograph of Cottonwood Triangular point (FS# 1074) from 26EU2126.

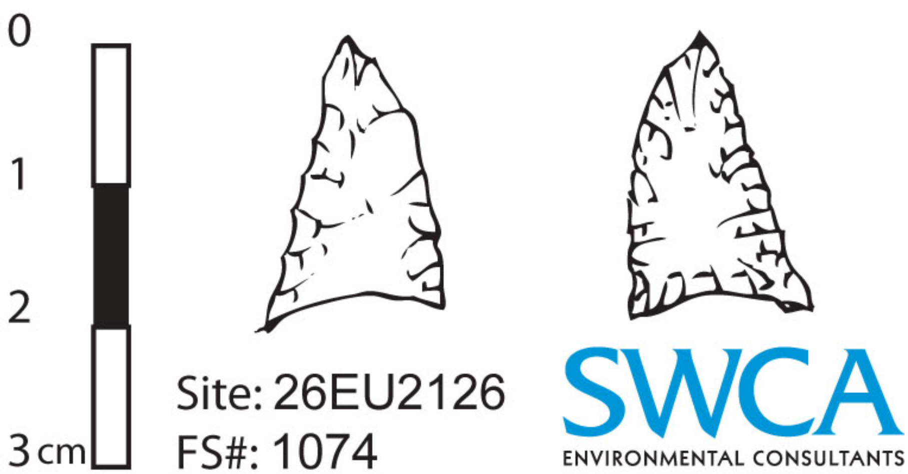


Figure 8. Illustration of Cottonwood Triangular point (FS# 1074) from 26EU2126.

Figure 9. Photograph of Cottonwood Triangular point (FS# 1085) from 26EU2126.

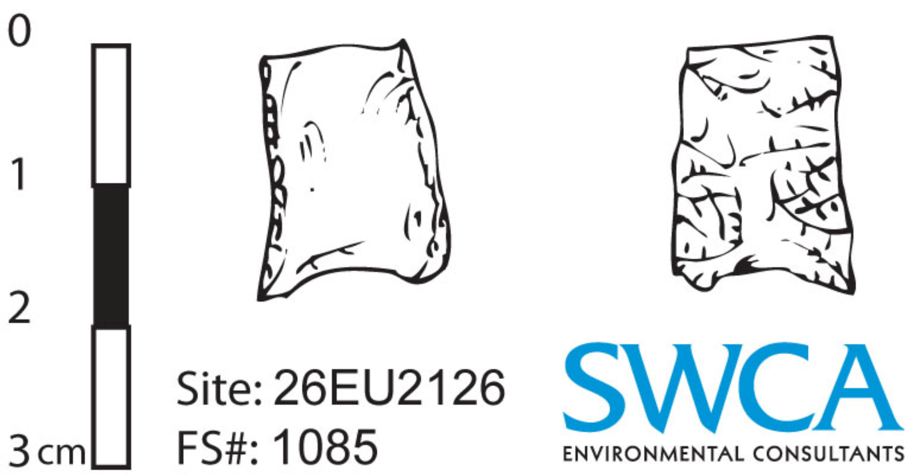


Figure 10. Illustration of Cottonwood Triangular point (FS# 1085) from 26EU2126.

Figure 11. Photograph of Desert Side-notched point (FS# 1096) from 26EU2126.

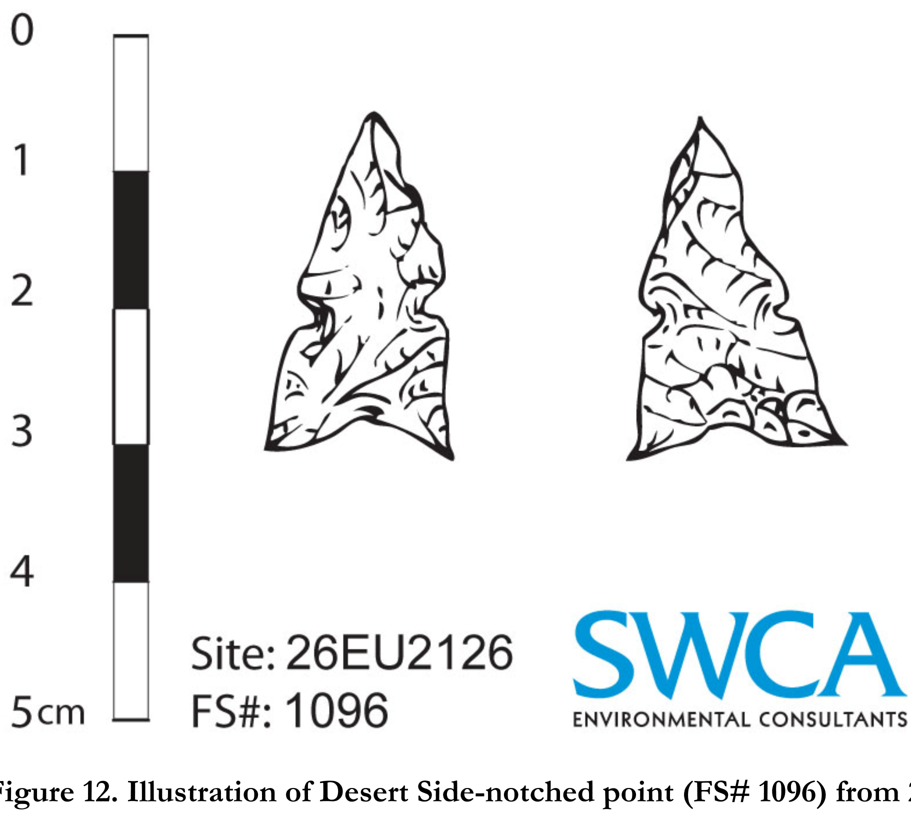
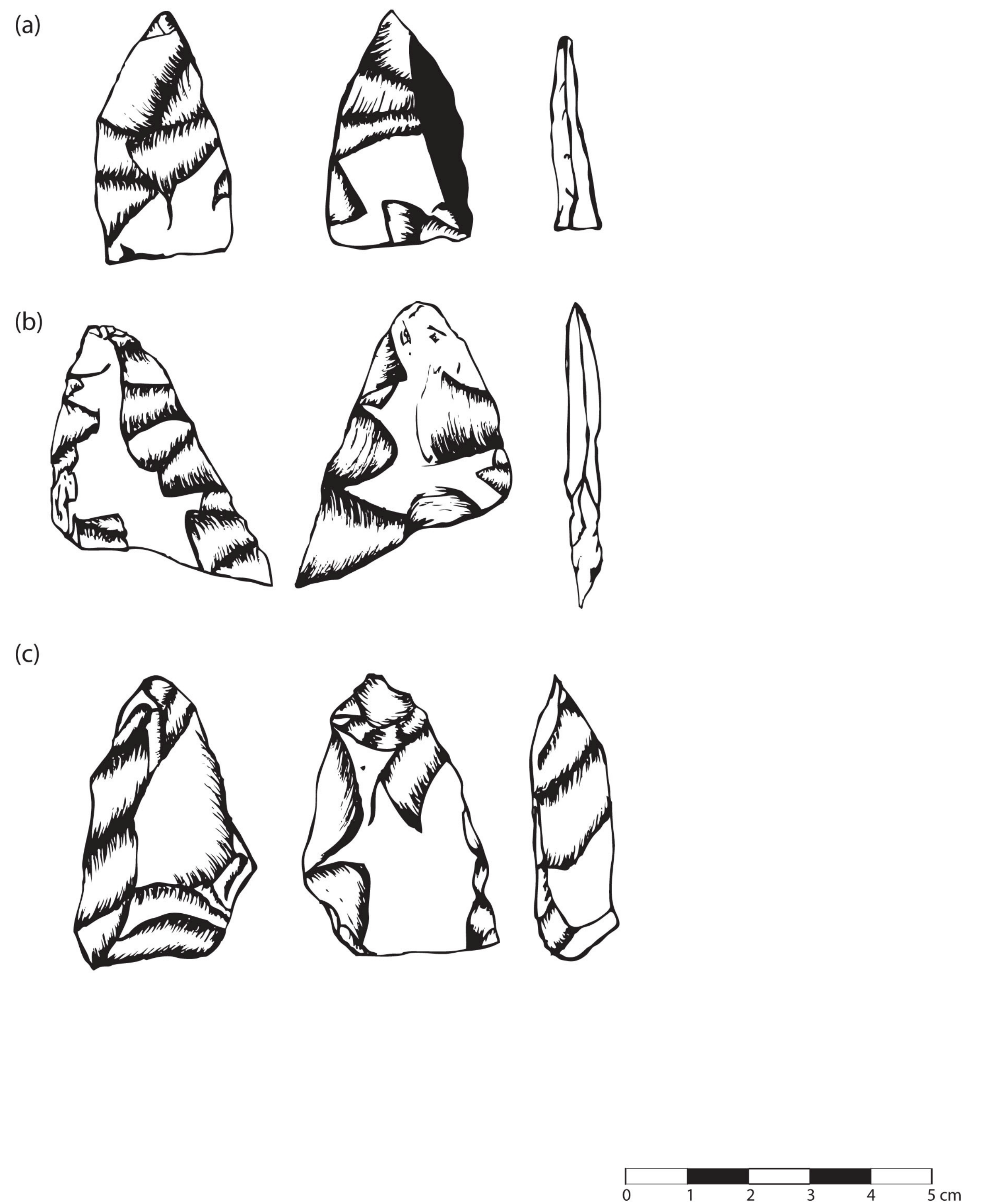


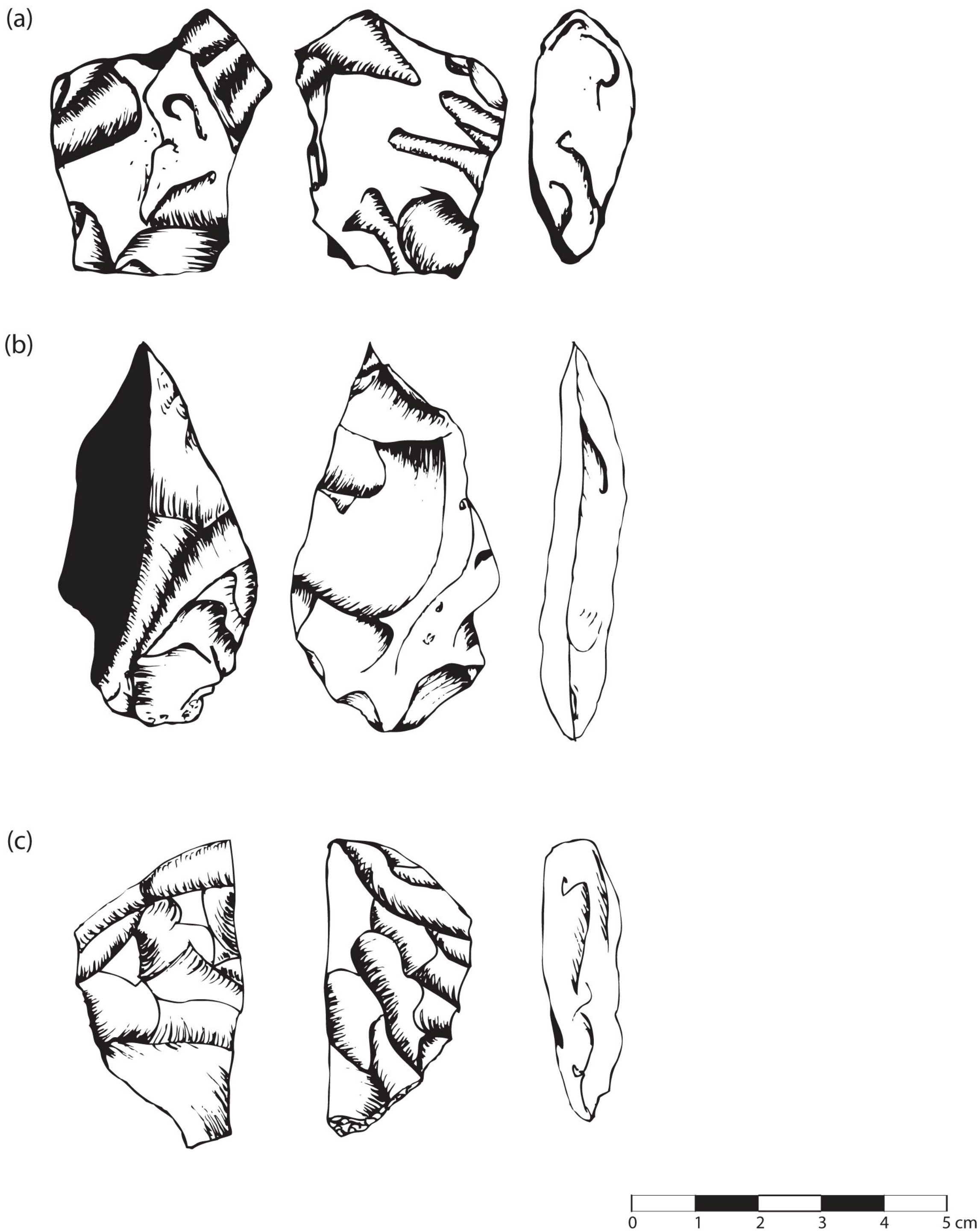
Figure 12. Illustration of Desert Side-notched point (FS# 1096) from 26EU2126.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: Stage 3 biface (a) FS# 1; Stage 4 biface (b) FS# 33-2; Stage 2 biface (c) FS# 1071-1.

SWCA ENVIRONMENTAL CONSULTANTS

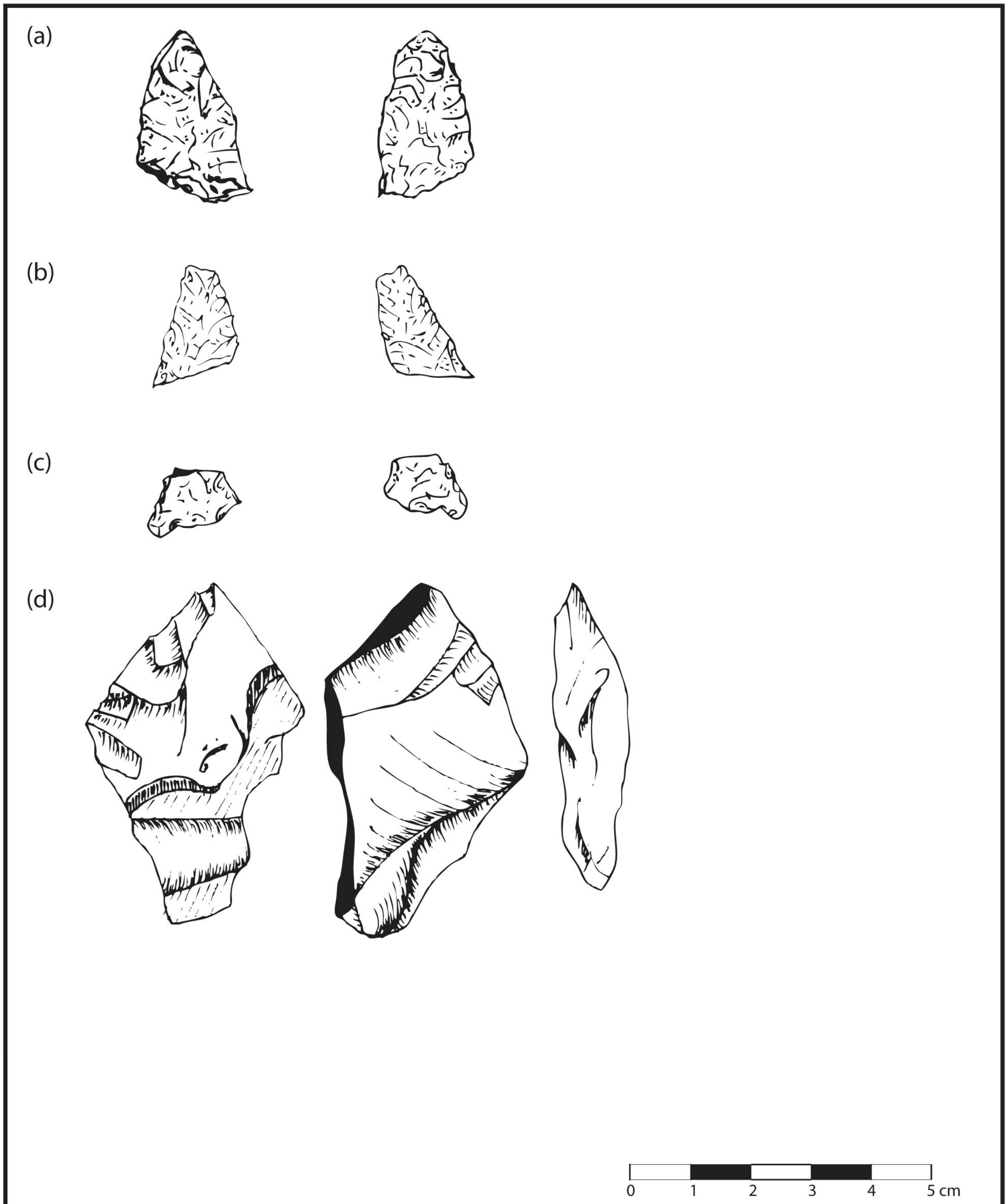
Figure 13. Illustrations of bifaces from 26EU2126.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: Stage 2 bifaces (a) FS# 1071-2, (b) FS# 1073, (c) FS# 1091.

SWCA ENVIRONMENTAL CONSULTANTS

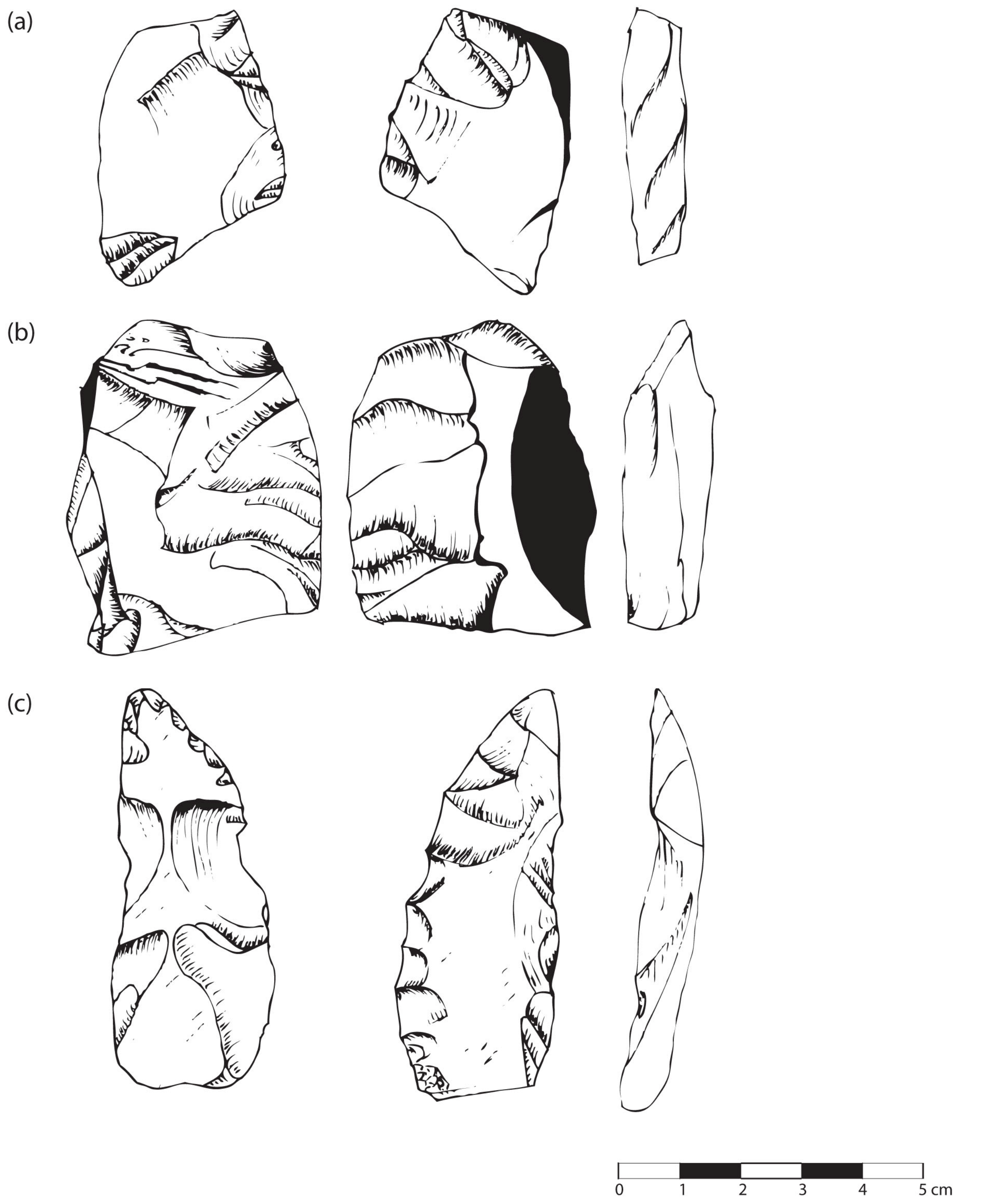
Figure 14. Illustrations of bifaces from 26EU2126.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: Stage 4 biface (a) FS# 1094; Stage 5 bifaces (b) FS# 1122, (c) FS# 1129; Stage 1 biface (d) FS# 1148-1.

SWCA
ENVIRONMENTAL CONSULTANTS

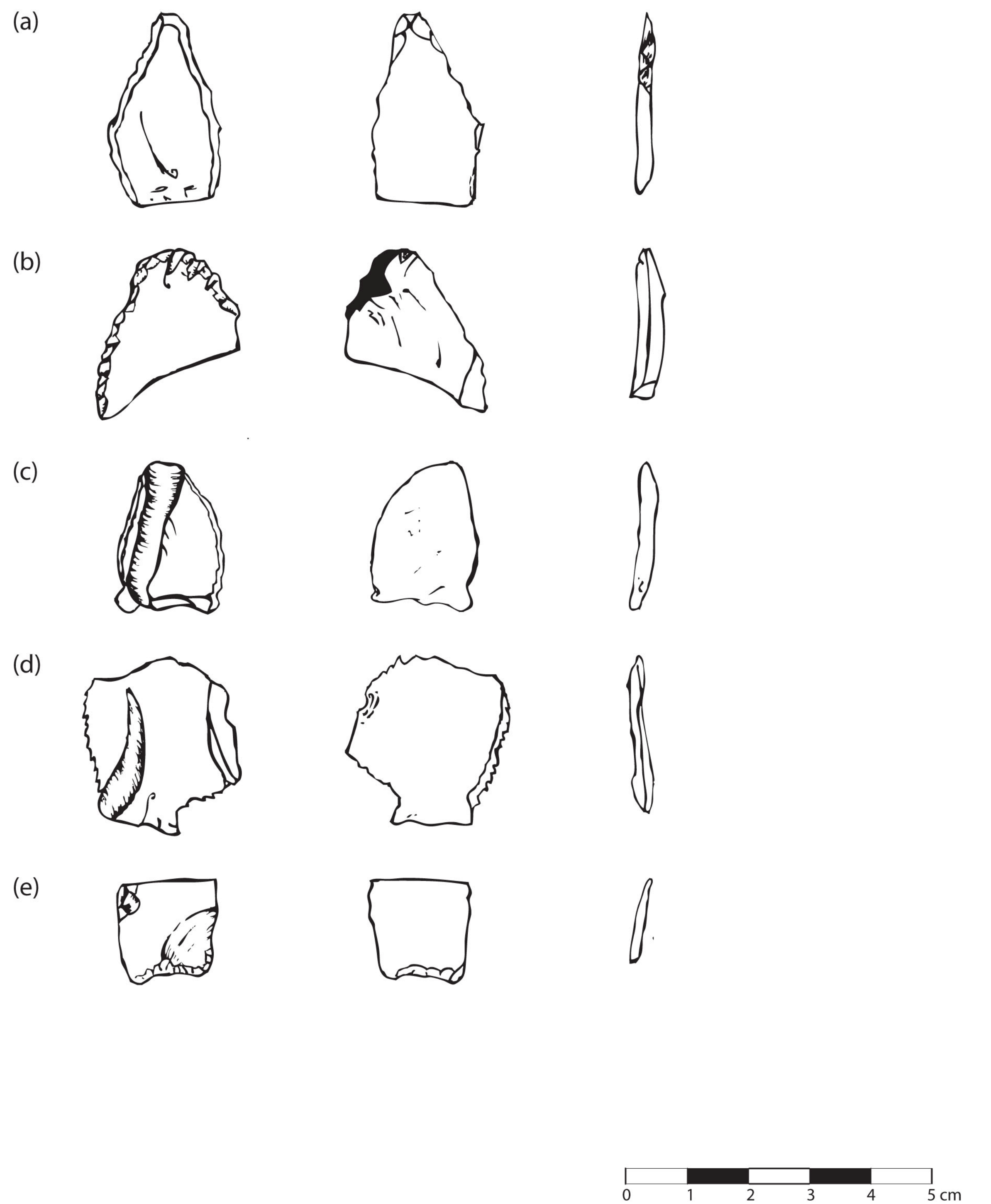
Figure 15. Illustrations of bifaces from 26EU2126.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: Stage 1 biface (a) FS# 1150; Stage 2 bifaces (b) FS# 1155, (c) FS# 2006-13.

SWCA ENVIRONMENTAL CONSULTANTS

Figure 16. Illustrations of bifaces from 26EU2126.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) FS# 33-1; (b) FS# 34-1; (c) FS# 36; (d) FS# 37; (e) FS# 301.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 17. Illustrations of utilized flakes from 26EU2126.

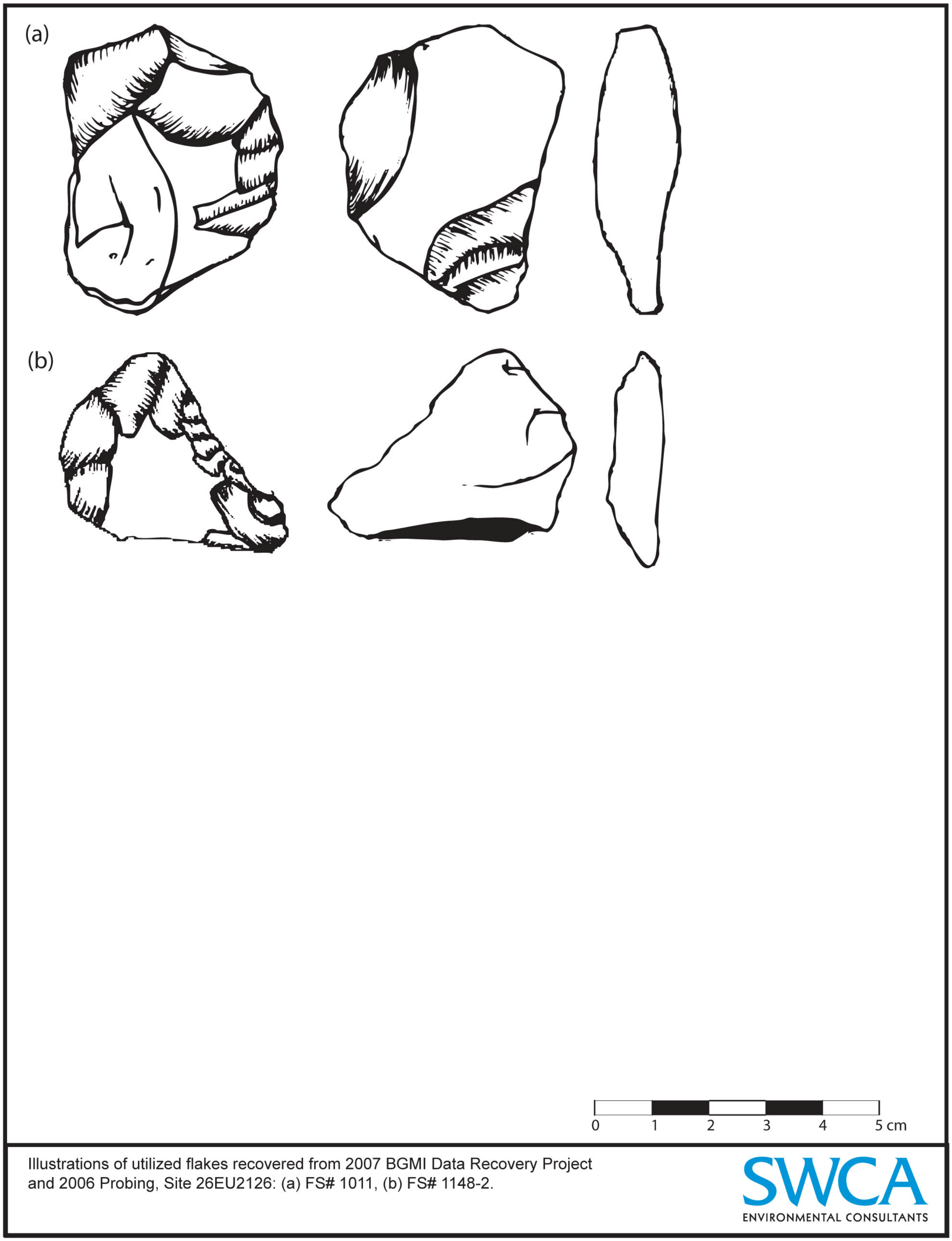


Figure 18. Illustrations of utilized flakes from 26EU2126.

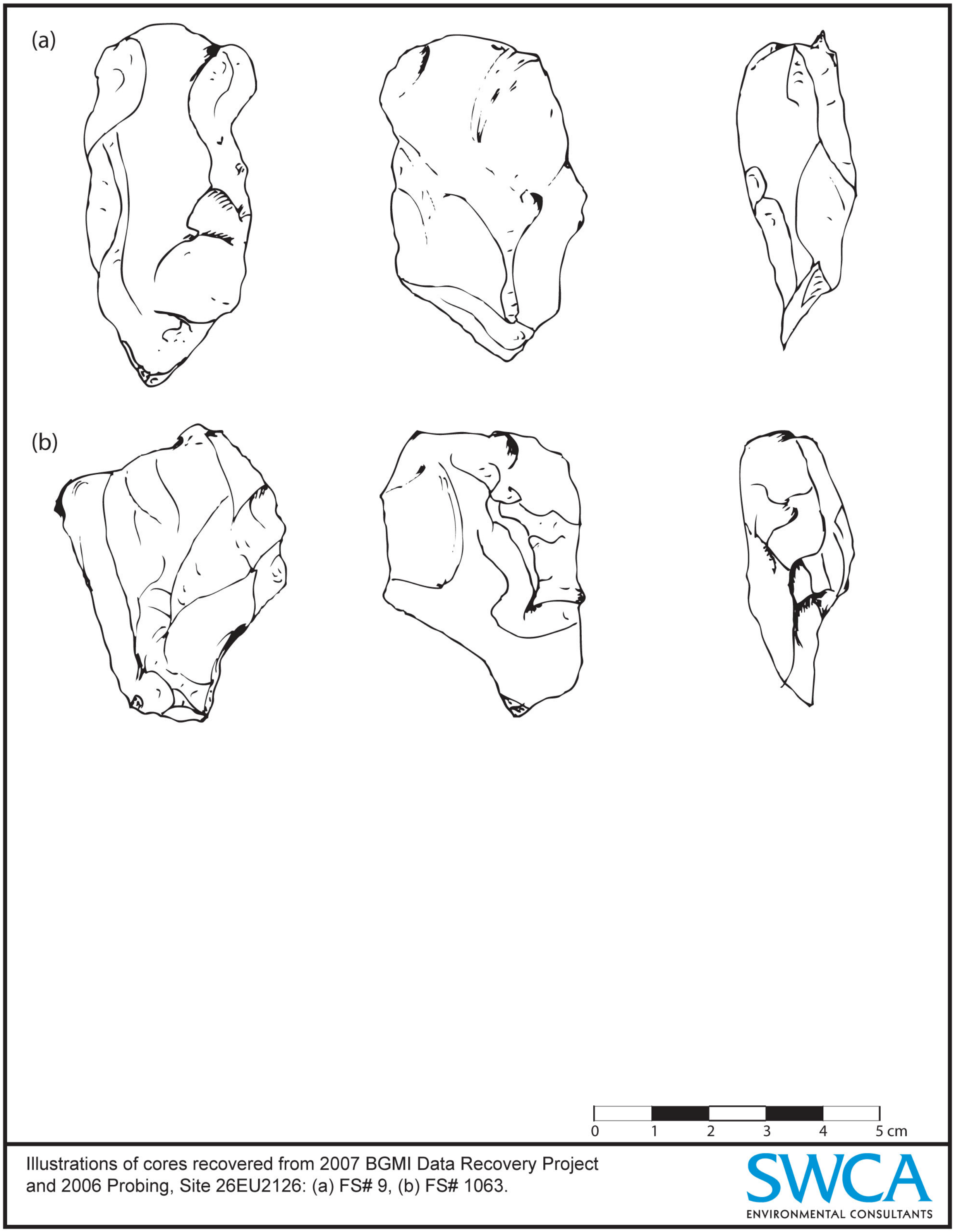


Figure 19. Illustrations of cores from 26EU2126.

Illustrations of cores recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) FS# 1300, (b) FS# 2006-02.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 20. Illustrations of cores from 26EU2126.

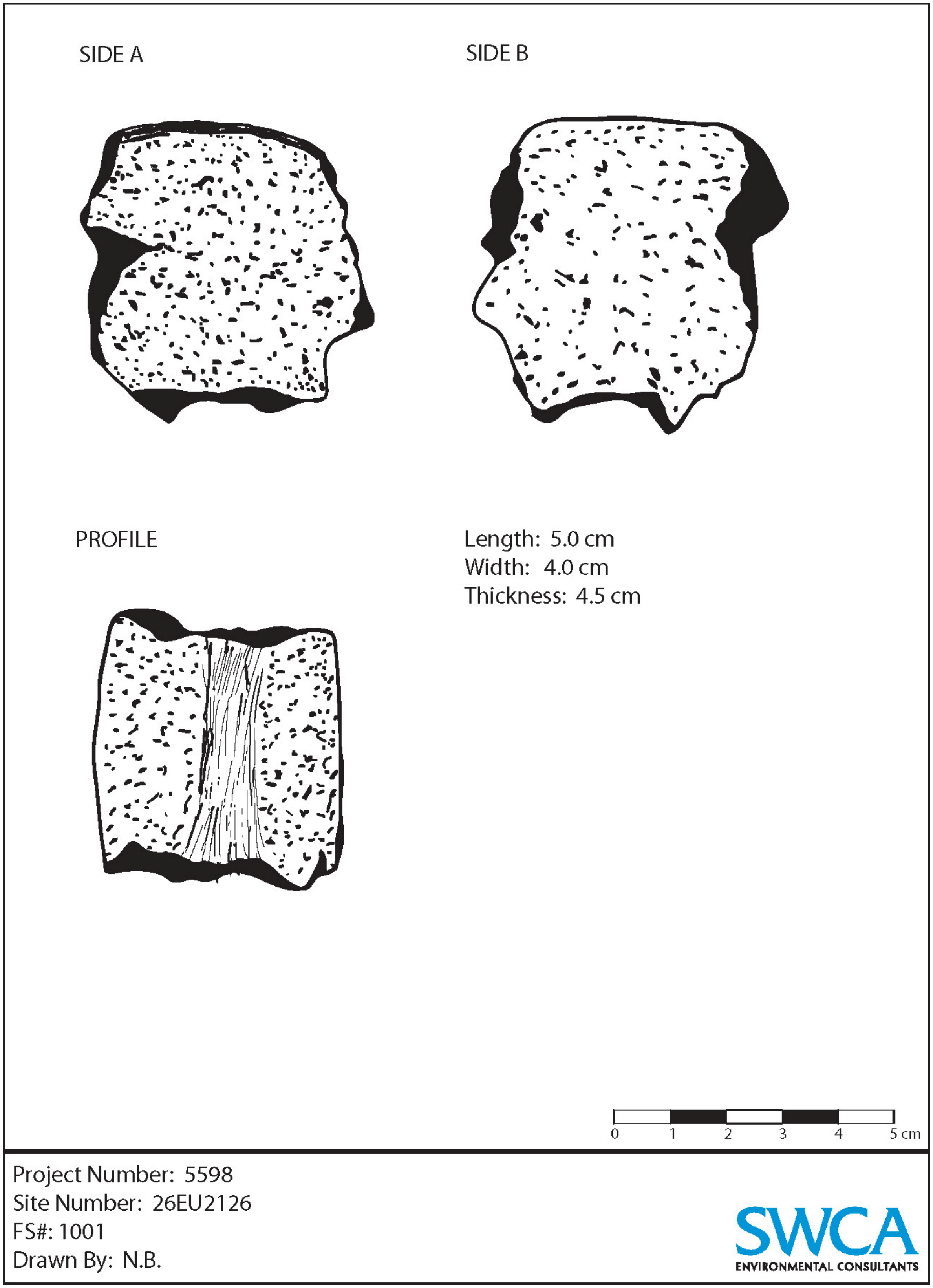


Figure 21. Illustrations of FS# 1001 from 26EU2126.

Figure 22. Overview of site after mowing & staking for remote sensing; from top of pipeline northeast of site facing south-southwest.

Figure 23. Overview of site after mowing & staking for remote sensing; from top of chicane in pipeline facing east-northeast.

Figure 24. Overview of site after mowing & staking for remote sensing; from top of chicane in pipeline facing southwest.

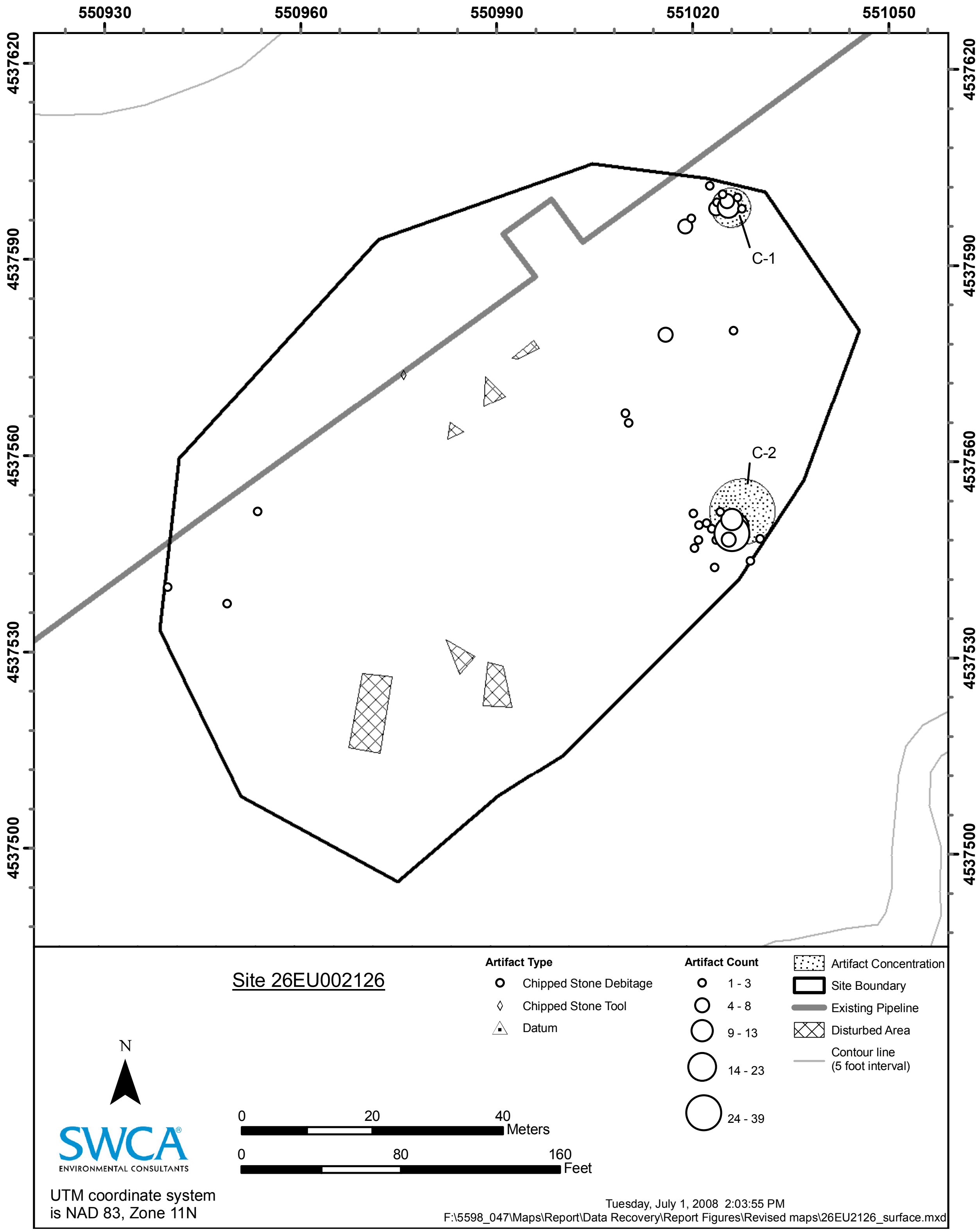


Figure 25. Results of surface artifact collection at 26EU2126.

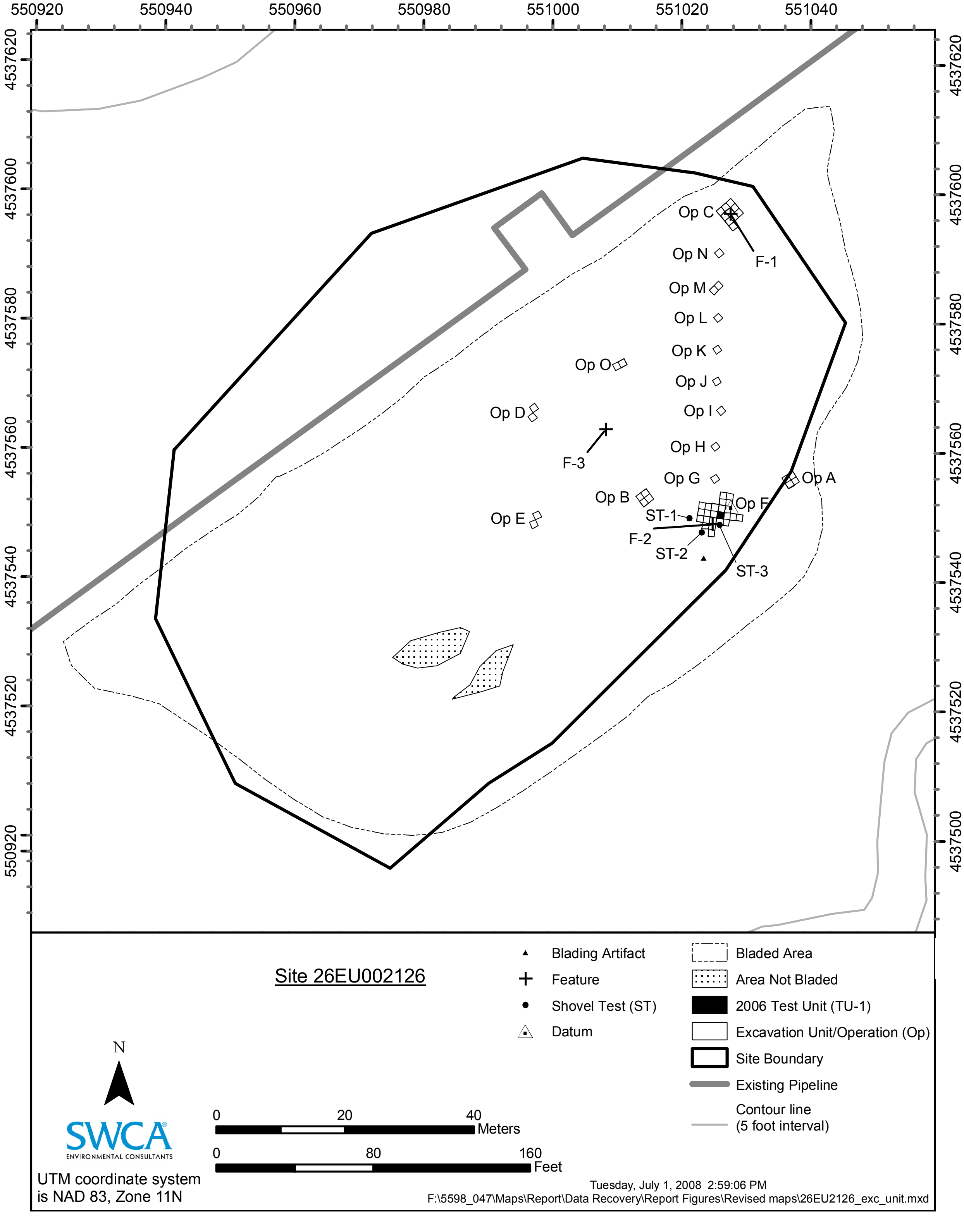


Figure 26. Locations of excavation units and extent of mechanical stripping at 26EU2126.

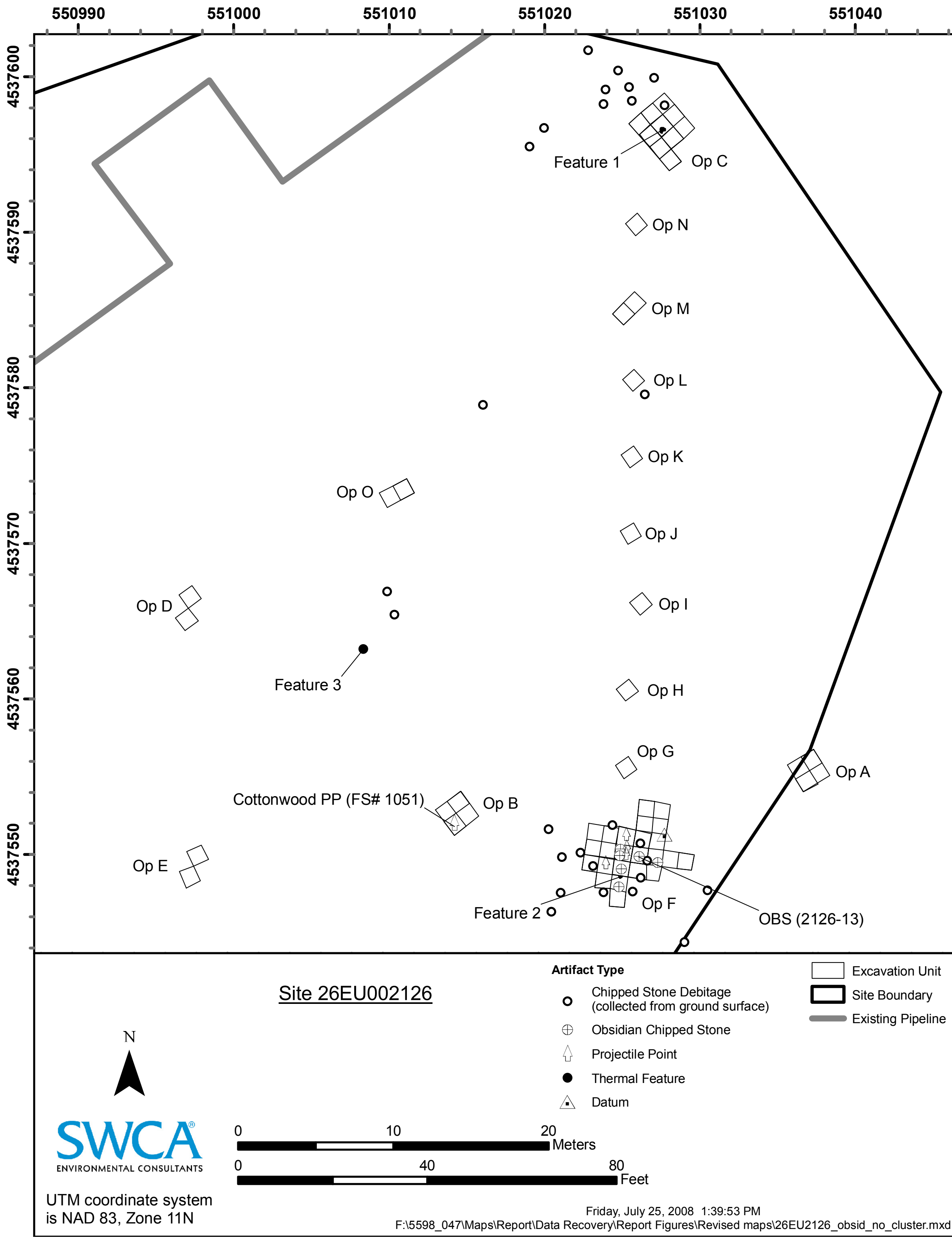


Figure 27. Location of obsidian artifacts and projectile points recovered from 26EU2126.

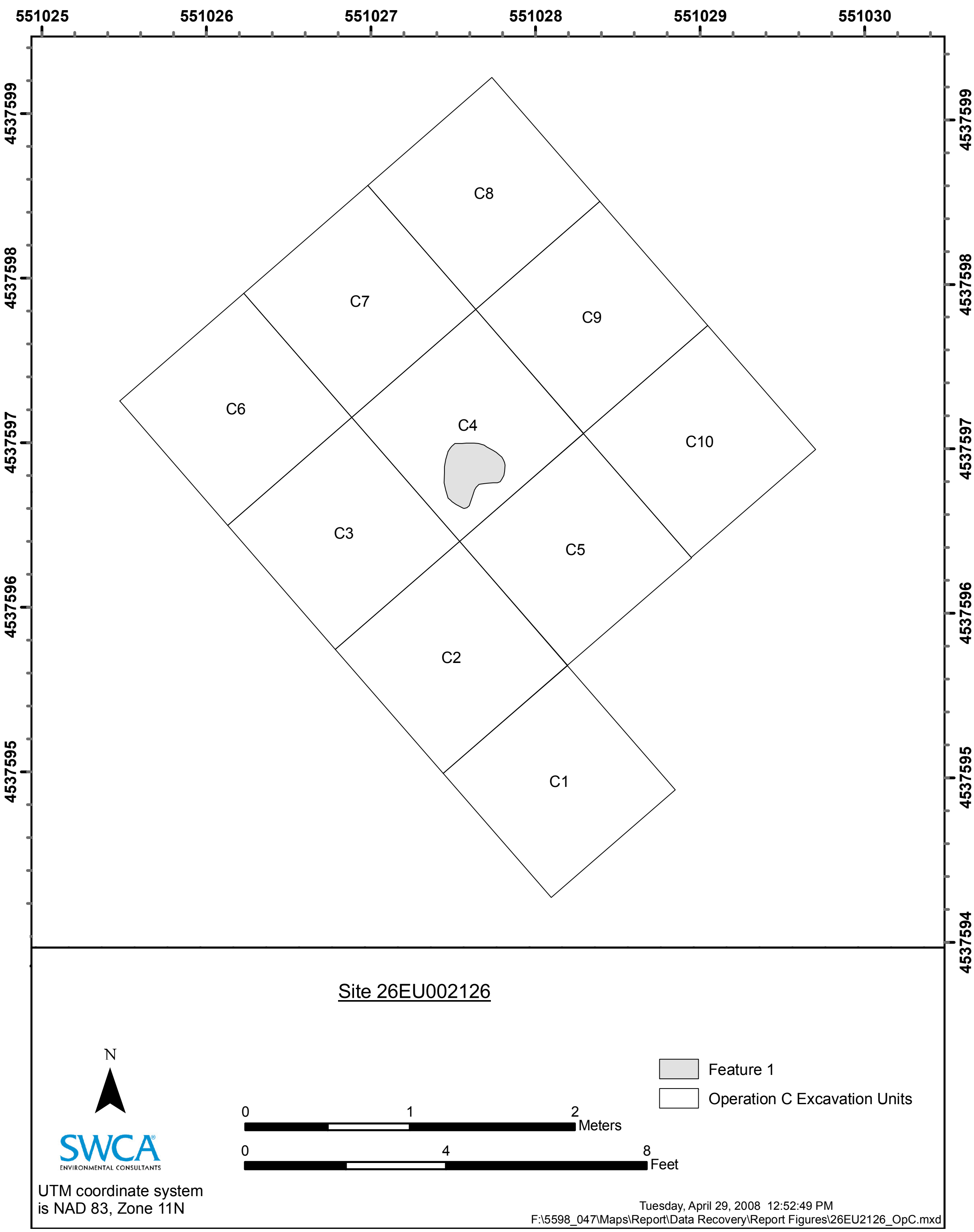


Figure 28. Excavation units in Operation C at 26EU2126, showing the location of Feature 1.

Figure 29. Photograph of Operation C at 26EU2126 after completion of excavation; facing southeast.

Figure 30. Photograph of Feature 1 at 26EU2126, taken at a depth of 20 cm in Unit C4; facing northeast.

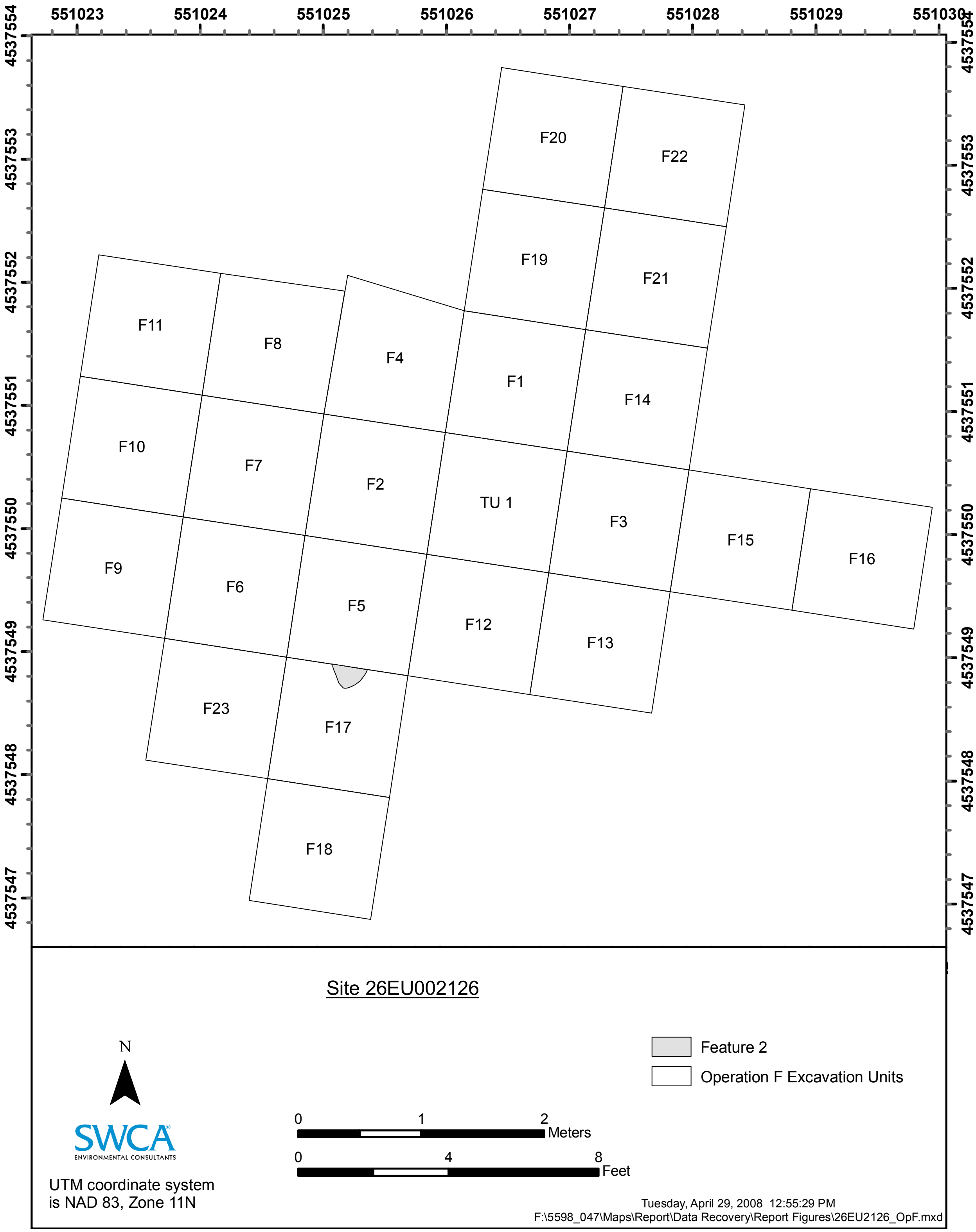


Figure 31. Excavation units in Operation F at 26EU2126, showing the location of Feature 2.

Figure 32. Photograph of Operation F at 26EU2126 after completion of excavation; facing west.

Figure 33. Photograph of Feature 2 at 26EU2126, taken at a depth of approximately 15 cm in Unit C4; facing south (feature is mislabeled in photograph).

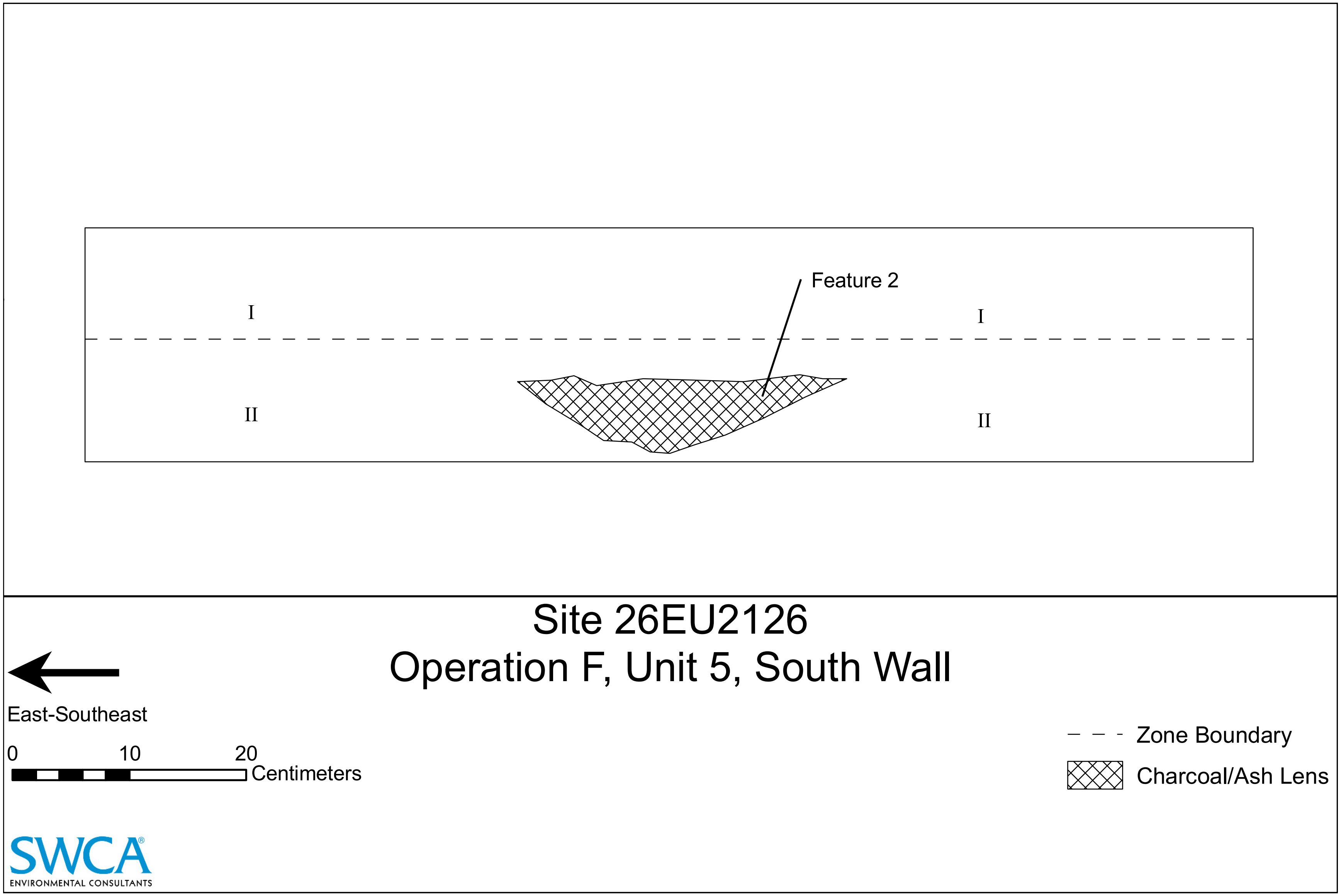


Figure 34. Profile of the south wall of Unit F5, 26EU2126, showing Feature 2.

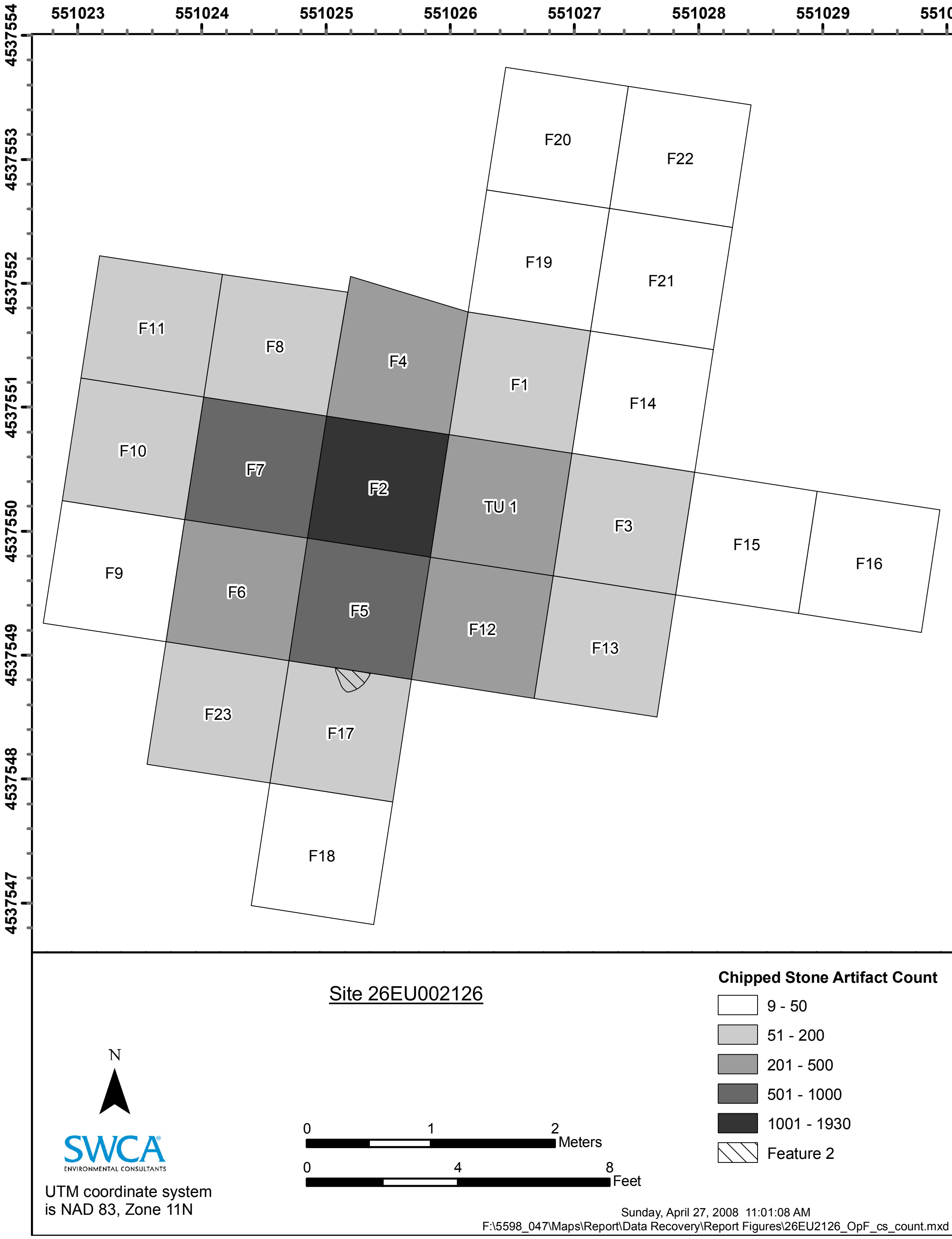


Figure 35. Chipped stone artifact density in Operation F at 26EU2126.

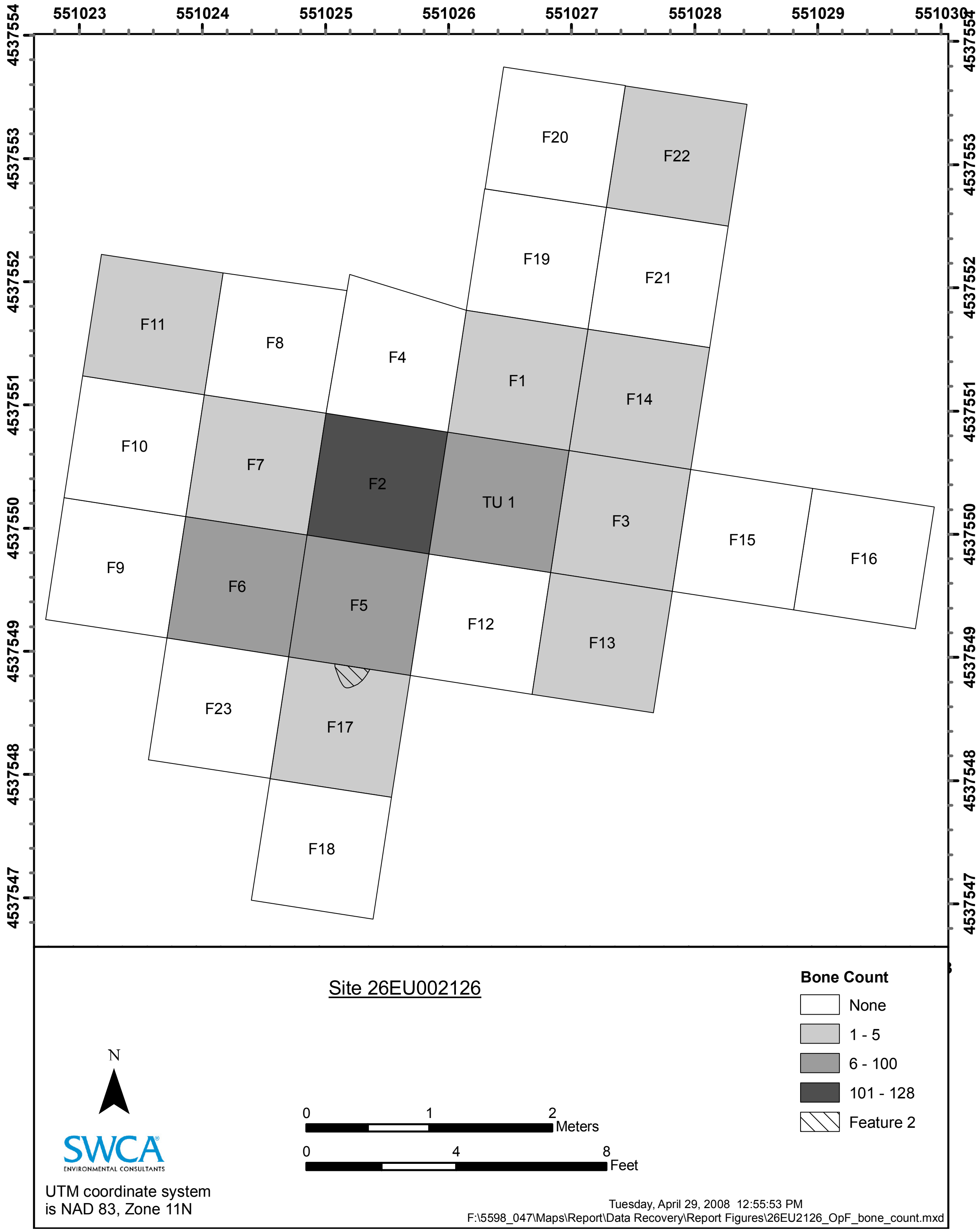


Figure 36. Faunal bone density in Operation F at 26EU2126.

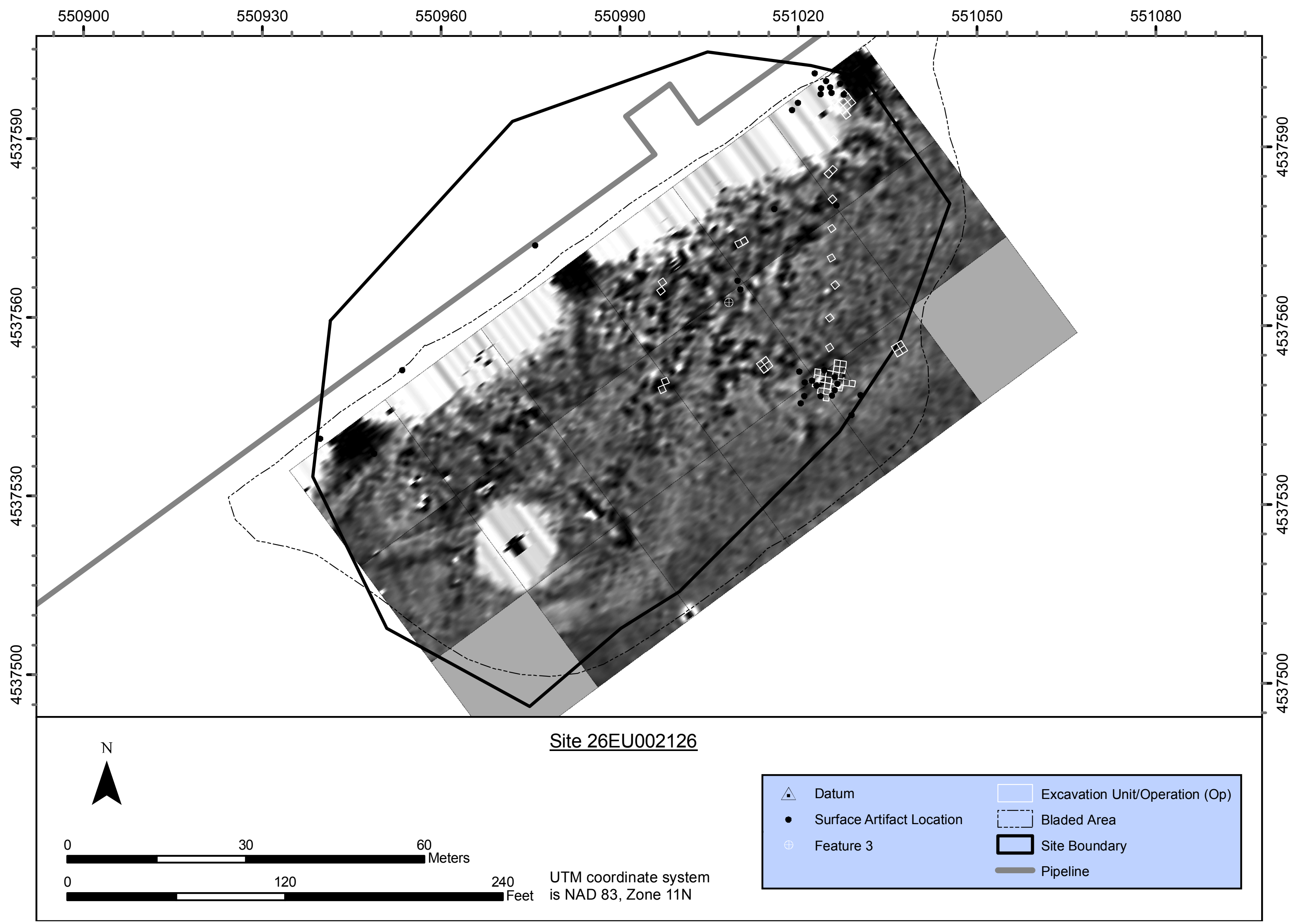


Figure 37. Magnetometer data from 26EU2126.

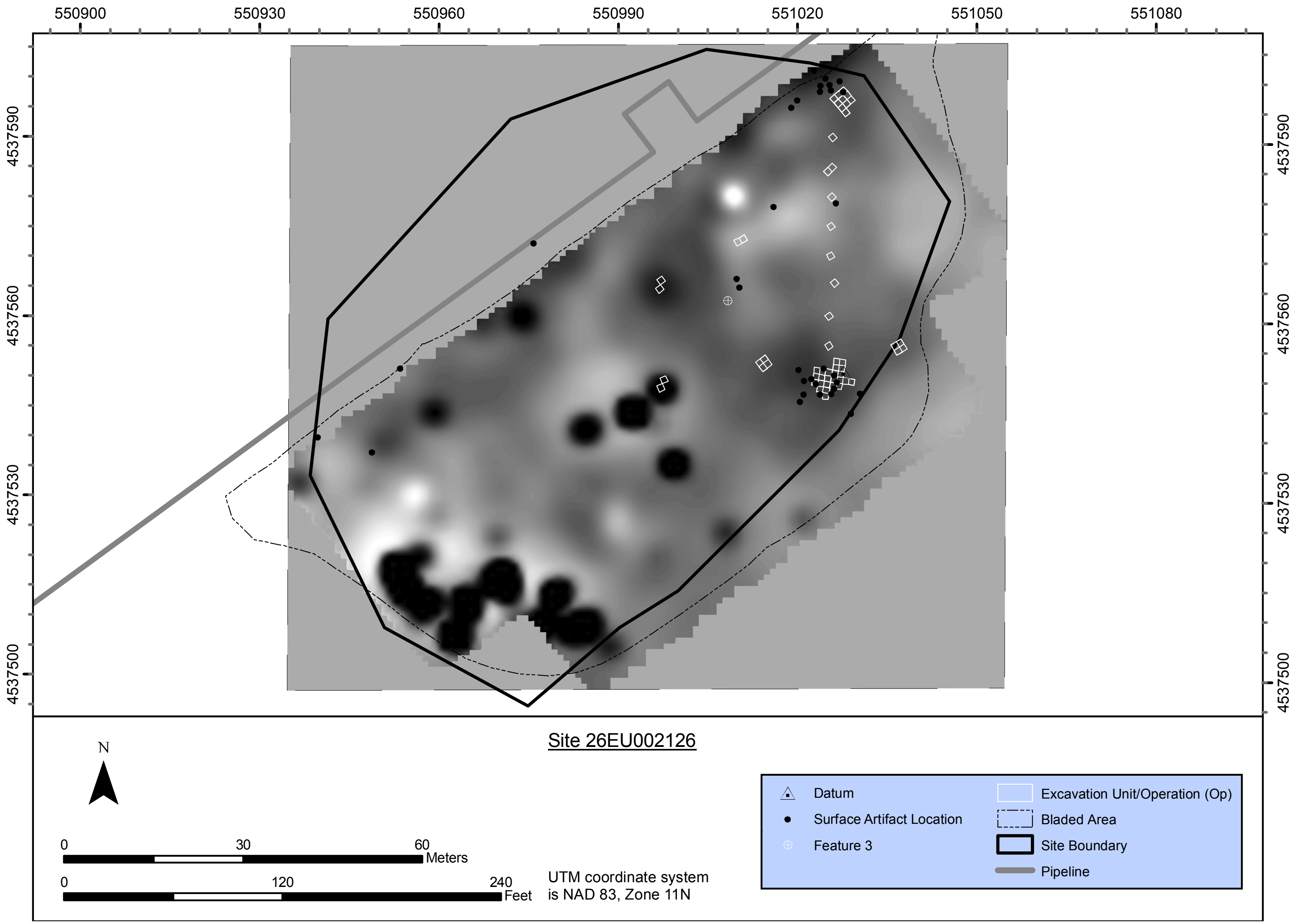


Figure 38. Conductivity data from 26EU2126.

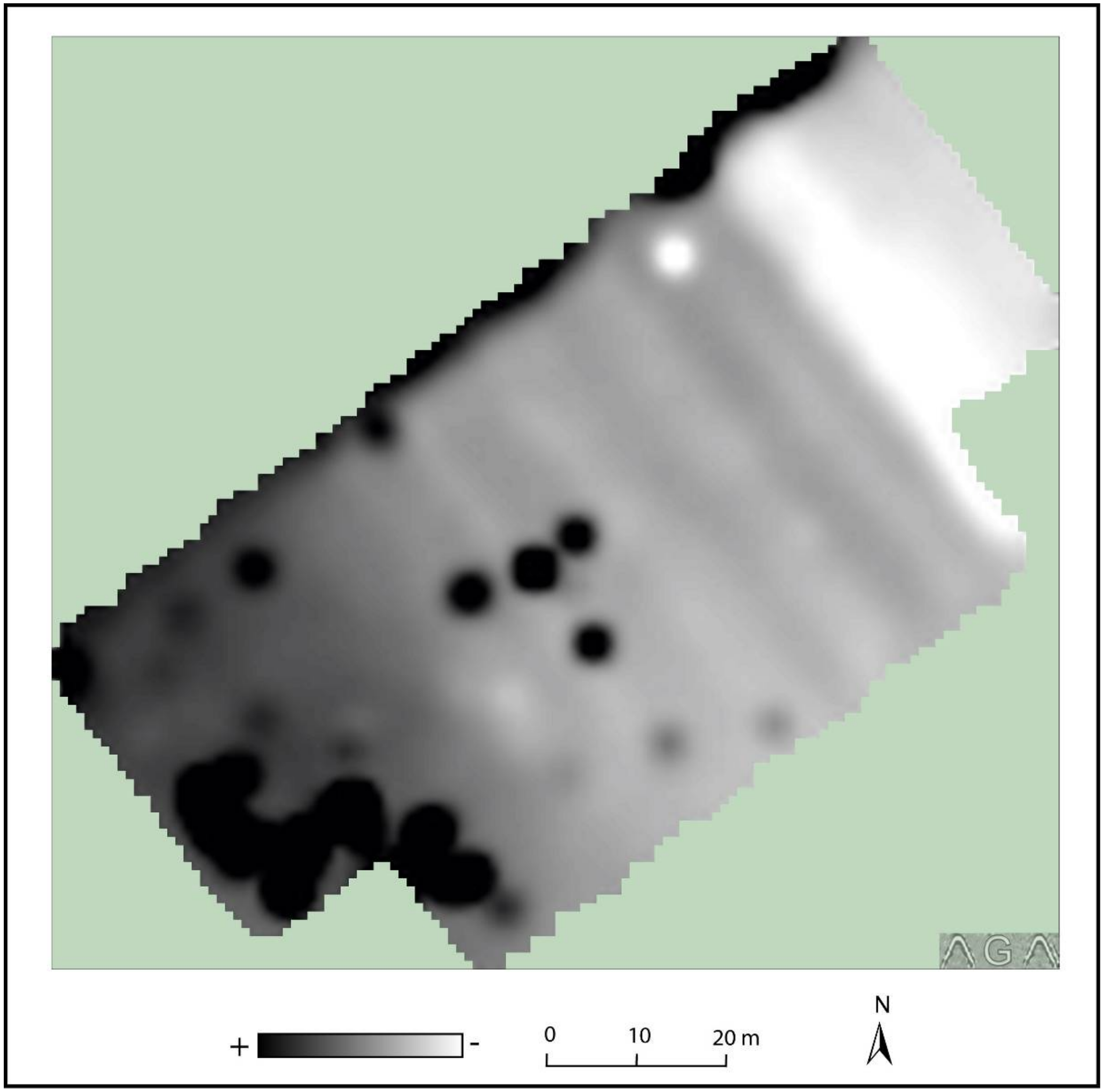


Figure 39. Magnetic susceptibility data from 26EU2126.

APPENDIX B. ARTIFACT AND SAMPLE COUNTS BY PROVENIENCE

LIST OF TABLES

Table B - 1. Artifact and Sample Counts from 26EU1533 .... B-2
Table B - 2. Artifact and Sample Counts from 26EU1539 .... B-3
Table B - 3. Artifact and Sample Counts from 26EU1548 .... B-5
Table B - 4. Artifact and Sample Counts from 26EU2064 .... B-8
Table B - 5. Artifact and Sample Counts from 26EU2126 .... B-10

Table B - 1. Artifact and Sample Counts from 26EU1533

Provenience	CAN	CS	CS-OBS	CST	CST-PP	GS	Total
2006 Shovel Test 1	0	11	0	0	0	0	11
2006 Shovel Test 2	0	1	0	0	0	0	1
2006 Test Unit 1, Level 1	0	28	0	0	0	0	28
General Surface Collection	1	134	1	1	1	0	138
Unit A1, Level 2	0	2	0	0	0	0	2
Unit A2, Level 1	0	2	0	0	0	0	2
Unit A3, Level 1	0	1	0	0	0	0	1
Unit A3, Level 2	0	3	0	0	0	0	3
Unit B1, Level 2	0	1	0	0	0	0	1
Unit B2, Level 1	0	1	0	0	0	0	1
Unit B4, Level 1	0	1	0	0	0	0	1
Unit C3, Level 2	0	1	0	0	0	0	1
Unit D3, Level 1	0	1	0	0	0	0	1
Unit D3, Level 2	0	1	0	0	0	0	1
Blading	0	0	0	0	0	1	1
Total	1	188	1	1	1	1	193

Note: CAN = historic tin can; CS = chipped stone; CS-OBS = chipped stone, obsidian; CST = chipped stone tool; CST-PP = chipped stone tool, projectile point; GS = ground stone.
Shovel test units measure approximately 50 cm in diameter and were excavated to a depth of 10 cm; Test units measure 1 m × 1 m; Levels were excavated in 10-cm increments.

Table B - 2. Artifact and Sample Counts from 26EU1539

Provenience	BLK SOIL	CS	CSC	CST	CST-OBS	CST-PP	GS	Total
2006 Shovel Test 1	0	10	0	0	0	0	0	10
2006 Shovel Test 2	0	3	0	0	0	0	0	3
2006 Shovel Test 3	0	4	0	0	0	0	0	4
2006 Test Unit 1, Level 1	0	138	0	0	0	0	0	138
2006 Test Unit 1, Level 2	0	10	0	0	0	0	0	10
General Surface Collection	0	704	1	13	0	0	3	721
Collection Grid 1, Unit A1	0	2	0	0	0	0	0	2
Collection Grid 1, Unit A2	0	32	0	0	0	0	0	32
Collection Grid 1, Unit A3	0	69	0	1	0	0	0	70
Collection Grid 1, Unit A4	0	20	0	0	0	0	0	20
Collection Grid 1, Unit B1	0	24	0	0	0	0	0	24
Collection Grid 1, Unit B2	0	247	0	5	0	0	0	252
Collection Grid 1, Unit B3	0	241	0	0	0	0	0	241
Collection Grid 1, Unit B4	0	178	0	0	0	0	0	178
Collection Grid 1, Unit C1	0	46	0	0	0	0	0	46
Collection Grid 1, Unit C2	0	512	0	0	0	0	0	512
Collection Grid 1, Unit C3	0	416	0	0	0	0	0	416
Collection Grid 1, Unit C4	0	107	0	0	1	0	0	108
Collection Grid 1, Unit D1	0	8	0	0	0	0	0	8
Collection Grid 1, Unit D2	0	373	0	0	0	0	0	373
Collection Grid 1, Unit D3	0	262	0	0	0	0	0	262
Collection Grid 1, Unit D4	0	65	0	0	0	0	0	65
Collection Grid 1, Unit E2	0	84	0	0	0	0	0	84
Collection Grid 1, Unit E3	0	87	0	0	0	0	0	87
Collection Grid 1, Unit E4	0	8	0	0	0	0	0	8
Unit A1, Level 1	0	1	0	0	0	0	0	1
Unit B1, Level 1	0	2	0	0	0	0	0	2
Unit B4, Level 1	0	1	0	0	0	0	0	1
Unit C1, Level 1	0	90	0	0	0	0	0	90
Unit C1, Level 2	0	138	0	0	0	0	0	138
Unit C3, Level 1	0	257	0	1	0	0	0	258
Unit C3, Level 2	0	111	0	0	0	0	0	111

Table B - 2, continued

Provenience	BLK SOIL	CS	CSC	CST	CST-OBS	CST-PP	GS	Total
Unit E1, Level 1	0	1	0	0	0	0	0	1
Unit F1, Level 1	0	7	0	0	0	0	0	7
Unit F1, Level 2	0	6	0	0	0	0	0	6
Unit G1, Level 1	0	58	0	0	0	0	0	58
Unit G1, Level 2	0	117	0	0	0	0	0	117
Unit G2, Level 1	0	1	0	0	0	0	0	1
Unit G2, Level 2	0	37	0	0	0	0	0	37
Unit G3, Level 1	0	1	0	0	0	0	0	1
Unit G3, Level 2	0	23	0	0	0	0	0	23
Unit G4, Level 1	0	1	0	0	0	0	0	1
Unit G4, Level 2	1	9	0	0	0	0	0	10
Unit G5, Level 1	0	11	0	0	0	0	0	11
Unit G5, Level 2	0	1	0	0	0	0	0	1
Blading	1	8	1	1	0	1	2	14
Total	2	4531	2	21	1	1	5	4563

Note: BLK SOIL = bulk soil sample; CS = chipped stone; CSC = chipped stone core; CST = chipped stone tool; CST-OBS = chipped stone tool, obsidian; CST-PP = chipped stone tool, projectile point; GS = ground stone.
Shovel test units measure approximately 50 cm in diameter and were excavated to a depth of 10 cm; Test units measure 1 m × 1 m; Levels were excavated in 10-cm increments; Collection grid units measure 1 m × 1 m.

Table B - 3. Artifact and Sample Counts from 26EU1548

Provenience	BLK SOIL	CS	CS-OBS	CST	Total
2006 Shovel Test 1	0	12	0	0	12
2006 Shovel Test 2	0	0	1	0	1
2006 Shovel Test 3	0	3	0	0	3
2006 Shovel Test 4	0	7	0	0	7
2006 Shovel Test 5	0	4	0	0	4
2006 Test Unit 1, Level 1	0	122	0	0	122
2006 Test Unit 1, Level 2	0	37	0	0	37
2006 Test Unit 1, Level 3	0	10	0	0	10
General Surface Collection	0	369	2	3	374
Collection Grid 1, Unit A1	0	1	0	0	1
Collection Grid 1, Unit A2	0	3	0	0	3
Collection Grid 1, Unit A3	0	1	0	0	1
Collection Grid 1, Unit A5	0	1	0	0	1
Collection Grid 1, Unit A6	0	1	0	0	1
Collection Grid 1, Unit B1	0	1	0	0	1
Collection Grid 1, Unit B2	0	10	0	0	10
Collection Grid 1, Unit B3	0	6	0	0	6
Collection Grid 1, Unit B4	0	3	0	0	3
Collection Grid 1, Unit B5	0	2	0	0	2
Collection Grid 1, Unit B6	0	1	0	0	1
Collection Grid 1, Unit C1	0	3	0	0	3
Collection Grid 1, Unit C2	0	6	0	0	6
Collection Grid 1, Unit C3	0	9	0	0	9
Collection Grid 1, Unit C4	0	3	0	0	3
Collection Grid 1, Unit C5	0	6	0	0	6
Collection Grid 1, Unit C6	0	2	0	0	2
Collection Grid 1, Unit D2	0	4	0	0	4
Collection Grid 1, Unit D3	0	4	0	0	4
Collection Grid 1, Unit D4	0	2	0	0	2
Collection Grid 2, Unit A3	0	1	0	0	1
Collection Grid 2, Unit A4	0	3	0	0	3
Collection Grid 2, Unit B1	0	2	0	0	2
Collection Grid 2, Unit B2	0	2	0	0	2

Table B - 3, continued

Provenience	BLK SOIL	CS	CS-OBS	CST	Total
Collection Grid 2, Unit B3	0	7	0	0	7
Collection Grid 2, Unit B5	0	1	0	0	1
Collection Grid 2, Unit C2	0	1	0	0	1
Collection Grid 2, Unit C3	0	4	0	0	4
Collection Grid 2, Unit C4	0	1	0	0	1
Collection Grid 2, Unit D1	0	2	0	0	2
Collection Grid 2, Unit D2	0	21	0	0	21
Collection Grid 2, Unit D3	0	7	0	0	7
Collection Grid 2, Unit D4	0	1	0	0	1
Collection Grid 2, Unit E1	0	27	0	0	27
Collection Grid 2, Unit E2	0	5	0	0	5
Collection Grid 2, Unit E3	0	1	0	0	1
Collection Grid 2, Unit E4	0	3	0	0	3
Collection Grid 2, Unit F1	0	4	0	0	4
Collection Grid 2, Unit F2	0	7	0	0	7
Collection Grid 2, Unit F3	0	3	0	0	3
Collection Grid 2, Unit G1	0	1	0	0	1
Collection Grid 2, Unit G2	0	2	0	0	2
Collection Grid 2, Unit G5	0	3	0	0	3
Collection Grid 2, Unit H1	0	2	0	0	2
Collection Grid 2, Unit H2	0	10	0	0	10
Collection Grid 2, Unit H3	0	4	0	0	4
Collection Grid 2, Unit H4	0	1	0	0	1
Collection Grid 2, Unit H5	0	3	0	0	3
Collection Grid 2, Unit I2	0	1	0	0	1
Collection Grid 2, Unit I4	0	2	0	0	2
Collection Grid 2, Unit I5	0	3	0	0	3
Collection Grid 2, Unit J4	0	1	0	0	1
Collection Grid 2, Unit J5	0	1	0	0	1
Collection Grid 2, Unit K2	0	2	0	0	2
Collection Grid 2, Unit K4	0	3	0	0	3
Collection Grid 2, Unit L2	0	1	0	0	1
Collection Grid 2, Unit L3	0	3	0	0	3
Collection Grid 2, Unit M2	0	8	0	0	8

Table B - 3, continued

Provenience	BLK SOIL	CS	CS-OBS	CST	Total
Collection Grid 2, Unit M3	0	7	0	0	7
Collection Grid 2, Unit M4	0	3	0	0	3
Collection Grid 2, Unit M5	0	2	0	0	2
Collection Grid 2, Unit N1	0	1	0	0	1
Collection Grid 2, Unit N2	0	4	0	0	4
Collection Grid 2, Unit N3	0	3	0	0	3
Collection Grid 2, Unit N4	0	4	0	0	4
Unit B2, Level 1	0	0	0	1	1
Unit C2, Level 1	0	3	0	0	3
Unit D4, Level 1	0	2	0	0	2
Unit G1, Level 1	0	4	0	0	4
Unit G3, Level 1	0	5	0	0	5
Unit G3, Level 2	0	1	0	0	1
Blading	8	0	0	0	8
Total	8	826	3	4	841

Note: BLK SOIL = bulk soil sample; CS = chipped stone; CS-OBS = chipped stone, obsidian; CST = chipped stone tool.
Shovel test units measure approximately 50 cm in diameter and were excavated to a depth of 10 cm; Test units measure 1 m × 1 m; Levels were excavated in 10-cm increments; Collection grid units measure 1 m × 1m.

Table B - 4. Artifact and Sample Counts from 26EU2064

Provenience	BLK SOIL	CAN	CS	CS-OBS	CST	CST-PP	Total
2006 Shovel Test 01	0	0	10	0	0	0	10
2006 Shovel Test 02	0	0	14	0	0	0	14
2006 Shovel Test 03	0	0	13	0	0	0	13
2006 Shovel Test 04	0	0	19	0	1	0	20
2006 Shovel Test 05	0	0	5	0	0	0	5
2006 Shovel Test 06	0	0	4	0	0	0	4
2006 Shovel Test 07	0	0	2	0	0	0	2
2006 Shovel Test 08	0	0	1	0	0	0	1
2006 Shovel Test 09	0	0	4	0	0	0	4
2006 Shovel Test 10	0	0	9	0	0	0	9
2006 Shovel Test 12	0	0	11	0	1	0	12
2006 Shovel Test 13	0	0	12	0	0	0	12
2006 Shovel Test 14	0	0	6	0	0	0	6
2006 Shovel Test 15	0	0	6	0	0	0	6
2006 Shovel Test 16	0	0	2	0	0	0	2
2006 Shovel Test 17	0	0	4	0	0	0	4
2006 Shovel Test 18	0	0	2	0	0	0	2
2006 Shovel Test 19	0	0	1	0	0	0	1
2006 Shovel Test 20	0	0	7	0	1	0	8
2006 Shovel Test 21	0	0	4	0	0	0	4
2006 Shovel Test 22	0	0	8	0	0	0	8
2006 Shovel Test 23	0	0	47	0	0	0	47
2006 Shovel Test 24	0	0	2	0	0	0	2
2006 Shovel Test 25	0	0	1	0	0	0	1
2006 Shovel Test 26	0	0	10	0	0	0	10
2006 Shovel Test 27	0	0	5	0	0	0	5
2006 Test Unit 01, Level 1	0	0	25	0	0	0	25
2006 Test Unit 01, Level 2	0	0	5	0	0	0	5
2006 Test Unit 02, Level 1	0	0	39	0	0	0	39
2006 Test Unit 02, Level 2	0	0	24	0	0	0	24
2006 Test Unit 03, Level 1	0	0	15	0	0	0	15
2006 Test Unit 04, Level 1	0	0	7	0	0	0	7
2006 Test Unit 05, Level 1	0	0	23	0	0	0	23

Table B - 4, continued

Provenience	BLK SOIL	CAN	CS	CS-OBS	CST	CST-PP	Total
2006 Test Unit 06, Level 1	0	0	9	0	0	0	9
2006 Test Unit 07, Level 1	0	0	37	0	0	0	37
2006 Test Unit 07, Level 2	0	0	3	0	0	0	3
2006 Test Unit 08, Level 1	0	0	35	0	0	0	35
2006 Test Unit 08, Level 2	0	0	2	0	0	0	2
2006 Test Unit 09, Level 1	0	0	1	0	0	0	1
2006 Test Unit 10, Level 1	0	0	1	0	0	0	1
General Surface Collection	0	1	1322	3	13	4	1343
Unit B1, Level 2	0	0	2	0	0	0	2
Unit H3, Level 1	0	0	1	0	0	0	1
Blading	1	0	0	0	1	0	2
Total	1	1	1760	3	17	4	1786

Note: BLK SOIL = bulk soil sample; CAN = historic tin can; CS = chipped stone; CS-OBS = chipped stone, obsidian; CST = chipped stone tool; CST-PP = chipped stone tool, projectile point.
Shovel test units measure approximately 50 cm in diameter and were excavated to a depth of 10 cm; Test units measure 1 m × 1 m; Levels were excavated in 10-cm increments.

Table B - 5. Artifact and Sample Counts from 26EU2126

Provenience	BLK SOIL	BONE	CS	CS-OBS	CSC	CST	CST-OBS	CST-PP	FCR	GS	Total
2006 Shovel Test 1	0	0	6	0	0	0	0	0	0	0	6
2006 Shovel Test 2	0	0	4	0	1	0	0	0	0	0	5
2006 Shovel Test 3	0	17	116	0	0	0	0	0	0	0	133
2006 Test Unit 1, Level 1	0	12	228	0	0	0	0	0	0	0	240
2006 Test Unit 1, Level 2	0	5	48	0	0	0	0	0	0	0	53
2006 Test Unit 1, Level 3	0	1	2	0	0	0	1	0	0	0	4
Test Unit 1, 2007 Wall Cleaning	0	2	39	0	0	0	0	0	0	0	41
General Surface Collection	0	0	123	0	1	1	0	0	0	0	125
Unit A02, Level 2	0	0	1	0	0	0	0	0	0	0	1
Unit A03, Level 1	0	0	1	0	0	0	0	0	0	0	1
Unit B02, Level 1	0	0	1	0	0	0	0	0	0	0	1
Unit B03, Level 1	0	0	1	0	0	0	0	1	0	0	2
Unit C01, Level 1	0	0	5	0	0	0	0	0	0	1	6
Unit C01, Level 2	0	0	4	0	0	0	0	0	0	0	4
Unit C02, Level 1	0	0	5	0	0	1	0	0	0	0	6
Unit C02, Level 2	0	0	3	0	0	0	0	0	0	0	3
Unit C03, Level 1	0	0	13	0	0	0	0	0	0	0	13
Unit C03, Level 2	0	0	10	0	0	0	0	0	0	0	10
Unit C04, Level 1	0	0	3	0	0	0	0	0	0	0	3
Unit C04, Level 2	0	0	5	0	0	0	0	0	5	0	10
Unit C05, Level 1	0	0	6	0	0	0	0	0	0	0	6
Unit C05, Level 2	0	0	4	0	0	0	0	0	0	0	4
Unit C06, Level 1	0	0	31	0	0	1	0	0	0	0	32
Unit C06, Level 2	0	2	29	0	0	0	0	0	0	0	31
Unit C07, Level 1	0	0	27	0	0	0	0	0	0	0	27
Unit C07, Level 2	0	0	11	0	0	0	0	0	0	0	11
Unit C08, Level 1	0	0	22	0	0	1	0	0	0	0	23
Unit C08, Level 2	0	0	13	0	0	0	0	0	0	0	13
Unit C09, Level 1	0	0	2	0	0	0	0	0	0	0	2
Unit C09, Level 2	0	0	1	0	0	0	0	0	0	0	1

Table B - 5, continued

Provenience	BLK SOIL	BONE	CS	CS-OBS	CSC	CST	CST-OBS	CST-PP	FCR	GS	Total
Unit C10, Level 1	0	0	4	0	0	0	0	0	0	0	4
Unit C10, Level 2	0	0	1	0	0	0	0	0	0	0	1
Unit E03, Level 1	0	0	2	0	0	0	0	0	0	0	2
Unit F01, Level 1	0	2	172	0	1	2	0	0	0	0	177
Unit F01, Level 2	0	0	11	0	0	0	0	0	0	0	11
Unit F02, Level 1	0	44	1267	3	0	4	0	1	0	0	1319
Unit F02, Level 2	0	74	559	1	0	1	0	1	0	0	636
Unit F02, Level 3	0	10	93	0	0	1	0	0	0	0	104
Unit F03, Level 1	0	1	77	1	0	0	0	0	0	0	79
Unit F03, Level 2	0	3	0	0	0	0	0	0	0	0	3
Unit F04, Level 1	0	0	289	0	0	1	0	1	0	0	291
Unit F04, Level 2	0	0	99	0	0	0	0	0	0	0	99
Unit F05, Level 1	0	22	648	1	0	1	0	0	0	0	672
Unit F05, Level 2	0	12	133	0	0	0	0	0	0	0	145
Unit F06, Level 1	0	13	381	0	0	2	0	0	0	0	396
Unit F06, Level 2	0	9	87	0	0	0	0	1	0	0	97
Unit F07, Level 1	0	2	580	0	0	0	0	0	0	0	582
Unit F07, Level 2	0	2	168	0	0	0	0	0	0	0	170
Unit F08, Level 1	0	0	152	0	0	0	0	0	0	0	152
Unit F08, Level 2	0	0	29	0	0	0	0	0	0	0	29
Unit F09, Level 1	0	0	47	0	0	0	0	0	0	0	47
Unit F09, Level 2	0	0	2	0	0	0	0	0	0	0	2
Unit F10, Level 1	0	0	74	0	0	0	0	0	0	0	74
Unit F10, Level 2	0		15	0	0	0	0	0	0	0	15
Unit F11, Level 1	0	2	50	0	0	0	0	0	0	0	52
Unit F11, Level 2	0	3	7	0	0	0	0	0	0	0	10
Unit F12, Level 1	0	0	202	0	0	1	0	0	0	0	203
Unit F12, Level 2	0	0	42	0	0	0	0	0	0	0	42
Unit F13, Level 1	0	0	144	0	0	0	0	0	0	0	144
Unit F13, Level 2	0	1	25	0	0	0	0	0	0	0	26
Unit F14, Level 1	0	2	34	0	0	0	0	0	0	0	36
Unit F14, Level 2	0	1	4	0	0	0	0	0	0	0	5

Table B - 5, continued

Provenience	BLK SOIL	BONE	CS	CS-OBS	CSC	CST	CST-OBS	CST-PP	FCR	GS	Total
Unit F15, Level 1	0	0	6	0	0	0	0	0	0	0	6
Unit F15, Level 2	0	0	19	0	0	0	0	0	0	0	19
Unit F16, Level 1	0	0	8	0	0	0	0	0	0	0	8
Unit F16, Level 2	0	0	1	0	0	0	0	0	0	0	1
Unit F17, Level 1	0	4	192	1	0	2	0	0	0	0	199
Unit F17, Level 2	1	1	0	0	0	0	0	0	0	0	2
Unit F18, Level 1	0	0	27	0	0	1	0	0	0	0	28
Unit F18, Level 2	0	0	8	0	0	0	0	0	0	0	8
Unit F19, Level 1	0	0	26	0	0	0	0	0	0	0	26
Unit F19, Level 2	0	0	17	0	0	0	0	0	0	0	17
Unit F20, Level 1	0	0	16	0	0	0	0	0	0	0	16
Unit F21, Level 1	0	0	11	0	0	2	0	0	0	0	13
Unit F21, Level 2	0	0	4	0	0	0	0	0	0	0	4
Unit F22, Level 1	0	1	8	0	0	0	0	0	0	0	9
Unit F22, Level 2	0	1	8	0	0	0	0	0	0	0	9
Unit F23, Level 1	0	0	95	0	0	0	0	0	0	0	95
Unit F23, Level 2	0	0	4	0	0	0	0	0	0	0	4
Unit G01, Level 1	0	0	1	0	0	0	0	0	0	0	1
Unit L01, Level 1	0	0	11	0	0	0	0	0	0	0	11
Unit L01, Level 2	0	0	18	0	0	0	0	0	0	0	18
Unit M01, Level 1	0	0	14	0	0	0	0	0	0	0	14
Unit M01, Level 2	0	0	3	0	0	0	0	0	0	0	3
Unit M02, Level 1	0	0	18	0	0	0	0	0	0	0	18
Unit M02, Level 2	0	0	6	0	0	0	0	0	0	0	6
Unit N01, Level 1	0	0	3	0	0	0	0	0	0	0	3
Unit N01, Level 2	0	0	3	0	0	0	0	0	0	0	3
Unit O01, Level 1	0	40	0	0	0	0	0	0	0	0	40
Unit O01, Level 2	0	6	0	0	0	0	0	0	0	0	6
Unit O02, Level 1	0	8	0	0	0	0	0	0	0	0	8
Unit O02, Level 2	0	4	1	0	0	0	0	0	0	0	5
Blading	1	0	0	0	1	0	0	0	0	0	2
Total	2	307	6690	7	4	22	1	5	5	1	7044

Table B - 5, continued

Note: BLK SOIL = bulk soil sample; BONE = bone; CS = chipped stone; CS-OBS = chipped stone, obsidian; CSC = chipped stone core; CST = chipped stone tool; CST-OBS = chipped stone tool, obsidian; CST-PP = chipped stone tool, projectile point; FCR = fire-cracked rock; GS = ground stone.
Shovel test units measure approximately 50 cm in diameter and were excavated to a depth of 10 cm; Test units measure 1 m × 1 m; Levels were excavated in 10-cm increments.

APPENDIX C. REPORT ON THE GEOPHYSICAL SURVEYS AT 26EU1548, 26EU2064, 26EU2126, 26EU1533, AND 26EU1539 ON THE BARRICK GOLDSTRIKE MINE IN EUREKA COUNTY, NEVADA

Chester P. Walker, Archaeo-Geophysical Associates, LLC

Archaeo-Geophysical Associates, LLC

Archaeological Geophysics
& Consulting Archaeologists

Report on the Geophysical Surveys at 26EU1548, 26EU2064, 26EU2126, 26EU1533, and 26EU1539 on the Barrick Goldstrike Mine in Eureka County, Nevada

Chester P. Walker

Report Submitted To:

Michael D. Cannon, Ph.D., RPA
SWCA Environmental Consultants, Inc.
257 E. 200 S., Suite 200
Salt Lake City, UT 84111

AGA Report 2007-15

November 14, 2007

Introduction

Based on consultation with SWCA Environmental Consultants, Inc., surveys using multiple geophysical methods were conducted by Archaeo-Geophysical Associates, LLC (AGA, LLC) in order to identify potential archaeological features at five prehistoric sites on the Barrick Goldstrike Mine in Eureka County, Nevada.

Detailed geophysical survey at each of the sites was conducted using a Geonics EM38B conductivity meter and a Bartington Grad 601-2 dual sensor fluxgate gradiometer. Grid corners were mapped using a Sokkia 2650 dual frequency GPS receiver with OmniStar correction service. Data was collected over an area totalling 87,200 m^2. The collections were divided up among the five sites: 7,200 m^2 at 26EU1533; 16,000 m^2 at 26EU1539; 8,800 m^2 at 26EU1548; 41,200 m^2 at 26EU2064; and 14,000 m^2 at 26EU2126.

Summary of Technical Information

Archaeo-geophysics employs a range of techniques for the non-destructive prospection of archaeological deposits (Gaffney and Gater 2003). These techniques have been developed for a range of applications, mostly geological in nature, but have been adapted for specific use in archaeological investigations through rigorous field collection techniques and unique data processing programs specifically developed for archaeo-geophysical investigations.

In general, all geophysical techniques map, record, or sense different variables or properties of the soil and the objects contained within the soil. The geophysical instruments are differentially affected by variables such as moisture, metal trash or debris, and transmission of signals such as cell phones and transmission lines. Data collection is also impacted differently for each of the geophysical instruments by physical impediments such as trees, pavement, fences, and vegetation.

Archaeologists have found the first line of defense against this complex matrix of variables is to come to the field prepared to collect data with several different instruments. The "multiple-technique" approach not only increases the likelihood of success in the ability to detect archaeological features of interest, but can often enhance the visibility of the archaeological targets that may be present and preserved at archaeological sites (Kvamme et al. 2006:251; Kvamme 2006a:57-58). Archaeo-geophysical data have a long history of success in helping to focus archaeological excavations to specific locations within sites, and under the right conditions can be used by itself as a primary source of archaeological data (Kvamme 2003a).

Magnetometer

Magnetometer and gradiometer surveys are non-invasive and passive and measure slight variations in the magnetic properties of soil. Magnetometers have become the primary tool for archaeo-geophysicists working on prehistoric archaeological sites in part due to the fact that data can be collected and processed rapidly and efficiently, and when conditions are right due to the properties of specific soils, magnetometers have proven useful in locating negative relief features such as pits and post holes as well as thermally-altered features such as fire hearths and burned structures (Gaffney et al. 2000; Kvamme 2003b; Walker and Perttula 2007a, 2007b; Walker and Schultz 2006).

Magnetometers record the minute fluctuations that sediments and objects have on the earth's magnetic field. This is known as induced magnetism because the object does not maintain its own magnetic field. If the effects of this induced magnetism are strong enough compared to the surrounding soil matrix, pit features or post holes can be identified or resolved in the geophysical data. A second type of magnetism called remnant magnetism is created when an object maintains its own magnetic field. In prehistoric archaeological examples, this occurs when objects are thermally altered, thus creating a magnetic state called thermoremanent magnetism (Kvamme 2006b:207). The specific magnetometer used in the current study is detailed by Bartington and Chaman (2004).

Conductivity

Conductivity surveys measure the ability to conduct an electric current (Clay 2006:79). This measurement is the theoretical inverse to resistivity (discussed below); however, measuring conductivity entails a much more complex set of procedures than resistivity (Bevan 1983:51; Clay 2006:79). Conductivity instruments differ greatly from resistivity instruments in that no probes are inserted into the earth. The conductivity has a set of wire coils, one transmitting a low frequency signal and the other receiving the signal. The conductivity meter is simply carried above the earth surface and data are logged automatically, making conductivity surveys time and labor efficient (although not as efficient as the magnetometer for geophysical surveys).

Conductivity meters can resolve data at different depths by changing the separation of the transmission and receiving coil and by transmitting its signal at different frequencies. Some instruments allow for these variables to be changed and others, like the Geonics EM38—the most widespread conductivity meter used in American archaeology—are not adjustable.

Magnetic Susceptibility

Magnetic susceptibility is a measurement of a material's ability to be magnetized (Dalan 2006:161). Changes or contrasts in the magnetic susceptibility of sediments are the results of a conversion of weakly magnetic oxides and hydroxides to more strongly magnetic forms (Dalan 2006:162). This magnetic enhancement can be caused by burning episodes (both natural and human-caused) as well as organic and inorganic pedogenic processes (Dalan 2006:162-163).

Similar to other geophysical methods, this technique has been increasingly useful for archaeological investigations. Magnetic susceptibility instruments differ from magnetometers in that they only measure fields resulting from induced magnetism, in contrast to a magnetometer, which records the net effect of induced and remnant magnetism (Dalan 2006:162, Kvamme 2006b:207-210). The differences between these two instruments produce data sets that are both complementary and unique. They are complementary in that magnetic susceptibility data can aid in the interpretation of magnetometer data (Dalan 2006:162-163), while magnetic susceptibility data are unique in that they can be used to address entirely different research questions, such as tracking broad magnetic changes across the landscape (David 1995:20).

Field Methods

When possible AGA, LLC collects geophysical data in 20 m grids. We have found that this size of collection unit represents an optimal size in balancing the speed of data collection with maintaining quality control of the magnetic data set. SWCA first laid out 20 x 20 m geophysical collection grids at the five sites using a total data station. After corner stakes were in place, PVC pin flags were placed every 2 m on two sides of each grid.

The specific settings used for the geophysical instruments used in this study differ greatly; however, there are a few general concepts of data collection that apply to all three technologies. The density of the dataset is controlled by two factors: (1) traverse interval—the distance between the passes the instrument makes as it is moved back and forth across the collection area; and (2) sample interval—the distance between readings the instrument records as it passes along each traverse. There are standard starting points for these settings, but ultimately this depends on many factors, including the size and depth of the targets of interest (i.e., archaeological features), the nature of the sediment matrix, land use of the collection area, duration of the survey, as well as the investigative scope of the overall project research design.

Magnetometer data was collected using a 0.5 m traverse interval and a 0.125 m (8 readings per m) sample interval. Conductivity and magnetic susceptibility data were collected using a 1.0 m traverse interval and 5 readings/second were recorded along the traverses. Given the pace of the collector, this is comparable to a 0.25 m sample interval. Both EM datasets were collected using a dual frequency DGPS system. Data was collected within the grid system established by SWCA to ensure data densities remained consistent and comparable with the magnetometer data. Both instruments were passed over the grids in a bi-directional pattern.

Data Processing

The data collection techniques discussed above have dramatically different workflows for post-collection data processing. All data were processed and filtered to remove extraneous false readings (spikes and drop-outs). Processing levels the datasets so adjacent collection grids can be combined into a single image with no “grid lines.” Datasets were processed to enhance the visibility of any target features through statistical manipulation of the recorded data as well as through image processing of the image file output.

The general goal of data processing is to lessen the effects of background “noise” and to enhance the quality of the “signal” or “target” in the geophysical data. In field geophysics in general, and archaeo-geophysics in particular, the term noise is used to discuss any return that is not a direct result of the object under investigation, this being referred to as the “target” or “signal.” Hence, in some cases what is discussed as noise can in another case become the signal or target (Milsom 2005:13-14). Accuracy of the geophysical readings are not as important for resolving targets in the geophysical data as is the contrast between the target and its surrounding matrix.

The major data processing techniques are discussed in this section (for more detail on data processing in general, see the ArchaeoSurveyor user manual), with details on the specific data processing workflow applied to each collection grid at the five sites. The general approach to data processing follows Kvamme (2006c:236), namely to computer process the geophysical data to identify regular and culturally interpretable patterns using pattern recognition principles: "In general, anomalies exhibiting regular geometric shapes (lines, circles, squares, rectangles) tend to be of human origin" (Kvamme 2006c:236). After each processing step the results are closely compared to their previous processed state to assure that data manipulation is not in fact decreasing the clarity and quality of the data, and thus avoiding the creation of processed images that are primarily products of the data processing itself.

Magnetometer Data Processing

All magnetometer data from the Gold Strike project was processed using ArchaeoSurveyor 2.0 by DW Consulting. The magnetometer data sets were first de-stripped (Tables 1-5). Destriping is a process used to equalize the underlying differences between grids caused by instrument drift, inconsistencies during setup, delays between surveying adjacent grids, or heading error from magnetic instruments. The median of each traverse was subtracted from the values in each traverse.

Table 1. Data processing steps for magnetometer data at 26EU1533.

1	Base Layer
2	DeStripe Median Traverse: Grids: All
3	Clip from -20 to 20
4	De Stagger: Grids: All Mode: Both By: -4 intervals
5	De Stagger: Grids: 01.asg 02.asg 03.asg 04.asg 05.asg 06.asg Mode: Both By: -2 intervals
6	Low pass Gaussian filter: Window: 3 x 3

Table 2. Data processing steps for magnetometer data at 26EU1539.

1	Base Layer
2	DeStripe Median Traverse: Grids: All
3	Clip from -10 to 10
4	De Stagger: Grids: All Mode: Both By: -4 intervals, 10.00cm
5	De Stagger: Grids: 01.asg 09.asg 30.asg 32.asg Mode: Both By: 2 intervals, 10.00cm
6	De Stagger: Grids: 18.asg 19.asg Mode: Both By: -2 intervals, 10.00cm
7	Low pass Gaussian filter: Window: 3 x 3

Table 3. Data processing steps for magnetometer data at 26EU1548.

1	Base Layer
2	DeStripe Median Traverse: Grids: All
3	De Stagger: Grids: All Mode: Both By: -3 intervals
4	De Stagger: Grids: 05.asg 09.asg 11.asg 12.asg 13.asg 14.asg 15.asg 16.asg Mode: Both By: -3 intervals
5	Clip from -15 to 15
6	Low pass Gaussian filter: Window: 3 x 3

Table 4. Data processing steps for magnetometer data at 26EU2064.

1	Base Layer
2	Clip from -15 to 15
3	DeStripe Median Traverse: Grids: All
4	De Stagger: Grids: 01.asg 02.asg 03.asg 04.asg 05.asg 06.asg 07.asg 08.asg 09.asg 10.asg 11.asg 12.asg 13.asg 14.asg 15.asg 16.asg 17.asg 18.asg 19.asg 20.asg 21.asg 22.asg 23.asg 24.asg 25.asg 26.asg 27.asg 28.asg 29.asg 30.asg 31.asg 32.asg 33.asg 34.asg 35.asg 36.asg 37.asg 38.asg 39.asg 40.asg 41.asg 42.asg 43.asg 44.asg 45.asg 46.asg 47.asg 48.asg 49.asg 50.asg 51.asg 52.asg 53.asg 54.asg 55.asg 56.asg 57.asg 58.asg 59.asg 60.asg 61.asg 62.asg 63.asg 64.asg 65.asg 66.asg 67.asg 68.asg 69.asg 70.asg 71.asg 72.asg 73.asg 74.asg 75.asg 76.asg 77.asg 78.asg 79.asg 80.asg 81.asg 82.asg 83.asg 84.asg Mode: Both By: -2 intervals
5	De Stagger: Grids: 50.asg 51.asg 67.asg 70.asg 84.asg Mode: Both By: -4 intervals
6	Low pass Gaussian filter: Window: 3 x 3

Table 5. Data processing steps for magnetometer data at 26EU2126.

1	Base Layer
2	Clip from -15 to 15
3	DeStripe Mean Traverse: Grids: All Threshold: 2 SDs

Next the data sets were clipped. Clipping replaces all values outside a specified minimum and maximum range. These minimum and maximum values are specified in either absolute values or as ± Standard Deviations (SD). This process is used to remove extreme data point values and aids in normalizing the histogram of the magnetic data. Archaeological details are subtle, and having a normal distribution of geophysical data allows the fine detail to show through with clarity.

When necessary the data was de-staggered. De-staggering corrects for the minor inconsistencies in the data collectors gait as they walk back and forth across the collection area. This filter simply moves the data up or down the traverse in a specified interval. Low pass filtering was also used when necessary. Low pass filters are used to remove low frequency components in a geophysical survey by calculating the mean of a window of a specified size, and replacing the center value with the mean. A Uniform or Gaussian weighting is used to replace the center value. With Uniform weighting, all values within the window are given equal weight. Gaussian weighting, which was used for all data sets in the current geophysical survey, gives a higher weight to values closer to the center of the window. Low pass filters are commonly applied to lessen the effects of background noise.

Conductivity and Magnetic Susceptibility Data Processing

All of the conductivity and magnetic susceptibility data sets were processed using DAT38BW by Geonics as well as ArchaeoSurveyor 2.0 by DW Consulting. DAT38BW was used to convert the files to an XYZ format positioned with GPS coordinates. DAT38BW interpolates the locations of the points in-between GPS readings. A GPS reading was logged every second and five EM readings were logged every second. Thus, the positions of four of the five EM readings logged every second were interpolated by the DAT38BW program. This interpolation process is conducted after the data are logged, and therefore it utilizes GPS readings on both sides of the EM readings.

After the data was converted into XYZ files it was imported into ArchaeoSurveyor 2.0. First the files were gridded using a 3 m search radius to create base layers (Tables 6-15). Next the data was clipped and low pass-filtered if necessary.

Table 6. Data processing steps for magnetic susceptibility data at 26EU1533.

1	Base Layer
2	Low pass Gaussian filter: Window: 8 x 8

Table 7. Data processing steps for conductivity data at 26EU1533.

1	Base Layer
2	Clip from 3 to 15

Table 8. Data processing steps for magnetic susceptibility data at 26EU1539.

1	Base Layer
2	Clip at 2 SD
3	Low pass Gaussian filter: Window: 8 x 8

Table 9. Data processing steps for conductivity data at 26EU1539.

1	Base Layer
2	Clip at 2 SD

Table 10. Data processing steps for magnetic susceptibility data at 26EU1548.

1	Base Layer
2	Clip at 2 SD
3	Low pass Gaussian filter: Window: 8 x 8

Table 11. Data processing steps for conductivity data at 26EU1548.

1	Base Layer
2	Clip at 2 SD

Table 12. Data processing steps for magnetic susceptibility data at 26EU2064.

1	Base Layer
2	Clip from -1 to 1
3	Low pass Gaussian filter: Window: 10 x 10

Table 13. Data processing steps for conductivity data at 26EU2064.

1	Base Layer
2	Clip at 1 SD
3	Clip from 11 to 28

Table 14. Data processing steps for magnetic susceptibility data at 26EU2126.

1	Base Layer
2	Clip at 1 SD

Table 15. Data processing steps for conductivity data at 26EU2126.

1	Base Layer
2	Clip at 1 SD

Geophysical Survey Results

26EU1533

Geophysical data from 26EU1533 did not contain any prehistoric cultural features (Figures 1-4). Of the sites subjected to geophysical investigation in this project, the magnetometer data from this site had the largest range of readings. The most obvious anomalies in this data are the few clusters of enhanced magnetism on the crest of the landform that are present in the magnetometer data (see Figures 1-3). An area of both high conductivity and high magnetic susceptibility is present on the northern edge of the site. A small dirt road and a few di-poles (possibly including the site datum) are the only visible cultural features in this dataset (see Figure 4).

26EU1539

Geophysical data from 26EU1539 did not contain any prehistoric cultural features (Figures 5-8). The most prominent anomaly, visible in all three data sets, is the east to west running road that crosses the site (see Figure 8) and an old ditch that diagonally traverses the site from the southeast to the northwest (see Figure 8). There is a notable trend in the magnetometer data that appears to correspond with the edge of the terrace (see Figures 5-8). This trend is marked by a dramatic decrease in magnetic activity from terrace to non-terrace landforms. This landform and magnetic trend is most obvious in the magnetometer data, but is also visible in the two EM datasets. There is also a buried waterline present in the southern edge of the site (see Figure 8).

26EU1548

Geophysical data from 26EU1548 also did not contain any prehistoric cultural features (Figures 9-12). The southern edge of the site is bisected by a road and ditch, both of which are visible in all three datasets. A drainage or wash runs diagonally from the northwest to the southeast across the middle of the site and is visible in the magnetometer data (see Figures 9 and 12).

26EU2064

Geophysical data from 26EU2064 did not contain any prehistoric cultural features (Figures 13-16). A road is visible crossing the eastern edge of both the magnetometer and conductivity datasets (see Figures 13 and 14). High conductivity anomalies and positive magnetic anomalies are present running parallel with the summit of the landform. These anomalies are geological in nature. Several di-polar anomalies are visible in the conductivity and magnetic susceptibility data that appear to be in a regular pattern running east to west (see Figures 14 and 15). The source of these anomalies is currently unknown, but it is assumed to be related to explorative mining activity.

26EU2126

Geophysical data from 26EU2126 did not contain any prehistoric cultural features (Figures 17-20). Visible in all three datasets is the obvious disturbance on the northwestern edge of the site caused by a large above-ground waterline. There is also a large di-polar anomaly visible in the magnetometer data that was caused by a low-lying spoil pile (see Figures 17 and 20). A positive magnetic anomaly is located next to the large di-pole that was caused by a larger spoil pile. The origins of these two spoil piles is not known.

Conclusions

Given the low number (n=3) of possible subsurface cultural features recovered during excavations conducted by SWCA at these five prehistoric sites at the Mine, advancing cultural interpretations of the archaeo-geophysical data, much less the archaeological data, is less than optimal. The archaeo-geophysical work also suggests that cultural features occur only in very low densities at the sites.

As stated in the proposal for the geophysical survey (Walker 2007a) and the project's request for proposal (RFP), features targeted with the use of geophysics were described as "small scatters of fire-cracked rock (FCR), more substantial thermal features, and more extensive occupational surfaces." Extensive excavations at the five sites, however, recovered only a single FCR feature, two thermal feature, and no extensive occupational surfaces.

General geological trends are visible in the data from all five sites. Magnetometer data clearly shows the effects of fluvial activity on the landscape (see Figures 5 and 9) at several of the sites. These parts of the landscape are accompanied by high densities of surface artifacts, but no corresponding trend in feature distributions. This trend in surface artifact densities, not any surface density of visible features, was also the main reason collection grids were extended to cover the summit of the landform, which was situated outside the established boundary at site 26EU1548.

A joint meeting between representatives of SWCA, AGA, LLC, the BLM, and BGMI was held at the Elko BLM office on August 22, 2007 to identify areas of interest to begin the "Remote Sensing Anomaly Excavation" stage of the excavation program as described in the data recovery plan (Cannon and Stettler 2007). First tier and second tier areas of interest were targeted at each site. Subsequent excavations conducted by SWCA at all of these areas of interest produced no cultural features, corroborating the archaeo-geophysical results discussed above (Table 16). A summary of the archaeological investigations and their archaeo-geophysical survey implications are discussed below.

Table 16. Archaeological Field Operations (Ops) located by Archaeo-geophysical Data.

	26EU1533	26EU1539	26EU1548	26EU2064	26EU2126
Located on Magnetometer Anomalies	Operations A and B	Operations A and B	Operations A, B, and C	Operations A - G	Operations A and B
Located on EM Anomalies	Operations C, D, and E	Operations C and D	Operations D, E, and F	Operation I	Operations D and E

26EU1533

According to Cannon (2007), no cultural features were recovered from 26EU1533. Test units were placed in areas of positive magnetic anomalies (Ops A and B) and areas of high conductivity (Ops C, D, and E). Ops C and D were also in areas of high artifact densities.

26EU1539

SWCA recovered one possible archaeological feature at site 26EU1539. A small ash lens was recovered in Op G (Cannon 2007). This possible feature is located on the edge of the terrace. This feature is not legible in any of the three geophysical datasets. If this feature is indeed representative of a primary deposition, archaeological experimentation of various types of burning events and their respective geophysical signatures (Linford and Canti 2001:224) suggest its absence from the geophysical data could be due several factors. These are discussed in more detail in the concluding summary.

26EU1548

Excavations at 26EU1548 did not locate any subsurface features, nor did the archaeo-geophysical survey investigations. According to Cannon (2007:5), subsurface artifacts were moderately dense but limited to the upper 10 cm of the units placed in areas of high surface artifact densities.

26EU2064

Excavations at 26EU2064 did not locate any subsurface features. Cannon (2007:5) notes that subsurface artifacts were rare and limited in distribution to the upper few cm of the sediments present at the site.

26EU2126

SWCA recovered one possible hearth feature at site 26EU2126. An ash lens was recovered in Op F. This feature was notably thicker than the ash feature recovered at 26EU1539 and was surrounded by midden deposits. Similar to the ash feature at 26EU1539, the ash feature at 26EU2126 was not legible in any of the three geophysical datasets. This could be a result of several factors, which are discussed in more detail below.

A burned rock feature was also recovered at 26EU2126 in Op C. Unfortunately, this feature was located well within the area of magnetic disturbance caused by the large metal water pipe that traverses the northern edge of the site. Similar to Op F, the general area of Op C was recorded as a diffuse area of moderately high conductivity.

Concluding Summary

Archaeological investigations at all five sites of the Barrick Goldstrike Project located three possible cultural features (Cannon 2007:4-6). All three possible cultural features that were identified fit the description of the geophysical targets as described in the geophysical RFP and subsequent proposal submitted to SWCA by AGA (Walker 2007a). One possible cultural feature, a burned rock feature, was located in an area adversely obstructed by the magnetic field of a large metal pipe and thus was not visible in the geophysical data. Two of these features were ash deposits representing possible hearth features. Neither of these features contained burned rock and both were located in areas unobstructed by extraneous noise or signal interference. Given the low frequency of this type of feature (n=2) recovered in the Barrick Goldstrike Project, no strong conclusions or generalizations can be made regarding this feature class with respect to geophysical signatures. However, several hypothesis are offered below to help explain why these features did not posses a high enough magnetic contrast with the surrounding soils to be easily identified in the magnetometer data.

Archaeological experiments on the nature of firing and its subsequent impact on magnetometer data offer some insight in explaining the absence of these features in the magnetic data (Linford and Canti 2001). These experiments were conducted to test the magnetic impacts of firing on different soil types. Temperature levels were measured using an array of thermocouples both above and below the ground. Magnetic measurements were taken in the field before and after firing using traditional archaeo-geophysical instruments (a GeoscanResearch FM36 fluxgate gradiometer and a Bartington MS2 Magnetic Susceptibility Meter) as well as in a laboratory setting (Linford and Canti 2001:212-223). These studies concluded that magnetically enhanced ash exposed to weathering displayed a rapid decrease in the strength of their magnetic signature. These experiments also concluded that the duration of the burning episode also had a significant impact on the magnetic signature of the feature.

Based on the experiments discussed above, the archaeological findings from the Barrick Goldstrike Project (Cannon 2007), and the archaeo-geophysical results presented in this report, several scenarios are suggested that account for the low magnetic contrast of the ash features:

(1) The feature did not reach high enough temperatures (above 150°C according to Linford and Canti [2001:224]) to significantly alter its remanent magnetism;

(2) The feature did not sustain high temperatures long enough to significantly alter its remnant magnetism;

(3) Post-depositional processes have subsequently reduced the remnant magnetism of the feature; and

(4) The net magnetic properties of the feature are below the observed magnetic properties of the surrounding sediments.

Future Recommendations

The science of archaeo-geophysics, especially as it is practiced in the United States, is still a young and burgeoning discipline. Large-scale landscape surveys, such as those conducted as part of the Barrick Goldstrike data recovery project, are considered by many to be the logical direction the science of archaeo-geophysics is headed (Kvamme 2003a). This places the current survey on the leading edge of this type of study and greatly adds to the importance of the findings presented here. The findings from the Barrick Goldstrike project are not only important with respect to this particular project, but in a more general sense because they can also be used to aid in future regional-scale investigations.

Below are some comments on incorporating the use of geophysics at various scales in future projects in this region. Emphasis is placed on the recovery of quality archaeological information and survey efficiency. Different survey parameters are discussed in detail, including using smaller surveys at known sites as an initial assessment of the productivity for various archaeo-geophysical techniques for a given set of geological and archaeological conditions. Next, a broad scale landscape survey is suggested employing the technique or techniques identified during the initial assessment. The goal of the landscape survey would be to quickly and efficiently cover as much of the site, and if possible portions of its surrounding landscape, in order to isolate areas of archaeological interest. A third stage is then suggested where the areas of archaeological interest identified in the landscape survey are targeted using a suite of archaeo-geophysical techniques at high sample densities in order to produce high-resolution imagery. These three stages are not meant to necessarily correspond to the various stages of a Cultural Resources Management (CRM) project on a one to one basis. Elements of the three stages of this archaeo-geophysical survey design can be incorporated into a single archaeo-geophysical field project, or deployed separately within the context of the different phases of the archaeological investigations.

Archaeo-geophysics Use in CRM

Based on the findings from the Barrick Goldstrike project, a multi-scalar archaeo-geophysical survey methodology appears to represent the optimal approach for incorporation in CRM projects. Emphasis is placed on recording quality data as well as overall survey efficacy. If implemented strategically within the existing structure of the CRM workflow, archaeo-geophysics has the potential to both greatly increase the information gained at each phase of investigation as well as decrease the time and money necessary to carry to completion archaeological work to identify and evaluate archaeological sites in an area of potential effects, and complete mitigation of archaeological sites to be affected by a development project (see also Lockhart and Green 2006).

Archaeo-geophysics should always be considered as part of the archaeological tool kit, but not as a replacement for actual subsurface investigations, whether those excavations be of an evaluative or mitigative nature. Several datasets do indeed exist where detailed archaeological interpretations can be made from geophysical data alone (Walker and Schultz 2006; Walker et al. 2007, Kvamme and Ahler 2007; Creel et al; 2005). Many more datasets exist, however, that are more ephemeral, noisy, and difficult to interpret simply from an archaeo-geophysical perspective (Walker and Perttula 2007a, 2007b; Walker 2007b). These more ephemeral (and unfortunately more common) data sets require the combination of traditional archaeological data (such as distributions and densities of artefacts, features, and architectural features) with geophysical data in order to isolate culturally significant patterns and trends within a particular site or across a landscape. This fact also cautions against the notion that geophysics can be used alone, or solely relied upon, as an expedient means to survey an area to identify archaeological sites or complete an evaluation of an archaeological site in a proposed development area.

There is a common misnomer that geophysics "does not work" in some areas; this is simply not true. Such misplaced thinking is typically offered as an ad hoc explanation for negative results, when understanding the parameters of the local geological and archaeological record is more critical in formulating archaeo-geophysical explanations. Archaeo-geophysics, however, is not always a turn key solution for detailed landscape analysis. Like all archaeological methods and techniques, archaeo-geophysics on site and landscape scales will take patience and rigor to perfect and such investigations will have to be attended to on a region-by-region basis before it becomes evident in what situations and in what contexts archaeologically useful geophysical data will be obtained. It is through the continued incorporation of archaeo-geophysical investigations in regional research designs (e.g., Cannon and Stettler 2007) that these methods and techniques will become more useful to the archaeological community as a whole.

Sample Density, Survey Speed, and Data Quality

There are several specific recommendations that can be implemented in future archaeo-geophysical investigations in this region. Sample density is perhaps the most important variable controlled by the geophysicist during data collection. Sample density refers to the number of readings recorded in the field. It consists of two variables: (1) the S***ample Interval***, or the number of readings taken as the surveyor moves back and forth along each traverse, and (2) the ***Traverse Interval***, or the distance between each traverse. Sample density can be expressed as a single number—as in 16 readings per m—or more specifically at two numbers, which express the relationship between the sample and traverse intervals – as in 0.125 x 0.5 m.

Sample density of a collection most directly affects the pace of an archaeo-geophysical survey. More specifically, the traverse interval has the greatest impact on survey speed. Changing the sample density has minor implications, with differences in survey speed mostly concerning data volume. For example, collecting data with a 0.5 m traverse interval takes twice as long as data collected with a 1.0 m traverse interval, whereas the only difference in survey time between data collected at a sample interval of 1 reading/m or a sample interval of 8 readings/m is the frequency at which data is downloaded from the instrument when it is full (usually only taking several minutes). Sample density also has the most direct impact on the resolution of the geophysical data. Thus, there is a trade off between speed and resolution.

Figure 21 show the same portion of 26EU1533 displayed in the original 0.125 x 0.5 m sample density that was used for all the sites in the current project, but de-sampled at various sample densities to illustrate the implications of the relationship between sample density and image clarity. As discussed above, it is assumed that the survey time is cut in half as the traverse interval is doubled. Figure 21 clearly shows that the 0.5 x 0.125 m sample interval has the sharpest clarity; however, considering that the 1.0 x 0.25 m sample interval would take half the collection time and the surveyor would never have to download data in the field (160 grids could be collected before a download) makes this sample interval a good possibility for archaeo-geophysical assessments or large scale landscape surveys. Both strategies are discussed below.

There is no "one size fits all" approach to archaeo-geophysics. It is also not accurate to assume that higher resolution images will be worth the extra time that must be spent in the field to collect them. Sample density should be considered as a flexible variable determined by the nature of the archaeological target, the surrounding geological context, as well as the ground cover present at the time of the survey. This is not a new or even novel concept for archaeologists and can be observed at many levels in modern archaeological field practices. For example, in archaeological survey, surveyors typically rely on the most time-efficient methods that are suitable for the given region in which the survey investigations are being conducted. Depending on the survey conditions, this can range from aerial photo analysis, to surface collection, to shovel testing. The same concept should be considered in the application of archaeo-geophysics in a particular project setting. Given the nascent understanding of archaeo-geophysics in the context of developing and appreciating the appropriate investigative scale of focus when compared to traditional archaeological practices, it is virtually a given that finding the correct sample density and survey speed variables to employ in specific archaeo-geophysical investigations will come through empirical testing in different archaeological and landscape situations.

Archaeo-geophysical Assesments to Landscape Surveys

The assemblage of variables impacting the results of archaeo-geophysical research is staggering. Ballpark predictions of archaeo-geophysical data quality can be made before one enters the field since they would based on information provided by previous archaeological work in a given region, the nature of the geology and geomorphological setting of the area, the current land cover and land use, as well as the general impacts present in the modern cultural landscape. However, actual fieldwork is required to discern the level of utility that archaeo-geophysical investigations can offer in a given archaeological region with a particular range of sites and site characteristics. With this in mind, archaeologists would greatly benefit from incorporating archaeo-geophysics at different levels of intensity and spatial scale in research designs at different phases of investigation. Below, I outline a few different strategies that can be employed that will help to incorporate archaeo-geophysics into CRM projects.

Archaeo-geophysical assessments are quick field tests of various geophysical methods and techniques on known sites. This type of geophysical survey can be used as a part of site evaluative testing, in the beginning stages of a data recovery project, or simply to assess the potential use of archaeo-geophysics for a given region as part of a broad-scale archaeological survey or the development of a landscape study. The primary goal of an archaeo-geophysical assessment, then, is to document the nature and quality of archaeo-geophysical data for a given area, and how best to collect such data. Used together with site evaluative testing, an archaeo-geophysical assessment can be employed to determine the potential for incorporating geophysics at an increased spatial scale for later phases of research or to help identify specific characteristics of a site (i.e. the use of ground penetrating radar [GPR] to measure the depth to bedrock, or stratigraphic work to supplement geomorphological test trenches).

Landscape surveys are those situations where the full potential of archaeo-geophysics can be incorporated into CRM projects. When possible, landscape surveys should be preceded by archaeo-geophysical assessments so that geophysical information on both the target archaeological features as well as their geophysical signatures is known or can be established. Landscape surveys can (and should) be implemented on a much larger scale that archaeological testing work alone. The speed and spatial scope at which archaeo-geophysical surveys can be conducted allows archaeologists to greatly widen their view of the archaeological character of the landscape, and begin to use geophysics as an integral tool that adds to their understanding of the entire prehistoric landscape in which the sites they are studying are located.

High Resolution Multi-Sensor Surveys

High resolution multi-sensor surveys are conducted in situations where the specific nature of the archaeological target is known with some precision but due to political or economic reasons actual excavation are by necessity either limited in scope or not possible at all. In this situation, multiple techniques can be used in tight collection intervals. Extra precautions can also be taken during such archaeo-geophysical investigations, such as collecting data in a single direction, to provide the greatest possible data quality. These surveys are time consuming when compared to the other previously mentioned types of archaeo-geophysical survey, but nevertheless will still progress at a much quicker speed, and cover a larger archaeological area, than actual manual excavations (even shovel tests) can.

Multi-sensor surveys are also useful to combine with landscape surveys. Landscape surveys will typically rely on one or more geophysical method that is rapidly operated, such as magnetometry, conductivity, or magnetic susceptibility. Its goal is to simply locate archaeological features on the landscape. Once this is accomplished, a high-resolution multi-sensor survey can be conducted to obtain more specific information from the cultural features that have been identified. This is accomplished by both increasing the sample density as well as the spatial control of the survey. For instance, magnetometer data could be collected at 25 cm traverse intervals using a uni-directional survey pattern; this would greatly increase the detail in the data but would also increase the time of the survey. Slower geophysical techniques such as GPR and resistivity could also then be used to further increase the clarity of the archaeological targets and the amount of archaeological information yielded from the survey.

The strategic employment of archaeo-geophysics into multiple stages of the CRM process can ultimately decrease the amount of time required to conduct archaeological site assessments, evaluative testing, and data recovery, if the archaeo-geophysical and archaeological work is effectively integrated and there is mutual feedback during the course of a project concerning the results obtained by one set of methods or both. Archaeo-geophysical surveys can allow archaeologists to investigate a much broader area and help to more strategically locate the areas they choose to manually excavate. Archaeo-geophysics has the potential to provide more useful information if it is threaded into the traditional CRM workflow and used at varying levels of intensity throughout the various phases of archaeological investigation.

Proposed Archaeo-geophysical Workflow

Based on the results from the present archaeo-geophysical survey conducted as part of the Barrick Goldstrike Data Recovery Project the following archaeo-geophysical workflow is offered for future consideration and implementation:

Sites that potentially contain intact sub-surface archaeological deposits

Archaeo-geophysical assessment would be performed on areas of known subsurface features or over areas of highest archaeological potential as identified during the initial site survey or in the early stages of site testing. Several instruments are tested and the instrument producing the most legible data is used over as much of the site as the project allows at a sample density determined by the initial geophysical assessment: the lowest resolution where archaeological targets can be identified. These data are interfaced with archaeological data and areas of archaeological interest are identified. High-resolution archaeo-geophysical investigations are conducted on the areas targeted as areas of archaeological interest and are used to supplement data recovery excavations and expand on the findings obtained from the data recovery work.

Sites with known sub-surface archaeological deposits and features

Sites with known sub-surface features that are undergoing data recovery can gain from following the first archaeo-geophysical work flow proposed above, or can proceed directly to a high-resolution archaeo-geophysical survey, depending on the specifics of the project goals and research design issues/approaches. In this workflow case, sites and areas on sites with known sub-surface features can be mapped at high sample intervals to produce a supplementary dataset for data recovery excavations.

References Cited

Bartington, G. and C. E. Chapman
2004 A high-stability Fluxgate Magnetic Gradiometer for Shallow Geophysical Survey Applications. *Archaeological Prospection* 11:19-34.

Bevan, B. M.
1983 Electromagnetics for Mapping Buried Earth Features. *Journal of Field Archaeology* 10:47-54.

Cannon
2007 *Fieldwork Summary and Reporting Schedule, Barrick Goldstrike 2007 Archaeological Data Recovery Project.* SWCA interim report.

Cannon and Stettler
2007 *Data Recovery Plan for five Prehistoric Archaeological Sites in the Little Boulder Basin, Eureka County, Nevada.* Prepared for Barrick Goldstrike Mines, Inc. Submitted to, United States Bureau of Land Management, Elko Field Office.

Clay, B. R.
2006 Conductivity Survey: A Survival Manual. In *Remote Sensing in Archaeology: An Explicitly North American Perspective, e*dited by J. K. Johnson, pp. ___. University of Alabama Press, Tuscaloosa.

Creel, D. G., D. Hudler, S. M. Wilson, T. C. Schultz, and C. P. Walker
2005 *A Magnetometer Survey of Caddoan Mounds State Historic Site*. Technical Report 51. Texas Archeological Research Laboratory, The University of Texas at Austin.

Dalan, R. A.
2006 Magnetic Susceptibility. In *Remote Sensing in Archaeology: An Explicitly North American Perspective, e*dited by J. K. Johnson, pp. ___. University of Alabama Press, Tuscaloosa.

David, A.
1995 *Geophysical Survey in Archaeological Field Evaluation*. Ancient Monuments Laboratory, English Heritage Society, London.

Gaffney, C. and J. Gater
2003 *Revealing the Buried Past: Geophysics for Archaeologists*. Tempus Publishing Ltd., Stroud, Gloucestershire, England.

Gaffney, C., J. A. Gater, P. Linford, V. Gaffney, and R. White
2000 Large-Scale Systematic Fluxgate Gradiometry at the Roman City of Wroxeter. *Archaeological Prospection* 7:81-99.

Kvamme, K. L.

2003a Geophysical Surveys as Landscape Archaeology. *American Antiquity* 68:435-457.

2003b Multidimensional Prospecting in North American Great Plains Villages Sites. *Archaeological Prospection* 10:131-142.

2006a Integrating Multidimensional Geophysical Data. *Archaeological Prospection* 13:57-72.

2006b Magnetometry: Nature's Gift to Archaeology. In *Remote Sensing in Archaeology: An Explicitly North American Perspective,* edited by J. K. Johnson, pp. 205-233. University of Alabama Press, Tuscaloosa.

2006c Data Processing and Presentation. In *Remote Sensing in Archaeology: An Explicitly North American Perspective,* edited by Jay K. Johnson, pp. 235-250. University of Alabama Press, Tuscaloosa.

Kvamme, K. L. and S. A. Ahler
2007 Integrated Remote Sensing and Excavation at Double Ditch State Historic Site, North Dakota. *American Antiquity* 72(3):539-562.

Kvamme, K. L., J. K. Johnson, and B. S. Haley
2006 Multiple Methods Surveys: Case Studies. In *Remote Sensing in Archaeology: An Explicitly North American Perspective,* edited by J. K. Johnson, pp. 251-267. University of Alabama Press, Tuscaloosa.

Linford, N.T. and M.G. Canti
2001 Geophysical Evidence for Fires in Antiquity: Preliminary Results from an Experimental Study Paper Given at the EGS XXIV General Assembly in the Hague, April 1999. *Archaeological Prospection* 8:211-225.

Lockhart, J. J. and T. J. Green
2006 The Current and Potential Role of Archaeogeophysics in Cultural Resource Management in the United States. In *Remote Sensing in Archaeology: An Explicitly North American Perspective*, edited by J. K. Johnson, pp. 18-32. University of Alabama Press, Tuscaloosa.

Milsom, J.
2005 *Field Geophysics: The Geological Field Guide Series*. Third edition. Wiley, West Sussex.

Walker, C. P.
2007a *Proposed Geophysical Survey At 26EU1548, 26EU2064, 26EU2126, 26EU1533 and 26EU1539.* Proposal Submitted to Michael D. Cannon, Ph.D., RPA SWCA Environmental Consultants, Inc. 257 E. 200 S., Suite 200 Salt Lake City, UT 84111

2007b *Magnetometer Survey at the Leaning Rock Site (41SM325).* AGA Report Number 2007-3. Archaeo-Geophysical Associates, LLC, Austin.

Walker, C. P. and T. K. Perttula
2007a Remote Sensing at the Horace Cabe Site (41BW14). *Caddo Archaeology Journal* 16:37-44.

2007b Geophysical Surveying at the Tallow Grove (41NA231), Foggy Fork (41NA235), and Beech Ridge (41NA242) sites. In *Lake Naconiche Archeology, Nacogdoches County, Texas: Results of the Data Recovery Excavations at Five Prehistoric Archeological Sites*, edited by T. K. Perttula, pp. 228-243. 2 Vols. Review Draft. Report of Investigations No. 60. Archeological & Environmental Consultants, LLC, Austin.

Walker, C. P. and T. C. Schultz
2006 Magnetometer Survey and Results. In *An Intensive Cultural Resources Survey and Remote Sensing and Geomorphological Investigations for the Bowie County Levee Realignment Project, Bowie County, Texas and Little River County, Arkansas*, by S. A. Sundermeyer, J. T. Penman, and T. K. Perttula, pp. 158-168. Miscellaneous Reports, Report of Investigations No. 29. LopezGarcia Group, Dallas, Texas.

Walker, C. P., A. King, R. Sharp, and F. K. Reilly
2007 *Geophysical Survey at the Etowah Site (9BR1), Barstow County, Georgia.* Collaborative Report: AGA Report Number 2007-7, CASAA Report Number 2-A, and SRARP Research Series No. 27. Submitted to the Georgia Department of Natural Resources, 2 MLK Jr. Dr., Suite 1325, East Atlanta, Georgia.

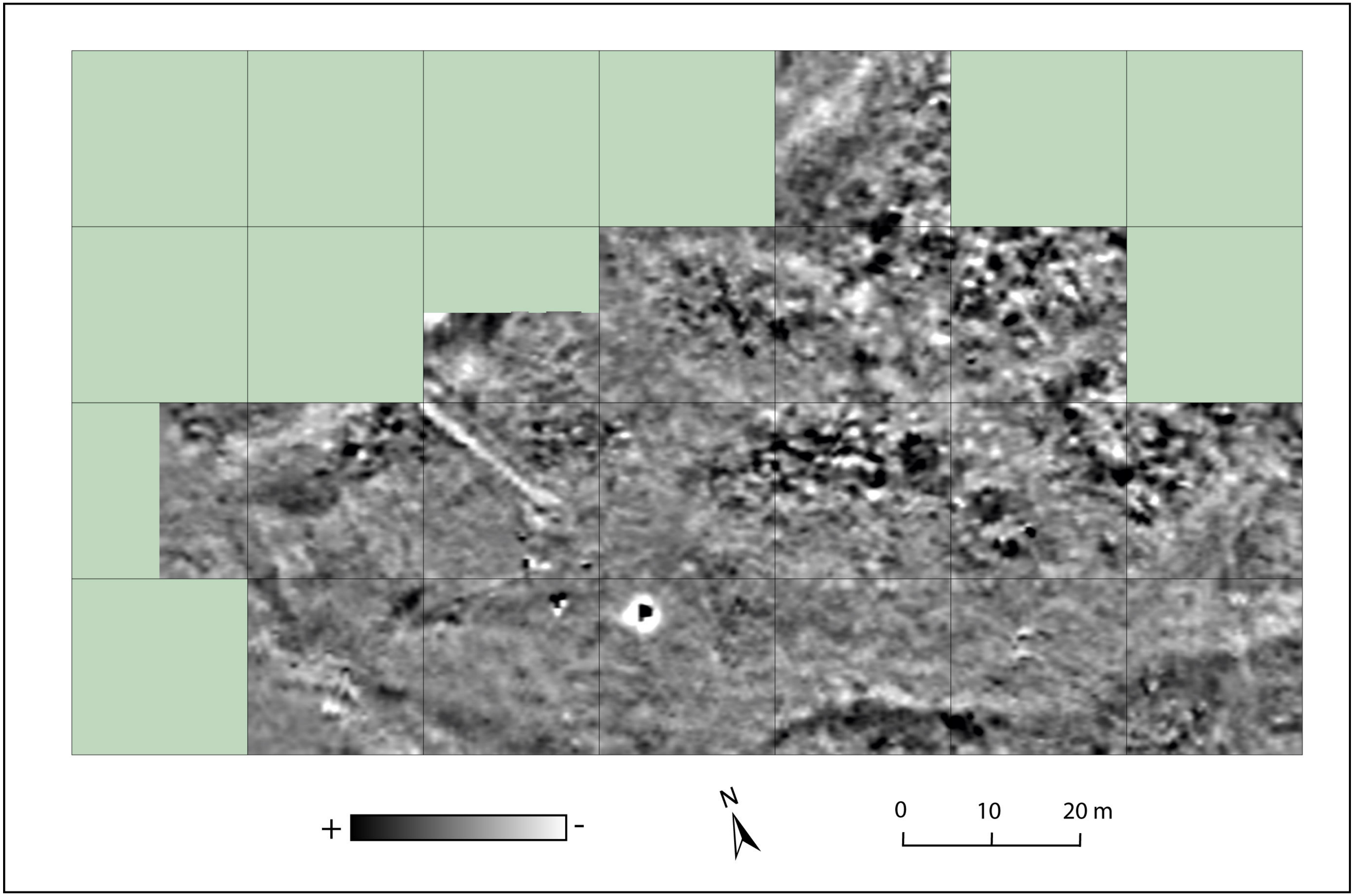


Figure 1. Magnetometer data from 26EU1533.

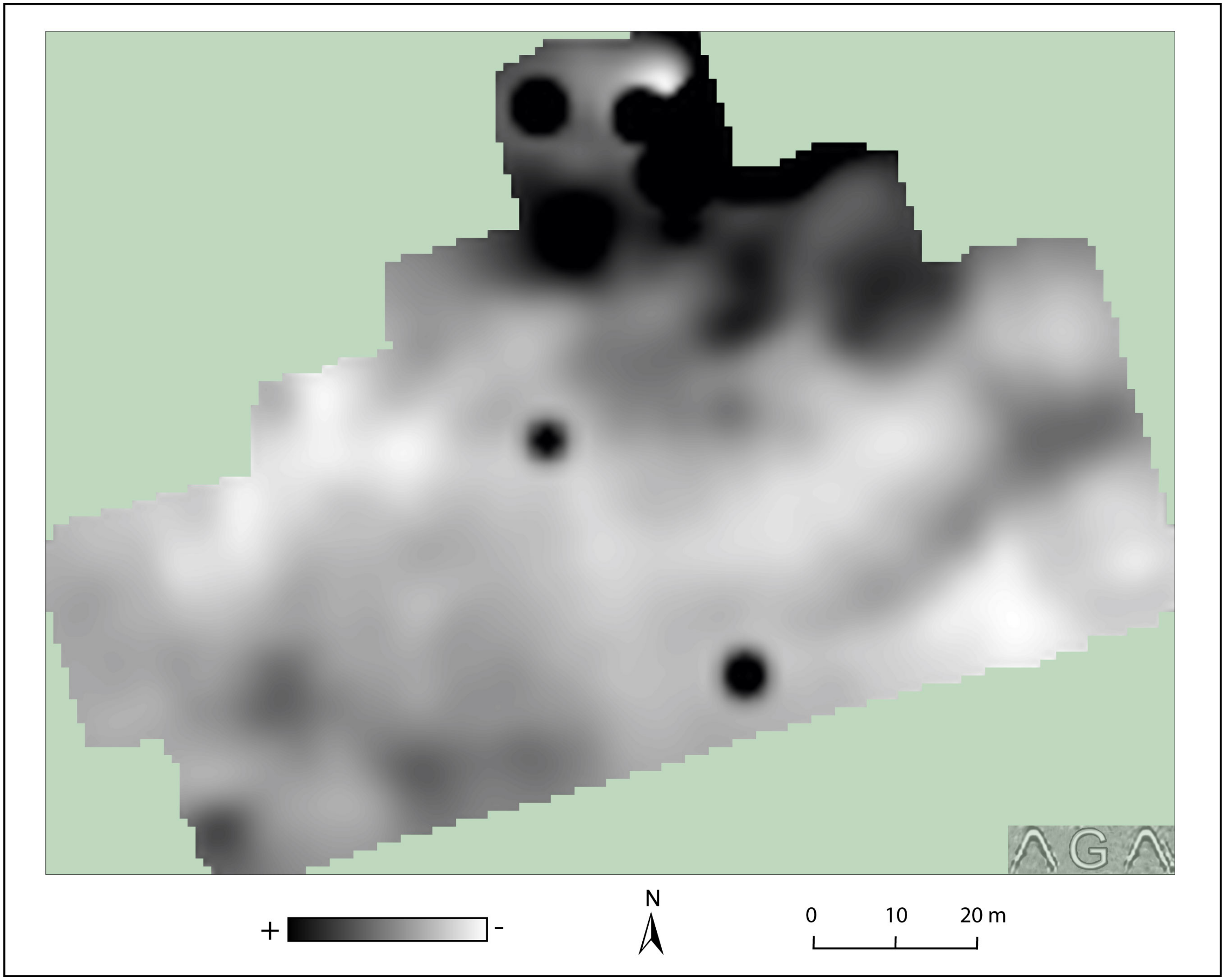


Figure 2. Conductivity data from 26EU1533.

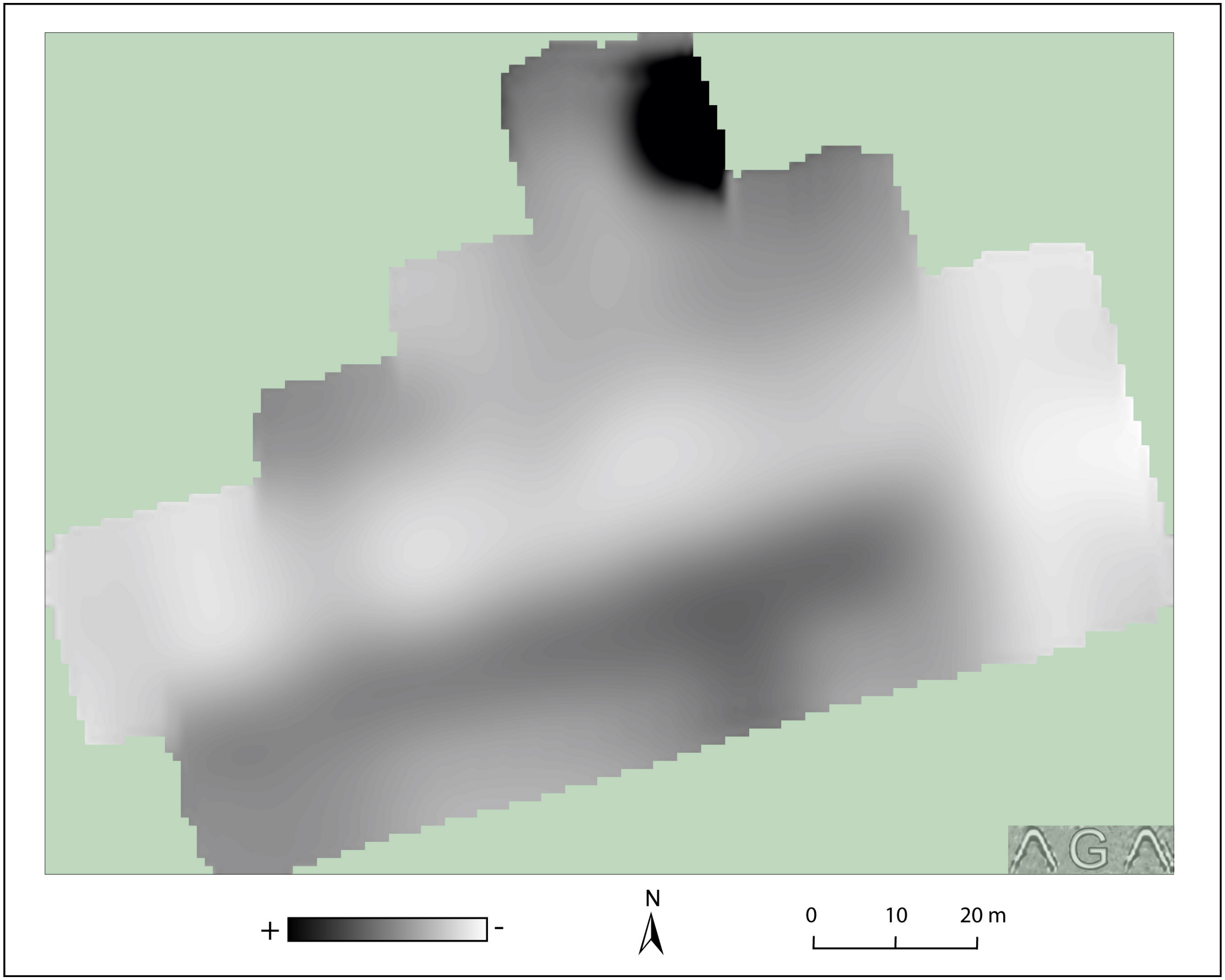


Figure 3. Magnetic Susceptibility data from 26EU1533.

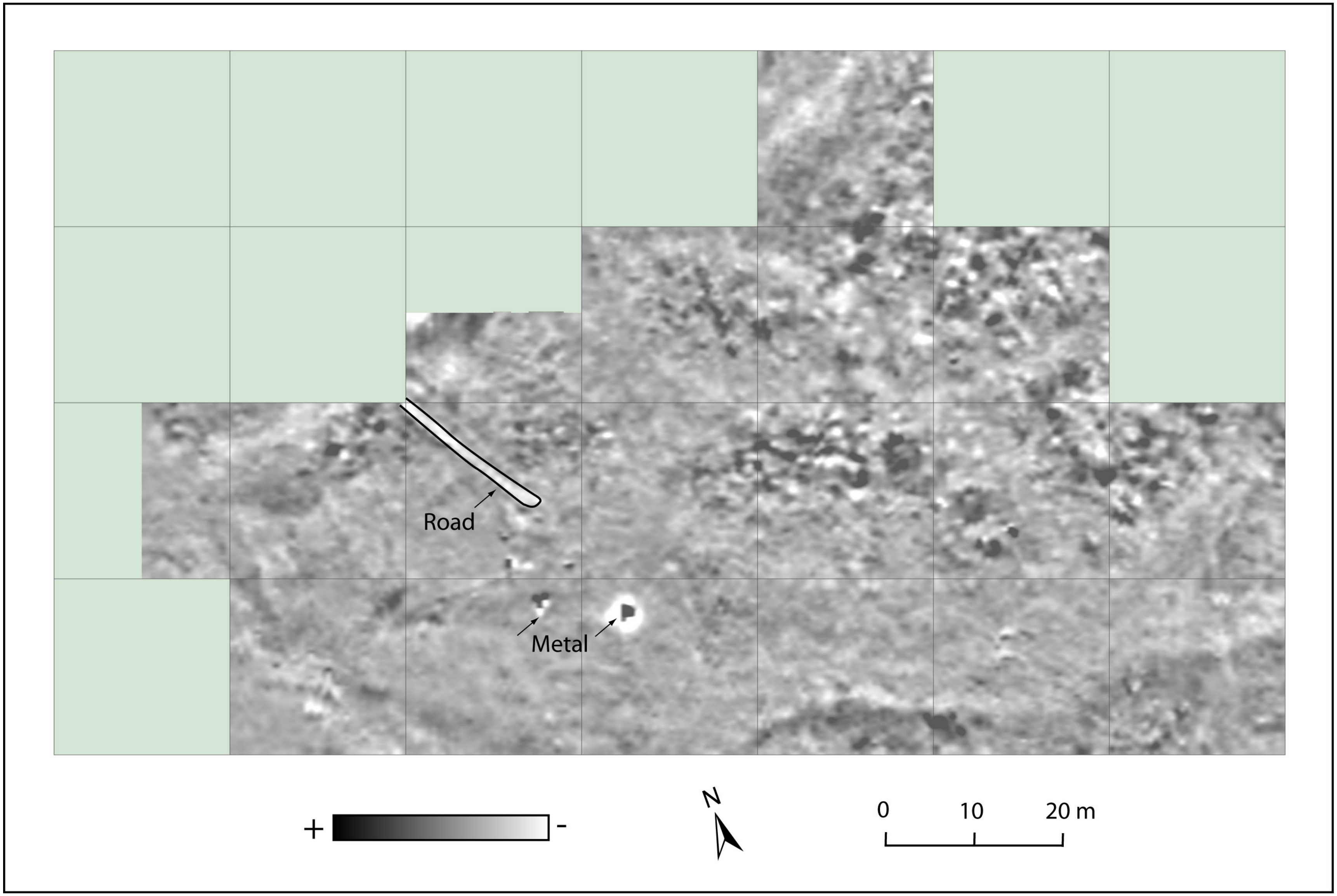


Figure 4. Interpretation of geophysical data from 26EU1533.

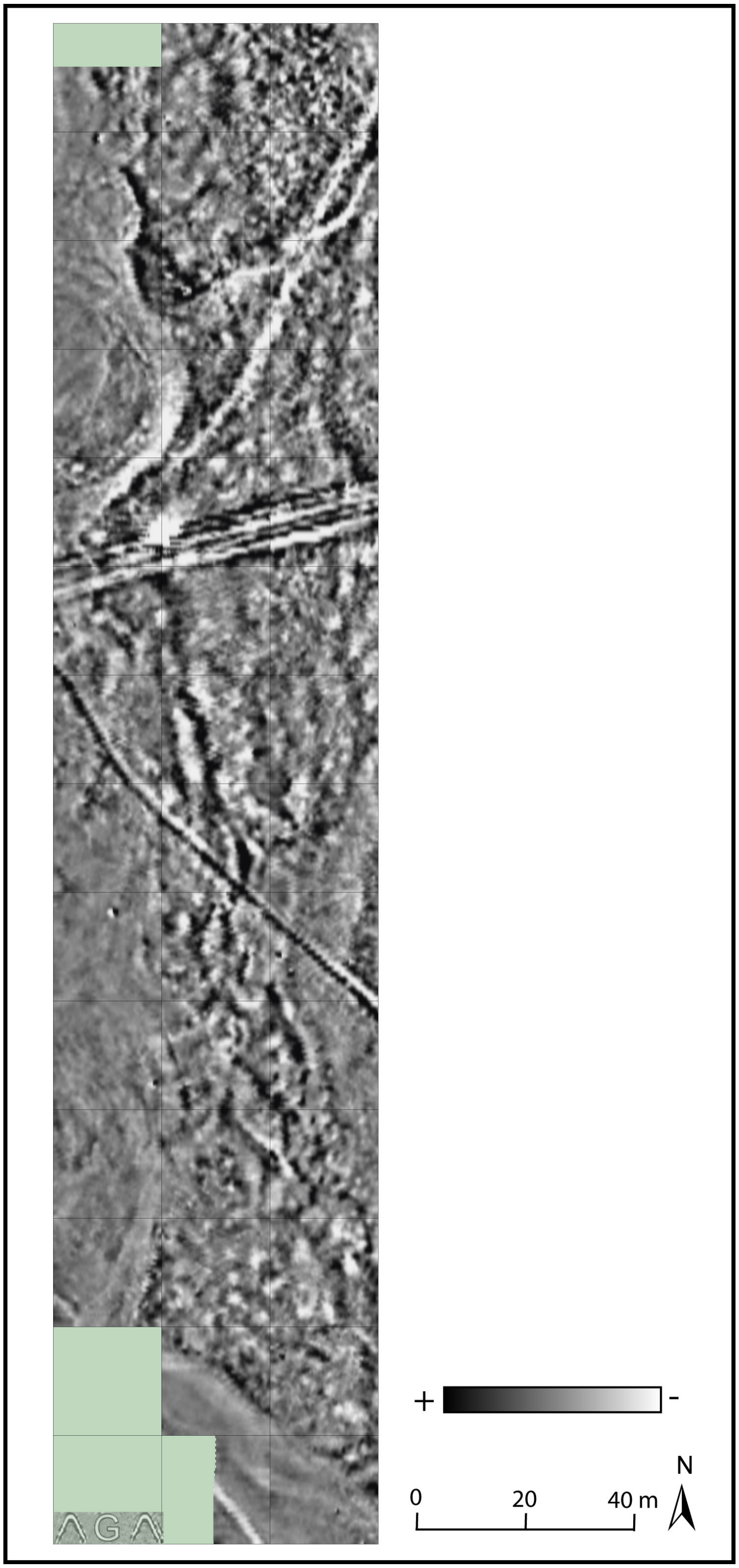


Figure 5. Magnetometer data from 26EU1539.

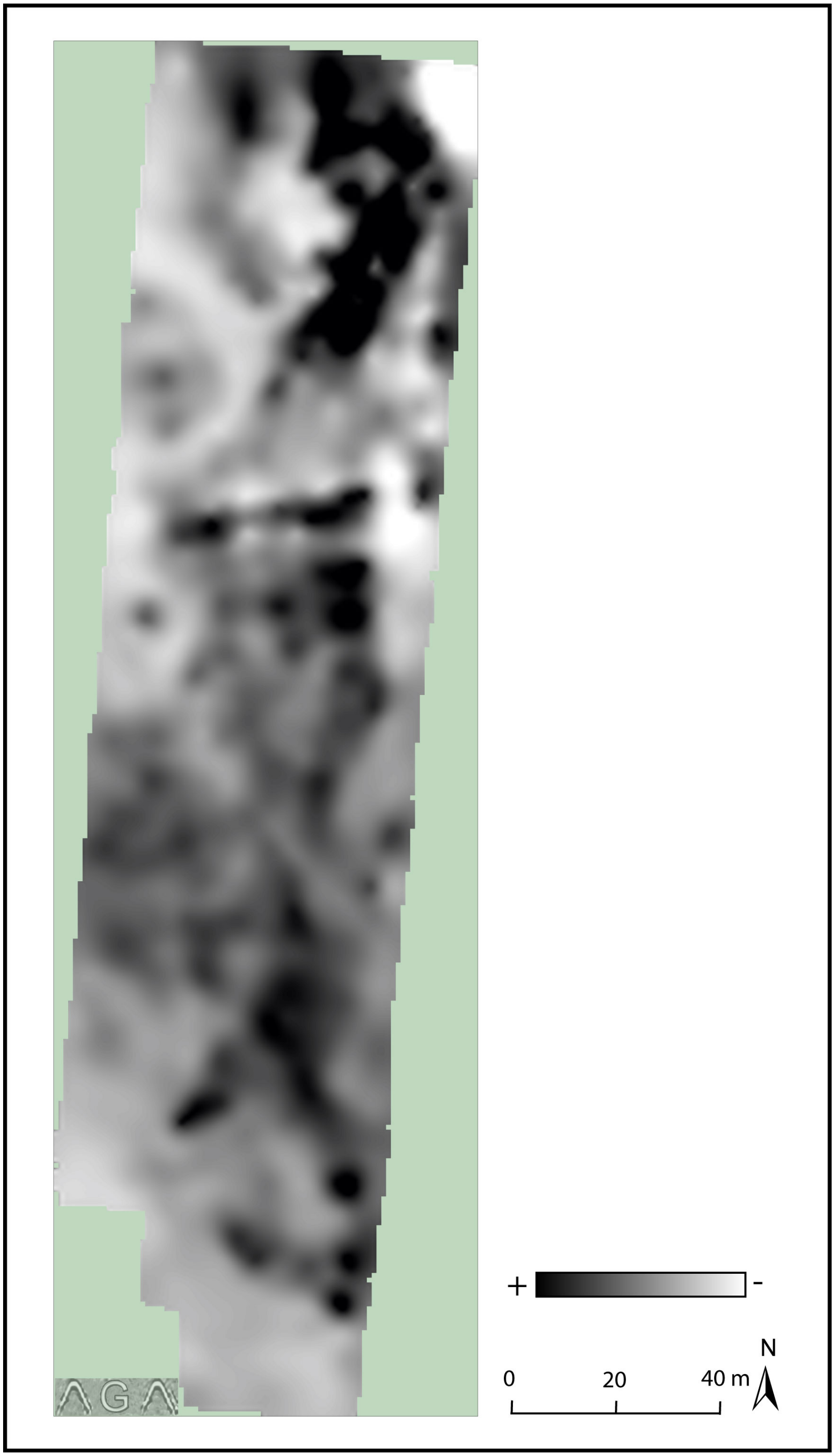


Figure 6. Conductivity data from 26EU1539.

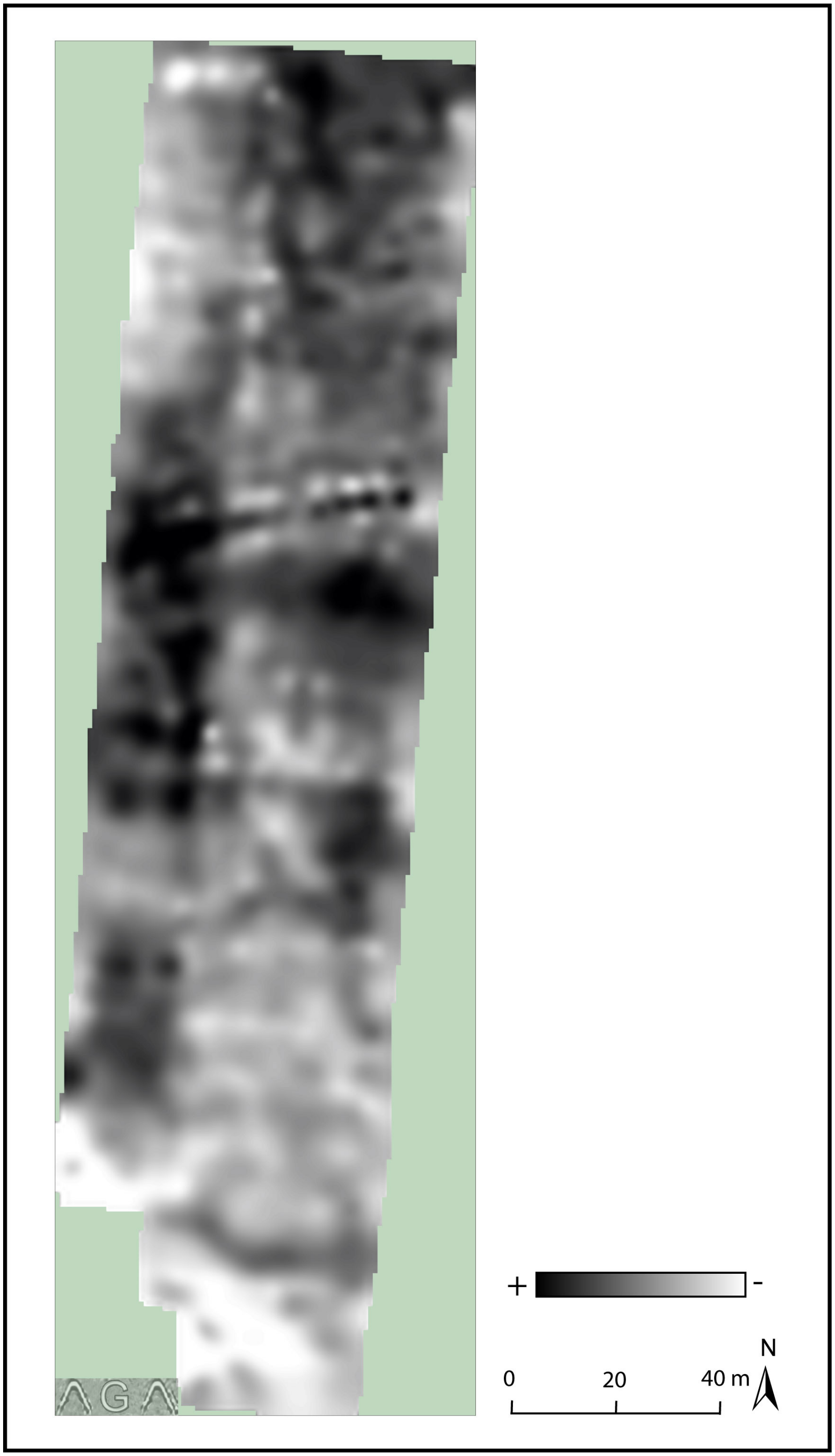


Figure 7. Magnetic Susceptibility data from 26EU1539.

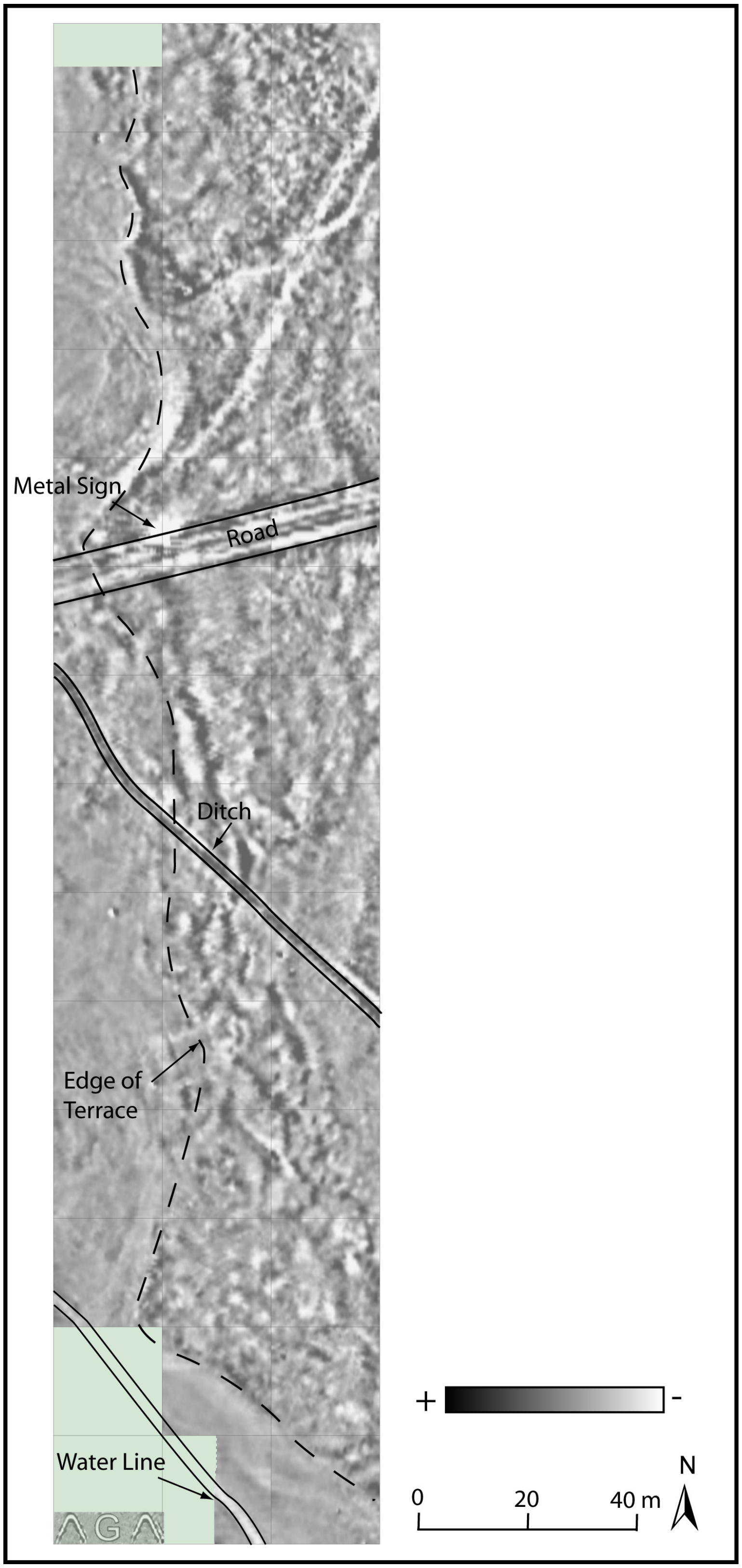


Figure 8. Interpretation of geophysical data from 26EU1539.

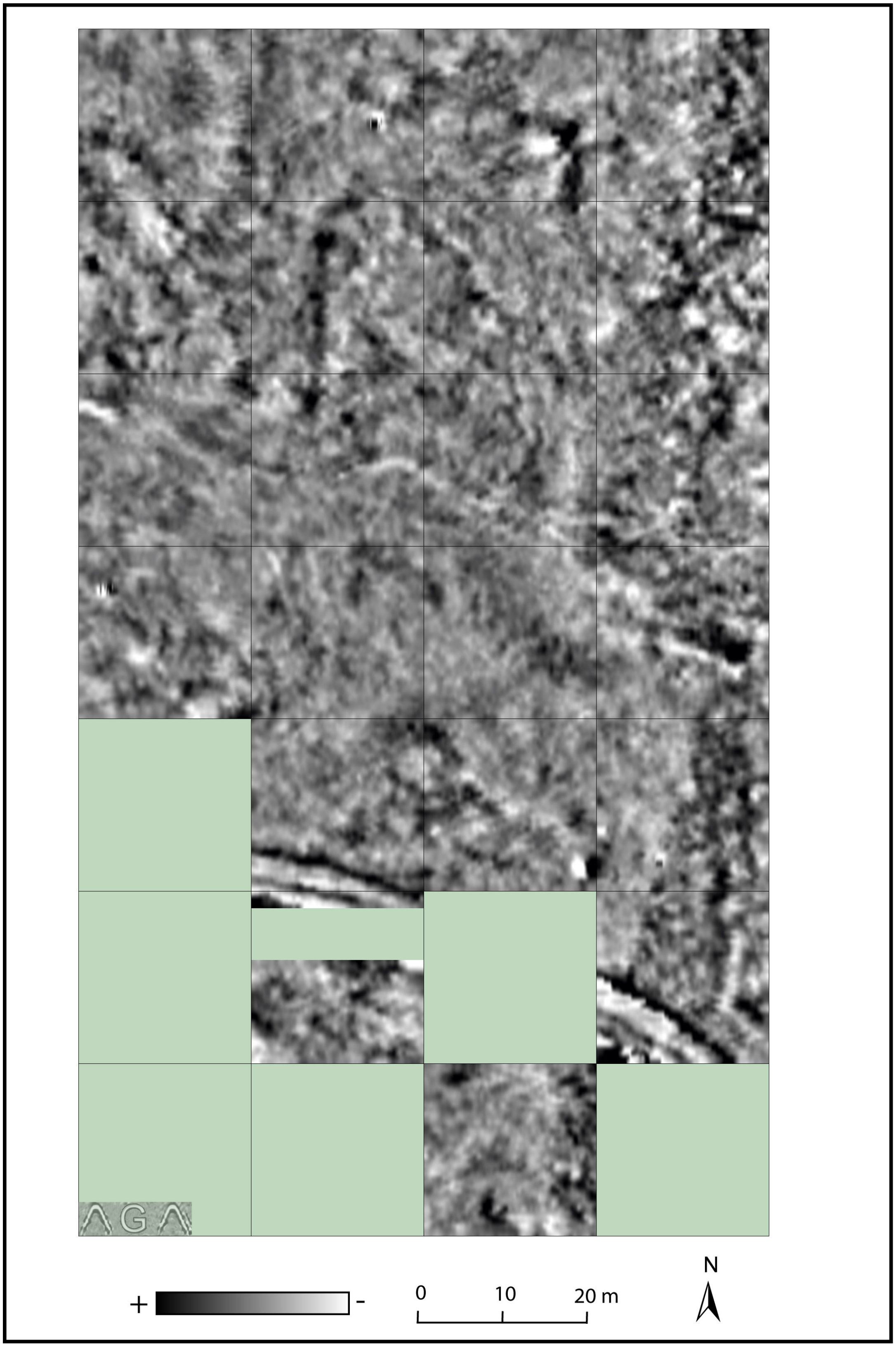


Figure 9. Magnetometer data from 26EU1548.

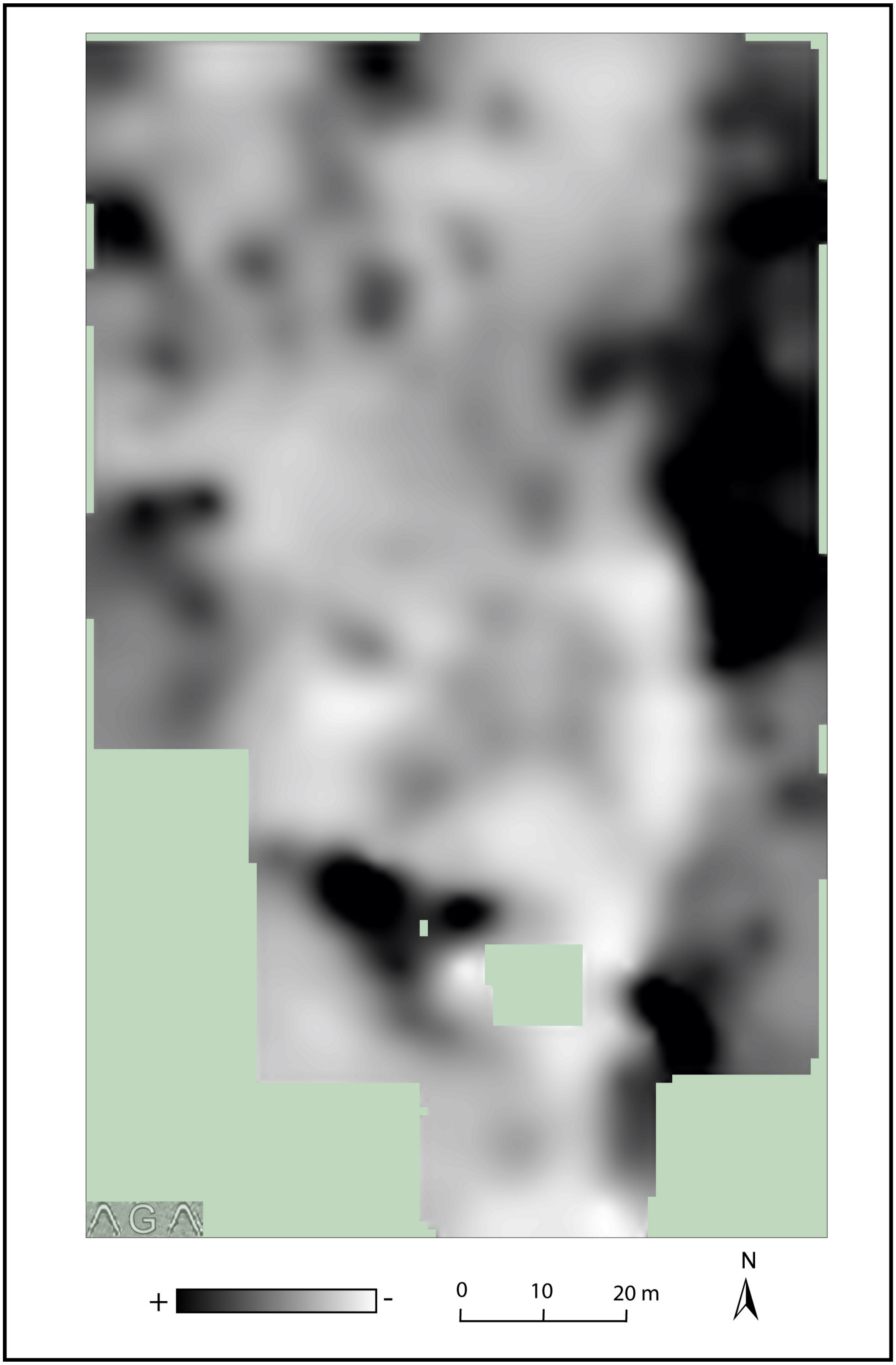


Figure 10. Conductivity data from 26EU1548.

Figure 11. Magnetic Susceptibility data from 26EU1548.

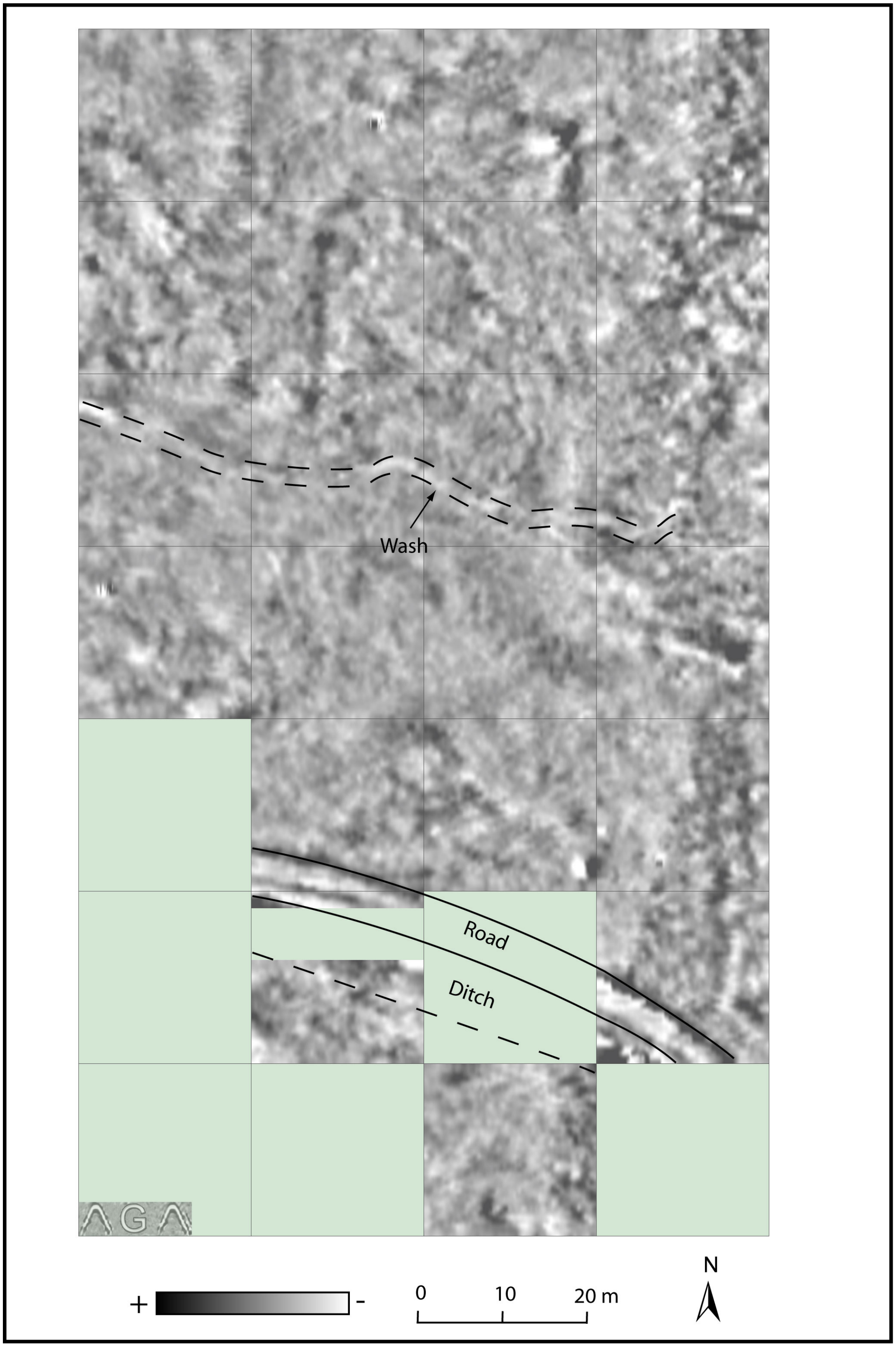


Figure 12. Interpretation of geophysical data from 26EU1548.

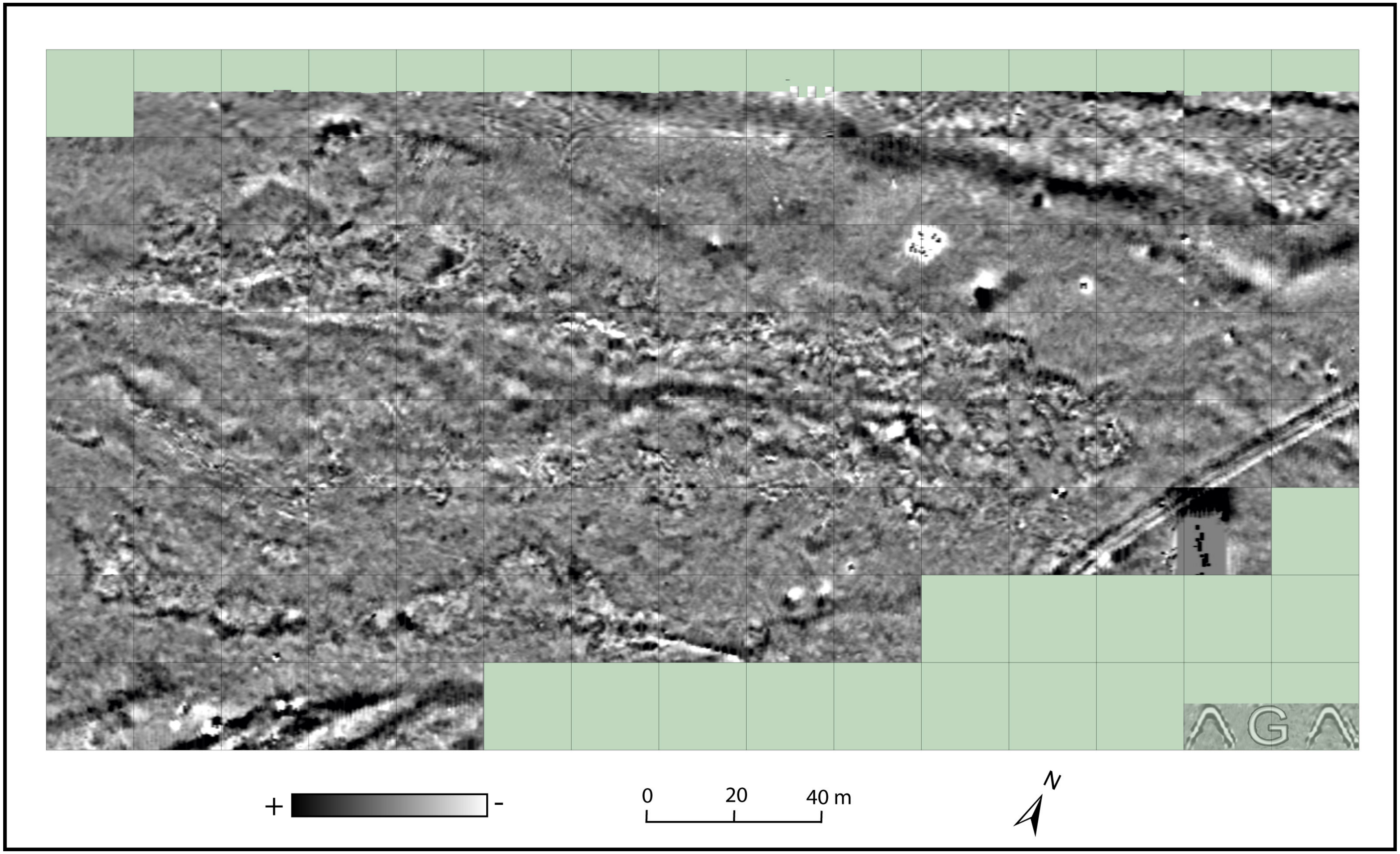


Figure 13. Magnetometer data from 26EU2064.

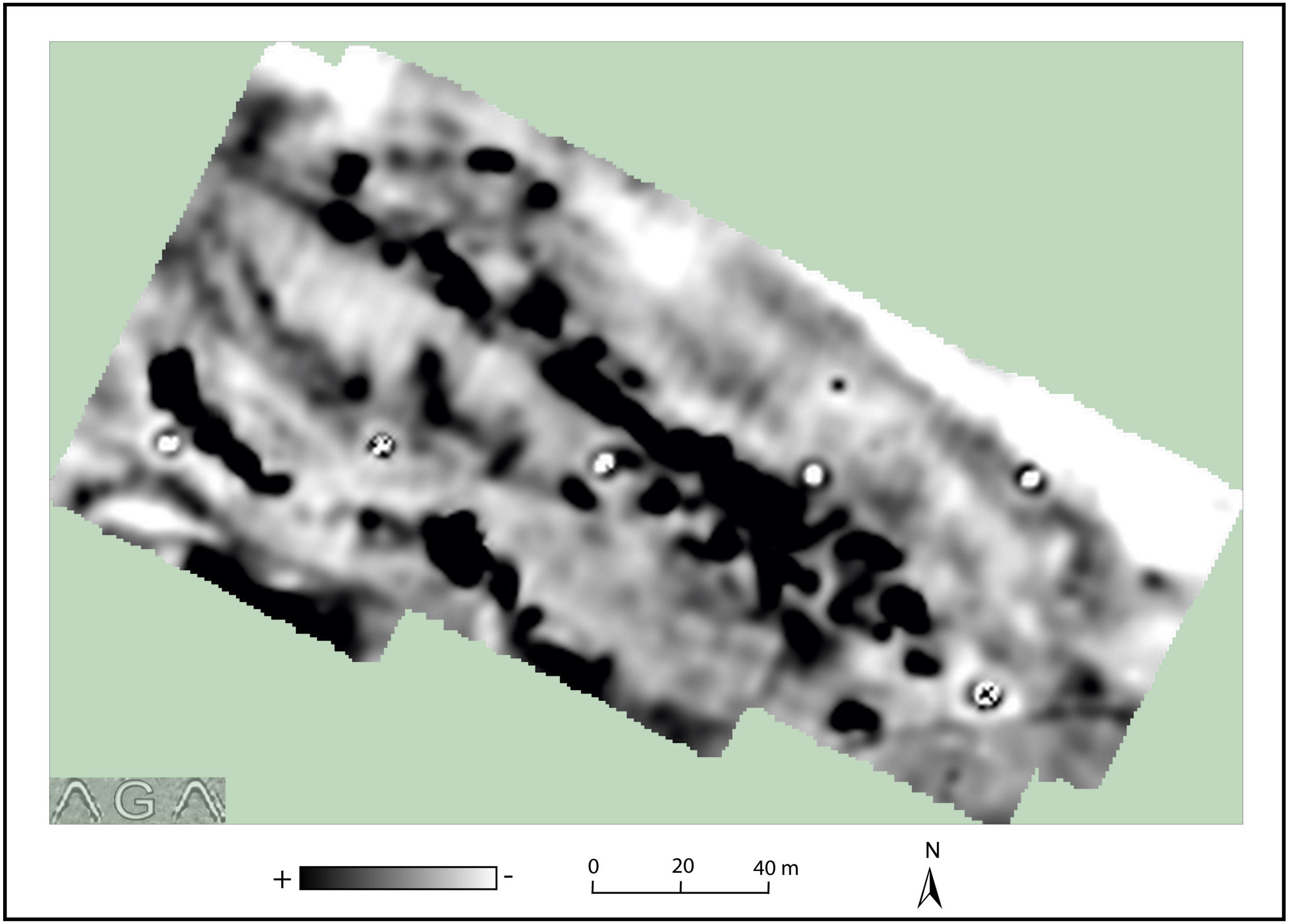


Figure 14. Conductivity data from 26EU2064.

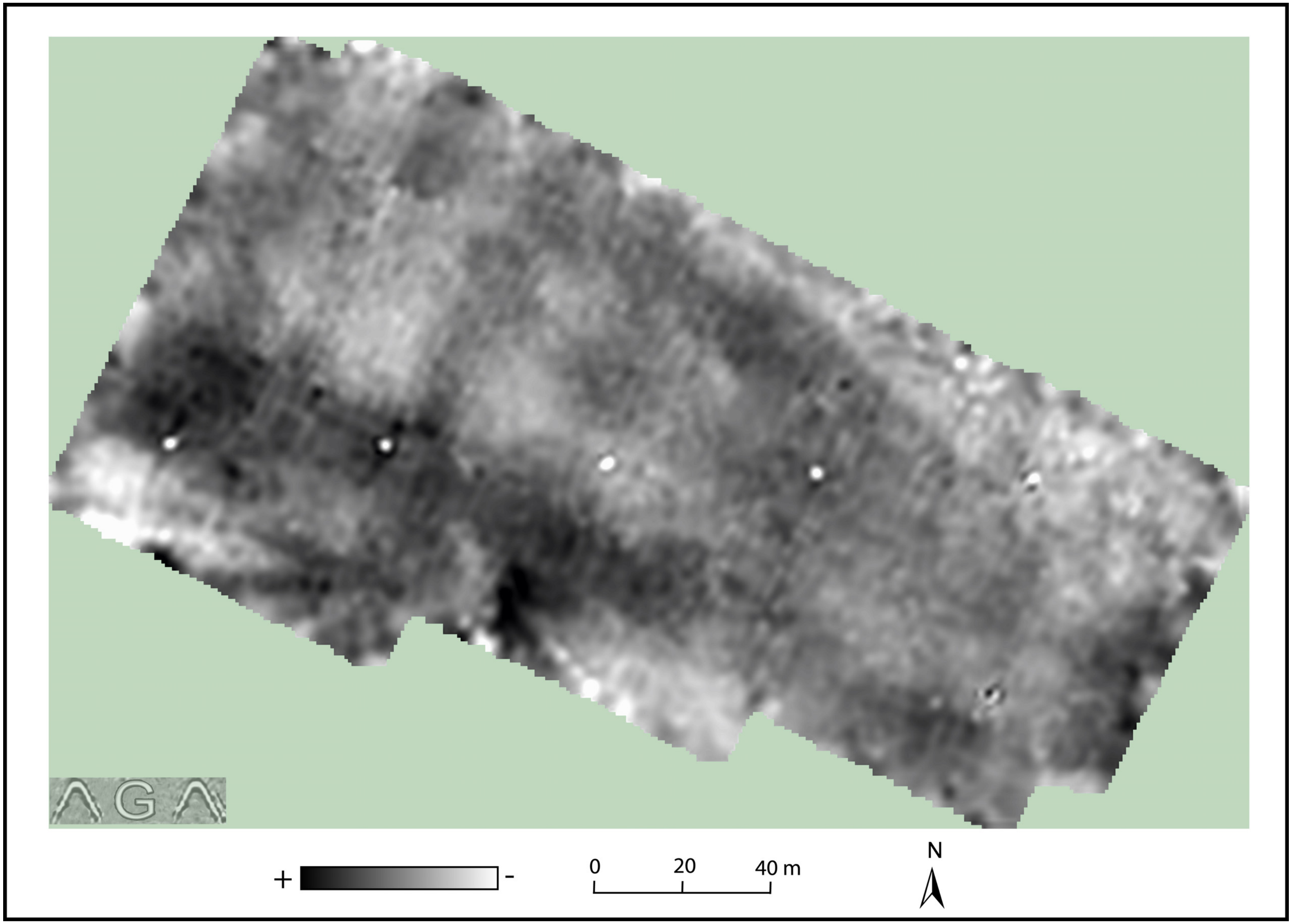


Figure 15. Magnetic Susceptibility data from 26EU2064.

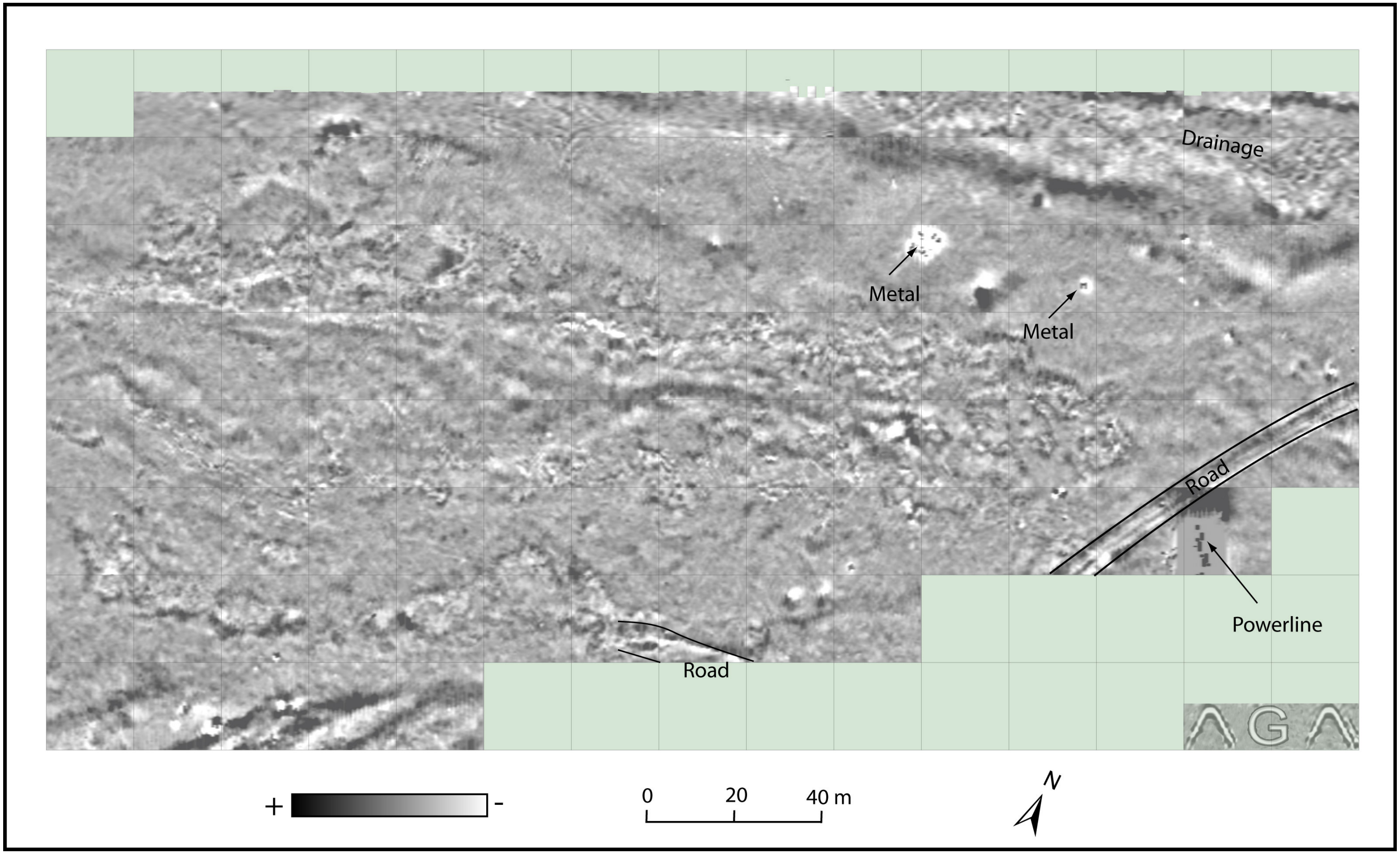


Figure 16. Interpretation of geophysical data from 26EU2064.

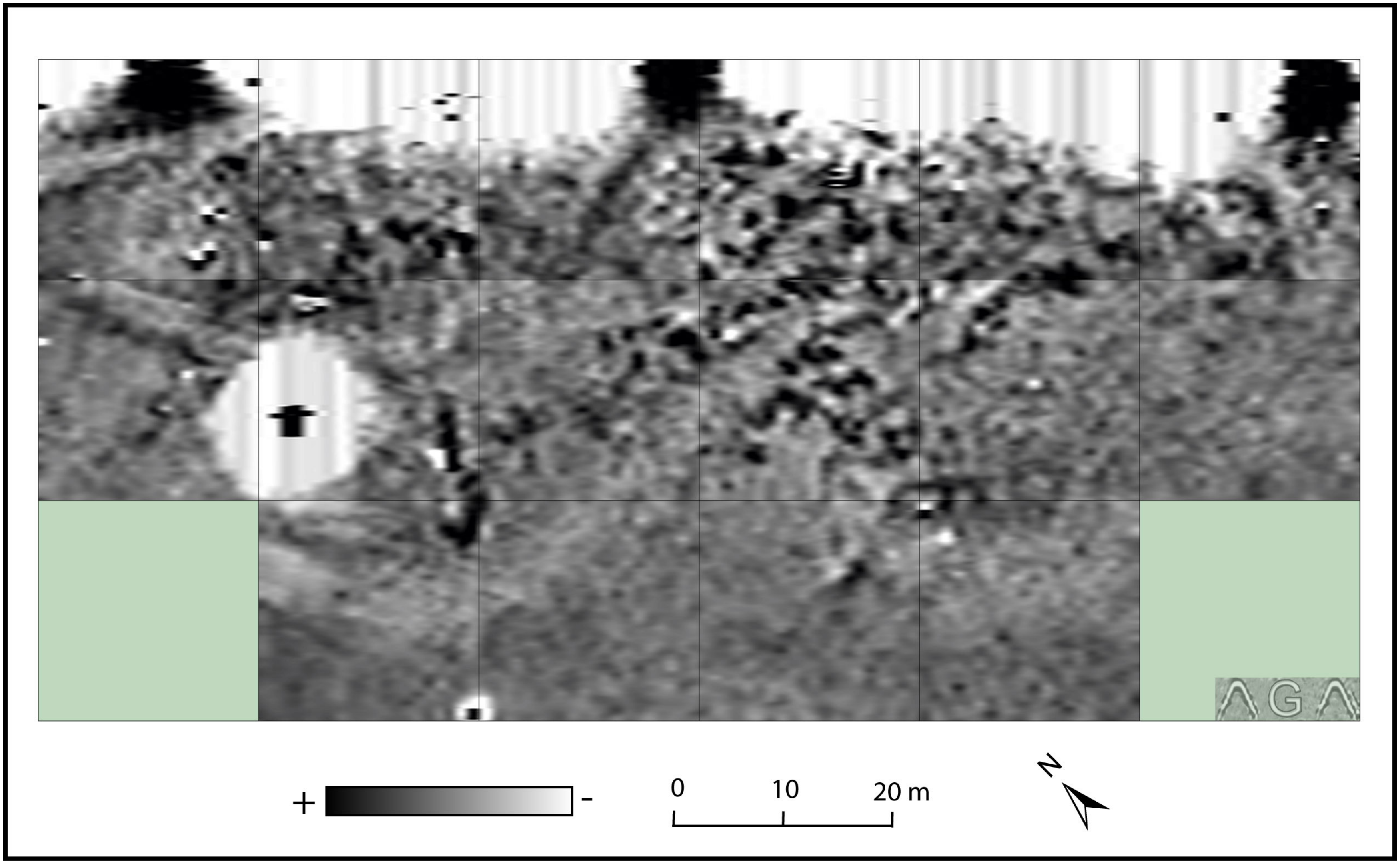


Figure 17. Magnetometer data from 26EU2126.

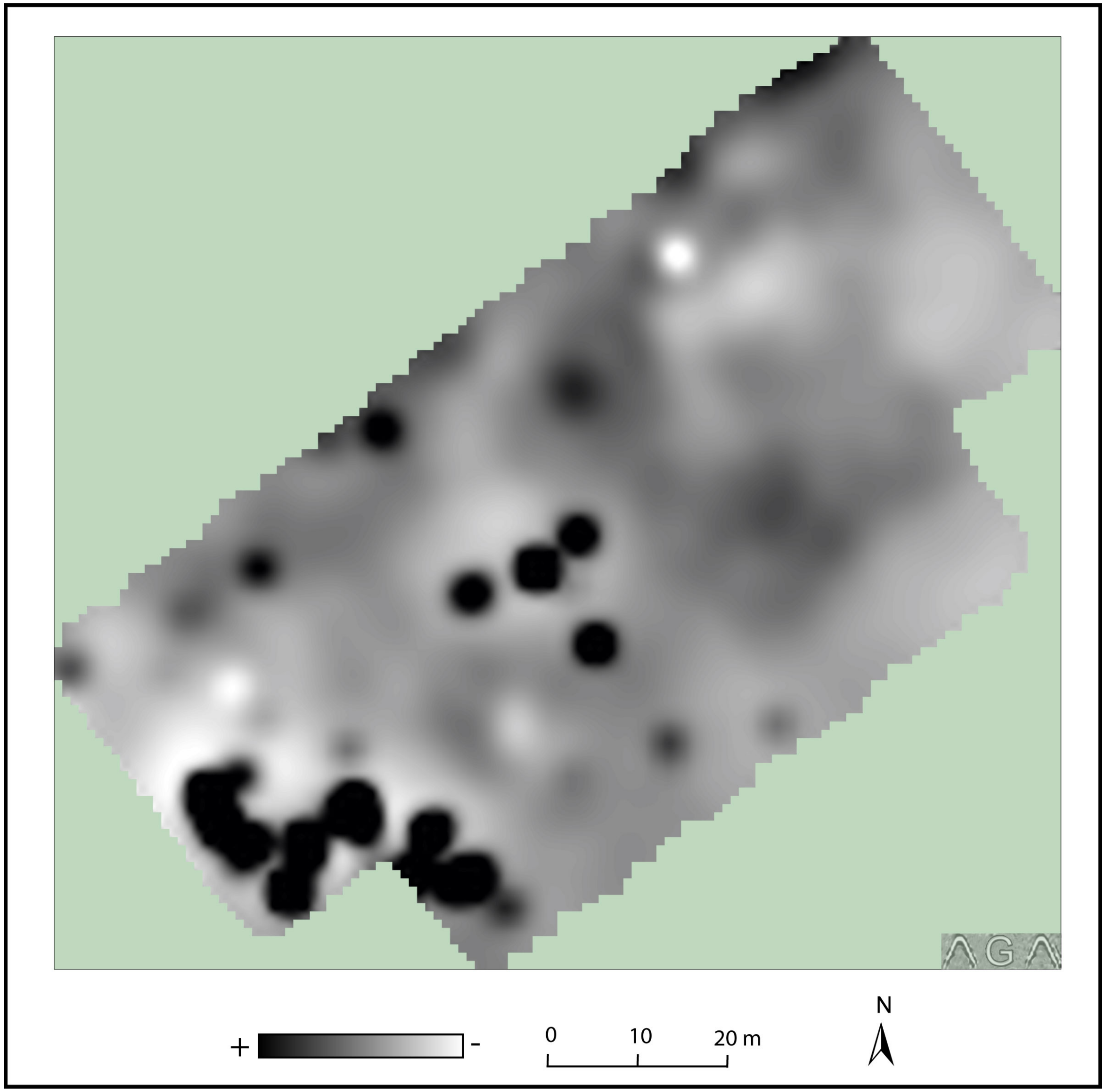


Figure 18. Conductivity data from 26EU2126.

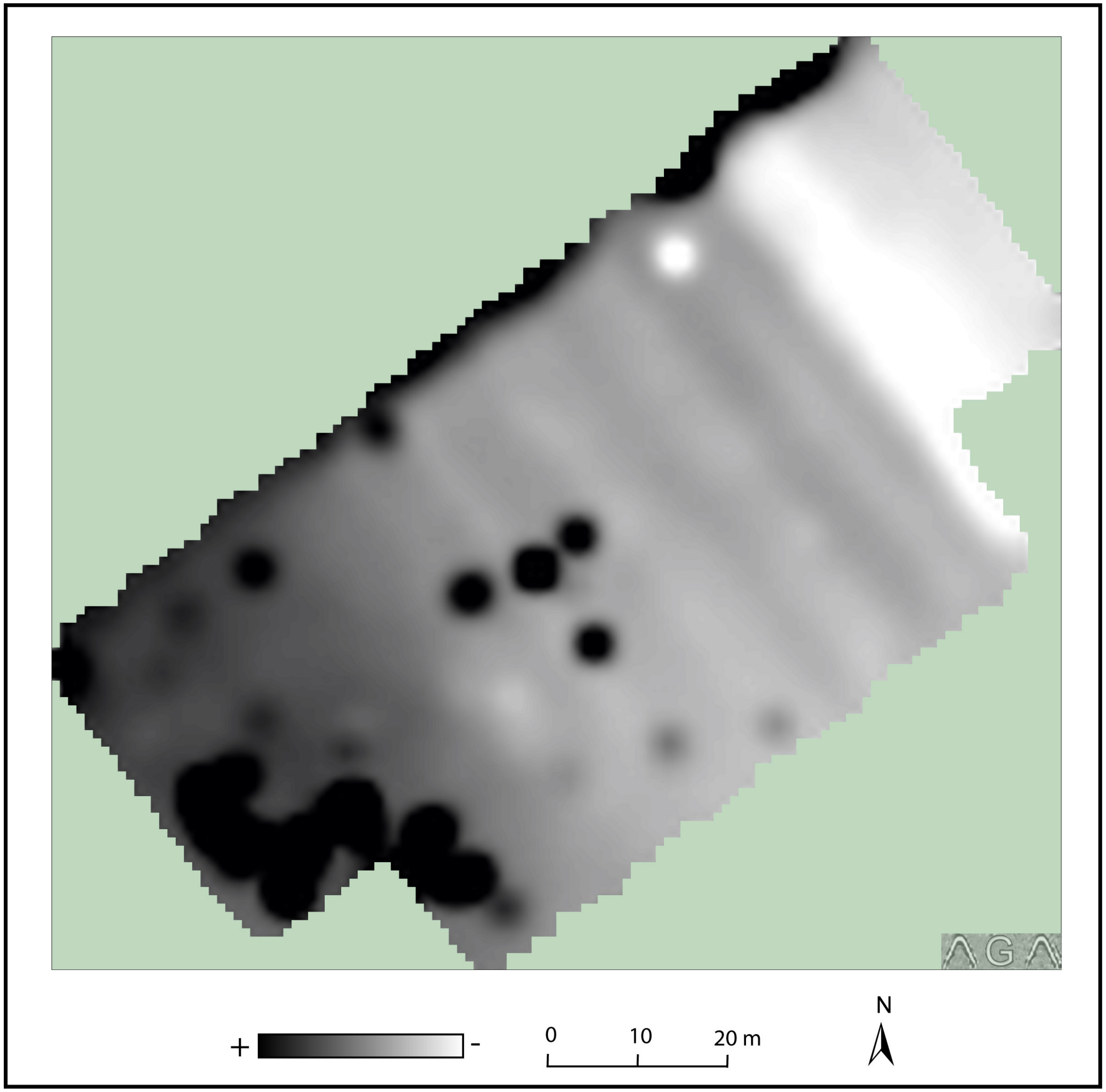


Figure 19. Magnetic Susceptibility data from 26EU2126.

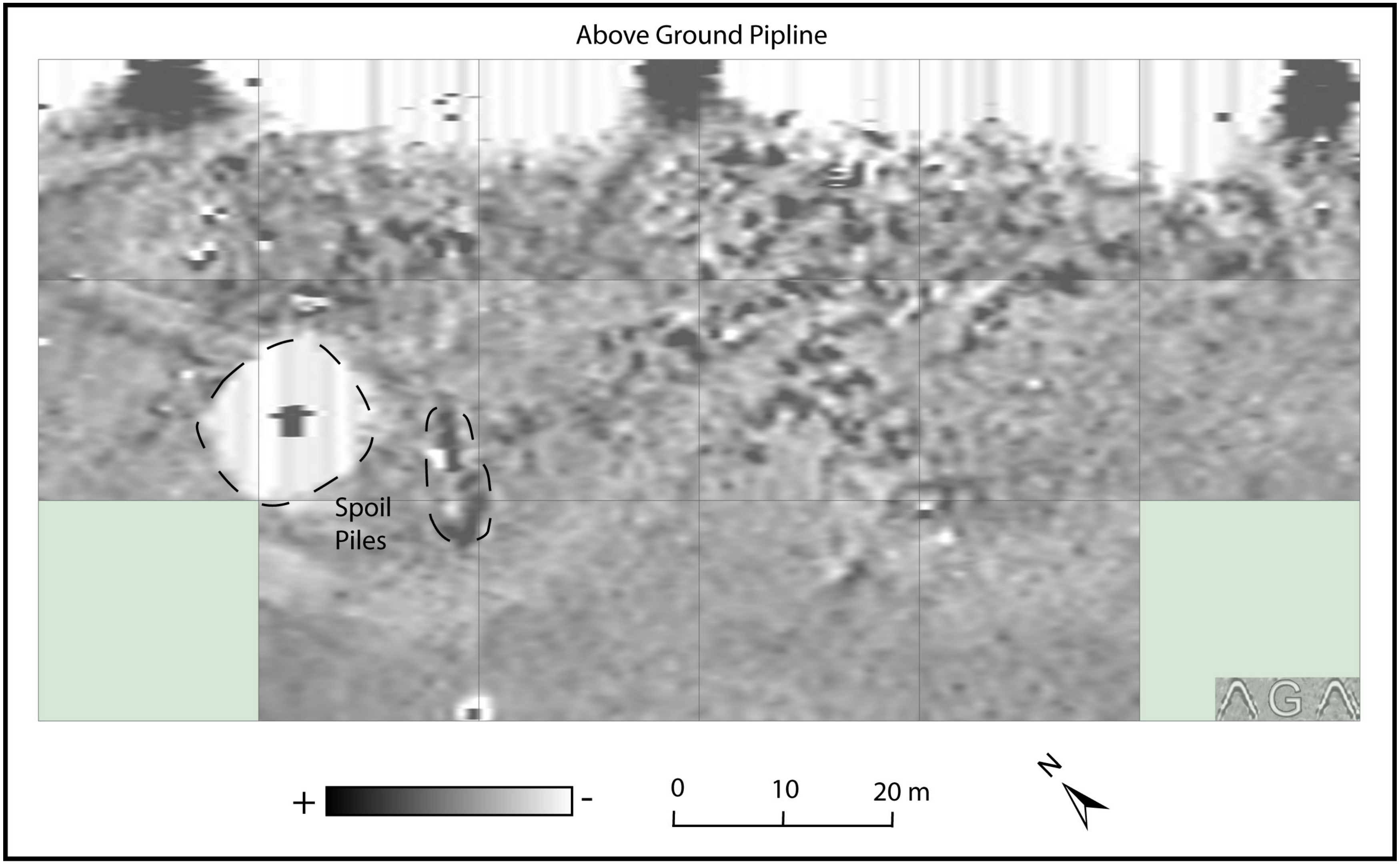


Figure 20. Interpretation of geophysical data from 26EU2126.

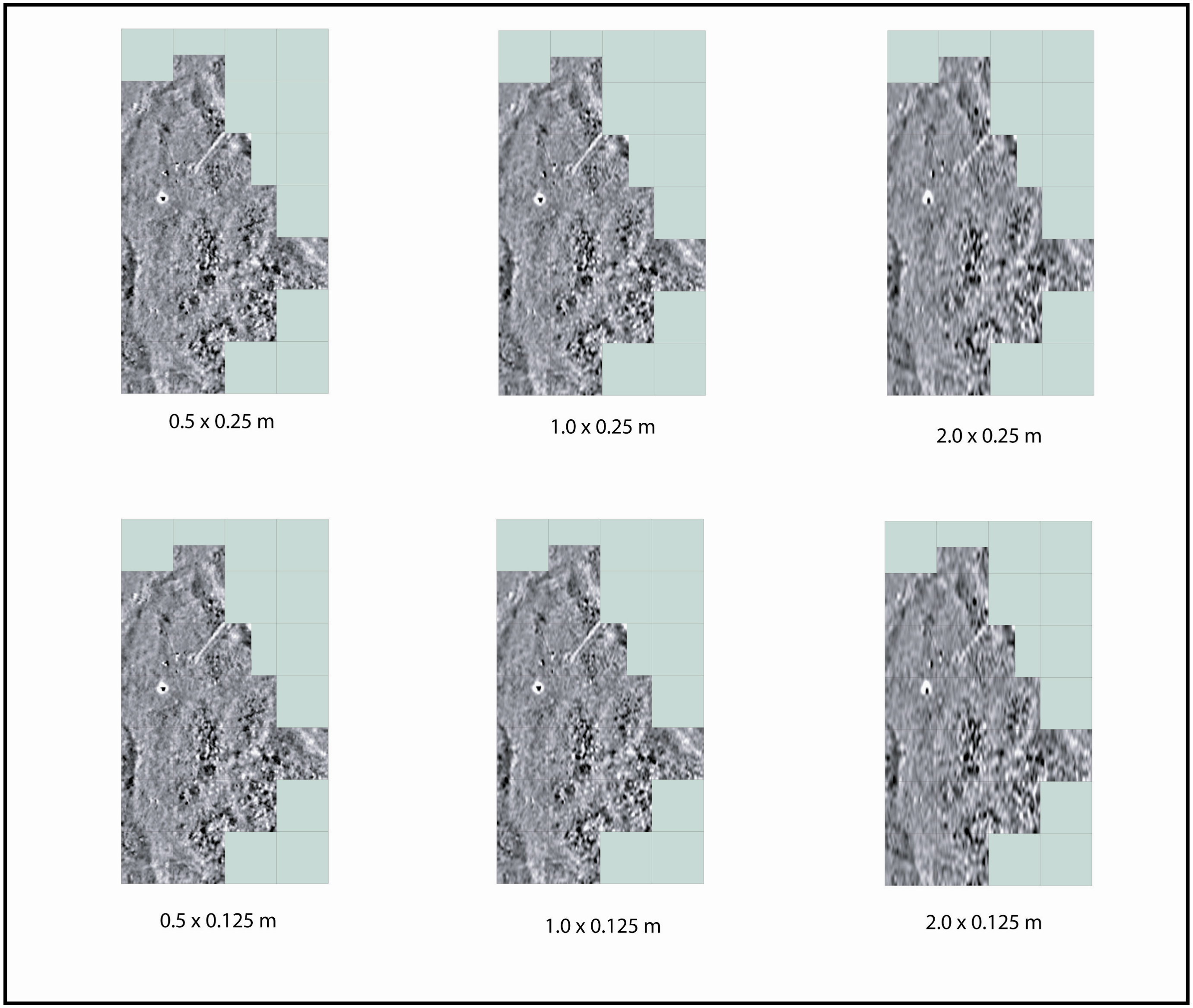


Figure 21. Examples of the affects of different sampling densities.

APPENDIX D. RADIOCARBON DATING REPORTS FROM BETA ANALYTIC, INC.

Consistent Accuracy ...
Delivered On Time.

Beta Analytic Inc.
4985 SW 74 Court
Miami, Florida 33155 USA
Tel: 305 667 5167
Fax: 305 663 0/97
Beta@radiocarbon.com
Www.radiocarbon.com

Mr. Darden Hood
Director

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

Final Report

The final report package includes the final date report, a statement outlining our analytical procedures, a glossary of pretreatment terms, calendar calibration information, billing documents (containing balance/credit information and the number of samples submitted within the yearly discount period), and peripheral items to use with future submittals. The final report includes the individual analysis method, the delivery basis, the material type and the individual pretreatments applied. The final report has been sent by mail and e-mail (where available).

Pretreatment

Pretreatment methods are reported along with each result. All necessary chemical and mechanical pretreatments of the submitted material were applied at the laboratory to isolate the carbon which may best represent the time event of interest. When interpreting the results, it is important to consider the pretreatments. Some samples cannot be fully pretreated, making their ^{14}C ages more subjective than samples which can be fully pretreated. Some materials receive no pretreatments. Please look at the pretreatment indicated for each sample and read the pretreatment glossary to understand the implications.

Analysis

Materials measured by the radiometric technique were analyzed by synthesizing sample carbon to benzene (92% C), measuring for ^{14}C content in one of 53 scintillation spectrometers, and then calculating for radiocarbon age. If the Extended Counting Service was used, the ^{14}C content was measured for a greatly extended period of time. AMS results were derived from reduction of sample carbon to graphite (100% C), along with standards and backgrounds. The graphite was then detected for ^{14}C content in one of 9 accelerator-mass-spectrometers (AMS) .

The Radiocarbon Age and Calendar Calibration

The "Conventional ^{14}C Age (*)" is the result after applying $^{13}C/^{12}C$ corrections to the measured age and is the most appropriate radiocarbon age. If an "*" is attached to this date, it means the $^{13}C/^{12}C$ was estimated rather than measured (The ratio is an option for radiometric analysis, but included on all AMS analyses.) Ages are reported with the units "BP" (Before Present). "Present" is defined as AD 1950 for the purposes of radiocarbon dating.

Results for samples containing more ^{14}C than the modern reference standard are reported as "percent modern carbon" (pMC). These results indicate the material was respiring carbon after the advent of thermo-nuclear weapons testing (and is less than ~ 50 years old).

Applicable calendar calibrations are included for materials between about 100 and 19,000 BP. If calibrations are not included with a report, those results were either too young, too old, or inappropriate for calibration. Please read the enclosed page discussing calibration.

PRETREATMENT GLOSSARY
Standard Pretreatment Protocols at Beta Analytic

Unless otherwise requested by a submitter or discussed in a final date report, the following procedures apply to pretreatment of samples submitted for analysis. This glossary defines the pretreatment methods applied to each result listed on the date report form (e.g. you will see the designation "acid/alkali/acid" listed along with the result for a charcoal sample receiving such pretreatment).

Pretreatment of submitted materials is required to eliminate secondary carbon components. These components, if not eliminated, could result in a radiocarbon date, which is too young or too old. Pretreatment does not ensure that the radiocarbon date will represent the time event of interest. This is determined by the sample integrity. Effects such as the old wood effect, burned intrusive roots, bioturbation, secondary deposition, secondary biogenic activity incorporating recent carbon (bacteria) and the analysis of multiple components of differing age are just some examples of potential problems. The pretreatment philosophy is to reduce the sample to a single component, where possible, to minimize the added subjectivity associated with these types of problems. If you suspect your sample requires special pretreatment considerations be sure to tell the laboratory prior to analysis.

"acid/alkali/acid"

The sample was first gently crushed/dispersed in deionized water. It was then given hot HCI acid washes to eliminate carbonates and alkali washes (NaOH) to remove secondary organic acids. The alkali washes were followed by a final acid rinse to neutralize the solution prior to drying. Chemical concentrations, temperatures, exposure times, and number of repetitions, were applied accordingly with the uniqueness of the sample. Each chemical solution was neutralized prior to application of the next. During these serial rinses, mechanical contaminants such as associated sediments and rootlets were eliminated. This type of pretreatment is considered a "full pretreatment". On occasion the report will list the pretreatment as "acid/alkali/acid - insolubles" to specify which fraction of the sample was analyzed. This is done on occasion with sediments (See "acid/alkali/acid - solubles"

Typically applied to: charcoal, wood, some peats, some sediments, and textiles "acid/alkali/acid - solubles"

On occasion the alkali soluble fraction will be analyzed. This is a special case where soil conditions imply
That the soluble fraction will provide a more accurate date. It is also used on some occasions to verify the present/absence or degree of contamination present from secondary organic acids. The sample was first pretreated with acid to remove any carbonates and to weaken organic bonds. After the alkali washes (as discussed above) are used, the solution containing the alkali soluble fraction is isolated/filtered and combined with acid. The soluble fraction, which precipitates, is rinsed and dried prior to combustion.

"acid/alkali/acid/cellulose extraction"

Following full acid/alkali/acid pretreatments, the sample is bathed in (sodium chlorite) $NaClO_2$ under very controlled conditions (Ph = 3, temperature = 70 degrees C). This eliminates all components except wood cellulose. It is useful for woods that are either very old or highly contaminated.

Applied to: wood

"acid washes"

Surface area was increased as much a possible. Solid chunks were crushed, fibrous materials were shredded, and sediments were dispersed. Acid (HCI) was applied repeatedly to ensure the absence of carbonates. Chemical concentrations, temperatures, exposure times, and number of repetitions, were applied accordingly with the uniqueness of each sample. The sample was not be subjected to alkali washes to ensure the absence of secondary organic acids for intentional reasons. The most common reason is that the primary carbon is soluble in the alkali. Dating results reflect the total organic content of the analyzed material. Their accuracy depends on the researcher's ability to subjectively eliminate potential contaminants based on contextual facts.

Typically applied to: organic sediments, some peats, small wood or charcoal, special cases

PRETREATMENT GLOSSARY
Standard Pretreatment Protocols at Beta Analytic
(Continued)

"collagen extraction: with alkali or collagen extraction: without alkali

The material was first tested for friability ("softness"). Very soft bone material is an indication of the potential absence of the collagen fraction (basal bone protein acting as a "reinforcing agent" within the crystalline apatite structure). It was then washed in de-ionized water, the surface scraped free of the outer most layers and then gently crushed. Dilute, cold HCI acid was repeatedly applied and replenished until the mineral fraction (bone apatite) was eliminated. The collagen was then dissected and inspected for rootlets. Any rootlets present were also removed when replenishing the acid solutions. "With alkali" refers to additional pretreatment with sodium hydroxide (NaOH) to ensure the absence of secondary organic acids. "Without alkali" refers to the NaOH step being skipped due to poor preservation conditions, which could result in removal of all available organics if performed.

Typically applied to: bones

"acid etch"

The calcareous material was first washed in de-ionized water, removing associated organic sediments and debris (where present). The material was then crushed/dispersed and repeatedly subjected to HCI etches to eliminate secondary carbonate components. In the case of thick shells, the surfaces were physically abraded prior to etching down to a hard, primary core remained. In the case of porous carbonate nodules and caliches, very long exposure times were applied to allow infiltration of the acid. Acid exposure times, concentrations, and number of repetitions, were applied accordingly with the uniqueness of the sample.

Typically applied to: shells, caliches, and calcareous nodules

"neutralized"

Carbonates precipitated from ground water are usually submitted in an alkaline condition (ammonium Hydroxide or sodium hydroxide solution). Typically this solution is neutralized in the original sample container, using deionized water. If larger volume dilution was required, the precipitate and solution were transferred to a sealed separatory flask and rinsed to neutrality. Exposure to atmosphere was minimal.

Typically applied to: Strontium carbonate, Barium carbonate
(i.e. precipitated ground water samples)

"carbonate precipitation"

Dissolved carbon dioxide and carbonate species are precipitated from submitted water by complexing them as ammonium carbonate. Strontium chloride is added to the ammonium carbonate solution and strontium carbonate is precipitated for the analysis. The result is representative of the dissolved inorganic carbon within the water. Results are reported as "water DIC".

Applied to: water

"solvent extraction"

The sample was subjected to a series of solvent baths typically consisting of benzene, toluene, hexane, pentane, and/or acetone. This is usually performed prior to acid/alkali/acid pretreatments.

Applied to: textiles, prevalent or suspected cases of pitch/tar contamination, conserved materials.

"none"

No laboratory pretreatments were applied. Special requests and pre-laboratory pretreatment usually accounts for this.

BETA

Consistent Accuracy ...
Delivered On Time.

Beta Analytic Inc.
4985 SW 74 Court
Miami, Florida 33155 USA
Tel: 305 667 5167
Fax: 305 663 0/97
Beta@radiocarbon.com
Www.radiocarbon.com

Mr. Darden Hood
Director

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

Calendar Calibration at Beta Analytic

Calibrations of radiocarbon age determinations are applied to convert BP results to calendar years. The short-term difference between the two is caused by fluctuations in the heliomagnetic modulation of the galactic cosmic radiation and, recently, large scale burning of fossil fuels and nuclear devices testing. Geomagnetic variations are the probable cause of longer-term differences.

The parameters used for the corrections have been obtained through precise analyses of hundreds of samples taken from known-age tree rings of oak, sequoia, and fir up to about 10,000 BP. Calibration using tree-rings to about 12,000 BP is still being researched and provides somewhat less precise correlation. Beyond that, up to about 20,000 BP, correlation using a modeled curve determined from U/Th measurements on corals is used. This data is still highly subjective. Calibrations are provided up to about 19,000 years BP using the most recent calibration data available.

The Pretoria Calibration Procedure (Radiocarbon, Vol 35, No.1, 1993, pg 317) program has been chosen for these calendar calibrations. It uses splines through the tree-ring data as calibration curves, which eliminates a large part of the statistical scatter of the actual data points. The spline calibration allows adjustment of the average curve by a quantified closeness-of-fit parameter to the measured data points. A single spline is used for the precise correlation data available back to 9900 BP for terrestrial samples and about 6900 BP for marine samples. Beyond that, splines are taken on the error limits of the correlation curve to account for the lack of precision in the data points.

In describing our calibration curves, the solid bars represent one sigma statistics (68% probability) and the hollow bars represent two sigma statistics (95% probability). Marine carbonate samples that have been corrected for $^{13}C/^{12}C$, have also been corrected for both global and local geographic reservoir effects (as published in Radiocarbon, Volume 35, Number 1, 1993) prior to the calibration. Marine carbonates that have not been corrected for $^{13}C/^{12}C$ are adjusted by an assumed value of 0 %0 in addition to the reservoir corrections. Reservoir corrections for fresh water carbonates are usually unknown and are generally not accounted for in those calibrations. In the absence of measured $^{13}C/^{12}C$ ratios, a typical value of -5 %0 is assumed for freshwater carbonates.

(Caveat: the correlation curve for organic materials assume that the material dated was living for exactly ten years (e.g. a collection of 10 individual tree rings taken from the outer portion of a tree that was cut down to produce the sample in the feature dated). For other materials, the maximum and minimum calibrated age ranges given by the computer program are uncertain. The possibility of an "old wood effect" must also be considered, as well as the potential inclusion of younger or older material in matrix samples. Since these factors are indeterminant error in most cases, these calendar calibration results should be used only for illustrative purposes. In the case of carbonates, reservoir correction is theoretical and the local variations are real, highly variable and dependent on provenience. Since imprecision in the correlation data beyond 10,000 years is high, calibrations in this range are likely to change in the future with refinement in the correlation curve. The age ranges and especially the intercept ages generated by the program must be considered as approximations.)

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

Variables used in the calculation of age calibration → (Variables: est. C13/C12=-25:lab. mult=1)

Laboratory number: Beta-123456

The uncalibrated Conventional Radiocarbon Age (± 1 sigma)

Conventional radiocarbon age[1]: 2400±60 BP

The calendar age range in both calendar years (AD or BC) and in Radiocarbon Years (BP)

→ **2 Sigma calibrated result: (95% probability)** Cal BC 770 to 380 (Cal BP 2720 to 2330)

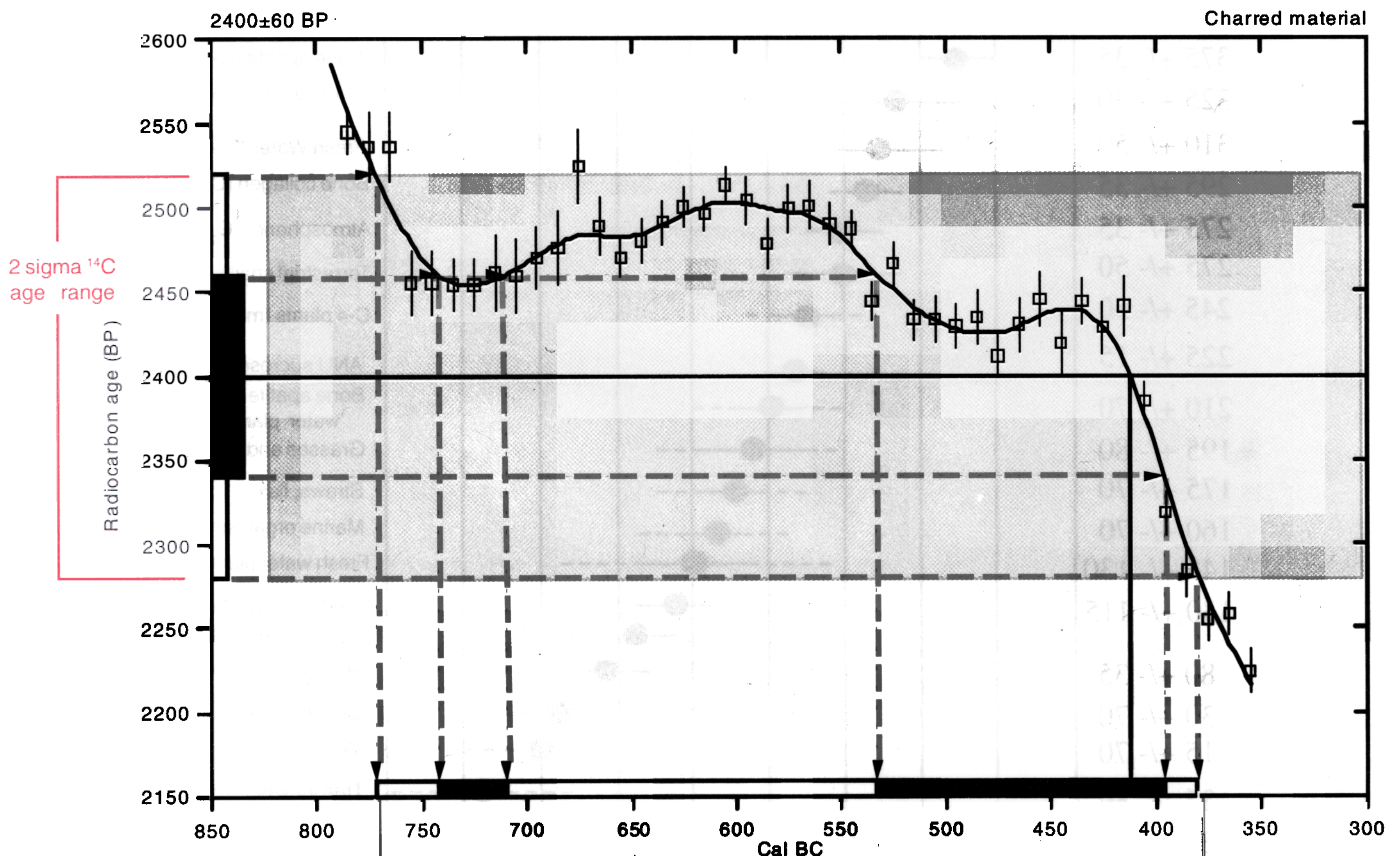
[1] C13/C12 ratio estimated

The intercept between the average radiocarbon age and the calibrated curve time scale. This value is illustrative and should not be used by itself.

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 410 (Cal BP 2360)

1 Sigma calibrated result: (68% probability) Cal BC 740 to 710 (Cal BP 2690 to 2660) and Cal BC 535 to 395 (Cal BP 2485 to 2345)



The 2 Sigma Calendar Calibrated Age Range

This range is determined by the portion of the curve that is in a "box" drawn from the 2 sigma limits on the radiocarbon age. If a section of the curve goes outside of the "box", multiple ranges will occur as shown by the two 1 sigma ranges which occur from sections going outside of a similar "box" which would be drawn at the 1 sigma limits.

References:

Database used
Intcal 98
Calibration Database
Editorial Comment
Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii
INTCAL98 Radiocarbon Age Calibration
Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

← References for the calibration data and the mathematics applied to the data. These references, as well as the Conventional Radiocarbon Age and the 13C/12C ratio used should be included in your papers.

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-mail: beta@radiocarbon.com

FROM: Darden Hood, Director (mailto:mailto:dhood@radiocarbon.com)
(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

October 2, 2007

Dr. Michael D. Cannon
SWCA Environmental Consultants
257 E, 200 S
Suite 200
Salt Lake City, UT 84111

RE: Radiocarbon Dating Results For Samples 2126-1017, 2126-1018, 2126-1019

Dear Dr. Cannon:

Enclosed are the radiocarbon dating results for three samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

The cost of the analysis was charged to the VISA card provided. A receipt is enclosed. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Dr. Michael D. Cannon | Report Date: 10/2/2007

SWCA Environmental Consultants | Material Received: 9/21/2007

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 235062 SAMPLE : 2126-1017 ANALYSIS : AMS-ADVANCE delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 340 to 540 (Cal BP 1610 to 1410)	1590 +/- 40 BP	-22.4 o/oo	1630 +/- 40 BP
Beta - 235063 SAMPLE : 2126-1018 ANALYSIS : AMS-ADVANCE delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 330 to 540 (Cal BP 1620 to 1420)	1620 +/- 40 BP	-24.0 o/oo	1640 +/- 40 BP
Beta - 235064 SAMPLE : 2126-1019 ANALYSIS : AMS-ADVANCE delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 350 to 540 (Cal BP 1600 to 1410)	1610 +/- 40 BP	-24.1 o/oo	1620 +/- 40 BP

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.4:lab. mult=1)

Laboratory number: **Beta-235062**

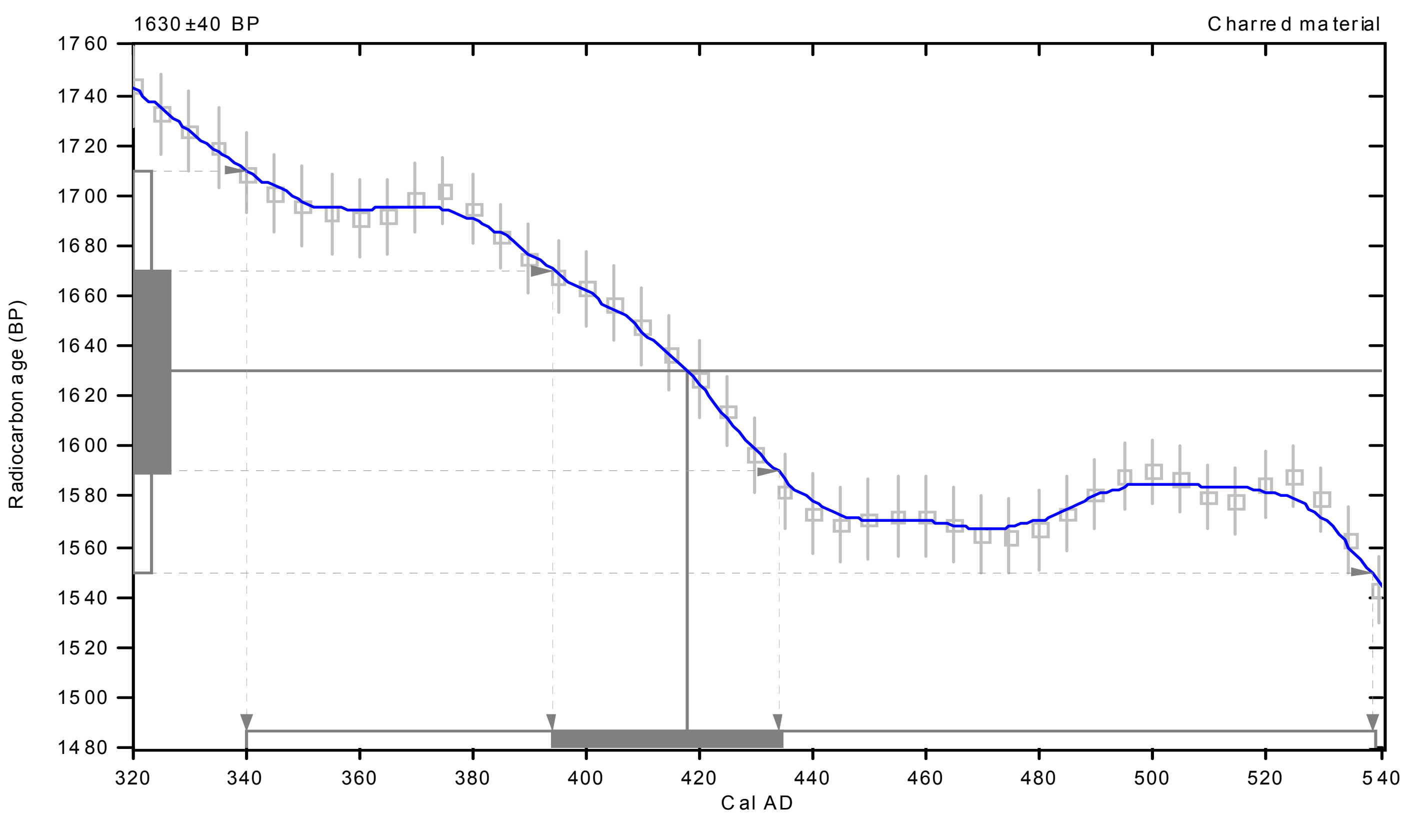
Conventional radiocarbon age: **1630±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 340 to 540 (Cal BP 1610 to 1410)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 420 (Cal BP 1530)

1 Sigma calibrated result: (68% probability) Cal AD 390 to 430 (Cal BP 1560 to 1520)



References:

Database used
INTCAL04
Calibration Database
INTCAL04 Radiocarbon Age Calibration
IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24:lab. mult=1)

Laboratory number: **Beta-235063**

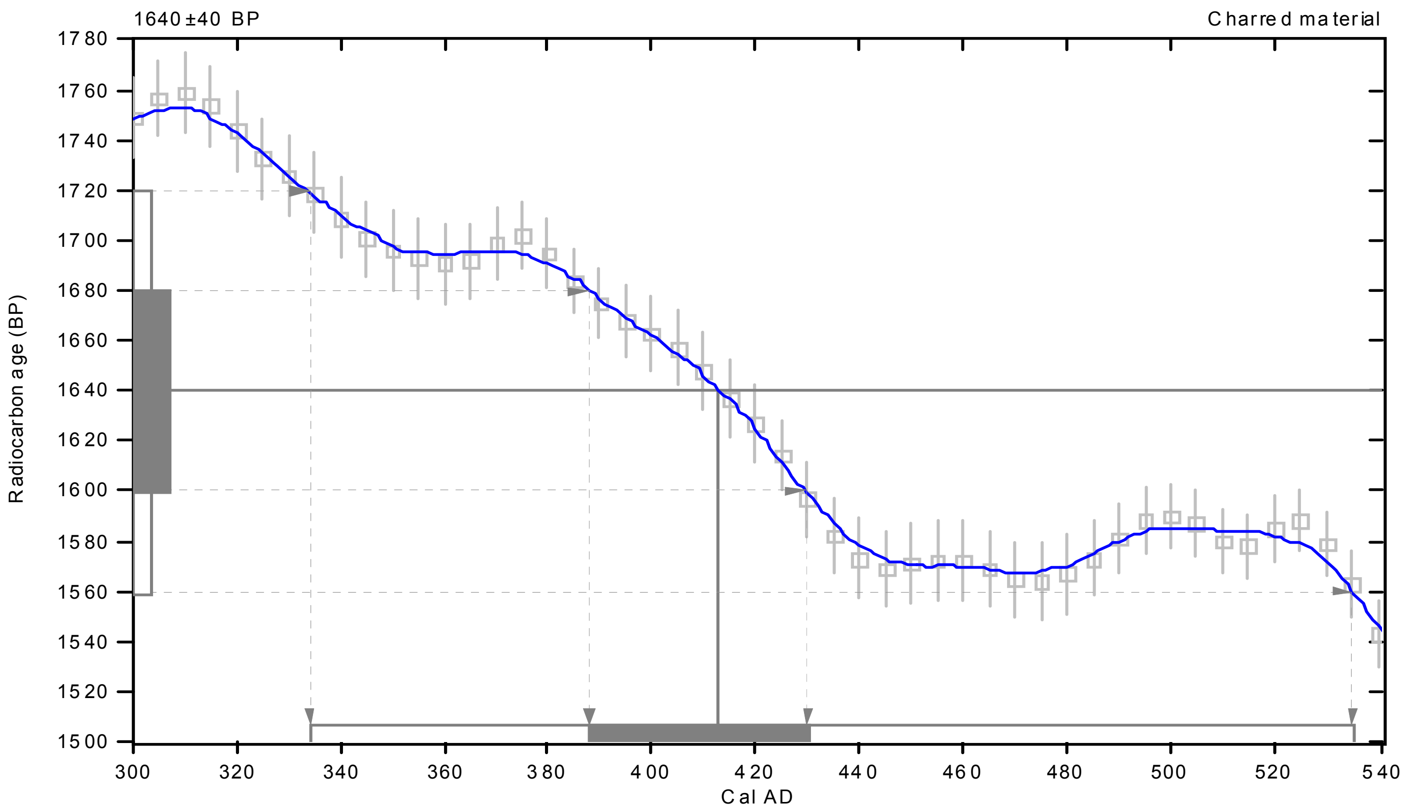
Conventional radiocarbon age: **1640±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 330 to 540 (Cal BP 1620 to 1420)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 410 (Cal BP 1540)

1 Sigma calibrated result: (68% probability) Cal AD 390 to 430 (Cal BP 1560 to 1520)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.1:lab. mult=1)

Laboratory number: **Beta-235064**

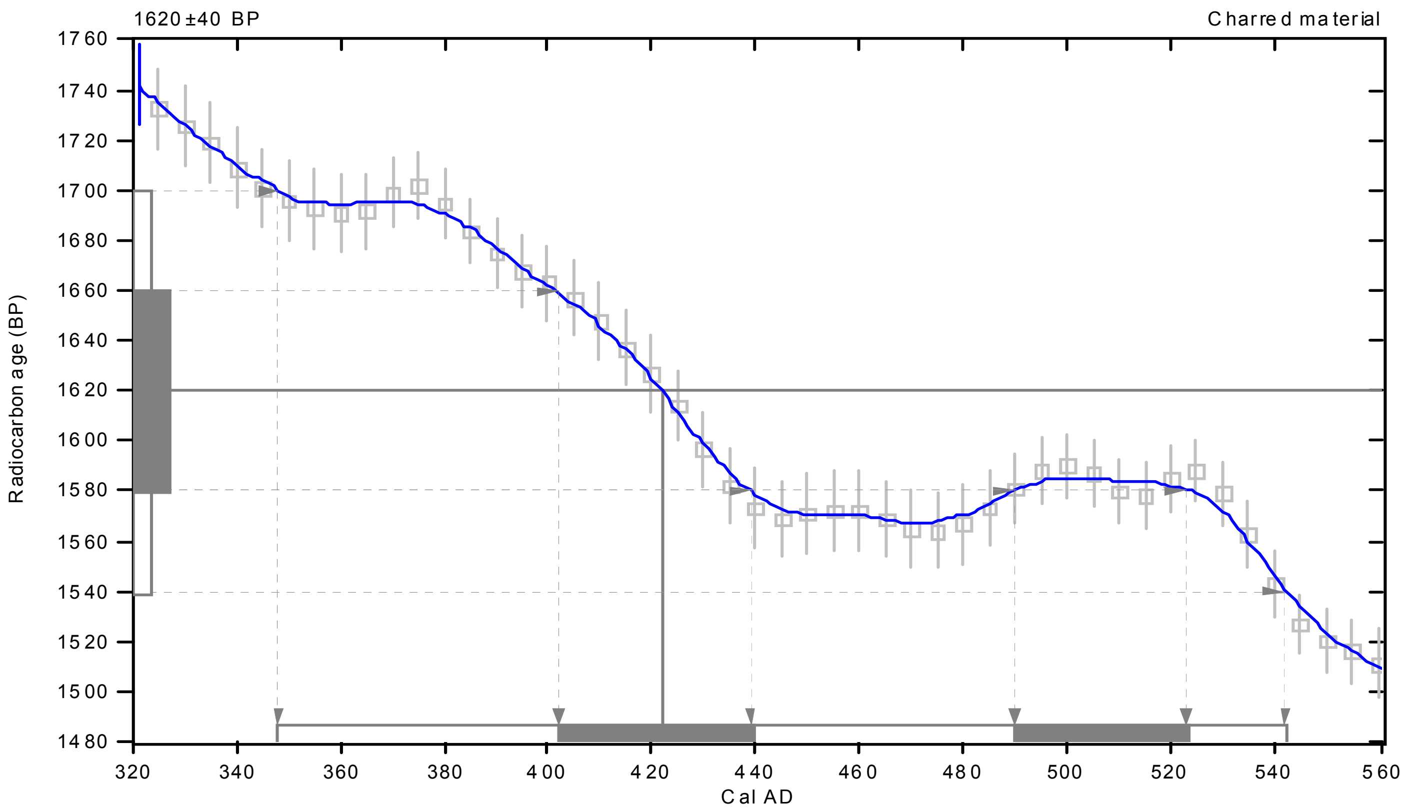
Conventional radiocarbon age: **1620±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 350 to 540 (Cal BP 1600 to 1410)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 420 (Cal BP 1530)

1 Sigma calibrated results: (68% probability) Cal AD 400 to 440 (Cal BP 1550 to 1510) and
Cal AD 490 to 520 (Cal BP 1460 to 1430)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

FROM: Darden Hood, Director (mailto:mailto:dhood@radiocarbon.com)

(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

October 18, 2007

Dr. Michael D. Cannon
SWCA Environmental Consultants
257 East 200 South
Suite 200
Salt Lake City, UT 84111
USA

RE: Radiocarbon Dating Result For Sample 2126-1200

Dear Dr. Cannon:

Enclosed is the radiocarbon dating result for one sample recently sent to us. It provided plenty of carbon for an accurate measurement and the analysis proceeded normally. The report sheet contains the method used, material type, and applied pretreatments and, where applicable, the two-sigma calendar calibration range.

This report has been both mailed and sent electronically. All results (excluding some inappropriate material types) which are less than about 20,000 years BP and more than about ~250 BP include a calendar calibration page (also digitally available in Windows metafile (.wmf) format upon request). Calibration is calculated using the newest (2004) calibration database with references quoted on the bottom of the page. Multiple probability ranges may appear in some cases, due to short-term variations in the atmospheric 14C contents at certain time periods. Examining the calibration graph will help you understand this phenomenon. Don't hesitate to contact us if you have questions about calibration.

We analyzed this sample on a sole priority basis. No students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analysis. We analyzed it with the combined attention of our entire professional staff.

Information pages are also enclosed with the mailed copy of this report. If you have any specific questions about the analysis, please do not hesitate to contact us. Someone is always available to answer your questions.

The cost of the analysis was charged to the VISA card provided. A receipt is enclosed. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Dr. Michael D. Cannon | Report Date: 10/18/2007

SWCA Environmental Consultants | Material Received: 10/5/2007

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 235549	1130 +/- 40 BP	-23.0 o/oo	1160 +/- 40 BP

SAMPLE : 2126-1200
ANALYSIS : AMS-ADVANCE delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 770 to 980 (Cal BP 1180 to 970)

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23:lab. mult=1)

Laboratory number: **Beta-235549**

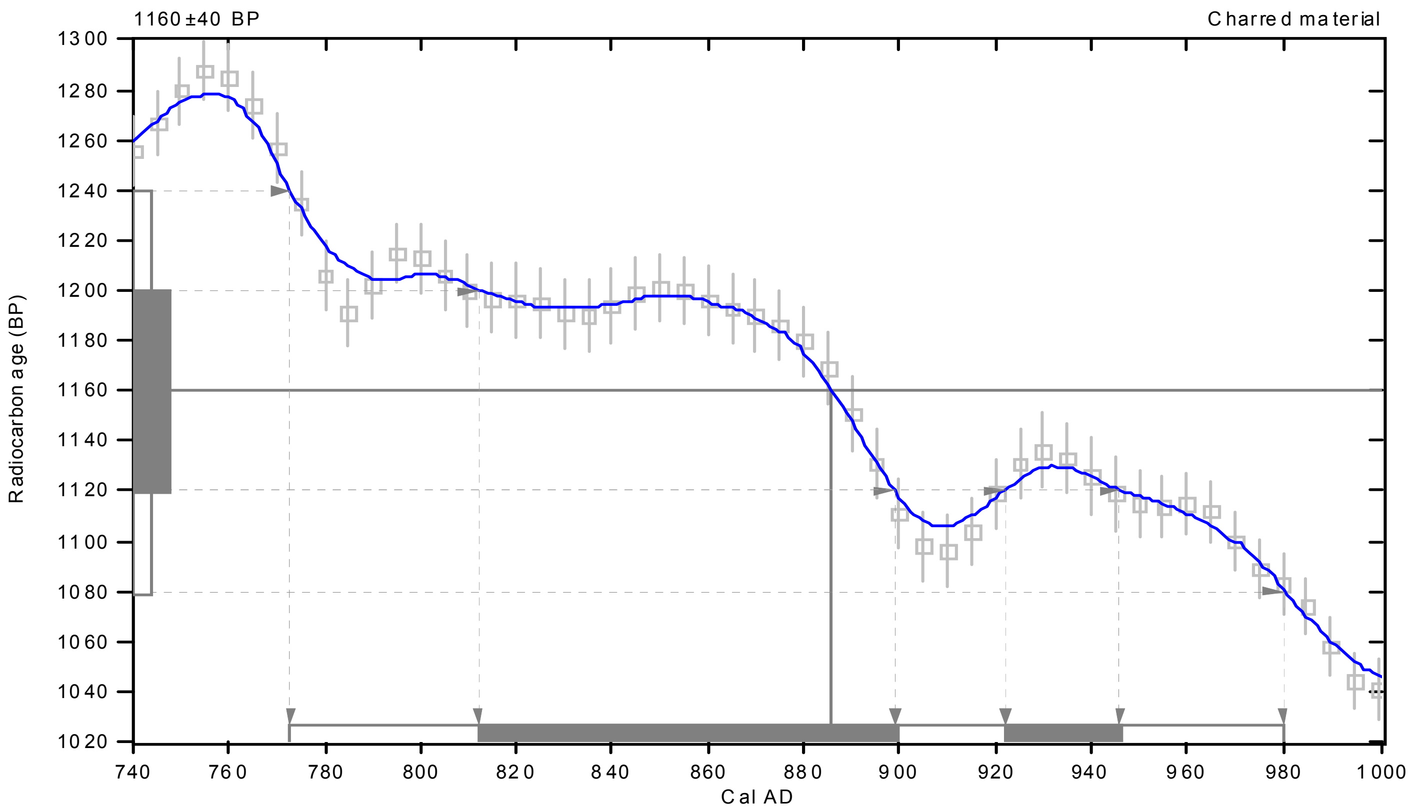
Conventional radiocarbon age: **1160±40 BP**

2 Sigma calibrated result: **Cal AD 770 to 980 (Cal BP 1180 to 970)**
(95% probability)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 890 (Cal BP 1060)

1 Sigma calibrated results: Cal AD 810 to 900 (Cal BP 1140 to 1050) and
(68% probability) Cal AD 920 to 950 (Cal BP 1030 to 1000)



References:

Database used
INTCAL04
Calibration Database
INTCAL04 Radiocarbon Age Calibration
IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

FROM: Darden Hood, Director (mailto:mailto:dhood@radiocarbon.com)
(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

December 20, 2007

Drs. Steven Carothers/Michael D. Cannon
SWCA Environmental Consultants
257 E., 200 S.
Suite 200
Salt Lake City, UT 84111

RE: Radiocarbon Dating Result For Sample 2126-1303

Dear Drs. Carothers and Cannon:

Enclosed is the radiocarbon dating result for one sample recently sent to us. It provided plenty of carbon for an accurate measurement and the analysis proceeded normally. As usual, the method of analysis is listed on the report sheet and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analysis. It was analyzed with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

The cost of the analysis was charged to the VISA card provided. A receipt is enclosed. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Drs. Steven Carothers/Michael D. Cannon | Report Date: 12/20/2007

SWCA Environmental Consultants | Material Received: 11/21/2007

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 237710	1370 +/- 40 BP	-23.5 o/oo	1390 +/- 40 BP

SAMPLE : 2126-1303
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 600 to 680 (Cal BP 1350 to 1270)

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.5:lab. mult=1)

Laboratory number: **Beta-237710**

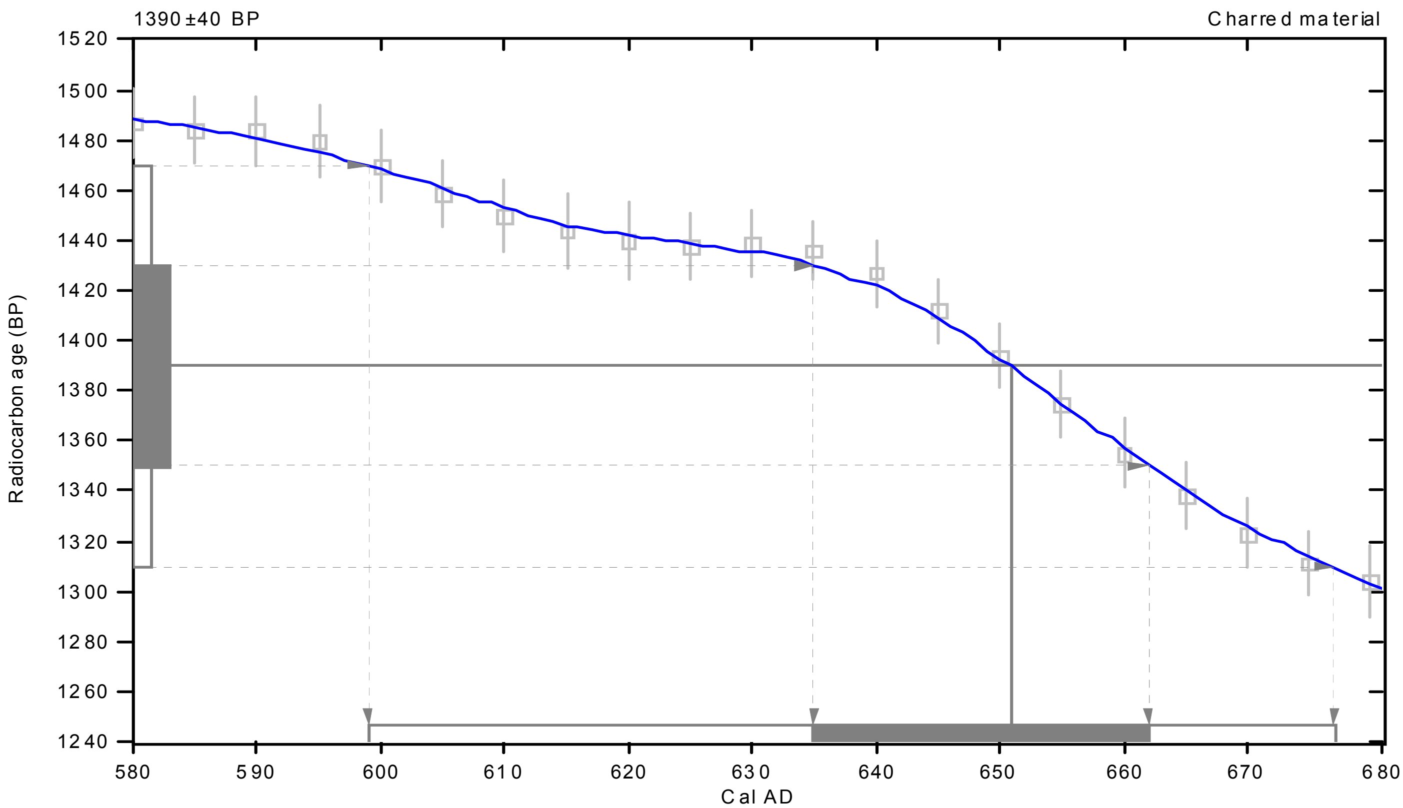
Conventional radiocarbon age: **1390±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 600 to 680 (Cal BP 1350 to 1270)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 650 (Cal BP 1300)

1 Sigma calibrated result: (68% probability) Cal AD 640 to 660 (Cal BP 1320 to 1290)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

FROM: Darden Hood, Director (mailto:mailto:dhood@radiocarbon.com)
(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

June 20, 2008

Dr. Michael D. Cannon
SWCA Environmental Consultants
257 East 200 South
Suite 200
Salt Lake City, UT 84111
USA

RE: Radiocarbon Dating Results For Samples 2126-1166-1 PRIORITY 1, 2126-1072-2 PRIORITY 2

Dear Dr. Cannon:

Enclosed are the radiocarbon dating results for two samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

The cost of the analysis was charged to the VISA card provided. A receipt is enclosed. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Dr. Michael D. Cannon | Report Date: 6/20/2008

SWCA Environmental Consultants | Material Received: 5/27/2008

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 244923	640 +/- 40 BP	-18.5 o/oo	750 +/- 40 BP

SAMPLE : 2126-1166-1 PRIORITY 1
ANALYSIS : AMS-ADVANCE delivery
MATERIAL/PRETREATMENT : (bone collagen): collagen extraction: with alkali
2 SIGMA CALIBRATION : Cal AD 1220 to 1290 (Cal BP 730 to 660)

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 244924	620 +/- 40 BP	-19.4 o/oo	710 +/- 40 BP

SAMPLE : 2126-1072-2 PRIORITY 2
ANALYSIS : AMS-ADVANCE delivery
MATERIAL/PRETREATMENT : (burned bone organics): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1260 to 1310 (Cal BP 700 to 640) AND Cal AD 1360 to 1380 (Cal BP 590 to 570)

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-18.5:lab. mult=1)

Laboratory number: **Beta-244923**

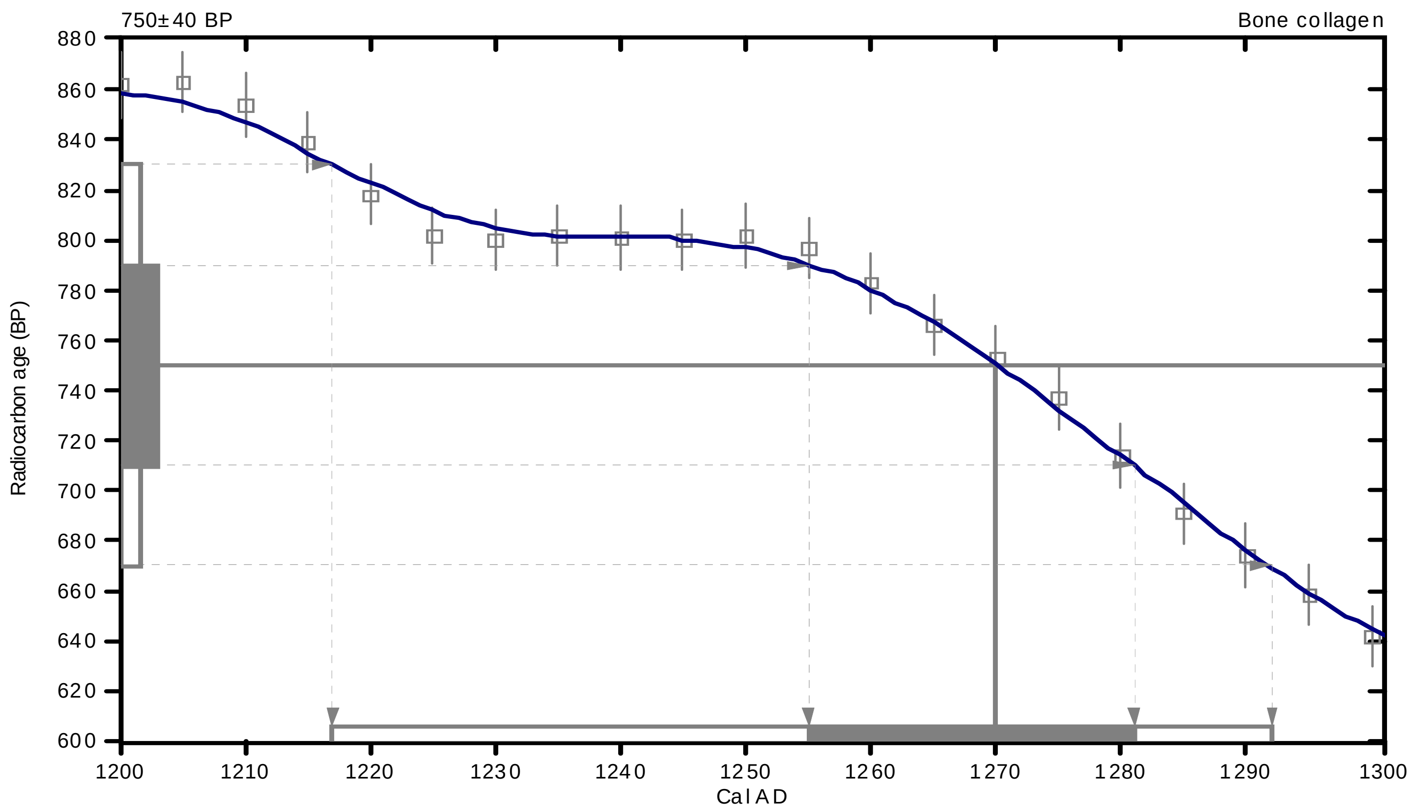
Conventional radiocarbon age: **750±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 1220 to 1290 (Cal BP 730 to 660)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 1270 (Cal BP 680)

1 Sigma calibrated result: (68% probability) Cal AD 1260 to 1280 (Cal BP 700 to 670)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

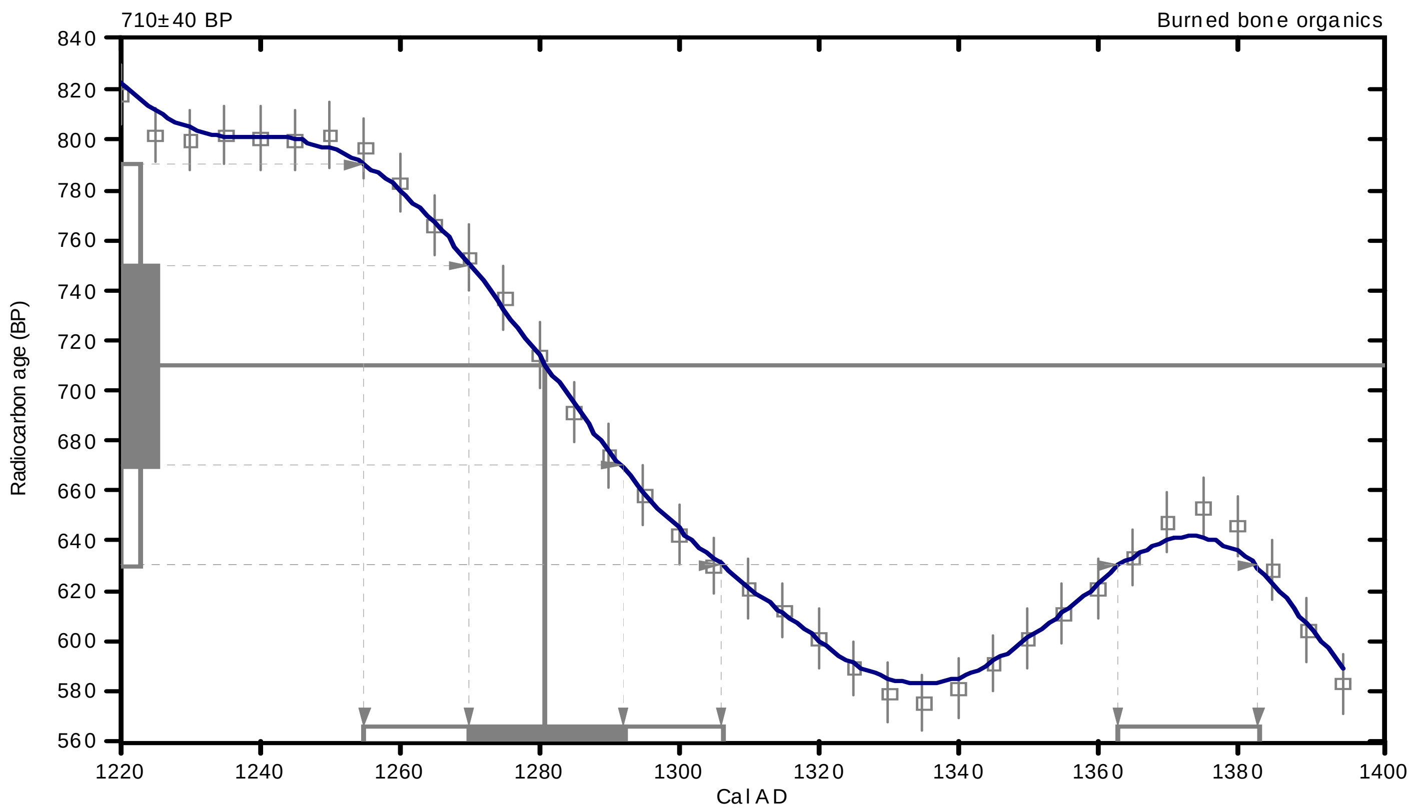
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-19.4:lab. mult=1)

Laboratory number:	**Beta-244924**
Conventional radiocarbon age:	**710±40 BP**
2 Sigma calibrated results: **(95% probability)**	**Cal AD 1260 to 1310 (Cal BP 700 to 640) and** **Cal AD 1360 to 1380 (Cal BP 590 to 570)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal AD 1280 (Cal BP 670)
1 Sigma calibrated result: (68% probability)	Cal AD 1270 to 1290 (Cal BP 680 to 660)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

APPENDIX E. OBSIDIAN SOURCING REPORTS FROM GEOCHEMICAL RESEARCH LABORATORY

May 10, 2007

Ms. Amanda Tews
Laboratory Manager
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, UT 84111

Dear Ms. Tews:

Enclosed with this letter you will find a table presenting energy dispersive x-ray fluorescence (edxrf) data generated from the analysis of two obsidian artifacts from two archaeological sites (26Eu1548 and 26Eu2126) near Rodeo Creek in northern Eureka County, Nevada. This research was conducted pursuant to your letter request of May 7, 2007.

Analyses of obsidian are performed at my laboratory on a QuanX-EC™ (Thermo Electron Scientific Instruments Corporation) edxrf spectrometer equipped with a silver (Ag) x-ray tube, a 50 kV x-ray generator, digital pulse processor with automated energy calibration, and a Peltier cooled solid state detector with 145 eV resolution (FWHM) at 5.9 keV. The x-ray tube was operated at differing voltage and current settings to optimize excitation of the elements selected for analysis. In this case analyses were conducted for the elements rubidium (Rb Kα), strontium (Sr Kα), yttrium (Y Kα), zirconium (Zr Kα), niobium (Nb Kα), and certain artifacts were analyzed to determine concentrations of the element barium (Ba Kα), and to generate iron vs. manganese (Fe Kα/Mn Kα) ratios. Tube current was scaled to the physical size of each specimen.

X-ray spectra are acquired and elemental intensities extracted for each peak region of interest, then matrix correction algorithms are applied to specific regions of the x-ray energy spectrum to compensate for inter-element absorption and enhancement effects. Following these corrections, intensities are converted to concentration estimates by employing a least-squares calibration line established for each element from analysis of up to 30 international rock standards certified by the U.S. Geological Survey, the U.S. National Institute of Standards and Technology, the Geological Survey of Japan, the Centre de Recherches Petrographiques et Geochimiques (France), and the South African Bureau of Standards. Further details pertaining to calibration appear in Hughes (1988, 1994).

Measurements in the edxrf data table are expressed in quantitative units (i.e. parts per million [ppm] by weight), and matches between the artifacts you sent and known obsidian chemical groups were made on the basis of correspondences (at the 2-sigma level) in diagnostic trace element concentration values (in this case, ppm values for Rb, Sr, Y, Zr, Nb and, when necessary, Ba, Ti, Mn and $Fe_2O_3^T$) that appear in Hughes (1983a; 1985; 1986; 1989; 1990, 2001; 2005; n.d. a, b), Jack and Carmichael (1969), Macdonald et al. (1992), Nelson (1984), Nelson and Holmes (1979), Noble (et al. 1979), Shackley (1991, 1992, 1994, 2005), and unpublished data in my possession on certain interior southern California and Great Basin obsidians (e.g. Hughes 1983b; 1995a, b; n.d. b). Artifact-to-obsidian source (geochemical type; *sensu* Hughes 1998) correspondences were considered reliable if diagnostic mean measurements for artifacts fell within 2 standard deviations of mean values for source standards. I use the term "diagnostic" to specify those trace elements that are well-measured by x-ray fluorescence, and whose concentrations show low intra-source variability and marked variability across sources. In short, diagnostic elements are those concentration values allowing one to draw the clearest geochemical distinctions between sources (Hughes 1990, 1993). Zn and Ga concentrations are not considered "diagnostic" because they don't usually vary significantly across obsidian sources (see Hughes 1982, 1984). This is particularly true of Ga, which occurs in concentrations between 10-30 ppm in nearly all parent obsidians in the study area. Zn ppm values are infrequently diagnostic; they are always high in Zr-rich, Sr-poor peralkaline volcanic glasses, but otherwise they do not vary significantly between sources in the study area. Trace element concentration measurements are reported to the nearest ppm to reflect the calibration-imposed resolution capabilities of non-destructive energy dispersive x-ray fluorescence spectrometry. The resolution limits of the present x-ray fluorescence instrument for the determination of Rb is about 3 ppm; for Sr about 3 ppm; Y about 2 ppm; Zr about 3 ppm; and Nb about 2 ppm (see Hughes [1994] for other elements). When counting and fitting error uncertainty estimates (the "±" value in the table) for a sample are greater than element-specific resolution limits, the larger number is a more conservative indicator of composition variation and measurement error arising from differences in sample size, surface, and x-ray reflection geometry.

Table 1

Quantitative Composition Estimates for Obsidian Samples from the Barrick Goldstrike Mine Project, Nevada

Cat. Number	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Ratio Fe/Mn	Obsidian Source (Chemical Type)
			Trace Element Concentrations										
26Eu1548, FS # 1	nm	nm	341 ±4	2 ±3	72 ±3	69 ±4	15 ±3	nm	nm	nm	nm	67	Paradise Valley, NV
26Eu2126, FS # 13	nm	nm	171 ±4	37 ±3	20 ±3	100 ±4	20 ±3	157 ±10	nm	nm	nm	22	Wild Horse Canyon, UT
				U.S. Geological Survey Reference Standard									
RGM-1 (measured)	nm	nm	145 ±4	107 ±3	23 ±3	218 ±4	9 ±3	816 ±10	nm	nm	nm	62	Glass Mountain, CA
RGM-1 (recommended)	32	15	49	108	25	219	9	807	1600	279	.86	nr	Glass Mountain, CA

Values in parts per million (ppm) except total iron [in weight %] and Fe/Mn intensity ratios; ± = x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime. nm= not measured. nr= not reported.

The artifact-to-source (geochemical type) attribution for each sample appears in Table 1, and the locations for the obsidian sources (chemical types) identified appear in Hughes (1990: Figure 1; 2005: Figure II.1) Edxrf data indicate that the obsidian flake from 26Eu1548 (FS # 1) was manufactured from Paradise Valley obsidian (cf. Hughes 1990: Table 1; Figure 2a, b), while the biface from 26Eu2126 (FS # 13) matches the trace element profile of obsidian from Wild Horse Canyon (Mineral Mountains), Utah (cf. Hughes 2005: Table II.2).

I hope this information will help in your analysis of these specimens. Please contact me at my laboratory (phone: [650] 851-1410; e-mail: rehughes@silcon.com; lab web site: www.geochemicalresearch.com) if I can provide any further assistance or information. As you requested, I have forwarded the specimens to Tom Origer for obsidian hydration analysis.

Sincerely,

Richard H Hughes

Richard E. Hughes, Ph.D., RPA
Director, Geochemical Research Laboratory

Geochemical Research Laboratory Letter Report 2007-36

REFERENCES

Hughes, Richard E.

1982 Age and Exploitation of Obsidian from the Medicine Lake Highland, California. **Journal of Archaeological Science** 9: 173-185.

X-ray Fluorescence Characterization of Obsidian. *In* David Hurst Thomas, The Archaeology of Monitor Valley: 2. Gatecliff Shelter. **Anthropological Papers of the American Museum of Natural History** 59 (1): 401-408.

1983b X-ray Fluorescence Analysis of Obsidian Artifacts and Source Samples from the Nevada Test Site. Letter report submitted to Lonnie Pippin, Desert Research Institute, Reno, June 15, 1983.

Obsidian Sourcing Studies in the Great Basin: Problems and Prospects. *In* Richard E. Hughes (ed.) Obsidian Studies in the Great Basin. **Contributions of the University of California Archaeological Research Facility** No. 45: 1-19.

Obsidian Source Use at Hidden Cave. *In* David Hurst Thomas, The Archaeology of Hidden Cave, Nevada. **Anthropological Papers of the American Museum of Natural History** 61: 332-353.

Diachronic Variability in Obsidian Procurement Patterns in Northeastern California and Southcentral Oregon. **University of California Publications in Anthropology**, Vol. 17.

1988 The Coso Volcanic Field Reexamined: Implications for Obsidian Sourcing and Hydration Dating Research. **Geoarchaeology** 3: 253-265.

1989 A New Look at Mono Basin Obsidians. *In* Richard E. Hughes (ed.), Current Directions in California Obsidian Studies. **Contributions of the University of California Archaeological Research Facility** No. 48, pp. 1-12.

1990 Obsidian Sources at James Creek Shelter, and Trace Element Geochemistry of Some Northeastern Nevada Volcanic Glasses. *In* Robert G. Elston and Elizabeth E. Budy (eds.), The Archaeology of James Creek Shelter. **University of Utah Anthropological Papers** No. 115, pp. 297-305.

1993 Trace Element Geochemistry of Volcanic Glass from the Obsidian Cliffs Flow, Three Sisters Wilderness, Oregon. **Northwest Science** 67: 199-207.

1994 Intrasource Chemical Variability of Artifact-Quality Obsidians from the Casa Diablo Area, California. **Journal of Archaeological Science** 21: 263-271.

1995a X-ray Fluorescence Analysis of Geologic Obsidian Samples from the Vicinity of Tubb Spring, Nevada Test Site, Nevada. Geochemical Research Laboratory Letter Report 95-15. Portola Valley, CA.

1995b X-ray Fluorescence Analysis of Geologic Obsidian Samples from Stonewall Flat on the Tonopah Test Range, Nellis Air Force Base, Nevada. Geochemical Research Laboratory Letter Report 95-45. Portola Valley, CA.

On Reliability, Validity, and Scale in Obsidian Sourcing Research. *In* Ann F. Ramenofsky and Anastasia Steffen (eds.), **Unit Issues in Archaeology: Measuring Time, Space and Material**, pp. 103-114. University of Utah Press, Salt Lake City.

Energy Dispersive X-ray Fluorescence Analysis of Obsidian Artifacts from Archaeological Sites in the Carson Desert and Stillwater Mountains. *In* Robert L. Kelly, Prehistory of the Carson Desert and Stillwater Mountains. **University of Utah Anthropological Papers** No. 123, pp. 241-250.

REFERENCES (continued)

Hughes, Richard E.

2005 Determination of the Geologic Sources for Obsidian Artifacts from Camels Back Cave, and Trace Element Analysis of Some Western Utah and Eastern Nevada Volcanic Glasses. *In* Dave N. Schmitt and David B. Madsen (eds.), Camels Back Cave. **University of Utah Anthropological Papers** No. 125, pp. 249-256.

n.d.a Geochemical Identification of the Sources for Alta Toquima Obsidian Artifacts. *In* David Hurst Thomas, The Archaeology of Monitor Valley: 4. Alta Toquima and the Mt. Jefferson Complex. **Anthropological Papers of the American Museum of Natural History**. In press. .

Trace Element Characterization of Volcanic Glasses from Obsidian Butte, Nellis Air Force Range Nevada, and Surrounding Areas. Manuscript in possession of the author.

Hughes, Richard E., and Robert L. Smith

1993 Archaeology, Geology, and Geochemistry in Obsidian Provenance Studies. *In* Julie K. Stein and Angela R. Linse (eds.), Effects of Scale on Archaeological and Geoscientific Perspectives. **Geological Society of America Special Paper** 283: 79-91.

Jack, R.N., and I.S.E. Carmichael

1969 The Chemical 'Fingerprinting' of Acid Volcanic Rocks. **California Division of Mines and Geology, Special Report** 100: 17-32. San Francisco.

Macdonald Ray, Robert L. Smith, and John E. Thomas

1992 Chemistry of the Subalkalic Silicic Obsidians. **U.S. Geological Survey Professional Paper** 1523.

Nelson, Fred W., Jr.

1984 X-ray Fluorescence Analysis of Some Western North American Obsidians. *In* Richard E. Hughes (ed.) Obsidian Studies in the Great Basin. **Contributions of the University of California Archaeological Research Facility**, No. 45: 27-62.

Nelson, Fred W., and Richard D. Holmes

1979 Trace Element Analysis of Obsidian Sources and Artifacts from Western Utah. **Antiquities Section Selected Papers** 6 (15). Division of State History, Utah State Historical Society.

Noble, Donald C., Ward L. Rigot and Harry R. Bowman

1979 Rare-Earth-Element Content of Some Highly Differentiated Ash-Flow Tuffs and Lavas. *In* Charles E. Chapin and Wolfgang E. Elston (eds.), Ash-Flow Tuffs. **Geological Society of America Special Paper** 180: 77-85.

Shackley, M. Steven

1991 Tank Mountains Obsidian: A Newly Discovered Archaeological Obsidian Source in East-Central Yuma County, Arizona. **Kiva** 57: 17-25.

The Upper Gila River Gravels as an Archaeological Obsidian Source Region: Implications for Models of Exchange and Interaction. **Geoarchaeology** 7: 315-326.

1994 Intersource and Intrasource Geochemical Variability in Two Newly Discovered Archaeological Obsidian Sources in the Southern Great Basin. **Journal of California and Great Basin Anthropology** 16: 118-129.

2005 **Obsidian: Geology and Archaeology in the North American Southwest**. University of Arizona Press, Tucson.

August , 2007

Dr. Michael D. Cannon
Cultural Resources Principal Investigator
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, UT 84111

Dear Dr. Cannon:

Enclosed with this letter you will find a table presenting energy dispersive x-ray fluorescence (edxrf) data generated from the analysis of five obsidian artifacts from four archaeological sites (26Eu1533, 26Eu1539, 26Eu1548, and 26Eu2064) located in the Little Boulder Basin, Eureka County, Nevada. This research was conducted pursuant to your letter request of July 27, 2007.

Laboratory equipment and instrumentation, and artifact-to-source (geochemical type) attribution procedures, measurement resolution limits for each element, and literature references are the same as those I reported for artifacts from other sites in this project (Hughes 2007).

Table 1

Quantitative Composition Estimates for Obsidian Samples from the Barrick Goldstrike Mine Project, Nevada

Cat. Number	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Ratio Fe/Mn	Obsidian Source (Chemical Type)
26Eu1533, 11-1	nm	nm	196 ±4	 ±3	90 ±3	514 ±4	28 ±3	0 ±10	nm	nm	nm	64	Double H Mountains
26Eu1539, 159-1	nm	nm	204 ±4	61 ±3	67 ±3	486 ±4	46 ±3	1202 ±12	nm	nm	nm	nm	Browns Bench, NV/ID
26Eu1548, 165-1	nm	nm	333 ±4	3 ±3	70 ±3	68 ±4	15 ±3	nm	nm	nm	nm	68	Paradise Valley, NV
26Eu2064, 77-1	nm	nm	365 ±4	3 ±3	73 ±3	74 ±4	17 ±3	nm	nm	nm	nm	71	Paradise Valley, NV
26Eu2064, 77-2	nm	nm	375 ±4	2 ±3	76 ±3	75 ±4	15 ±3	nm	nm	nm	nm	68	Paradise Valley, NV
U.S. Geological Survey Reference Standard													
RGM-1 (measured)	nm	nm	150 ±4	108 ±3	24 ±3	220 ±4	8 ±3	820 ±10	nm	nm	nm	66	Glass Mountain, CA
RGM-1 (recommended)	32	15	149	108	25	219	9	807	1600	279	.86	nr	Glass Mountain, CA

Values in parts per million (ppm) except total iron [in weight %] and Fe/Mn intensity ratios; ± = x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime. nm= not measured. nr= not reported.

The artifact-to-source (geochemical type) attribution for each sample appears in Table 1, and the locations for the obsidian sources (chemical types) identified appear in Hughes (1990: Figure 1; 2001: 249, note 3) Edxrf data indicate that three obsidian flakes have the same trace element composition as obsidian of the Paradise Valley chemical type (cf. Hughes 1990: Table 1; Figure 2a, b), while single specimens match the trace element profile of obsidian from the Double H Mountains, Nevada (Hughes 2001: Table 8-25) and Browns Bench, Nevada/Idaho (Hughes 1990: Table 1).

I hope this information will help in your analysis of these specimens. Please contact me at my laboratory (phone: [650] 851-1410; e-mail: rehughes@silcon.com; lab web site: www.geochemicalresearch.com) if I can provide any further assistance or information. As you requested, I have forwarded the specimens to Tom Origer for obsidian hydration analysis.

Sincerely,

Richard Hughes

Richard E. Hughes, Ph.D., RPA
Director, Geochemical Research Laboratory

encl.

REFERENCES

Hughes, Richard E.

1990 Obsidian Sources at James Creek Shelter, and Trace Element Geochemistry of Some Northeastern Nevada Volcanic Glasses. *In* Robert G. Elston and Elizabeth E. Budy (eds.), The Archaeology of James Creek Shelter. **University of Utah Anthropological Papers** No. 115, pp. 297-305.

2001 Energy Dispersive X-ray Fluorescence Analysis of Obsidian Artifacts from Archaeological Sites in the Carson Desert and Stillwater Mountains. *In* Robert L. Kelly, Prehistory of the Carson Desert and Stillwater Mountains. **University of Utah Anthropological Papers** No. 123, pp. 241-250.

2007 Energy Dispersive X-ray Fluorescence Analysis of Obsidian Artifacts from Two Archaeological Sites (26Eu1548 and 26Eu2126) Near Rodeo Creek in Northern Eureka County, Nevada. Geochemical Research Laboratory Letter Report 2007-36 submitted to Amber Tews, SWCA, Inc., May 10, 2007.

September 21, 2007

Dr. Michael D. Cannon
Cultural Resources Principal Investigator
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, UT 84111

Dear Dr. Cannon:

Enclosed below you will find a table presenting energy dispersive x-ray fluorescence (edxrf) data generated from the analysis of five obsidian artifacts from archaeological sites (26Eu2064, n= 1, and 26Eu2126, n= 4) located in the Little Boulder Basin, Eureka County, Nevada. This research was conducted pursuant to your letter request of September 19, 2007.

Laboratory equipment and instrumentation, and artifact-to-source (geochemical type) attribution procedures, measurement resolution limits for each element, and literature references are the same as those I reported for artifacts from other sites in this project (Hughes 2007).

Table 1

Quantitative Composition Estimates for Obsidian Samples from the Barrick Goldstrike Mine Project, Nevada

Cat. Number	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Ratio Fe/Mn	Obsidian Source (Chemical Type)
			Trace Element Concentrations										
26Eu2064, 401-1	nm	nm	390 ±4	3 ±3	78 ±3	74 ±4	17 ±3	nm	nm	nm	nm	78	Paradise Valley, NV
26Eu2126, 1070-1	nm	nm	343 ±4	3 ±3	73 ±3	71 ±4	15 ±3	nm	nm	nm	nm	80	Paradise Valley, NV
26Eu2126, 1070-2	nm	nm	374 ±4	2 ±3	73 ±3	73 ±4	15 ±3	nm	nm	nm	nm	80	Paradise Valley, NV
26Eu2126, 1070-3	nm	nm	369 ±4	4 ±3	74 ±3	73 ±4	14 ±3	nm	nm	nm	nm	78	Paradise Valley, NV
26Eu2126, 1078-1	nm	nm	345 ±4	6 ±3	72 ±3	71 ±4	14 ±3	nm	nm	nm	nm	75	Paradise Valley, NV
U.S. Geological Survey Reference Standard													
RGM-1 (measured)	nm	nm	147 ±4	109 ±3	23 ±3	221 ±4	12 ±3	nm ±10	nm	nm	nm	63	Glass Mountain, CA
RGM-1 (recommended)	32	15	149	108	25	219	9	807	1600	279	.86	nr	Glass Mountain, CA

Values in parts per million (ppm) except total iron [in weight %] and Fe/Mn intensity ratios; ± = x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime. nm= not measured. nr= not reported.

The artifact-to-source (geochemical type) attribution for each sample appears in Table 1, and the locations for the obsidian source (chemical type) identified appears in Hughes (1990: Figure 1). Edxrf data indicate that all five of these obsidian flakes have the same trace element composition as obsidian of the Paradise Valley chemical type (cf. Hughes 1990: Table 1; Figure 2a, b).

I hope this information will help in your analysis of these artifacts. Please contact me at my laboratory (phone: [650] 851-1410; e-mail address: rehughes@silcon.com; laboratory web site: www.geochemicalresearch.com) if I can provide any further assistance or information. As you requested, I have forwarded the specimens to Tom Origer for obsidian hydration analysis.

Sincerely,
Richard Hughes

Richard E. Hughes, Ph.D., RPA
Director, Geochemical Research Laboratory

encl.

REFERENCES

Hughes, Richard E.

1990 Obsidian Sources at James Creek Shelter, and Trace Element Geochemistry of Some Northeastern Nevada Volcanic Glasses. *In* Robert G. Elston and Elizabeth E. Budy (eds.), The Archaeology of James Creek Shelter. **University of Utah Anthropological Papers** No. 115, pp. 297-305.

2007 Energy Dispersive X-ray Fluorescence Analysis of Obsidian Artifacts from Two Archaeological Sites (26Eu1548 and 26Eu2126) Near Rodeo Creek in Northern Eureka County, Nevada. Geochemical Research Laboratory Letter Report 2007-36 submitted to Amber Tews, SWCA, Inc., May 10, 2007.

October 15, 2007

Dr. Michael D. Cannon
Cultural Resources Principal Investigator
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, UT 84111

Dear Dr. Cannon:

Enclosed below you will find a table presenting energy dispersive x-ray fluorescence (edxrf) data generated from the analysis of an obsidian artifact from archaeological site 26Eu2126, located in the Little Boulder Basin, Eureka County, Nevada. This research was conducted pursuant to your letter request of October 4, 2007. Laboratory equipment and instrumentation, and artifact-to-source (geochemical type) attribution procedures, measurement resolution limits for each element, and literature references are the same as reported for other sites in this project (Hughes 2007).

Table 1

Quantitative Composition Estimates for an Obsidian Sample from 26EU2126, Nevada

Cat. Number	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Ratio Fe/Mn	Obsidian Source (Chemical Type)
	Trace Element Concentrations												
26Eu2126, 1161-1	nm	nm	362 ±4	2 ±3	79 ±3	73 ±4	15 ±3	nm	nm	nm	nm	85	Paradise Valley, NV
U.S. Geological Survey Reference Standard													
RGM-1 (measured)	nm	nm	145 ±4	107 ±3	25 ±3	220 ±4	8 ±3	nm	nm	nm	nm	67	Glass Mountain, CA
RGM-1 (recommended)	32	15	149	108	25	219	9	807	1600	279	1.86	nr	Glass Mountain, CA

Values in parts per million (ppm) except total iron [in weight %] and Fe/Mn intensity ratios; ± = x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime. nm= not measured. nr= not reported.

Edxrf data indicate that this obsidian flake was made from obsidian of the Paradise Valley chemical type. Please contact me at my laboratory (phone: [650] 851-1410; e-mail address: rehughes@silcon.com; laboratory web site: www.geochemicalresearch.com) if I can provide any further assistance or information. As you requested, I have forwarded the specimen to Tom Origer for obsidian hydration analysis.

Sincerely,

Richard Hughes

Richard E. Hughes, Ph.D., RPA
Director, Geochemical Research Laboratory

REFERENCE

Hughes, Richard E.
2007 Energy Dispersive X-ray Fluorescence Analysis of Obsidian Artifacts from Two Archaeological Sites (26Eu1548 and 26Eu2126) Near Rodeo Creek in Northern Eureka County, Nevada. Geochemical Research Laboratory Letter Report 2007-36 submitted to Amber Tews, SWCA, Inc., May 10, 2007.

Geochemical Research Laboratory Letter Report 2007-82

November 19, 2007

Dr. Michael D. Cannon
Cultural Resources Principal Investigator
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, UT 84111

Dear Dr. Cannon:

Enclosed below you will find a table presenting energy dispersive x-ray fluorescence (edxrf) data generated from the analysis of two obsidian artifacts from archaeological site 26Eu2126, Little Boulder Basin, Eureka County, Nevada. This research was conducted pursuant to your letter request of November 12, 2007. Laboratory equipment and instrumentation, and artifact-to-source (geochemical type) attribution procedures, measurement resolution limits for each element, and literature references are the same as reported for other sites in this project (Hughes 2007).

Table 1

Quantitative Composition Estimates for Obsidian Samples from 26EU2126, Nevada

Cat. Number	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	Fe_2O_3	Ratio Fe/Mn	Obsidian Source (Chemical Type)
			Trace Element Concentrations										
73-1	nm	nm	392 ±4	2 ±3	82 ±3	82 ±4	15 ±3	nm	nm	nm	nm	73	Paradise Valley, NV
74-[illegible]	nm	nm	349 ±4	2 ±3	75 ±3	72 ±4	16 ±3	nm	nm	nm	nm	77	Paradise Valley, NV
			U.S. Geological Survey Reference Standard										
RGM-1 (measured)	nm	nm	143 ±4	105 ±3	24 ±3	221 ±4	9 ±3	nm	nm	nm	nm	63	Glass Mountain, CA
RGM-1 (recommended)	32	15	149	108	25	219	9	807	1600	279	.86	nr	Glass Mountain, CA

Values in parts per million (ppm) except total iron [in weight %] and Fe/Mn intensity ratios; ± = x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime. nm= not measured. nr= not reported.

Edxrf data in Table 1 indicate that both obsidian artifacts were made from obsidian of the Paradise Valley chemical type. Please contact me at my laboratory (phone: [650] 851-1410; e-mail address: rehughes@silcon.com; laboratory web site: www.geochemicalresearch.com) if I can provide any further assistance or information. As you requested, I have forwarded the specimens to Tom Origer for obsidian hydration analysis.

Sincerely,

Richard Hughes

Richard E. Hughes, Ph.D., RPA
Director, Geochemical Research Laboratory

REFERENCE

Hughes, Richard E.
2007 Energy Dispersive X-ray Fluorescence Analysis of Obsidian Artifacts from Two Archaeological Sites (26Eu1548 and 26Eu2126) Near Rodeo Creek in Northern Eureka County, Nevada. Geochemical Research Laboratory Letter Report 2007-36 submitted to Amber Tews, SWCA, Inc., May 10, 2007.

November 28, 2007

Dr. Michael D. Cannon
Cultural Resources Principal Investigator
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, UT 84111

Dear Dr. Cannon:

Enclosed below you will find a table presenting energy dispersive x-ray fluorescence (edxrf) data generated from the analysis of one obsidian artifacts from archaeological site 26Eu1548, Little Boulder Basin, Eureka County, Nevada. This research was conducted pursuant to your letter request of November 16, 2007. Laboratory equipment and instrumentation, and artifact-to-source (geochemical type) attribution procedures, measurement resolution limits for each element, and literature references are the same as reported for other sites in this project (Hughes 2007).

Table 1

Quantitative Composition Estimates for an Obsidian Sample from 26EU1548, Nevada

Cat. Number	Trace Element Concentrations: Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Ratio: Fe/Mn	Obsidian Source (Chemical Type)
15-1	nm	nm	365 ±4	±3	73 ±3	69 ±4	15 ±3	nm	nm	nm	nm	81	Paradise Valley, NV
U.S. Geological Survey Reference Standard													
RGM-1 (measured)	nm	nm	148 ±4	10 ±3	23 ±3	221 ±4	8 ±3	nm	nm	nm	nm	62	Glass Mountain, CA
RGM-1 (recommended)	32	15	149	108	25	219	9	807	1600	279	.86	nr	Glass Mountain, CA

Values in parts per million (ppm) except total iron [in weight %] and Fe/Mn intensity ratios; ± = x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime. nm= not measured. nr= not reported.

Edxrf data in Table 1 indicate that this artifact was made from obsidian of the Paradise Valley chemical type. Please contact me at my laboratory (phone: [650] 851-1410; e-mail address: rehughes@silcon.com; laboratory web site: www.geochemicalresearch.com) if I can provide any further assistance or information. As you requested, I have forwarded the specimen to Tom Origer for obsidian hydration analysis.

Sincerely,
Richard Hughes
Richard E. Hughes, Ph.D., RPA
Director, Geochemical Research Laboratory

REFERENCE

Hughes, Richard E.
2007 Energy Dispersive X-ray Fluorescence Analysis of Obsidian Artifacts from Two Archaeological Sites (26Eu1548 and 26Eu2126) Near Rodeo Creek in Northern Eureka County, Nevada. Geochemical Research Laboratory Letter Report 2007-36 submitted to Amber Tews, SWCA, Inc., May 10, 2007.

APPENDIX F. OBSIDIAN HYDRATION REPORTS FROM ORIGER'S OBSIDIAN LABORATORY

Origer's Obsidian Laboratory

P.O. Box 1531
Rohnert Park, California 94927
(707) 584-8200, Fax 584-8300
origer@origer.com

May 25, 2007

Amanda Tews, Laboratory Manager
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, Utah 84111

Dear Ms. Tews:

I write to report the results of obsidian hydration band analysis of two specimens from two sites in northern Eureka County, Nevada. This work was completed following source determinations by Richard Hughes, Geochemical Research Laboratory, who forwarded the specimens to us on your behalf.

Procedures used by our lab for preparation of thin sections and measurement of hydration bands are described here. The specimens were examined to find two or more surfaces that would yield edges that would be perpendicular to the microslides when preparation of the thin sections was done. Generally, two parallel cuts were made at an appropriate location along the edge of each specimen with a four-inch diameter circular saw blade mounted on a lapidary trimsaw. The cuts resulted in the isolation of a small sample with a thickness of about one millimeter. The samples were removed from the specimens and mounted with Lakeside Cement onto glass slides.

The thickness of each sample was reduced by manual grinding with a slurry of #600 silicon carbide abrasive on plate glass. Grinding was completed in two steps. The first grinding was stopped when the sample's thickness was reduced by approximately one-half. This eliminated micro-flake scars created by the saw blade during the cutting process. The slides were then reheated, which liquefied the Lakeside Cement, and the samples inverted. The newly exposed surfaces were then ground until proper thickness was attained.

Correct thin section thickness was determined by the "touch" technique. A finger was rubbed across each slide, onto the sample, and the difference (sample thickness) was "felt." The second technique used to arrive at proper thin section thickness is the "transparency" test where each microslide was held up to a strong source of light and the translucency of the samples was observed. Samples were reduced enough when they readily allowed the passage of light. A coverslip was affixed over each sample when grinding was completed. The slides and paperwork are on file under our job number OOL-326.

The hydration bands were measured with a strainfree 40-power objective and a Bausch and Lomb 12.5-power filar micrometer eyepiece mounted on a Nikon Labophot-Pol polarizing microscope. Hydration band measurements have a range of +/- 0.2 microns due to normal equipment limitations.

Amanda Tews
May 25, 2007
Page 2

Six measurements were taken at several locations along the edges of each thin section, and the mean of the measurements was calculated and listed on the enclosed data page.

Both specimens were marked by measurable hydration bands that were thin. This suggests that they were knapped relatively recently, perhaps within the past 200 to 400 years.

Don't hesitate to contact me if you have questions regarding this hydration work.

Cordially,

Thomas M. Origer
Director

Submitter: A. Tews - SWCA Environmental Consultants May 2007

	Lab#	Sample#	Description	Unit	Depth	Remarks	Measurements	Mean	Source
26EU1548									
		26EU1548FS0	Debitage			none	1.3 1.3 1.4 1.4 1.4 1.4	1.4	
26EU2126									
	2	26EU2126FS1	Biface			none	1.6 1.6 1.6 1.6 1.6 1.7	1.6	

Lab Accession No: OOL-326 Technician: Thomas M. Origer

Origer's Obsidian Laboratory
P.O. Box 1531
Rohnert Park, California 94927
(707) 584-8200, Fax 584-8300
origer@origer.com

August 21, 2007

Dr. Michael D. Cannon
Cultural Resources Principal Investigator
SWCA Environmental Consultants, Inc.
257 East 200 South, Suite 200
Salt Lake City, Utah 84111

Dear Dr. Cannon:

I write to report the results of obsidian hydration band analysis of five specimens from four sites in the Little Boulder Basin, Eureka County, Nevada. This work was completed following source determination by Richard Hughes, Geochemical Research Laboratory, who forwarded the specimens to us on your behalf.

Procedures used by our lab for preparation of thin sections and measurement of hydration bands are described here. The specimens were examined to find two or more surfaces that would yield edges that would be perpendicular to the microslides when preparation of the thin sections was done. Generally, two parallel cuts were made at an appropriate location along the edge of each specimen with a four-inch diameter circular saw blade mounted on a lapidary trimsaw. The cuts resulted in the isolation of a small sample with a thickness of about one millimeter. The samples were removed from the specimens and mounted with Lakeside Cement onto glass slides.

The thickness of each sample was reduced by manual grinding with a slurry of #600 silicon carbide abrasive on plate glass. Grinding was completed in two steps. The first grinding was stopped when the sample's thickness was reduced by approximately one-half. This eliminated micro-flake scars created by the saw blade during the cutting process. The slides were then reheated, which liquefied the Lakeside Cement, and the samples inverted. The newly exposed surfaces were then ground until proper thickness was attained.

Correct thin section thickness was determined by the "touch" technique. A finger was rubbed across each slide, onto the sample, and the difference (sample thickness) was "felt." The second technique used to arrive at proper thin section thickness is the "transparency" test where each microslide was held up to a strong source of light and the translucency of the samples was observed. Samples were reduced enough when they readily allowed the passage of light. A coverslip was affixed over each sample when grinding was completed. The slides and paperwork are on file under our job number OOL-336.

The hydration bands were measured with a strainfree 40-power objective and a Bausch and Lomb 12.5-power filar micrometer eyepiece mounted on a Nikon Labophot-Pol polarizing microscope. Hydration band measurements have a range of +/- 0.2 microns due to normal equipment limitations. Six measurements were taken at several locations along the edge of each thin section, and the mean of the measurements was calculated and listed on the enclosed data page.

All five specimens were marked by weathered surfaces, and two exhibited no visible hydration bands (NVB). Despite the weathering, three yielded hydration band measurements. The measurement from the specimen from site 26EU1533 was obtained from one surface while the opposing surface was marked by diffuse hydration (DH). Diffuse hydration lacks a distinct interface between the hydration and non-hydrated portions of the glass; therefore, it is not accurately measurable.

Don't hesitate to contact me if you have questions regarding this hydration work.

Cordially,

Thomas M. Origer
Director

Submitter: M. Cannon - SWCA Environmental Consultants, Inc. August 2007

	Lab#	Sample#	Description	Unit	Depth	Remarks	Measurements	Mean	Source
26EU1533									
	1.1	26EU1533-11-1	Debitage			Band 1; None	7.6 7.6 7.8 7.8 7.8 7.9	7.8	
	1.2	26EU1533-11-1	Debitage			Band 2; Weathered		DH	
26EU1539									
	2	26EU1539-159-1	Biface Fragment			Weathered		NVB	
26EU1548									
	3	26EU1548-165-1	Debitage			Weathered		NVB	
26EU2064									
	4	26EU2064-77-1	Debitage			Weathered	1.3 1.3 1.3 1.3 1.3 1.4	1.3	
	5	26EU2064-77-2	Debitage			Weathered	1.6 1.6 1.6 1.6 1.7 1.7	1.6	

Lab Accession No: OOL-336 Technician: Thomas M. Origer

Origer's Obsidian Laboratory
P.O. Box 1531
Rohnert Park, California 94927
(707) 584-8200, Fax 584-8300
origer@origer.com

September 28, 2007

Dr. Michael D. Cannon
SWCA Environmental Consultants, Inc.
257 East 200 South, Suite 200
Salt Lake City, Utah 84111

Dear Michael:

I write to report the results of hydration band analysis of five obsidian specimens from two sites within the Barrick Goldstrike Mine project area. The sites include 26EU2064 (n=1) and 26EU2126 (n=4). This work was completed following source determinations by Richard E. Hughes, Geochemical Research Laboratory, who forwarded the specimens to us on your behalf.

Procedures used by our obsidian lab for preparation of thin sections and measurement of hydration bands are described here. The specimens were examined to find two or more surfaces that would yield edges that would be perpendicular to the slide when preparation of the thin sections was done. Two parallel cuts were made at an appropriate location along the edge of each specimen with a four-inch diameter circular saw blade mounted on a lapidary trimsaw. The cuts resulted in the isolation of small samples with a thickness of about one millimeter. The samples were removed from the specimens and mounted with Lakeside Cement onto glass slides.

The thickness of each sample was reduced by manual grinding with a water-based slurry of #600 silicon carbide abrasive on plate glass. Grinding was completed in two steps. The first grinding was stopped when a sample's thickness was reduced by approximately one-half. This eliminated micro-flake scars created by the saw blade during the cutting process. The slides were then reheated, which liquefied the Lakeside Cement, and the samples inverted. The newly exposed surfaces were then ground until proper thickness was attained.

Correct thin section thickness was determined by the "touch" technique. A finger was rubbed across each slide, onto the samples, and the difference (sample thickness) was "felt." The second technique used to arrive at proper thin section thickness is the "transparency" test where each slide was held up to a strong source of light and the translucency of the samples was observed. The samples were reduced enough when they readily allowed the passage of light. A coverslip was affixed over each sample when grinding was completed. The completed slides are curated under our file number OOL-340.

The hydration band was measured with a strain free 60-power objective and a Bausch and Lomb 12.5-power filar micrometer eyepiece mounted on a Nikon Labophot-Pol petrographic microscope. Hydration measurements have a range of +/- 0.2 due to standard equipment limitations. Six measurements were taken at several locations along the edge of the thin section, and the mean of the measurements was calculated and listed on the enclosed data page.

Four of the five specimens yielded hydration band measurements; however, one specimen (26EU2126-1078-1) was marked by diffuse hydration (DH). The specimen's surfaces were weathered, and the weathering process probably caused the hydration to be diffuse.

Don't hesitate to contact me if you have questions regarding this hydration work.

Sincerely,

Thomas M. Origer
Director

Submitter: M. Cannon - SWCA Environmental Consultants, Inc. September 2007

	Lab#	Sample#	Description	Unit	Depth	Remarks	Measurements	Mean	Source
26EU2064									
		26EU2064-401-1	Debitage			None	1.0 1.0 1.1 1.1 1.1 1.1	1.	
26EU2126									
	2	26EU2126-1070-1	Debitage			None	1.2 1.2 1.2 1.2 1.2 1.2	1.2	
	3	26EU2126-1070-2	Debitage			None	1.8 1.8 1.8 1.8 1.9 1.9	1.8	
	4	26EU2126-1070-3	Debitage			Weathered	1.7 1.8 1.8 1.8 1.9 1.9	1.8	
	5	26EU2126-1078-1	Debitage			Weathered		DH	

Lab Accession No: OOL-340 Technician: Thomas M. Origer

Origer's Obsidian Laboratory
P.O. Box 1531
Rohnert Park, California 94927
(707) 584-8200, Fax 584-8300
origer@origer.com

October 19, 2007

Dr. Michael D. Cannon
SWCA Environmental Consultants, Inc.
257 East 200 South, Suite 200
Salt Lake City, Utah 84111

Dear Michael:

I write to report the results of hydration band analysis of one obsidian specimen from one site, 26EU2126. This work was completed following source determination by Richard E. Hughes, Geochemical Research Laboratory, who forwarded the specimen to us on your behalf.

Procedures used by our lab for preparation of thin sections and measurement of hydration bands are described here. The specimen was examined to find two or more surfaces that would yield edges that would be perpendicular to the microslide when preparation of the thin section was done. Two parallel cuts were made at an appropriate location along the edge of the specimen with a four-inch diameter circular saw blade mounted on a lapidary trimsaw. The cuts resulted in the isolation of a small sample with a thickness of about one millimeter. The sample was removed from the specimen and mounted with Lakeside Cement onto a glass slide.

The thickness of the sample was reduced by manual grinding with a slurry of #600 silicon carbide abrasive on plate glass. Grinding was completed in two steps. The first grinding was stopped when the sample's thickness was reduced by approximately one-half. This eliminated micro-flake scars created by the saw blade during the cutting process. The slide was then reheated, which liquefied the Lakeside Cement, and the sample was inverted. The newly exposed surface was then ground until proper thickness was attained.

Correct thin section thickness was determined by the "touch" technique. A finger was rubbed across the slide, onto the sample, and the difference (sample thickness) was "felt." The second technique used to arrive at proper thin section thickness is the "transparency" test where the microslide was held up to a strong source of light and the translucency of the sample was observed. The sample was reduced enough when it readily allowed the passage of light. A coverslip was affixed over the sample when grinding was completed. The slide and paperwork are on file under our job number OOL-345.

The hydration band was measured with a strain free 60-power objective and a Bausch and Lomb 12.5-power filar micrometer eyepiece mounted on a Nikon Labophot-Pol petrographic microscope. The hydration measurements have a range of +/- 0.2 due to standard equipment limitations.

Six measurements were taken at several locations along the edge of the thin section, and the mean of the measurements was calculated and listed on the enclosed data page.

Don't hesitate to contact me if you have questions regarding this hydration work.

Sincerely,

Thomas M. Origer
Director

Submitter: M. Cannon - SWCA Environmental Consultants — September 2007

	Lab#	Sample#	Description	Unit	Depth	Remarks	Measurements	Mean	Source
26EU2126									
		26EU2126-1161-1	Debitage			None	3.1 3.1 3.2 3.2 3.2 3.3	3.2	

Lab Accession No: OOL-345 — Technician: Thomas M. Origer

ORIGER'S OBSIDIAN LABORATORY
P.O. BOX 1531
ROHNERT PARK, CALIFORNIA 94927
(707) 584-8200, FAX 584-8300
ORIGER@ORIGER.COM

November 26, 2007

Dr. Michael D. Cannon
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, Utah 84111

Dear Michael:

I write to report the results of obsidian hydration band analysis of two specimens from site 26EU2126, Little Boulder Creek Basin, Nevada. This work was completed following source determination by Richard Hughes, Geochemical Research Laboratory, who forwarded the specimens to us on your behalf.

Procedures typically used by our lab for preparation of thin sections and measurement of hydration bands are described here. Specimens are examined to find two or more surfaces that will yield edges that will be perpendicular to the microslides when preparation of each thin sections is done. Generally, two parallel cuts are made at an appropriate location along the edge of each specimen with a four-inch diameter circular saw blade mounted on a lapidary trimsaw. The cuts result in the isolation of small samples with a thickness of about one millimeter. The samples are removed from the specimens and mounted with Lakeside Cement onto etched glass micro-slides.

The thickness of each sample was reduced by manual grinding with a slurry of #600 silicon carbide abrasive on plate glass. Grinding was completed in two steps. The first grinding is stopped when each sample's thickness is reduced by approximately one-half. This eliminates micro-flake scars created by the saw blade during the cutting process. Each slide is then reheated, which liquefies the Lakeside Cement, and the samples are inverted. The newly exposed surfaces are then ground until proper thickness is attained.

Correct thin section thickness is determined by the "touch" technique. A finger is rubbed across the slide, onto the sample, and the difference (sample thickness) is "felt." The second technique used to arrive at proper thin section thickness is the "transparency" test where the micro-slide is held up to a strong source of light and the translucency of each sample is observed. The samples are reduced enough when it readily allows the passage of light. A cover glass is affixed over each sample when grinding is completed. The slides and paperwork are on file under File No. OOL-352.

The hydration bands are measured with a strainfree 60-power objective and a Bausch and Lomb 12.5-power filar micrometer eyepiece mounted on a Nikon Labophot-Pol polarizing microscope. Hydration band measurements have a range of +/- 0.2 microns due to normal equipment limitations. Six measurements are taken at several locations along the edge of each thin section, and the mean of the measurements is calculated and listed on the enclosed data page.

The specimens were marked by easily discerned and measured hydration bands of equal thickness at 1.3 microns.

Please don't hesitate to contact me if you have questions regarding this hydration work.

Sincerely,

Thomas M. Origer
Director

Submitter: M. Cannon - SWCA Environmental Consultants

November 2007

	Lab#	Sample#	Description	Unit	Depth	Remarks	Measurements	Mean	Source
26EU2126									
	1	26EU2126-1173-1	Debitage			None	1.2 1.3 1.3 1.3 1.4 1.4	1.3	
	2	26EU2126-1174-1	Debitage			None	1.2 1.2 1.2 1.3 1.3 1.4	1.3	

Lab Accession No: OOL-352

Technician: Thomas M. Origer

ORIGER'S OBSIDIAN LABORATORY

P.O. BOX 1531
ROHNERT PARK, CALIFORNIA 94927
(707) 584-8200, FAX 584-8300
ORIGER@ORIGER.COM

December 3, 2007

Dr. Michael D. Cannon
SWCA Environmental Consultants
257 East 200 South, Suite 200
Salt Lake City, Utah 84111

Dear Michael:

I write to report the results of obsidian hydration band analysis of one specimen from site 26EU1568, Eureka County, Nevada. This work was completed following source determination by Richard Hughes, Geochemical Research Laboratory, who forwarded the specimen to us on your behalf.

Procedures typically used by our lab for preparation of thin sections and measurement of hydration bands are described here. Specimens are examined to find two or more surfaces that will yield edges that will be perpendicular to the microslides when preparation of each thin section is done. Generally, two parallel cuts are made at an appropriate location along the edge of each specimen with a four-inch diameter circular saw blade mounted on a lapidary trimsaw. The cuts result in the isolation of small samples with a thickness of about one millimeter. The samples are removed from the specimens and mounted with Lakeside Cement onto etched glass micro-slides.

The thickness of each sample was reduced by manual grinding with a slurry of #600 silicon carbide abrasive on plate glass. Grinding was completed in two steps. The first grinding is stopped when each sample's thickness is reduced by approximately one-half. This eliminates micro-flake scars created by the saw blade during the cutting process. Each slide is then reheated, which liquefies the Lakeside Cement, and the samples are inverted. The newly exposed surfaces are then ground until proper thickness is attained.

Correct thin section thickness is determined by the "touch" technique. A finger is rubbed across the slide, onto the sample, and the difference (sample thickness) is "felt." The second technique used to arrive at proper thin section thickness is the "transparency" test where the micro-slide is held up to a strong source of light and the translucency of each sample is observed. The samples are reduced enough when it readily allows the passage of light. A cover glass is affixed over each sample when grinding is completed. The slides and paperwork are on file under File No. OOL-353.

The hydration bands are measured with a strainfree 60-power objective and a Bausch and Lomb 12.5-power filar micrometer eyepiece mounted on a Nikon Labophot-Pol polarizing microscope. Hydration band measurements have a range of +/- 0.2 microns due to normal equipment limitations. Six measurements are taken at several locations along the edge of each thin section, and the mean of the measurements is calculated and listed on the enclosed data page.

The specimen was marked by a thin hydration band that measured 1.1 microns.

Please don't hesitate to contact me if you have questions regarding this hydration work.

Sincerely,

Thomas M. Origer
Director

Submitter: M. Cannon - SWCA Environmental Consultants, Inc. December 2007

	Lab#	Sample#	Description	Unit	Depth	Remarks	Measurements	Mean	Source
26EU1548									
	1	26EU1548-15-1	Debitage			None	1.0 1.0 1.		

Lab Accession No: OOL-353 Technician: Thomas M. Origer

APPENDIX G. ILLUSTRATIONS OF GROUND STONE ARTIFACTS

Illustrations by Amy Spurling and Nicci Barger.

LIST OF FIGURES

Figure G - 1. Illustration of side A of FS# 2000 from 26EU1533. G-2
Figure G - 2. Illustration of side B of FS# 2000 from 26EU1533. G-3
Figure G - 3. Illustration of profile of FS# 2000 from 26EU1533. G-4
Figure G - 4. Illustration of side A of FS# 51 from 26EU1533. G-5
Figure G - 5. Illustration of side B of FS# 51 from 26EU1533. G-6
Figure G - 6. Illustration of profile of FS# 51 from 26EU1533. G-7
Figure G - 7. Illustrations of sides A and B of FS# 107 from 26EU1539. G-8
Figure G - 8. Illustration of profile of FS# 107 from 26EU1539. G-9
Figure G - 9. Illustrations of FS# 294 from 26EU1539. G-10
Figure G - 10. Illustration of side A of FS# 1250 from 26EU1539. G-11
Figure G - 11. Illustration of side B of FS# 1250 from 26EU1539. G-12
Figure G - 12. Illustration of profile of FS# 1250 from 26EU1539. G-13
Figure G - 13. Illustrations of FS# 1251 from 26EU1539. G-14
Figure G - 14. Illustrations of FS# 1001 from 26EU2126. G-15

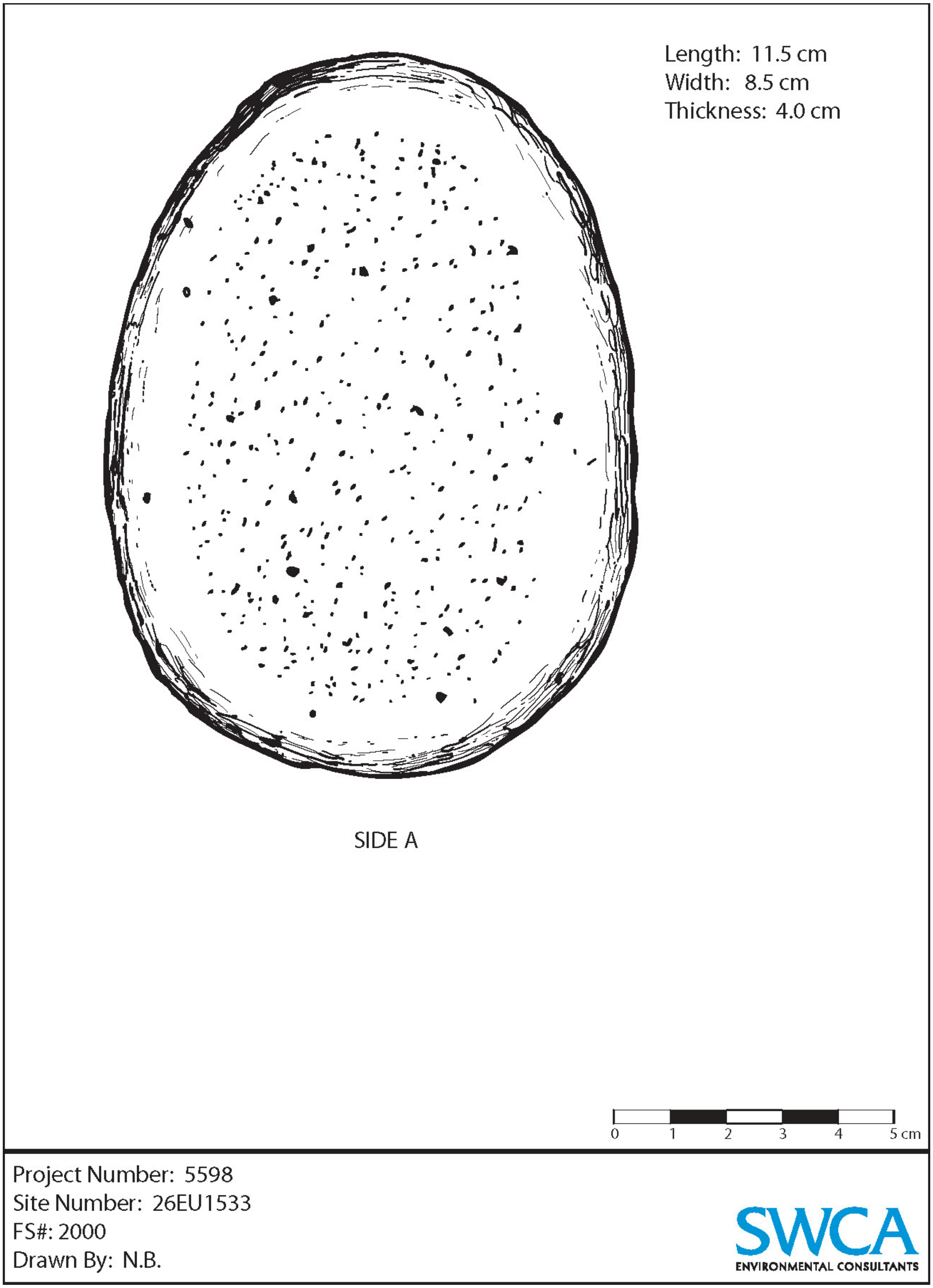


Figure G - 1. Illustration of side A of FS# 2000 from 26EU1533.

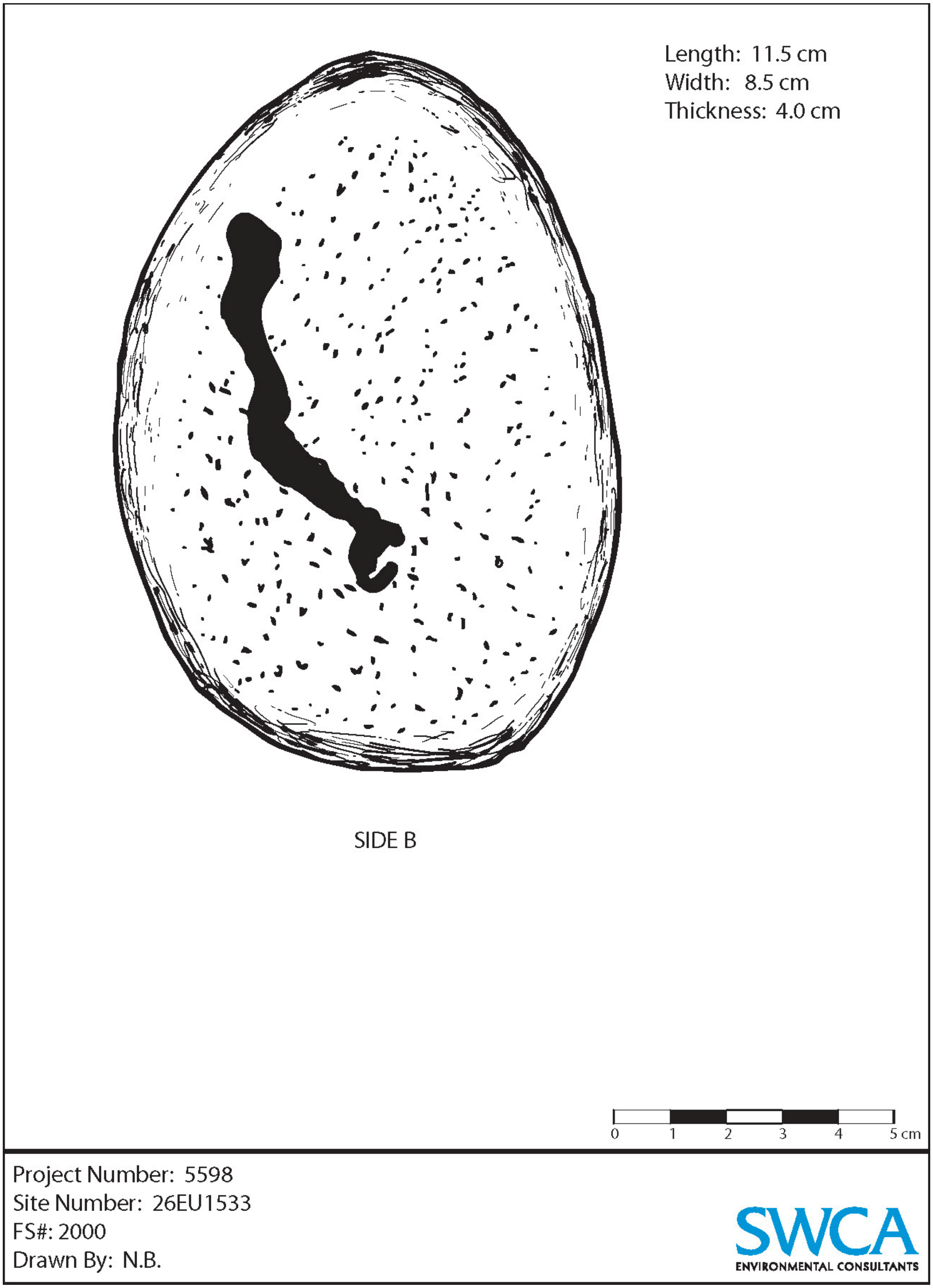


Figure G - 2. Illustration of side B of FS# 2000 from 26EU1533.

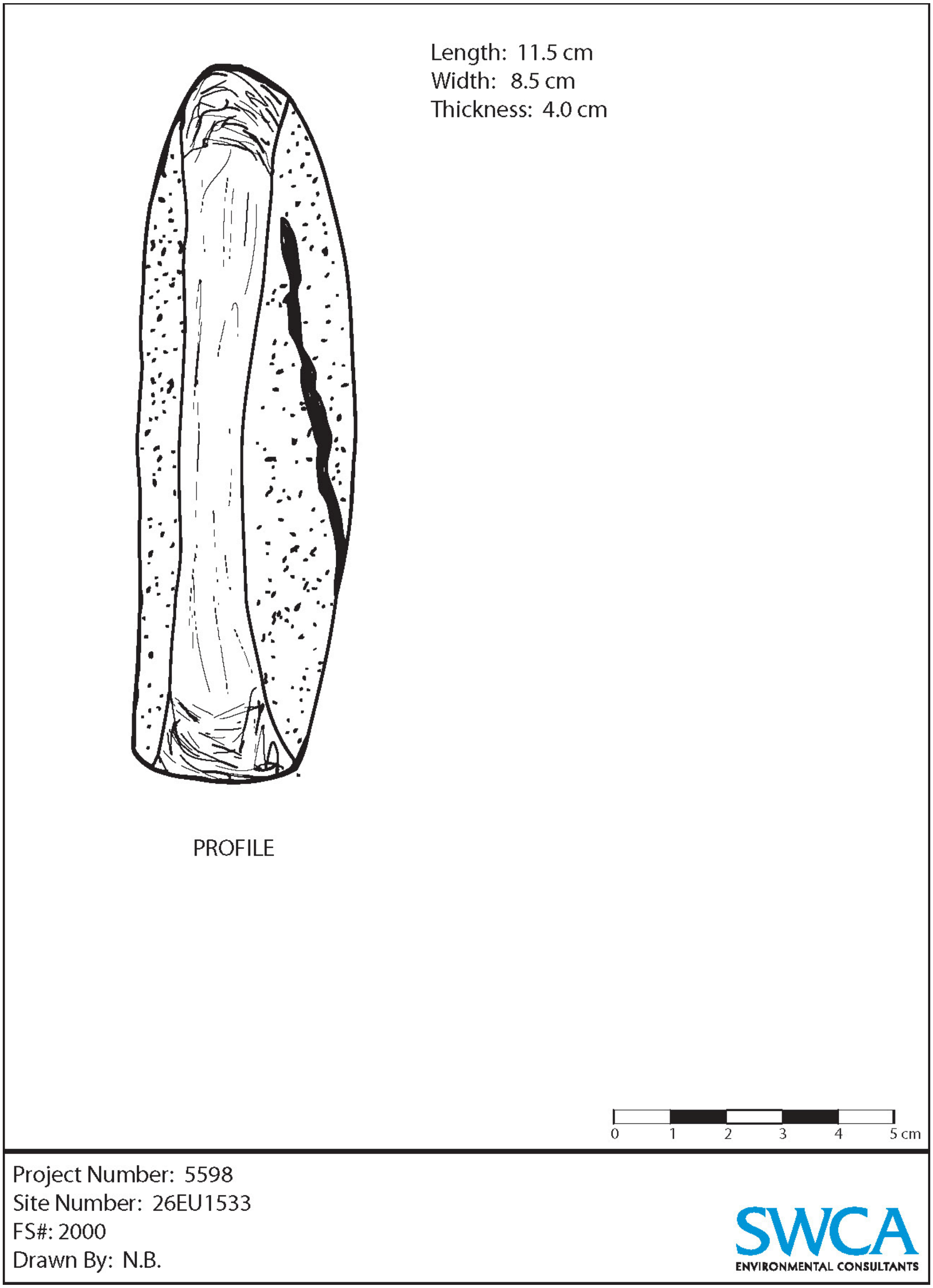


Figure G - 3. Illustration of profile of FS# 2000 from 26EU1533.

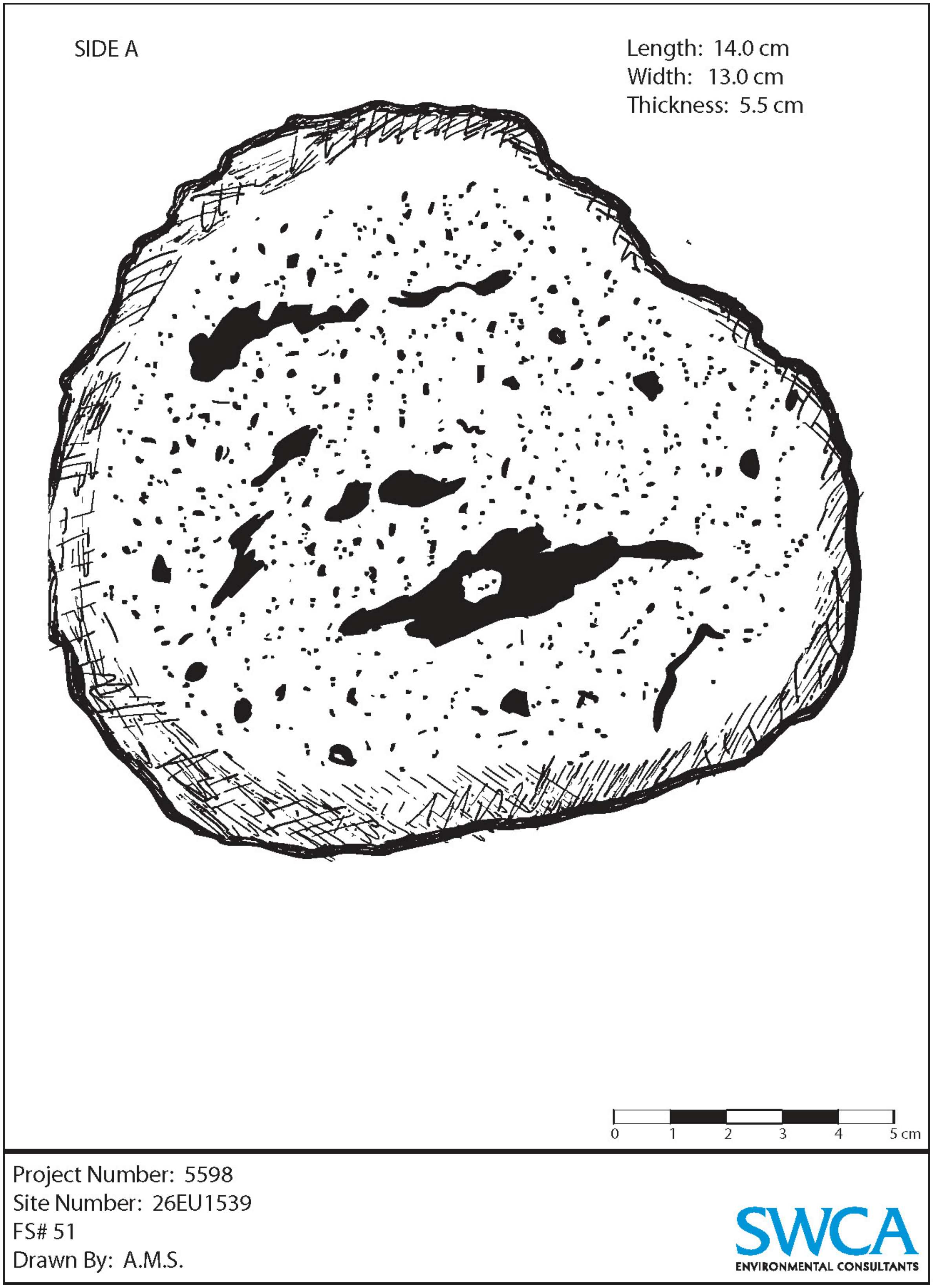


Figure G - 4. Illustration of side A of FS# 51 from 26EU1539.

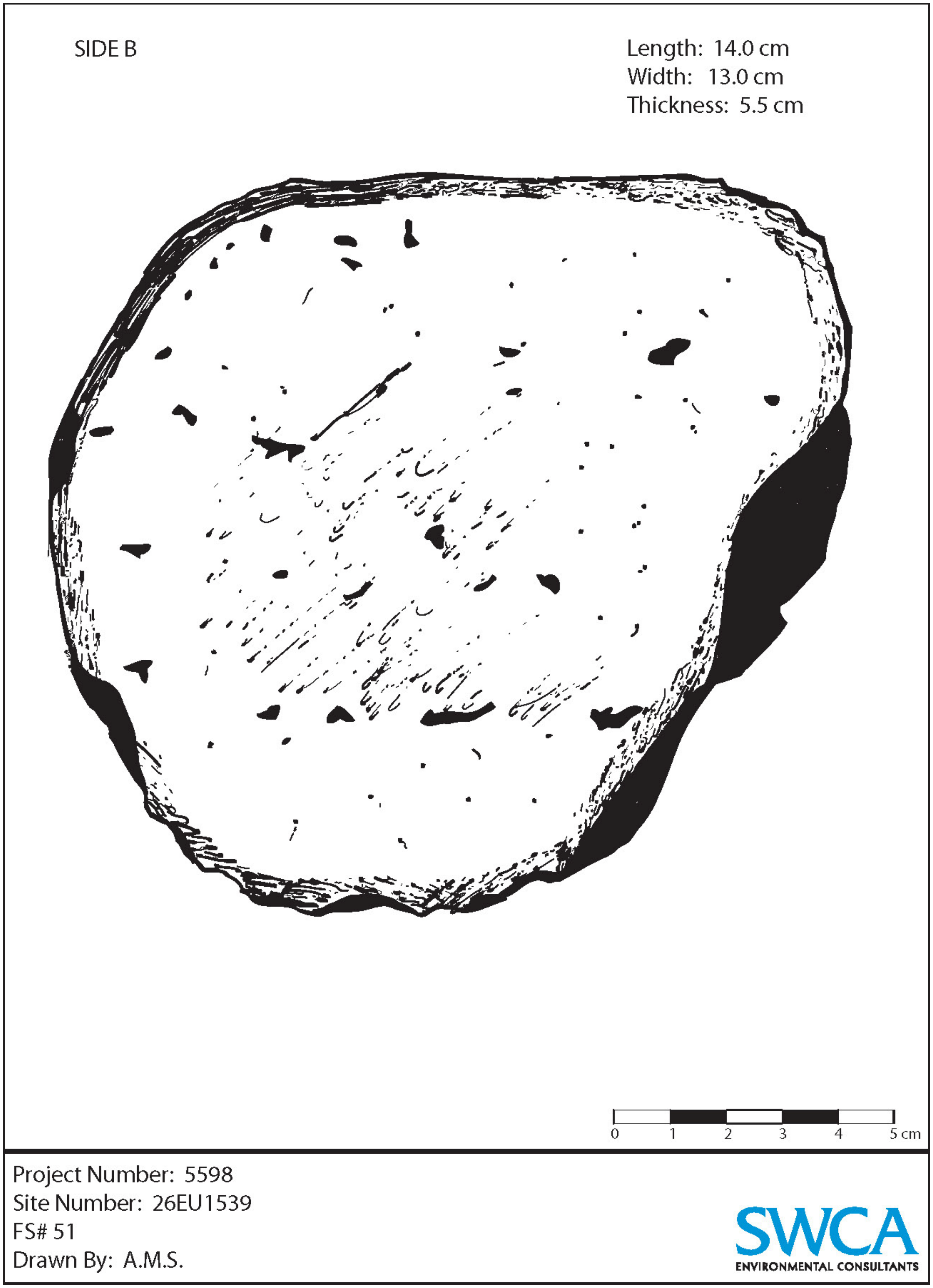
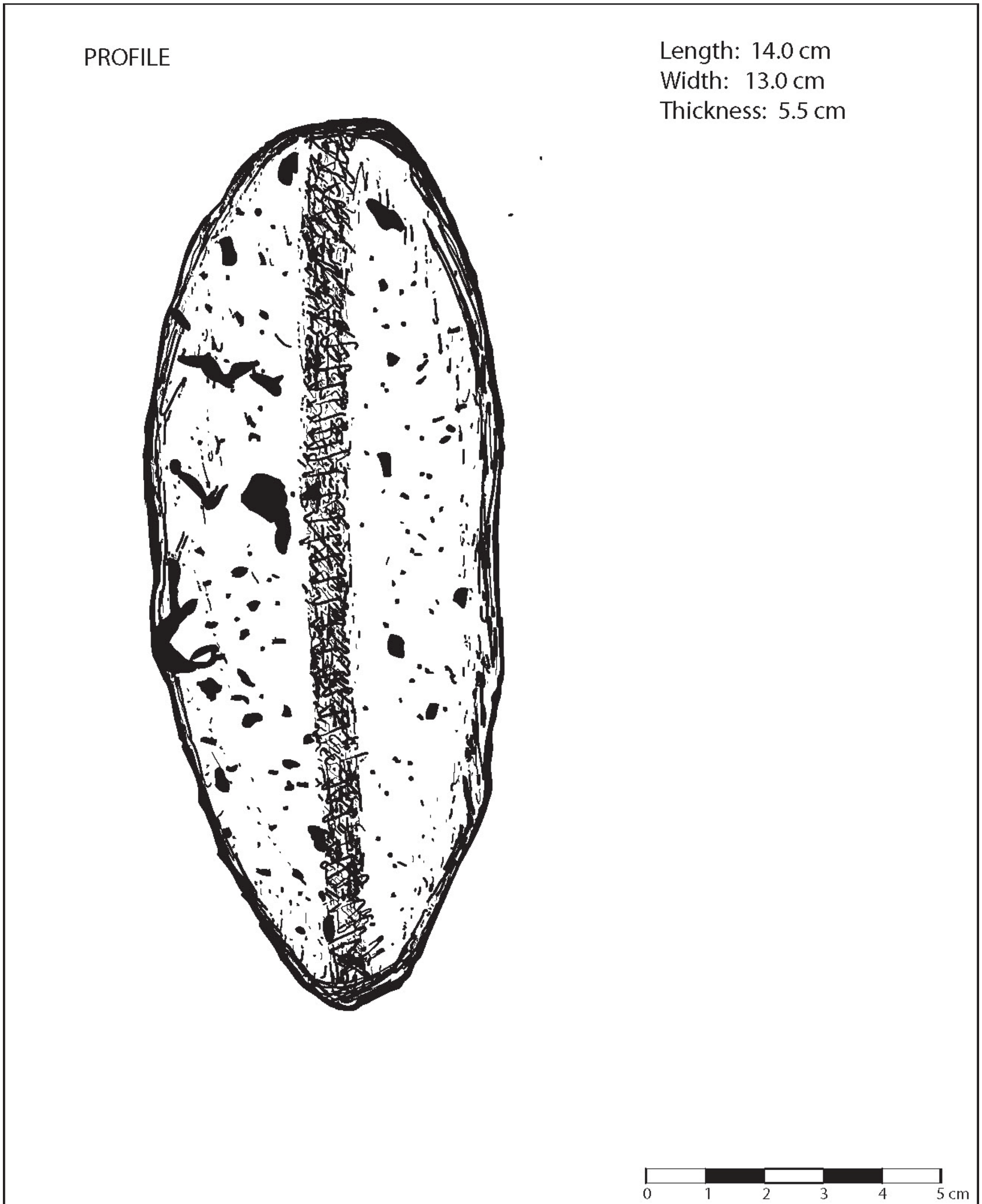


Figure G - 5. Illustration of side B of FS# 51 from 26EU1539.



Project Number: 5598
Site Number: 26EU1539
FS# 51
Drawn By: A.M.S.

Figure G - 6. Illustration of profile of FS# 51 from 26EU1539.

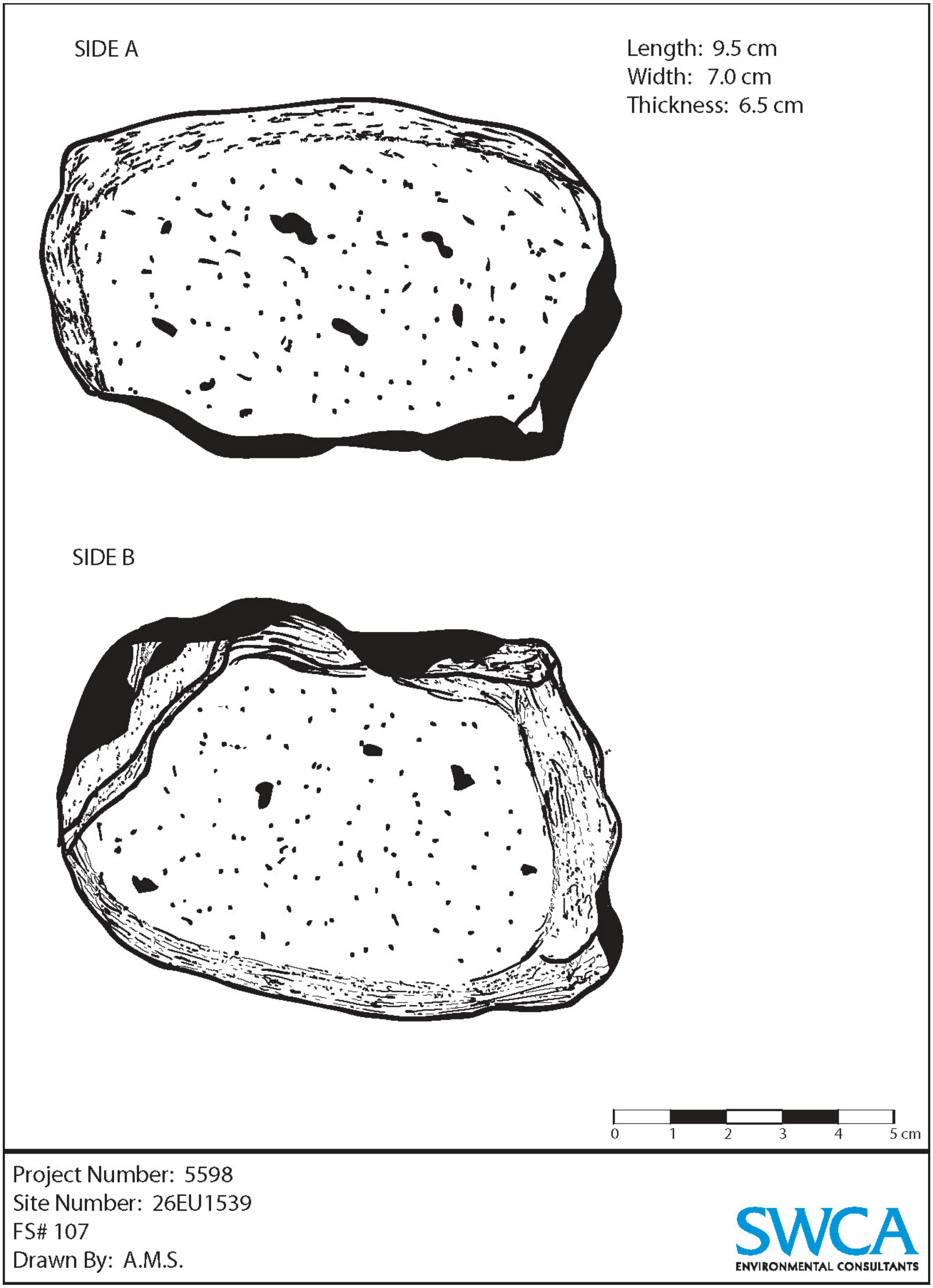


Figure G - 7. Illustrations of sides A and B of FS# 107 from 26EU1539.

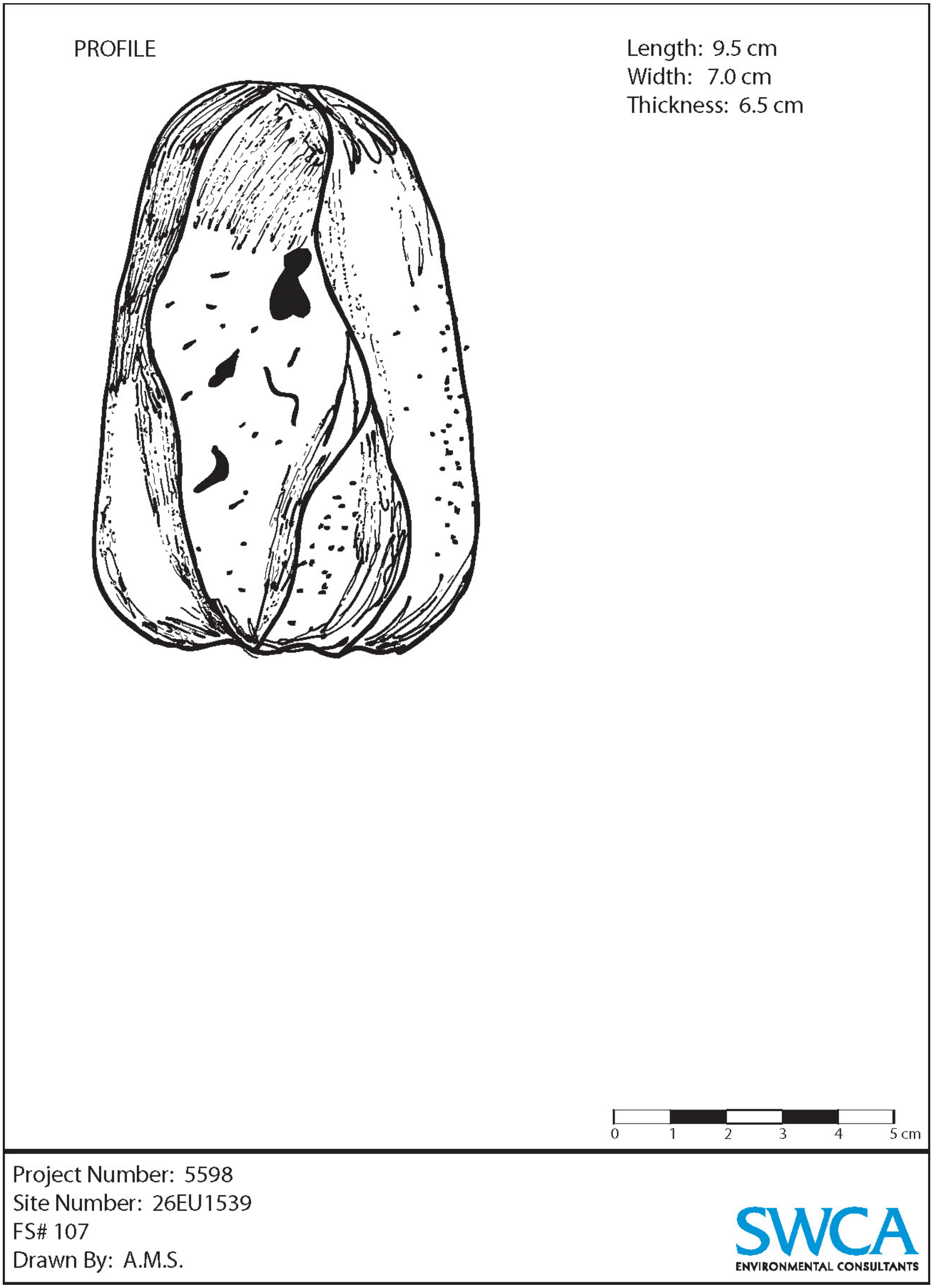


Figure G - 8. Illustration of profile of FS# 107 from 26EU1539.

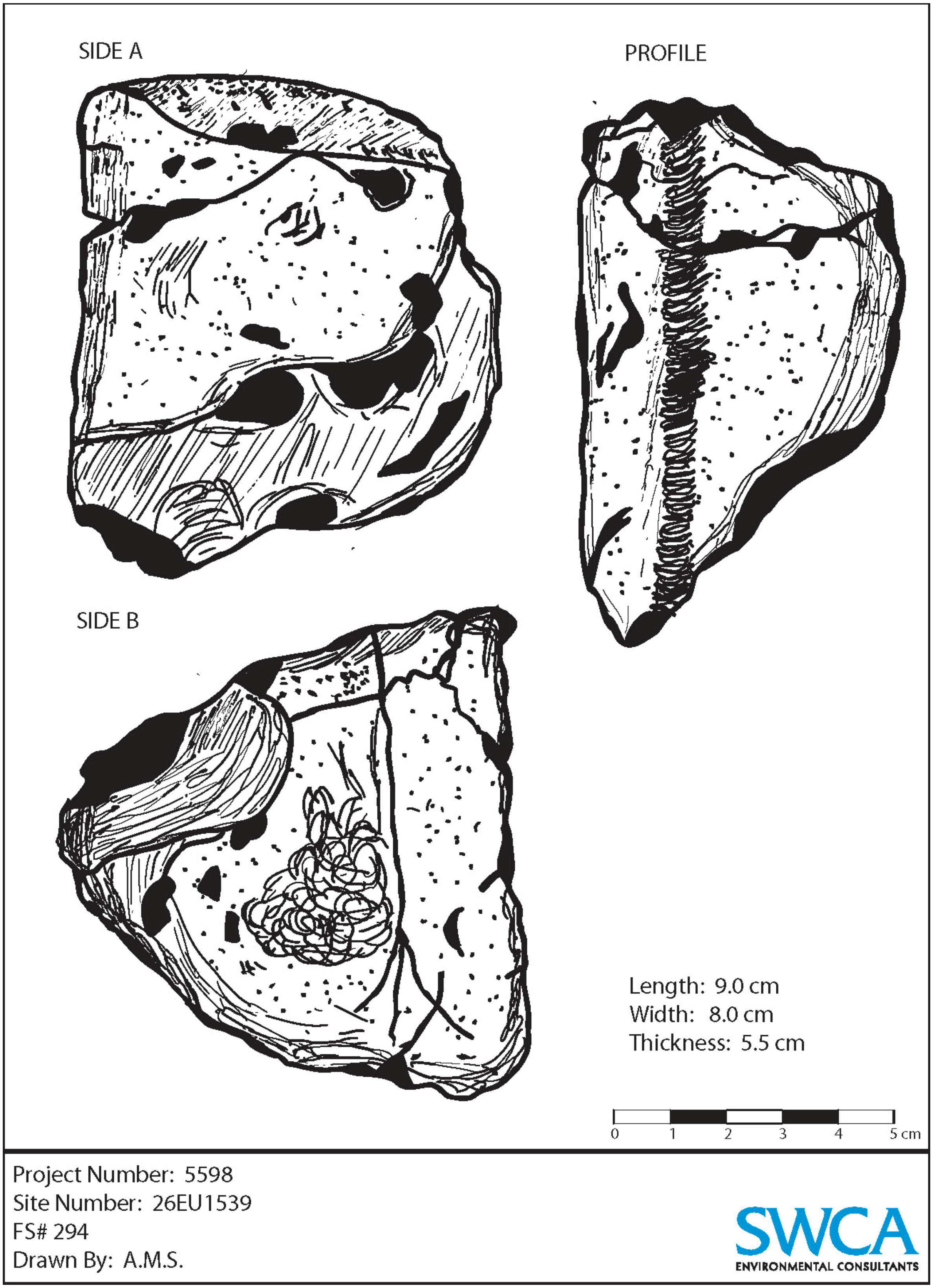


Figure G - 9. Illustrations of FS# 294 from 26EU1539.

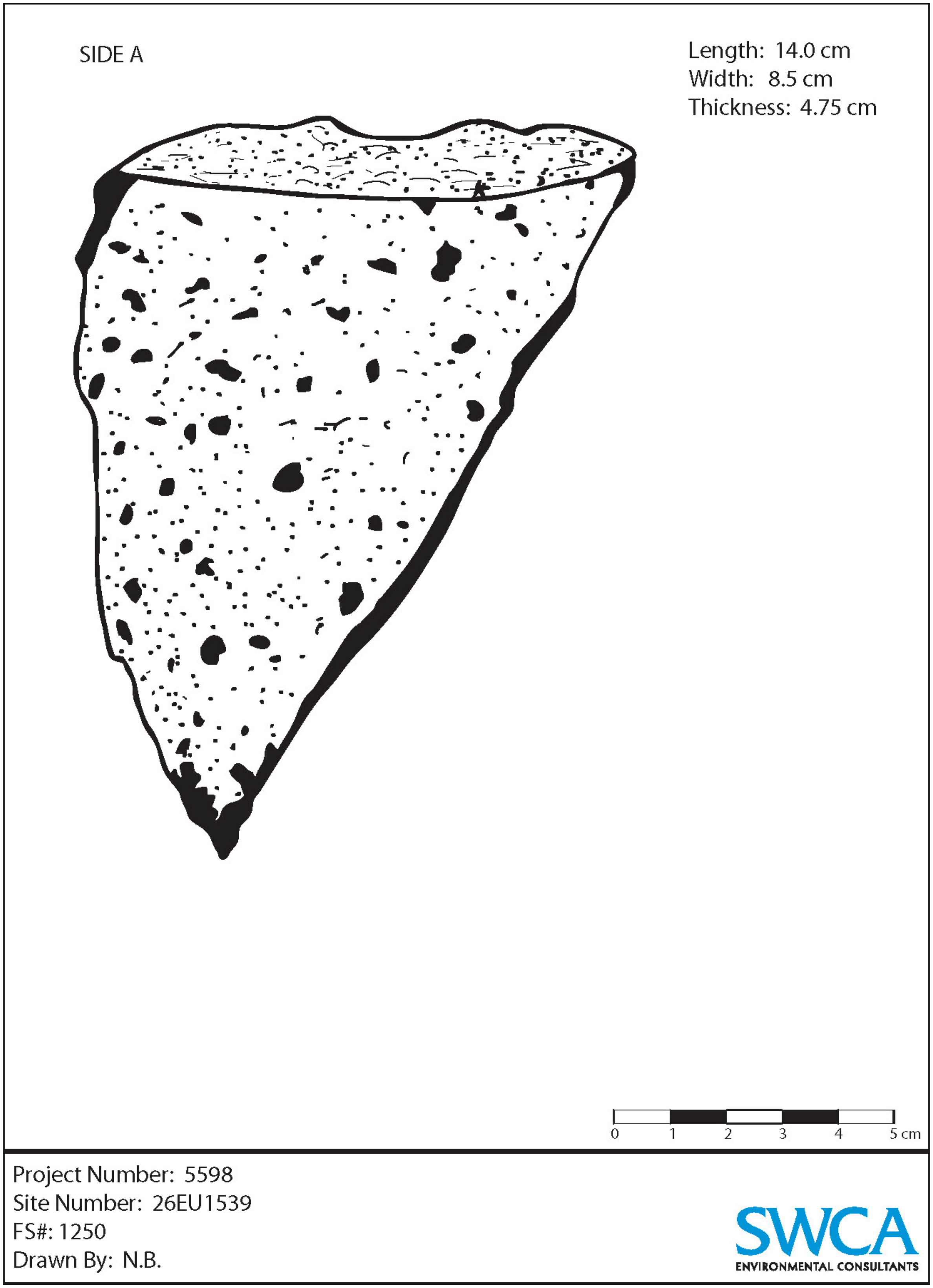


Figure G - 10. Illustration of side A of FS# 1250 from 26EU1539.

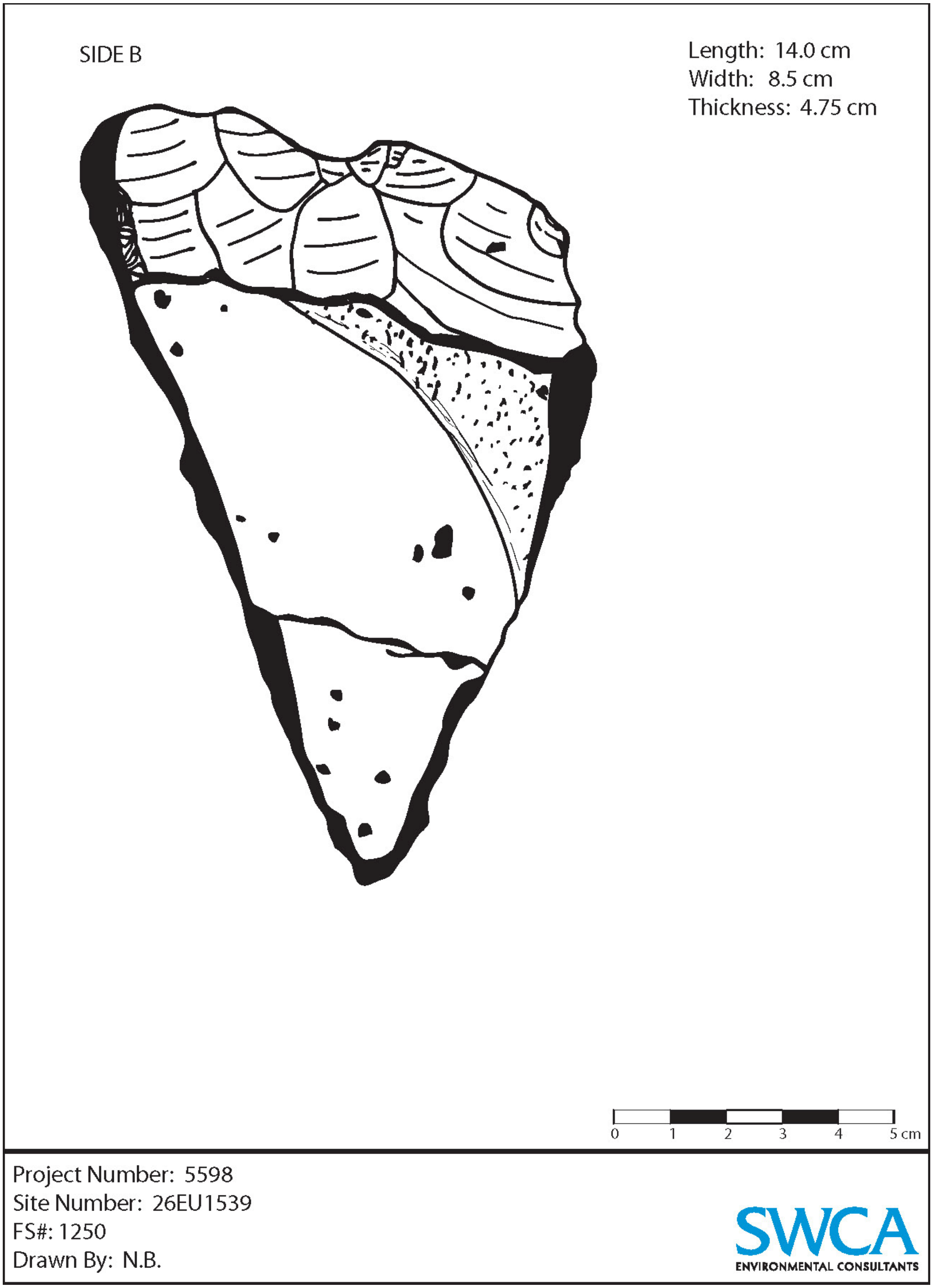


Figure G - 11. Illustration of side B of FS# 1250 from 26EU1539.

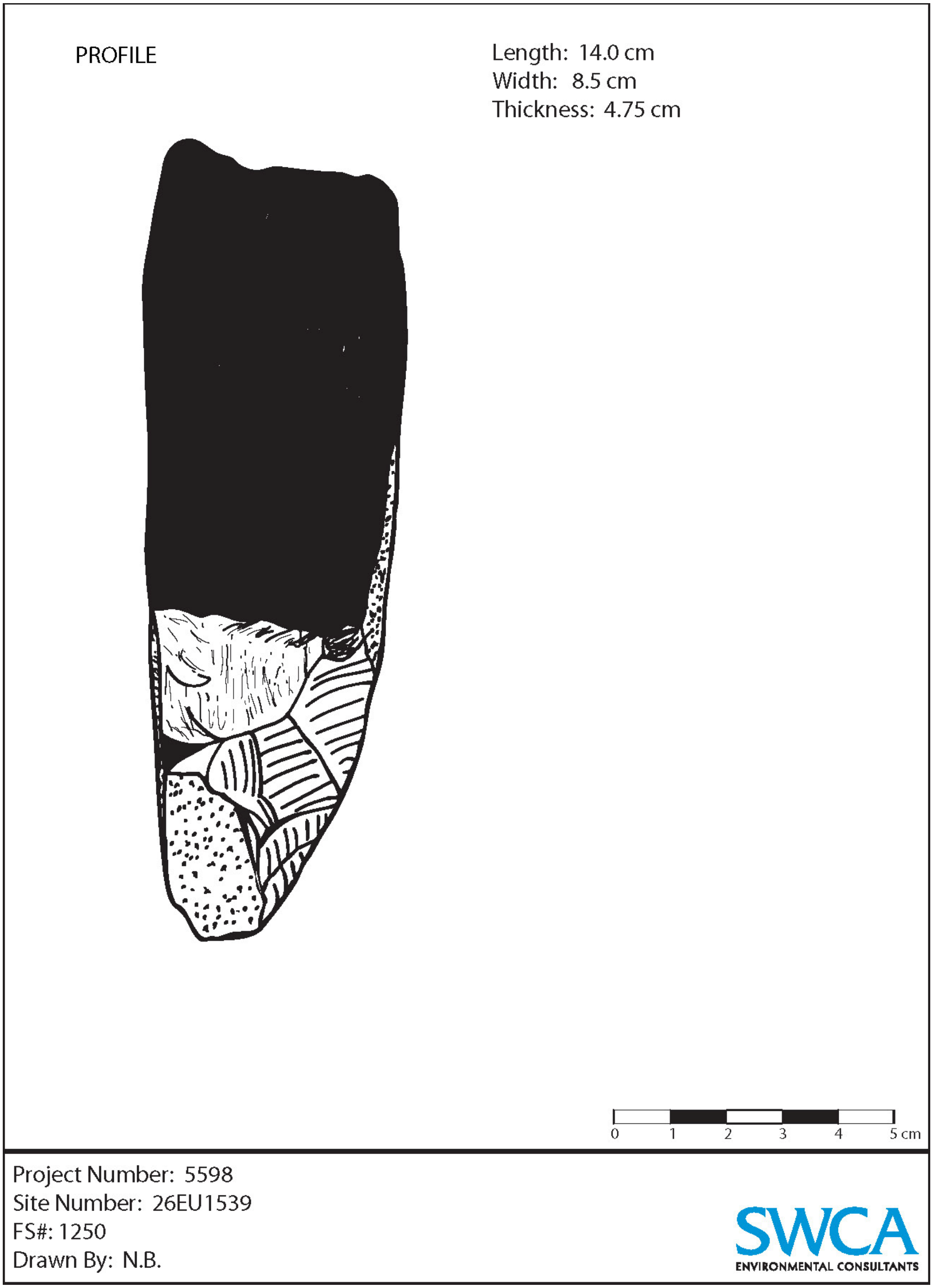
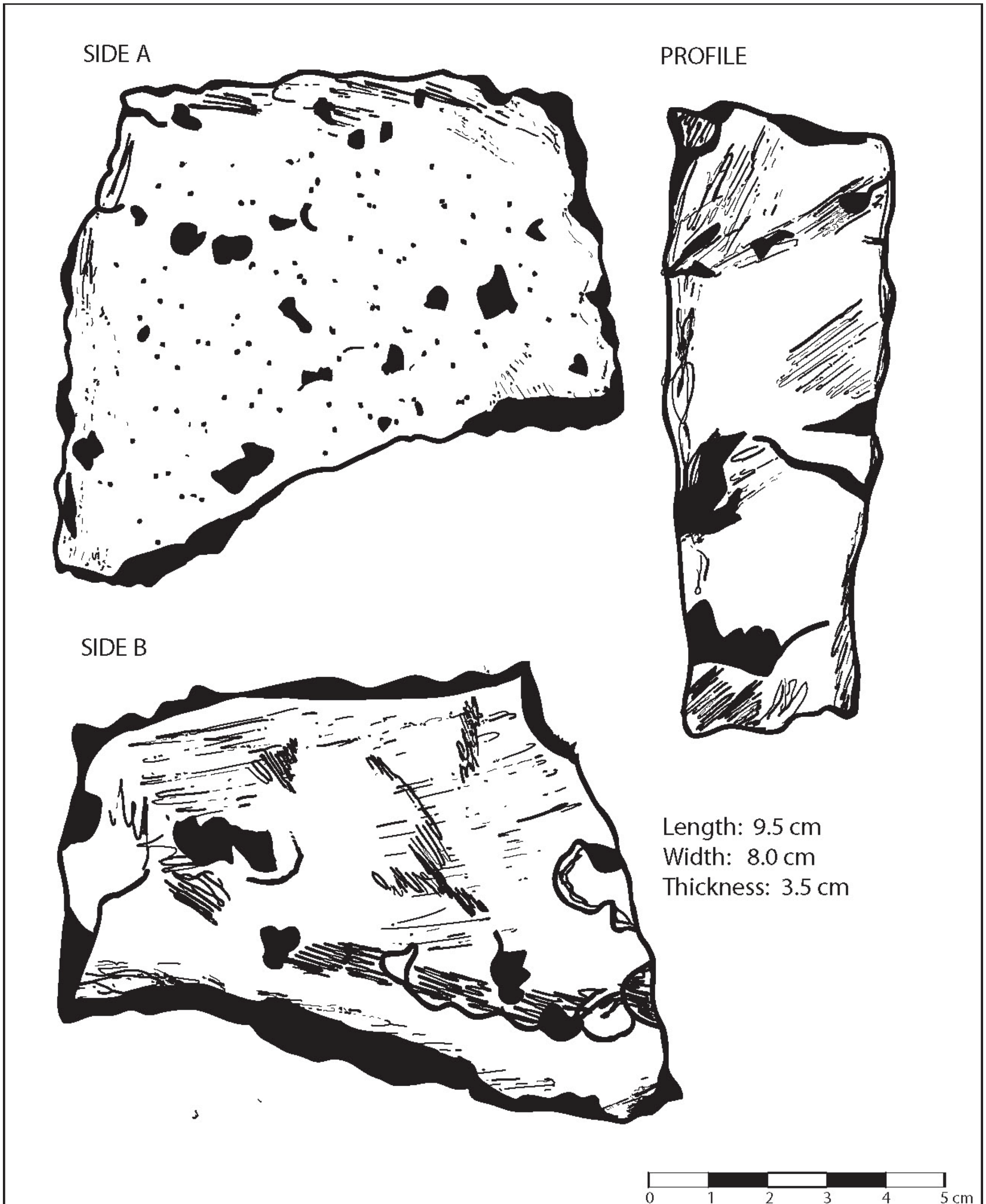


Figure G - 12. Illustration of profile of FS# 1250 from 26EU1539.



Project Number: 5598
Site Number: 26EU1539
FS# 1251
Drawn By: A.M.S.

Figure G - 13. Illustrations of FS# 1251 from 26EU1539.

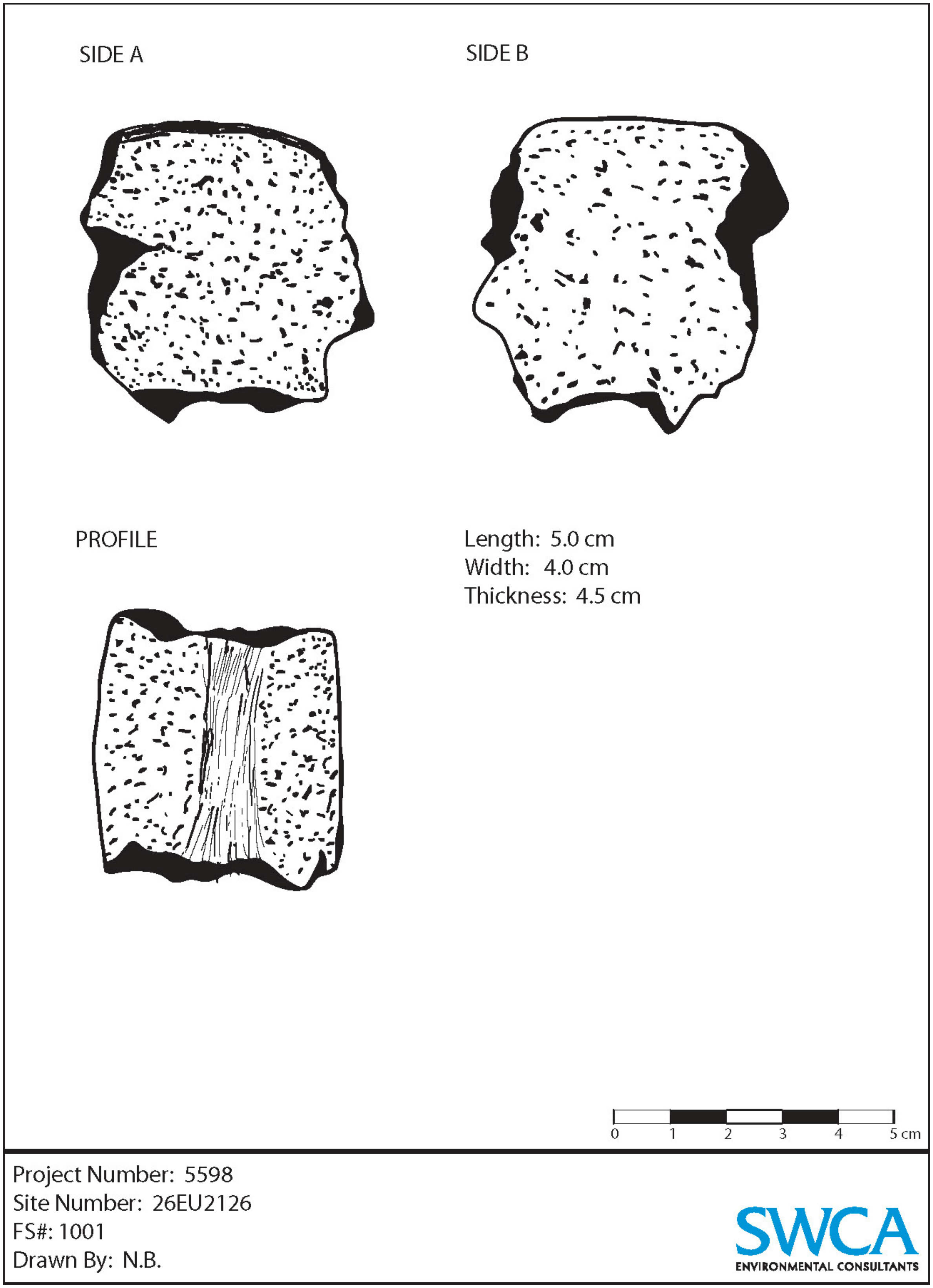


Figure G - 14. Illustrations of FS# 1001 from 26EU2126.

APPENDIX H. ILLUSTRATIONS OF CHIPPED STONE TOOLS AND CORES

Artifacts were illustrated by Victor Villagran. Six chipped stone tools (all modified flakes) were too small to be drawn: FS# 44 and FS# 159 from 26EU1539, FS# 303 and FS# 620 from 26EU2064, and FS #34-Specimen #2 and FS# 35 from 26EU2126.

LIST OF FIGURES

Figure H - 1. Illustration of projectile point from 26EU1533.. H-2
Figure H - 2. Illustration of utilized flake from 26EU1533... H-3
Figure H - 3. Illustration of projectile point from 26EU1539.. H-4
Figure H - 4. Illustrations of lithic tools from 26EU1539. .... H-5
Figure H - 5. Illustrations of bifaces from 26EU1539.. H-6
Figure H - 6. Illustrations of bifaces from 26EU1539.. H-7
Figure H - 7. Illustrations of utilized flakes from 26EU1539.. H-8
Figure H - 8. Illustrations of utilized flakes from 26EU1539.. H-9
Figure H - 9. Illustrations of cores from 26EU1539.. H-10
Figure H - 10. Illustration of lithic tool from 26EU1548. .... H-11
Figure H - 11. Illustrations of bifaces from 26EU1548... H-12
Figure H - 12. Illustrations of projectile points from 26EU2064. .... H-13
Figure H - 13. Illustrations of bifaces from 26EU2064... H-14
Figure H - 14. Illustrations of bifaces from 26EU2064... H-15
Figure H - 15. Illustrations of utilized flakes from 26EU2064.. H-16
Figure H - 16. Illustrations of utilized flakes from 26EU2064.. H-17
Figure H - 17. Illustrations of projectile points from 26EU2126. .... H-18
Figure H - 18. Illustration of lithic tool from 26EU2126. .... H-19
Figure H - 19. Illustrations of bifaces from 26EU2126... H-20
Figure H - 20. Illustrations of bifaces from 26EU2126... H-21
Figure H - 21. Illustrations of bifaces from 26EU2126... H-22
Figure H - 22. Illustrations of bifaces from 26EU2126... H-23
Figure H - 23. Illustrations of utilized flakes from 26EU2126.. H-24
Figure H - 24. Illustrations of utilized flakes from 26EU2126.. H-25
Figure H - 25. Illustrations of cores from 26EU2126.. H-26
Figure H - 26. Illustrations of cores from 26EU2126.. H-27

(a)

Illustration of projectile point recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1533: (a) Elko Corner-notched projectile point FS# 1.

SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 1. Illustration of projectile point from 26EU1533.

(a)

Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1533: (a) FS# 53.

SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 2. Illustration of utilized flake from 26EU1533.

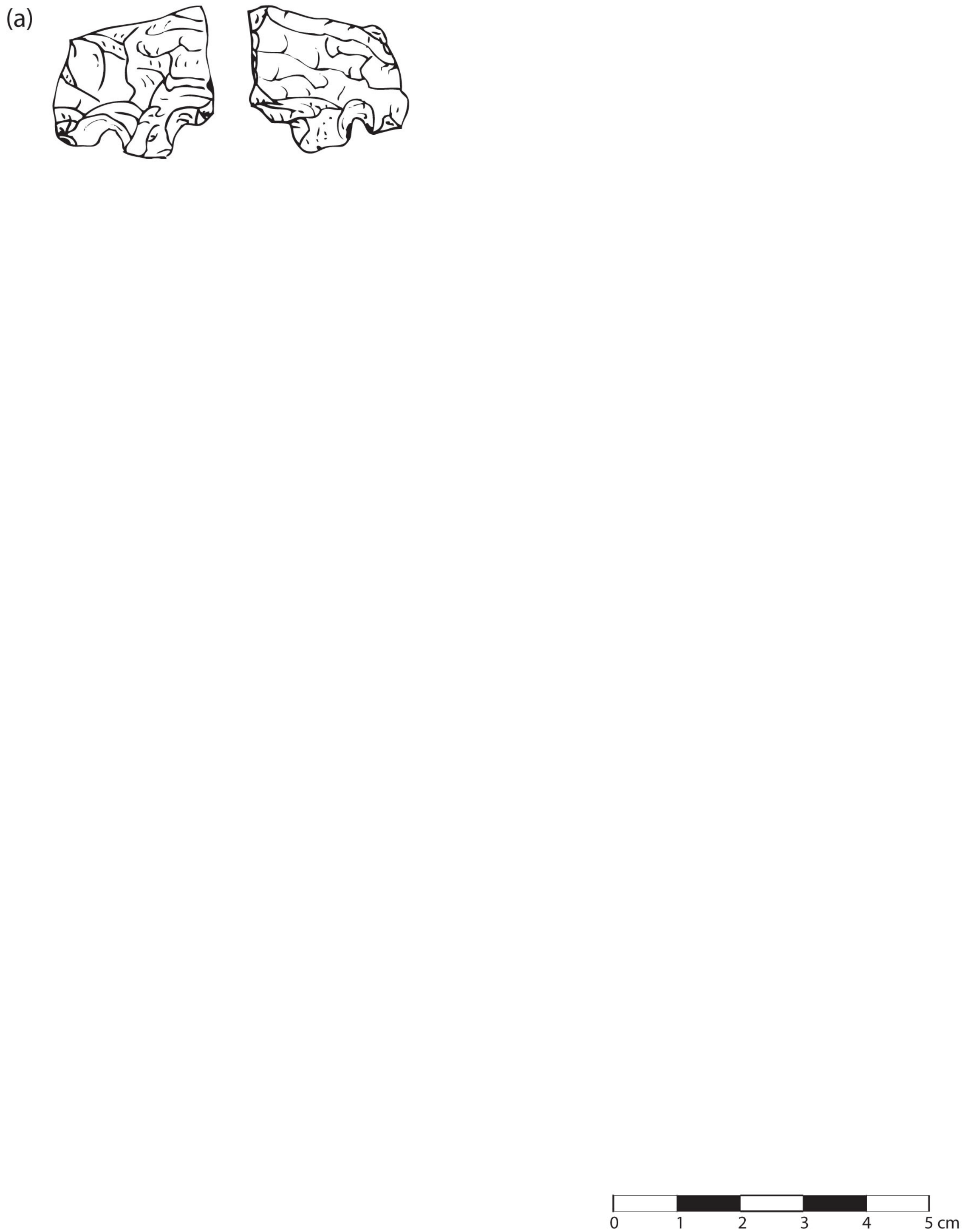
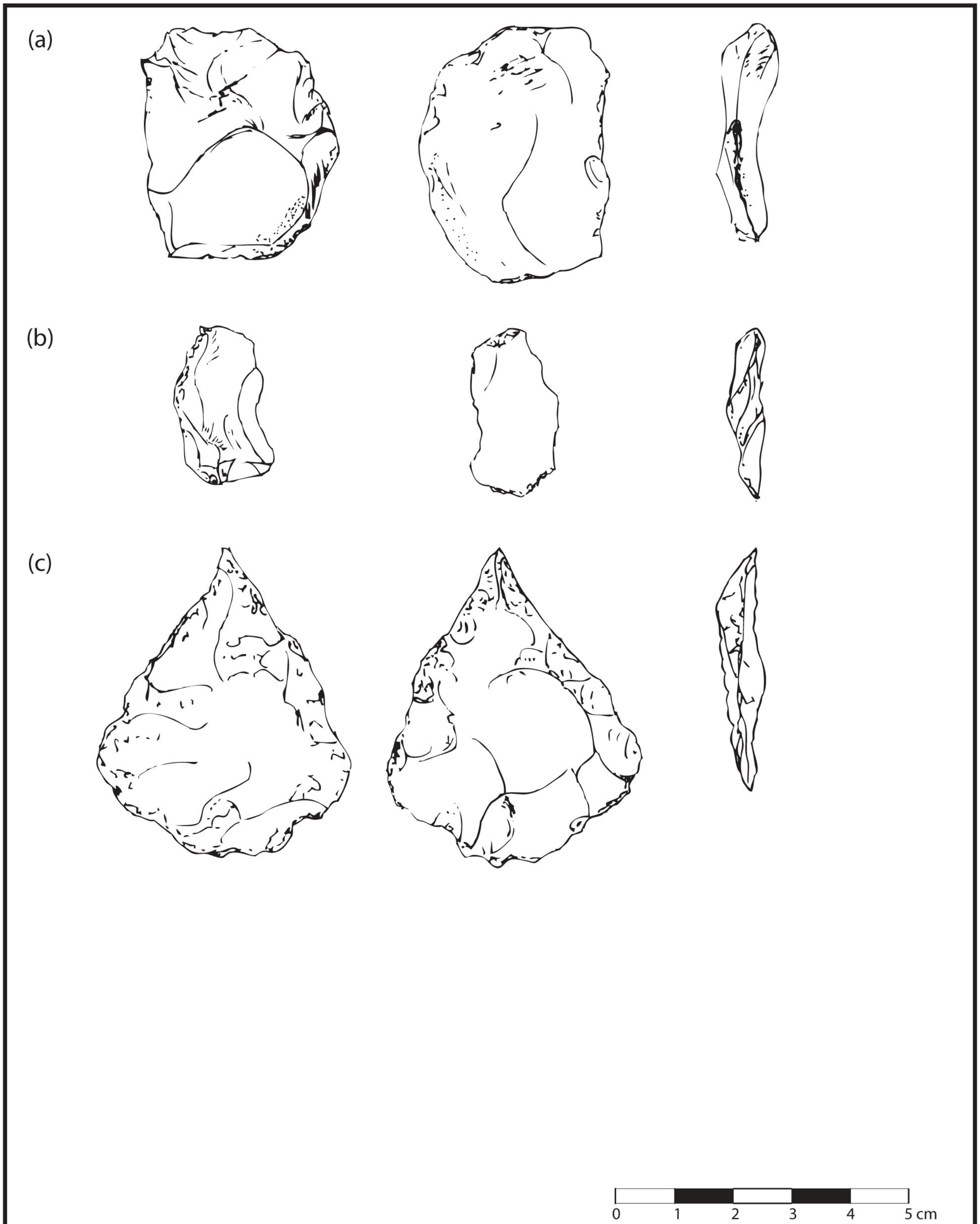


Illustration of projectile point recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: (a) Eastgate Expanding Stem projectile point FS# 1256.

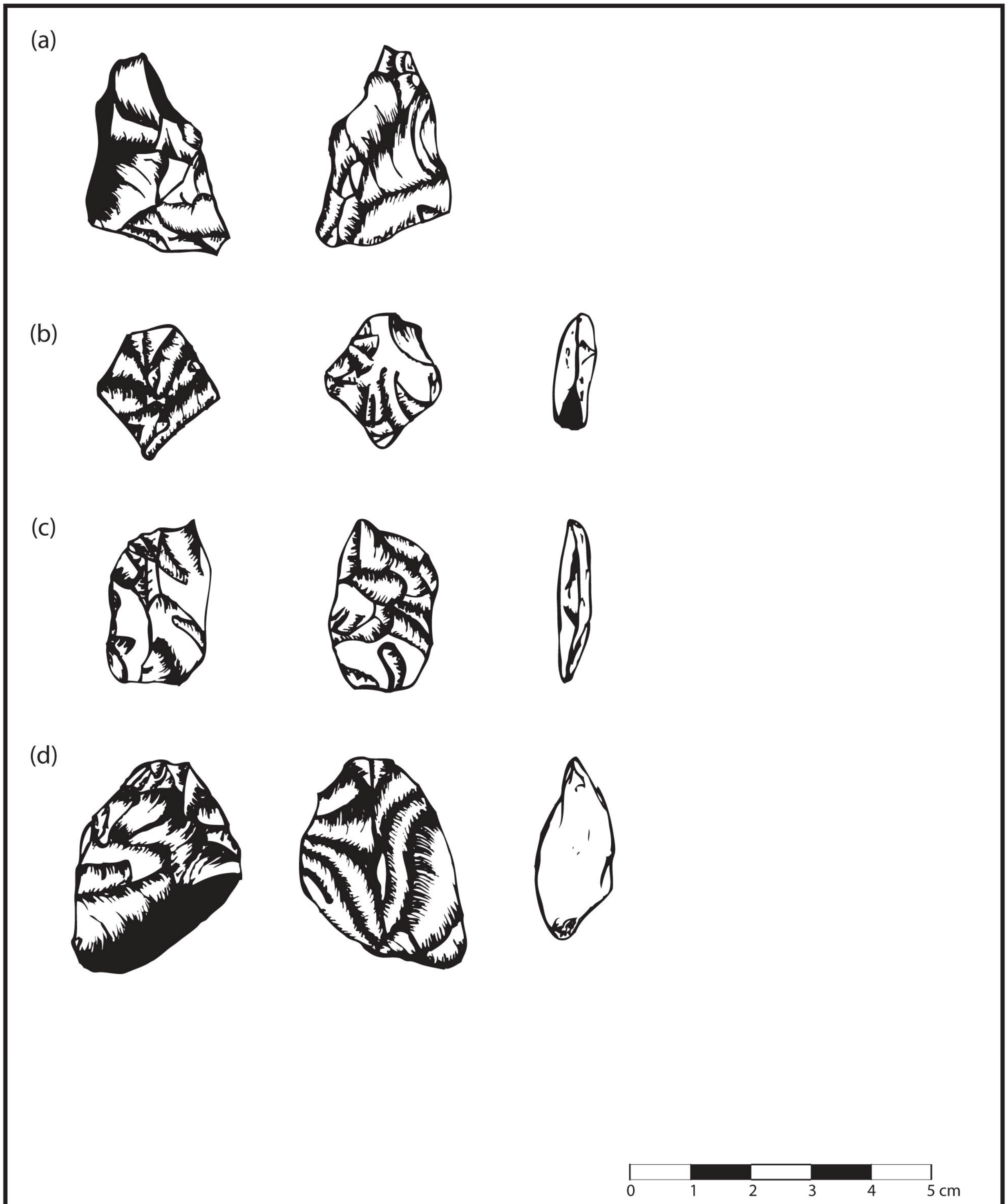
SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 3. Illustration of projectile point from 26EU1539.



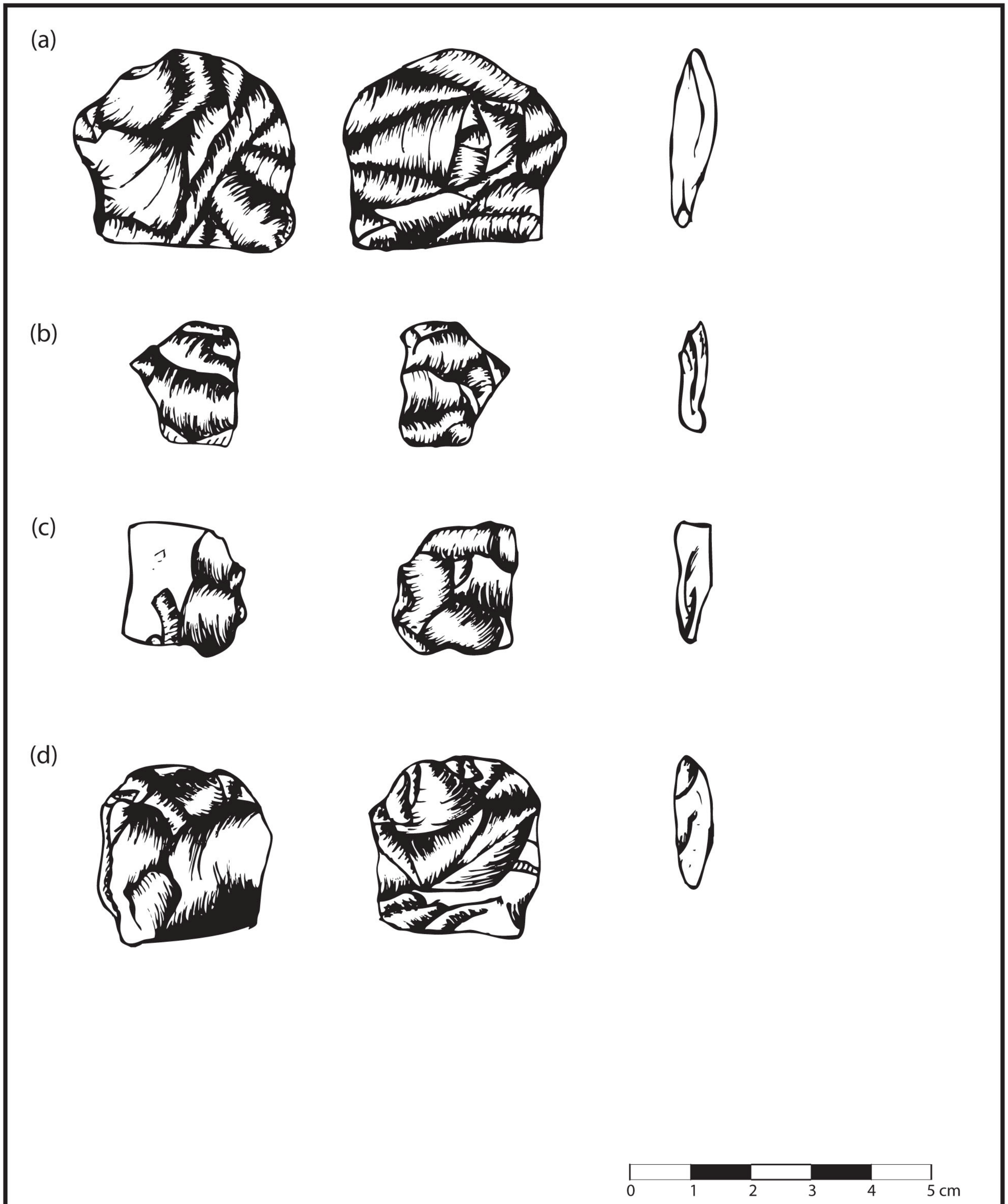
Illustrations of lithic tools recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: (a) scraper FS# 8; (b) scraper FS# 139; (c) compound tool FS# 238.

Figure H - 4. Illustrations of lithic tools from 26EU1539.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: Stage 4 bifaces (a) FS# 6, (b) FS# 71, (c) FS# 122; Stage 1 biface (d) FS# 166.

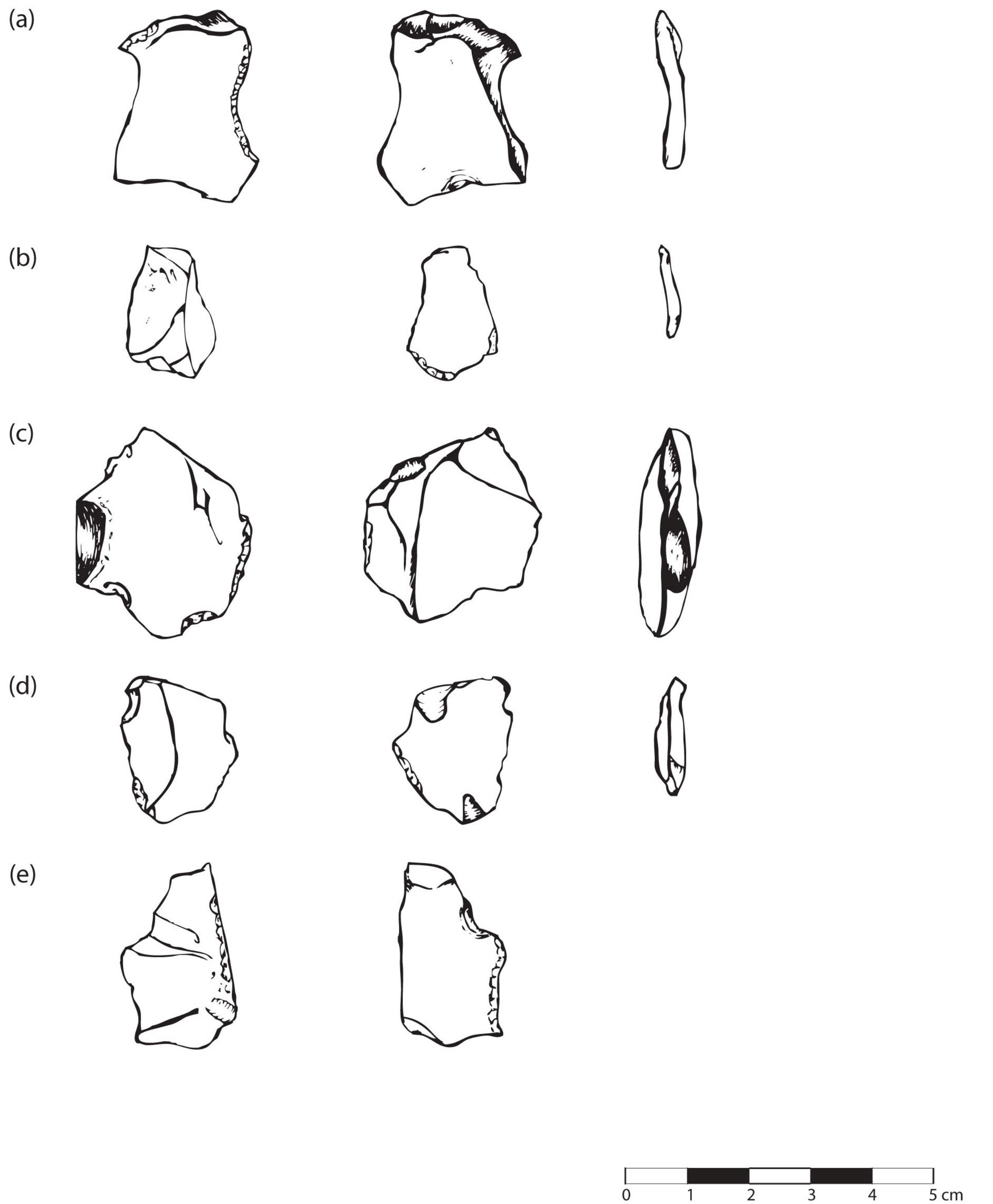
Figure H - 5. Illustrations of bifaces from 26EU1539.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: Stage 2 biface (a) FS# 201; Stage 3 bifaces (b) FS# 292, (c) FS# 1005; Stage 2 biface (d) FS# 1254.

SWCA ENVIRONMENTAL CONSULTANTS

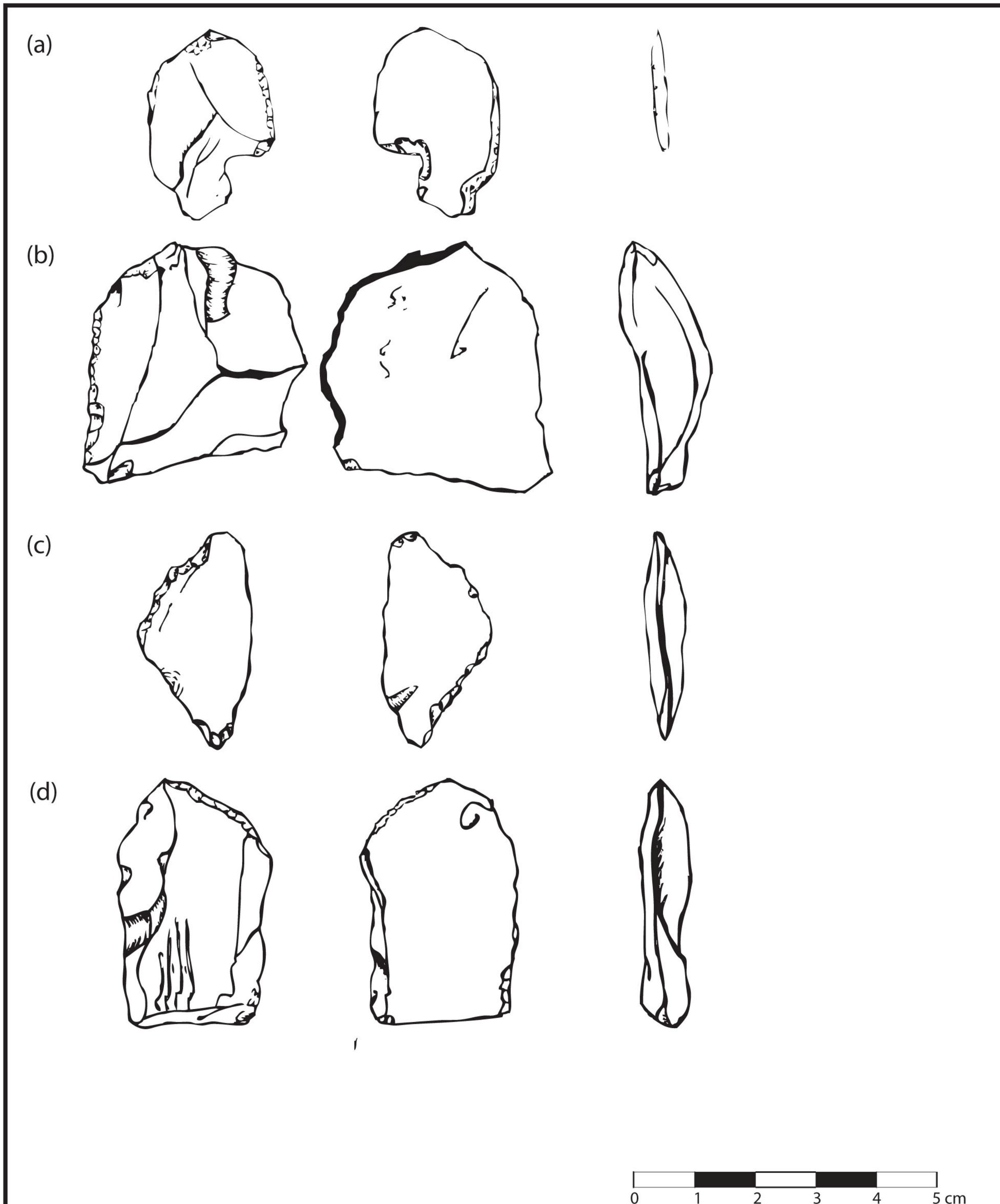
Figure H - 6. Illustrations of bifaces from 26EU1539.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: (a) FS# 136-1; (b) FS# 136-2; (c) FS# 137-1; (d) FS# 137-2; (e) FS# 137-3.

SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 7. Illustrations of utilized flakes from 26EU1539.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: (a) FS# 139-1; (b) FS# 148-1; (c) FS# 148-2; (d) FS# 154.

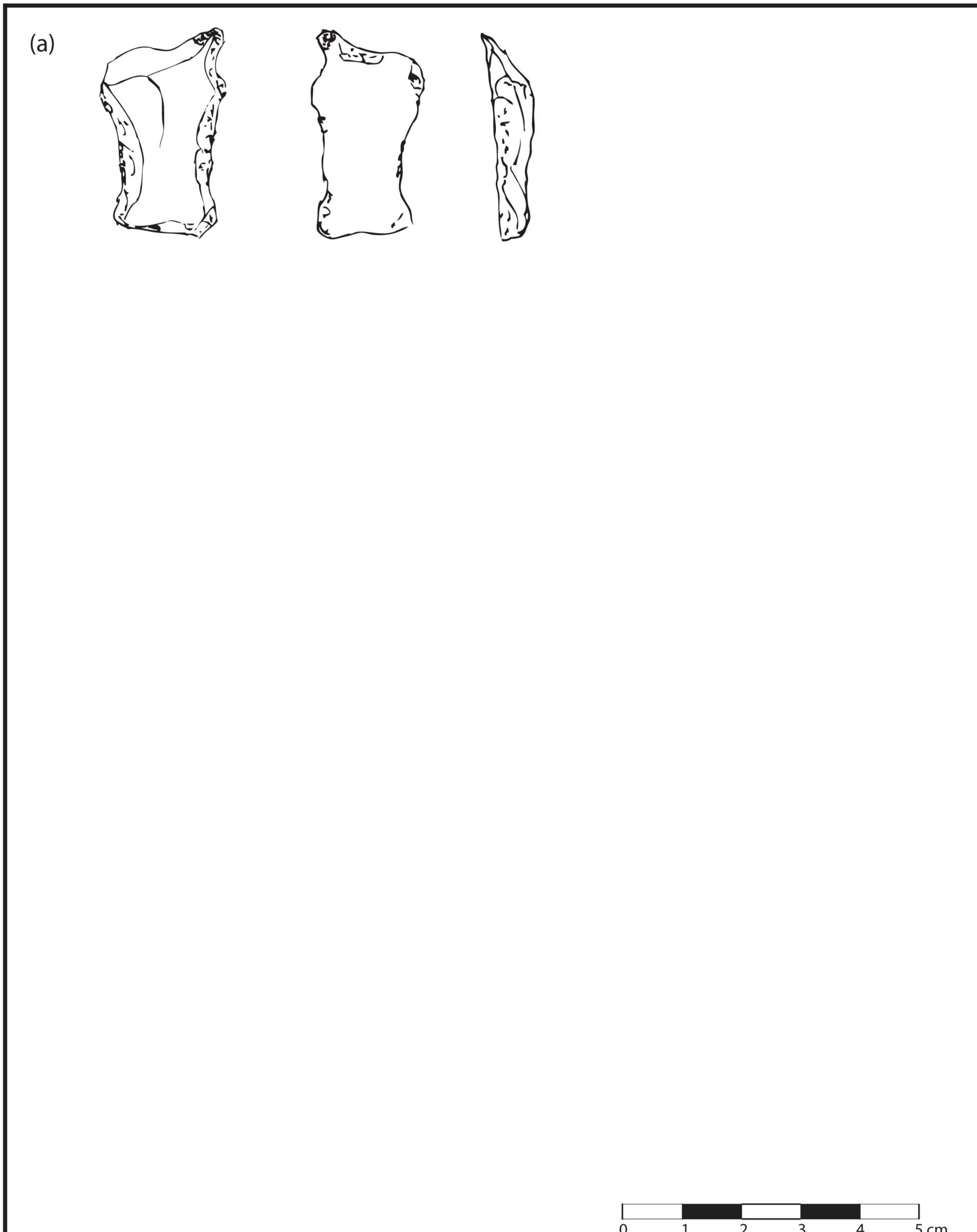
SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 8. Illustrations of utilized flakes from 26EU1539.

Illustrations of cores recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1539: (a) FS# 246, (b) FS# 1253.

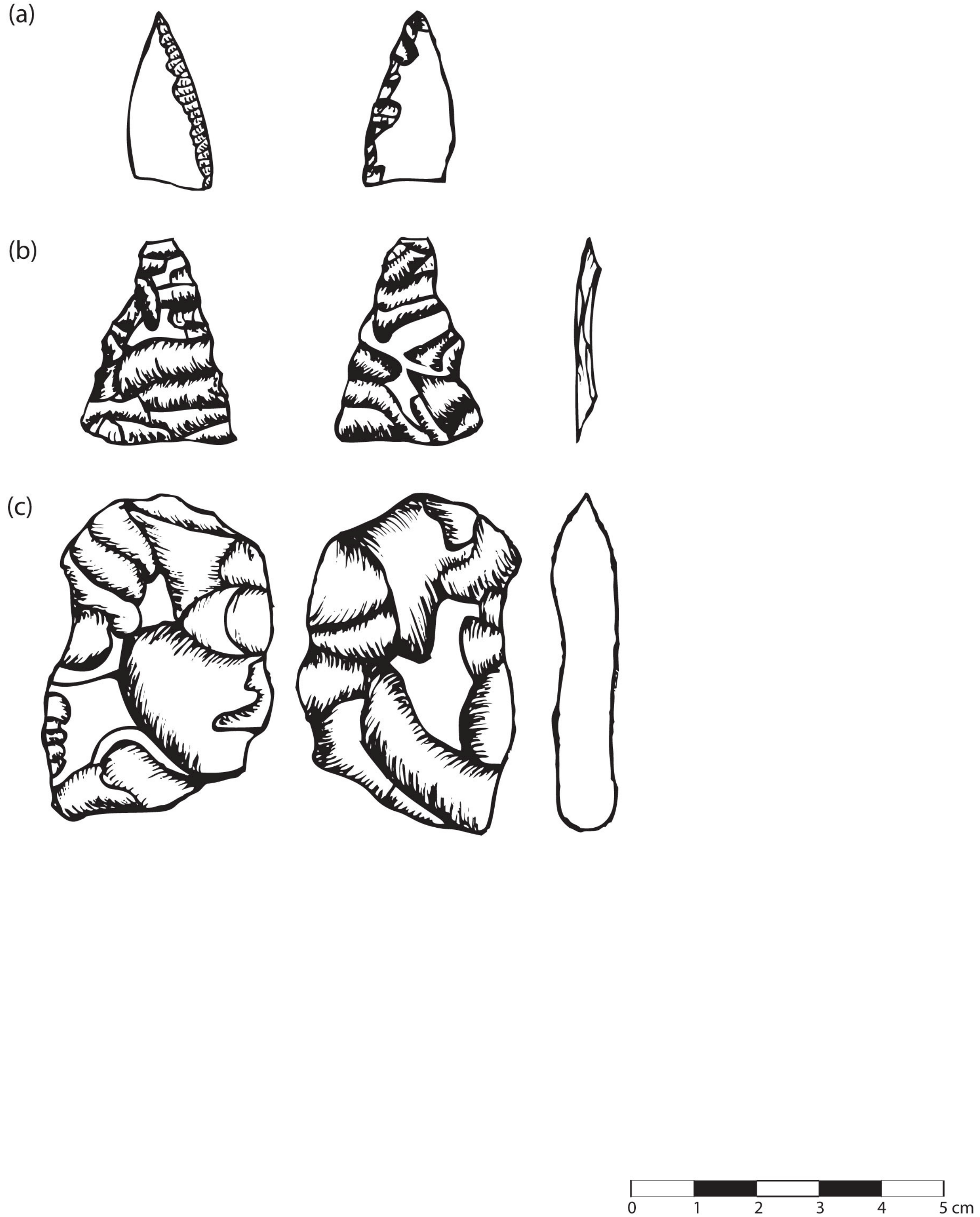
SWCA
ENVIRONMENTAL CONSULTANTS

Figure H - 9. Illustrations of cores from 26EU1539.



Illustrations of lithic tools recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1548: (a) scraper FS# 233.

Figure H - 10. Illustration of lithic tool from 26EU1548.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU1548: Stage 4 bifaces (a) FS# 100, (b) FS# 179; Stage 2 biface (c) FS# 1000.

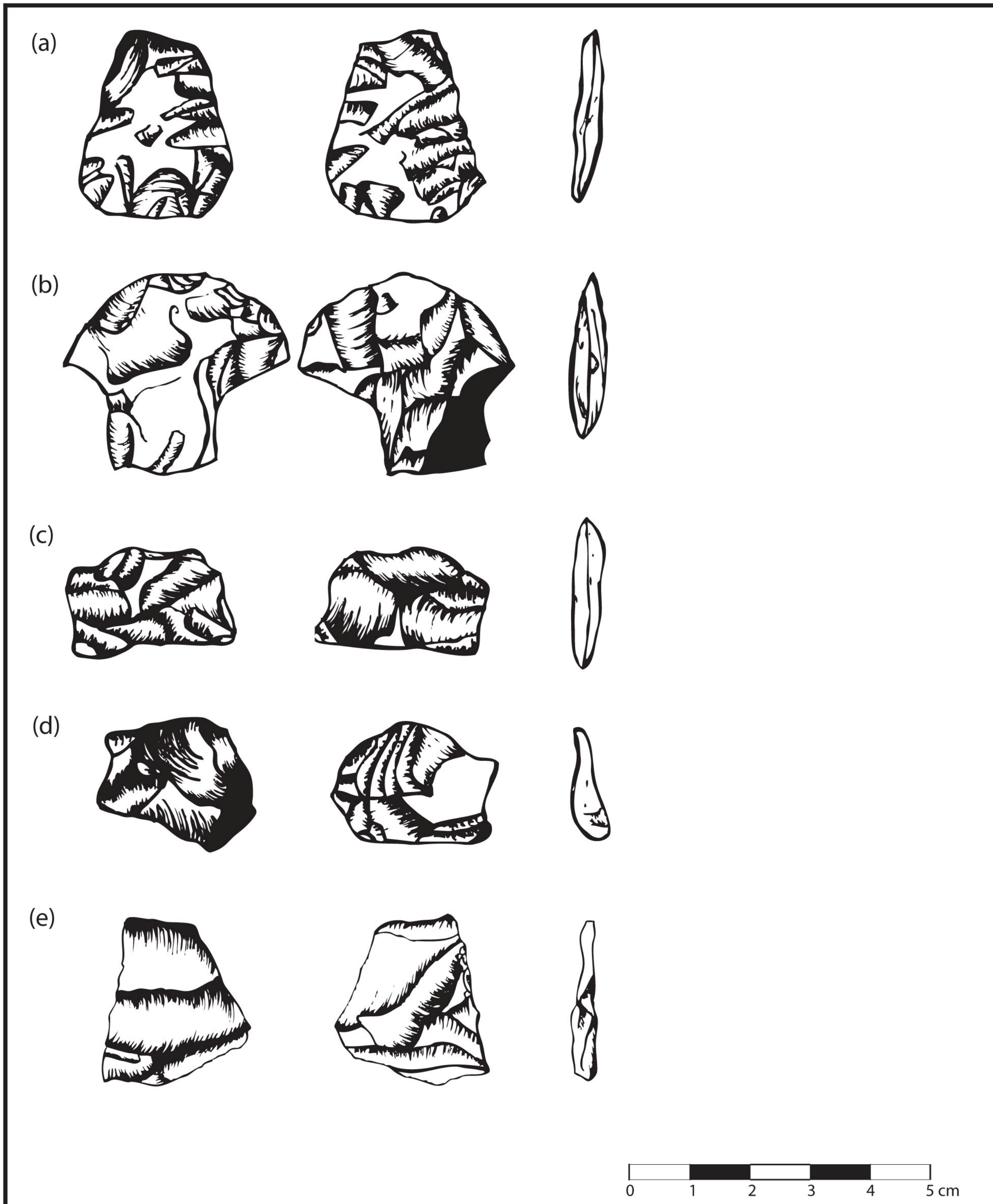
SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 11. Illustrations of bifaces from 26EU1548.

Illustrations of projectile points recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: (a) Desert Side-notched projectile point FS# 206, (b) Desert Side-notched projectile point FS#207, (c) Gatecliff Contracting stem projectile point FS# 438, (d) Elko Eared projectile point FS# 483.

SWCA ENVIRONMENTAL CONSULTANTS

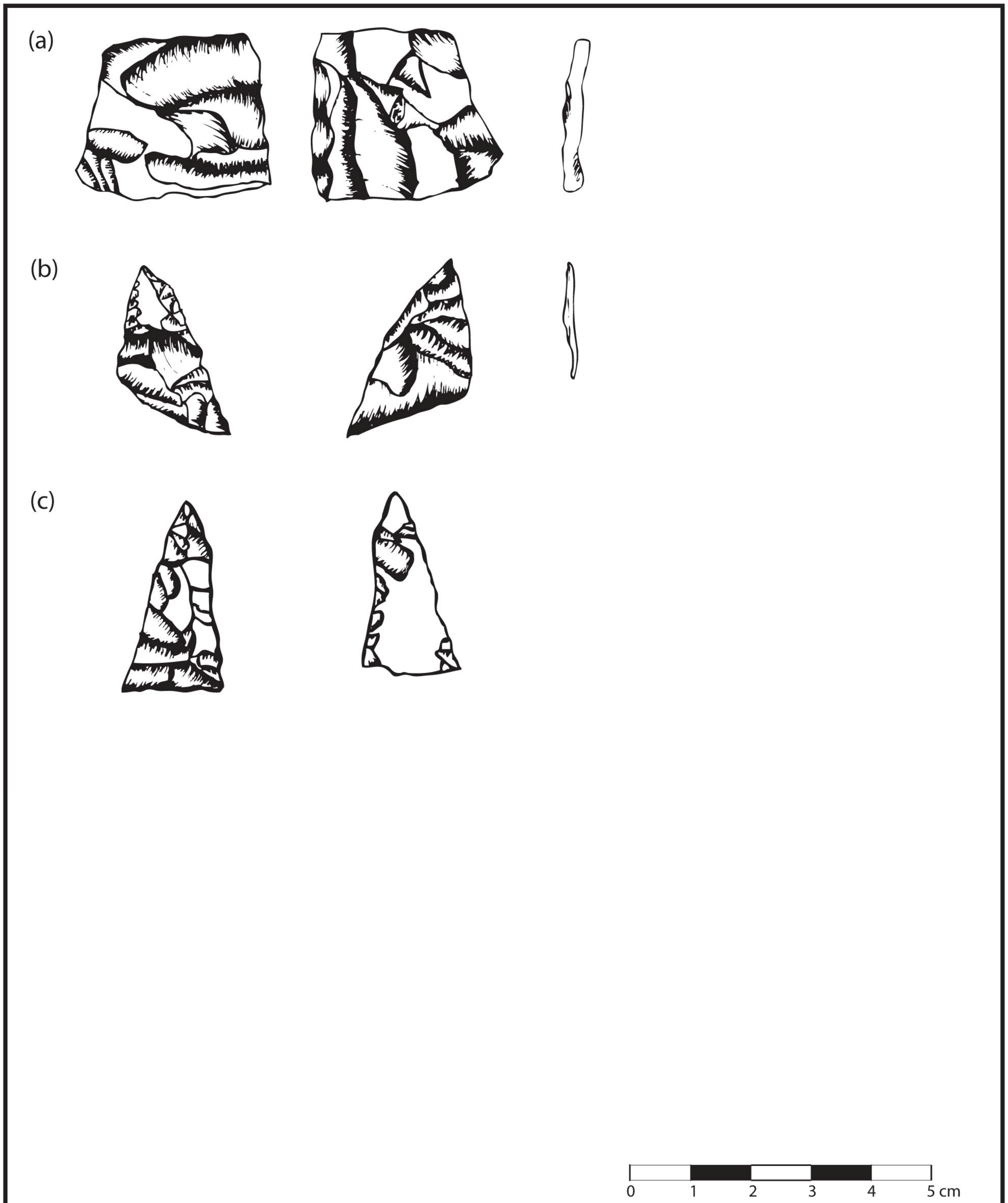
Figure H - 12. Illustrations of projectile points from 26EU2064.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: Stage 1 biface (a) FS# 1; Stage 3 biface (b) FS# 114; Stage 4 bifaces (c) FS# 140, (d) FS# 230; Stage 3 biface (e) FS# 300.

SWCA ENVIRONMENTAL CONSULTANTS

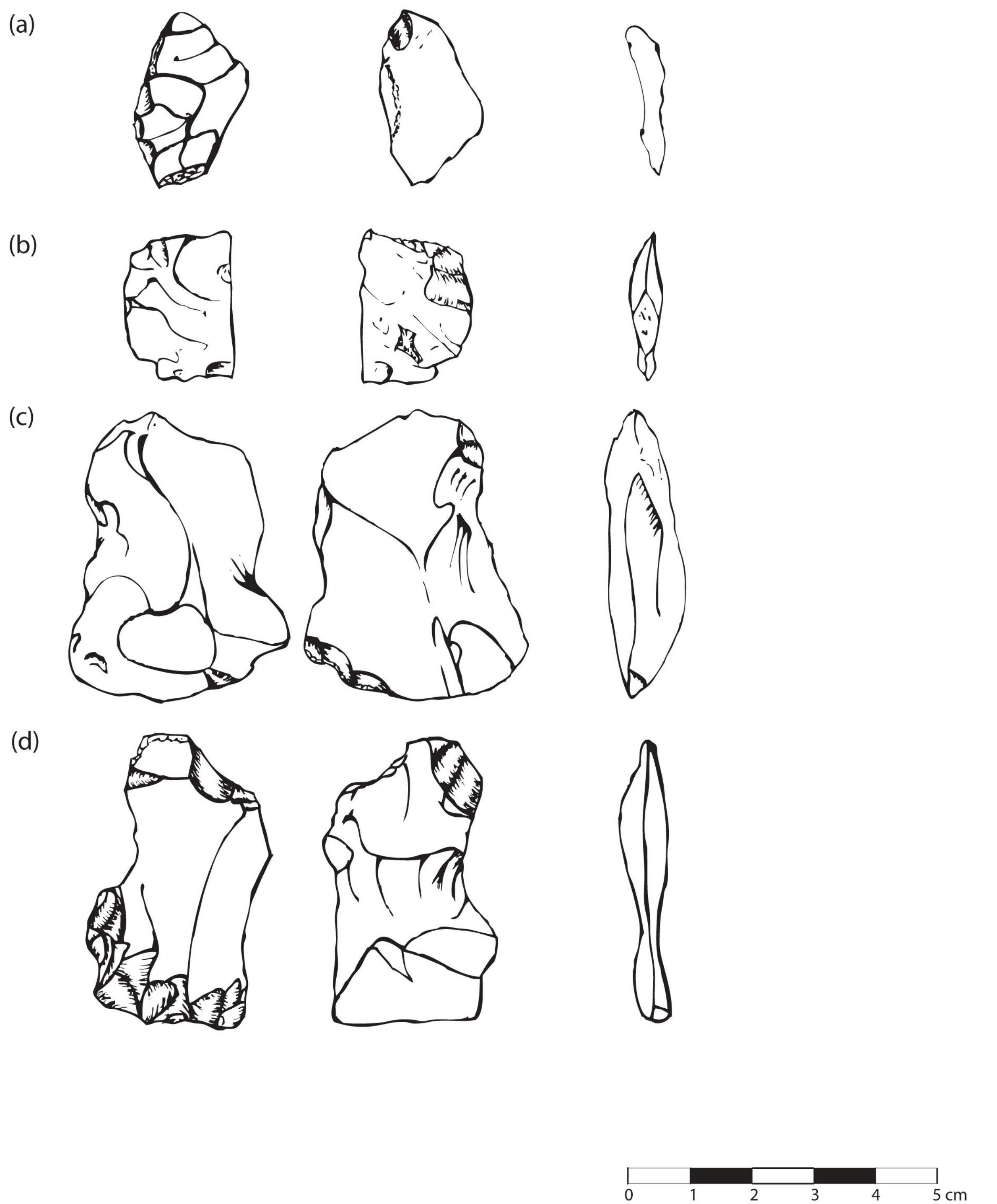
Figure H - 13. Illustrations of bifaces from 26EU2064.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: Stage 4 biface (a) FS# 530; Stage 3 biface (b) FS# 2006-05; Stage 4 biface (c) FS# 2006-46.

SWCA ENVIRONMENTAL CONSULTANTS

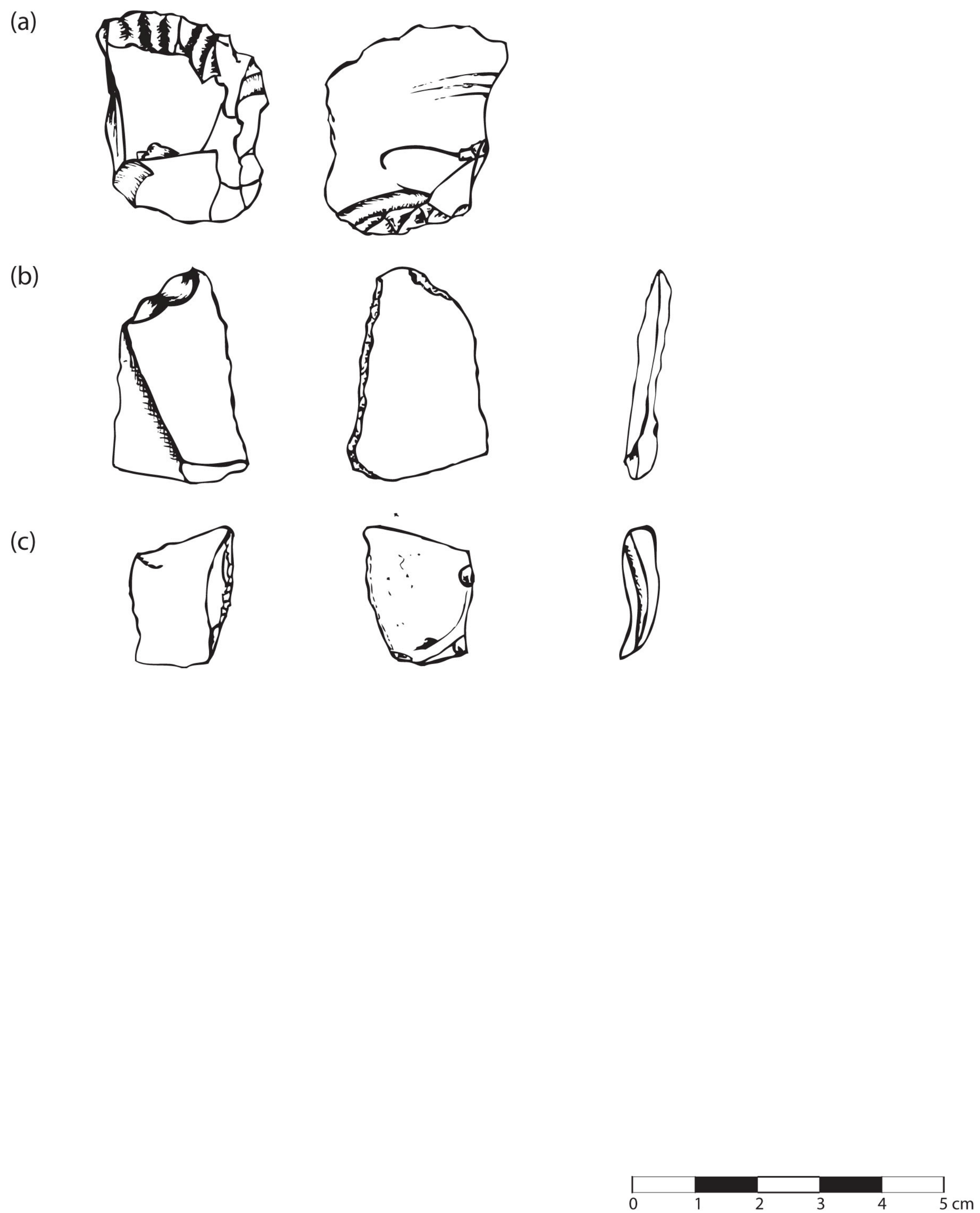
Figure H - 14. Illustrations of bifaces from 26EU2064.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: (a) FS# 128; (b) FS# 141; (c) FS# 210; (d) FS# 302.

SWCA ENVIRONMENTAL CONSULTANTS

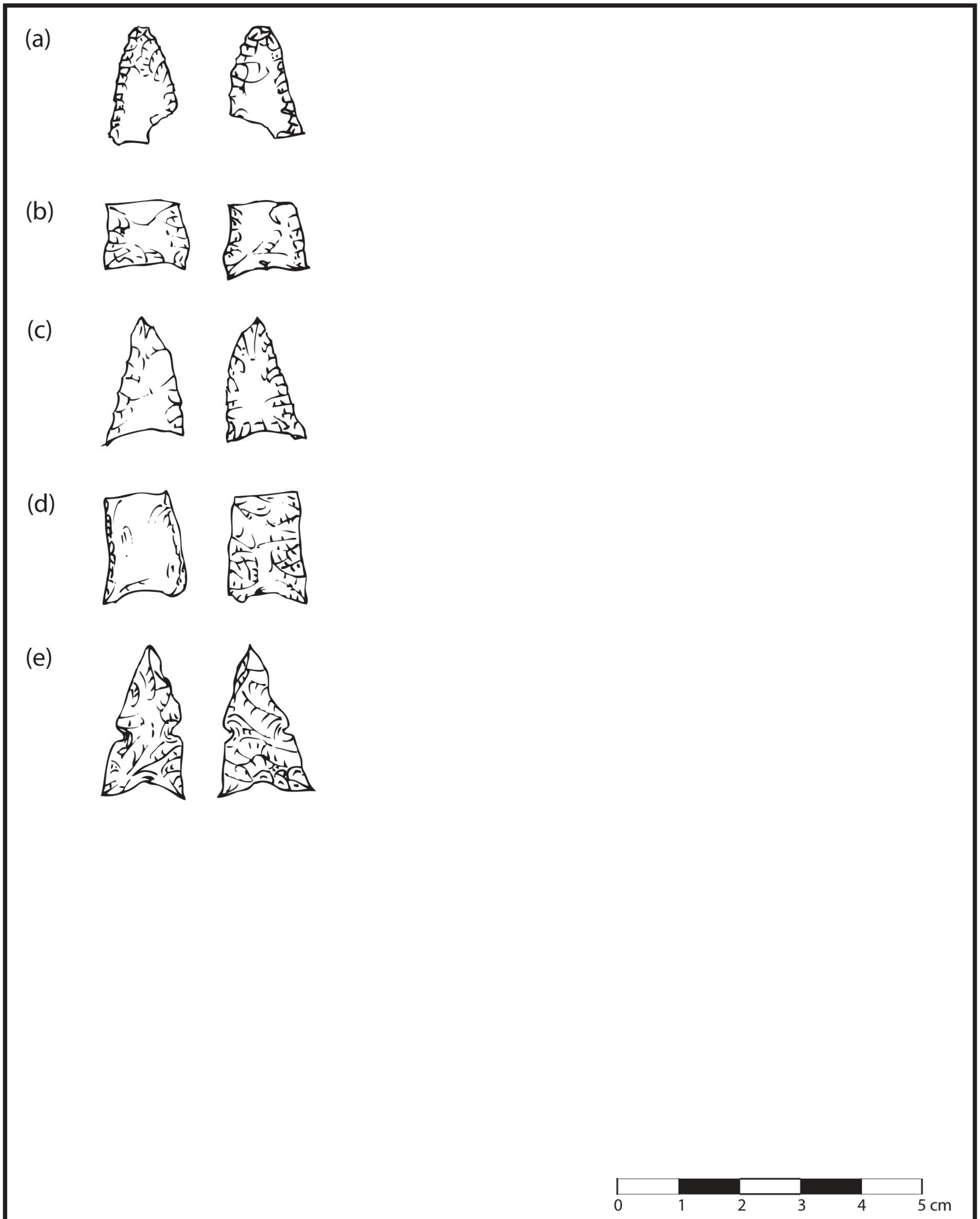
Figure H - 15. Illustrations of utilized flakes from 26EU2064.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2064: (a) FS# 518; (b) FS# 2001; (c) FS# 2006-80.

SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 16. Illustrations of utilized flakes from 26EU2064.

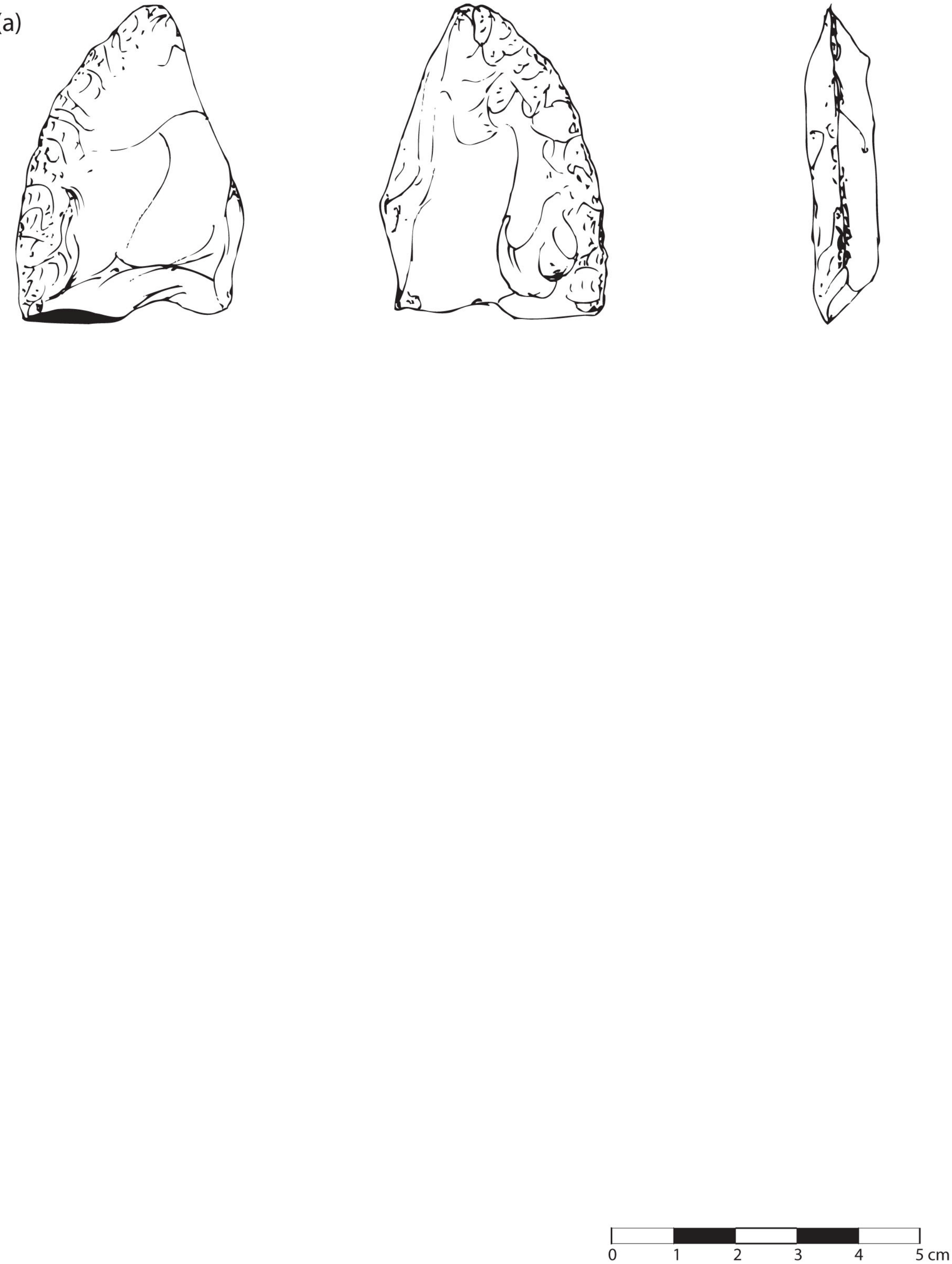


Illustrations of projectile points recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) Cottonwood Triangular point FS# 1051, (b) Cottonwood Triangular point FS# 1069, (c) Cottonwood Triangular point FS#1074, (d) Cottonwood Triangular point FS# 1085, (e) Desert Side-notched point FS# 1096.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure H - 17. Illustrations of projectile points from 26EU2126.

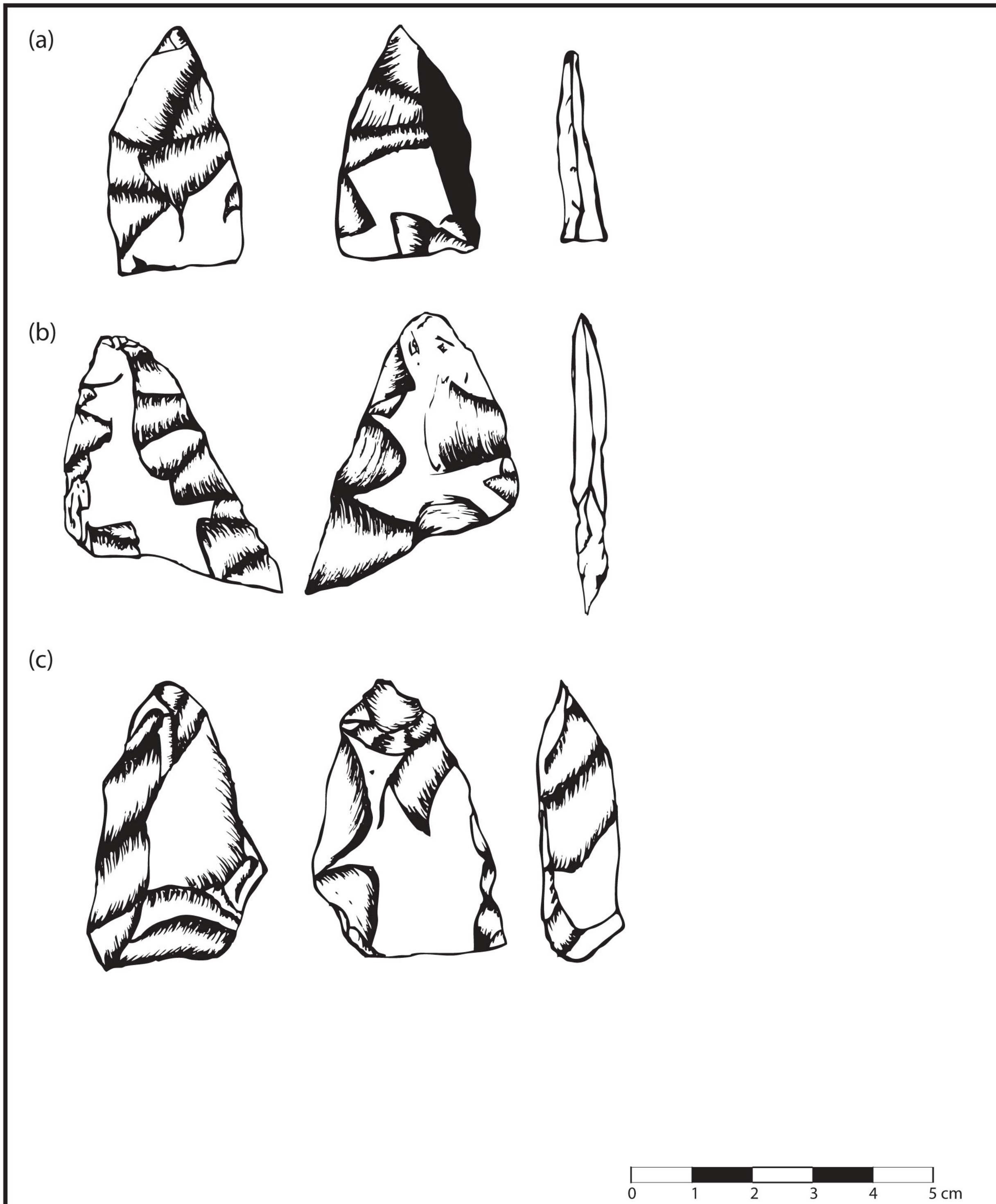
(a)



Illustrations of lithic tools recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) knifelike biface FS# 1086.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure H - 18. Illustration of lithic tool from 26EU2126.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: Stage 3 biface (a) FS# 1; Stage 4 biface (b) FS# 33-2; Stage 2 biface (c) FS# 1071-1.

SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 19. Illustrations of bifaces from 26EU2126.

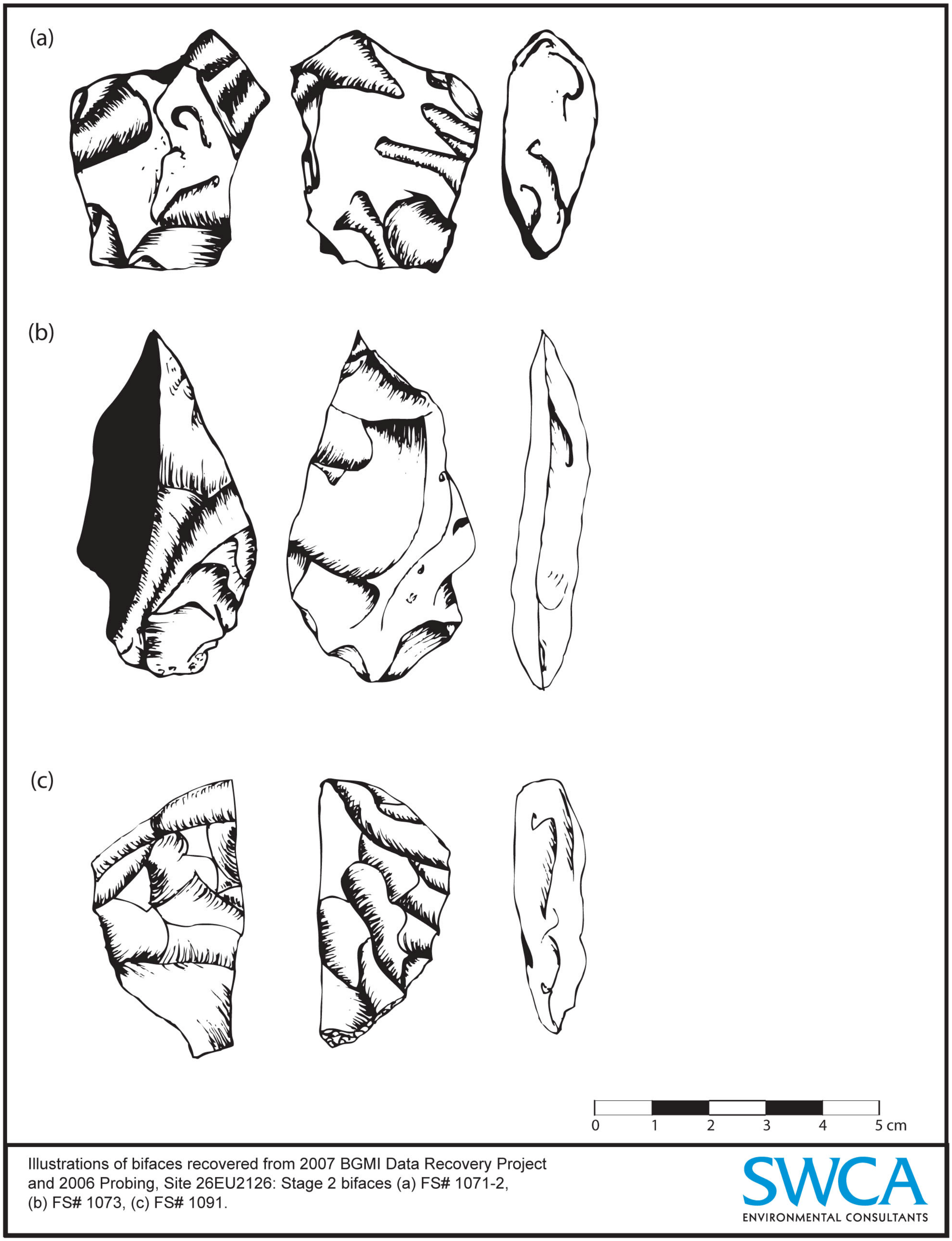
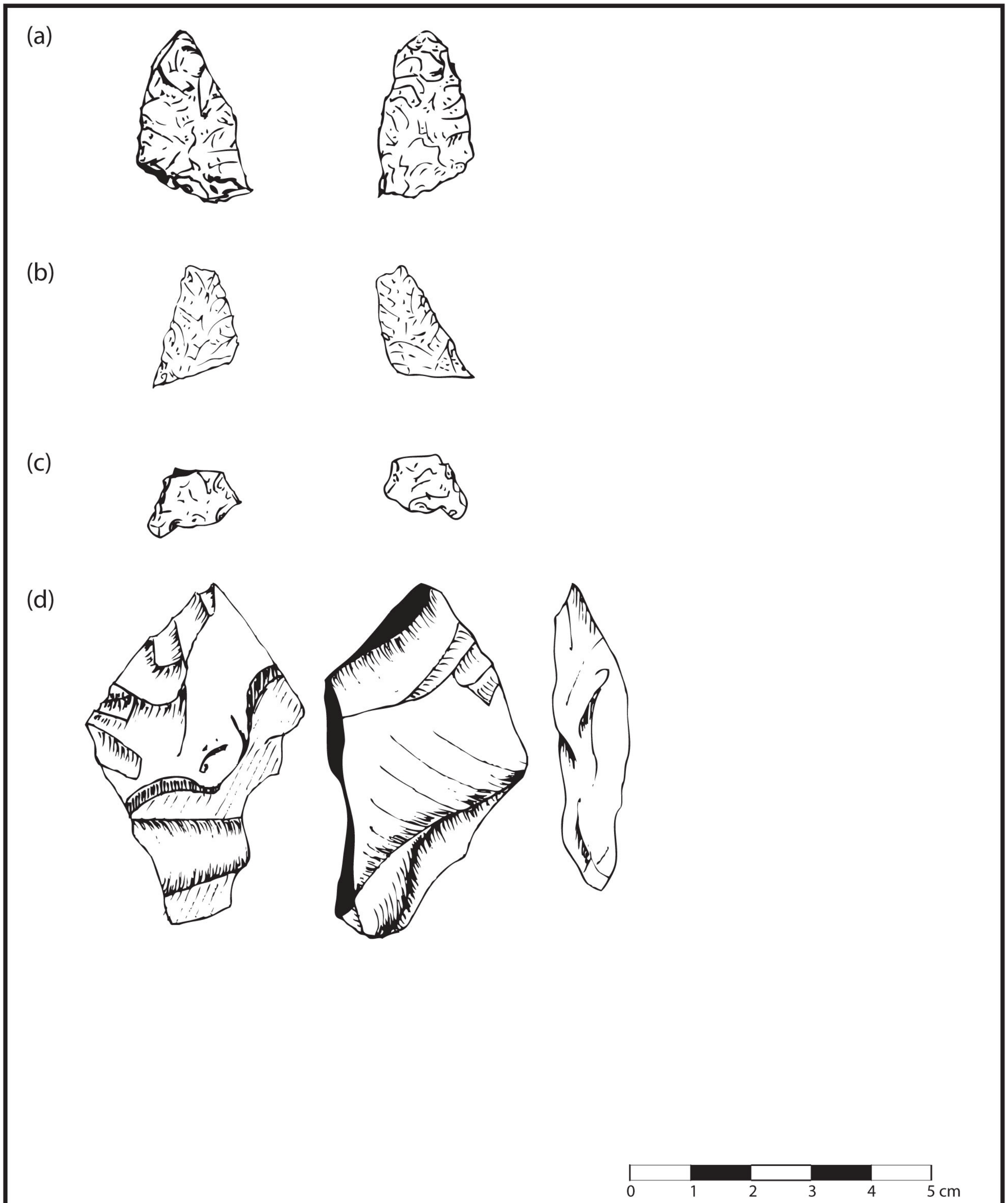


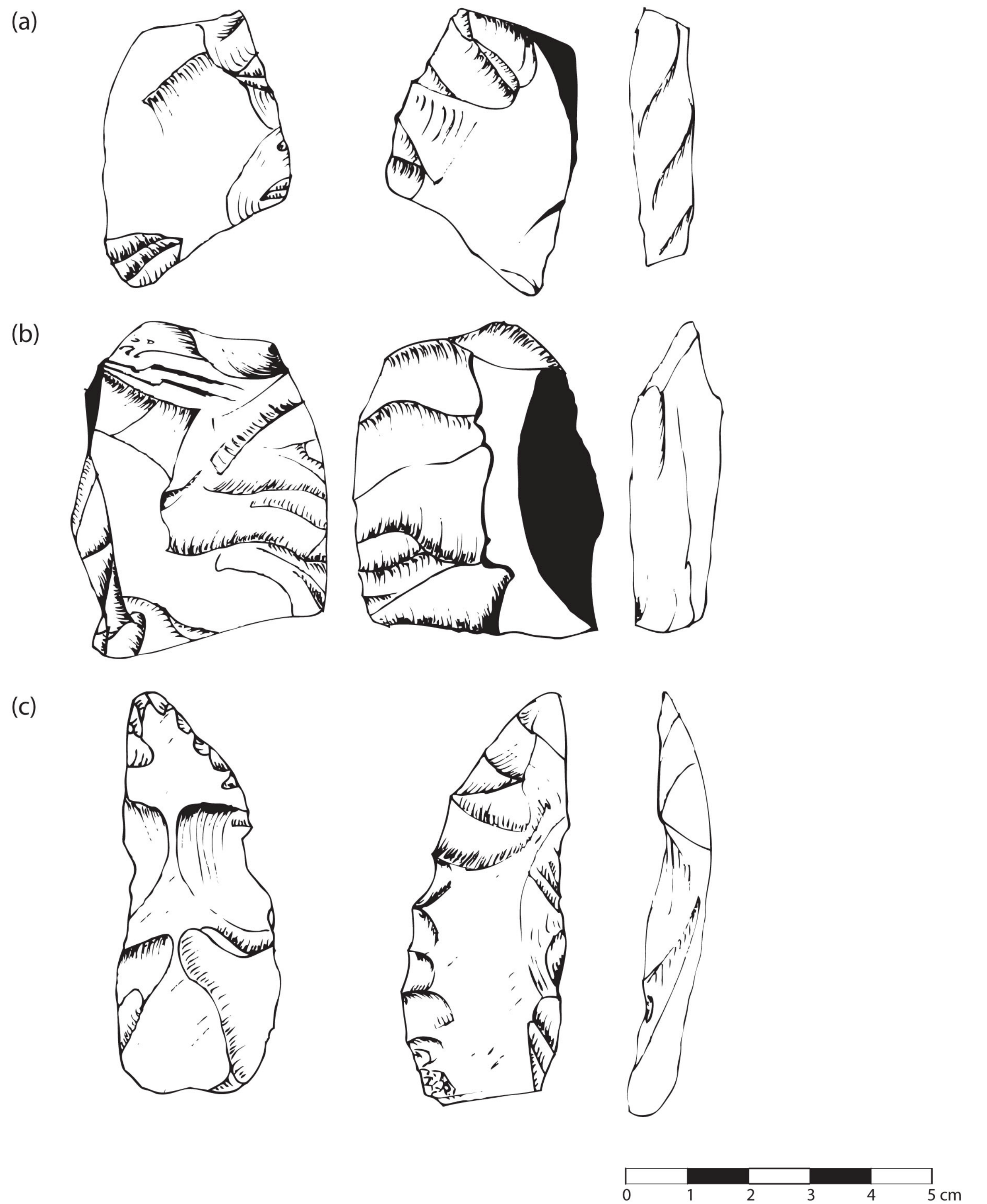
Figure H - 20. Illustrations of bifaces from 26EU2126.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: Stage 4 biface (a) FS# 1094; Stage 5 bifaces (b) FS# 1122, (c) FS# 1129; Stage 1 biface (d) FS# 1148-1.

SWCA ENVIRONMENTAL CONSULTANTS

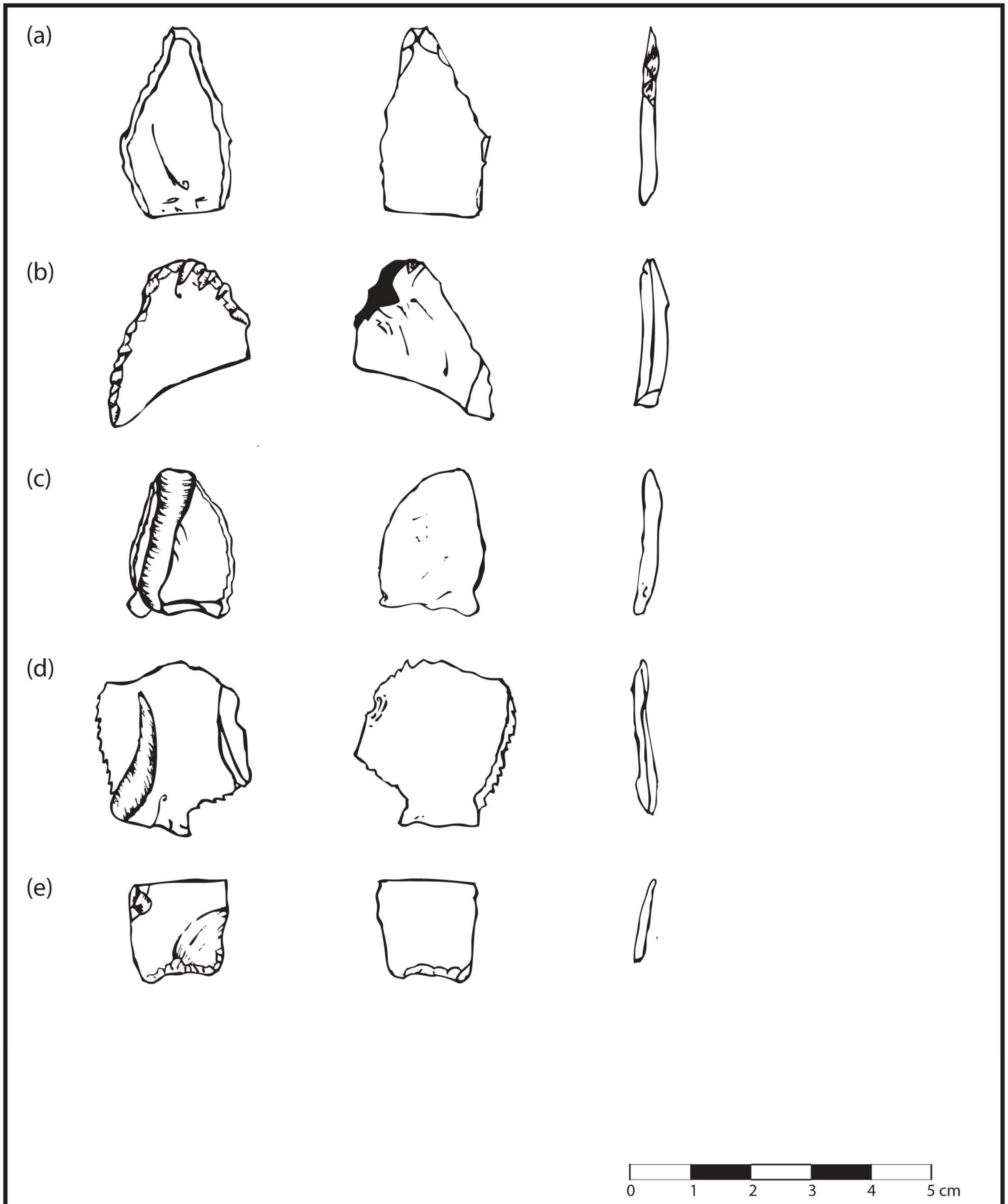
Figure H - 21. Illustrations of bifaces from 26EU2126.



Illustrations of bifaces recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: Stage 1 biface (a) FS# 1150; Stage 2 bifaces (b) FS# 1155, (c) FS# 2006-13.

SWCA ENVIRONMENTAL CONSULTANTS

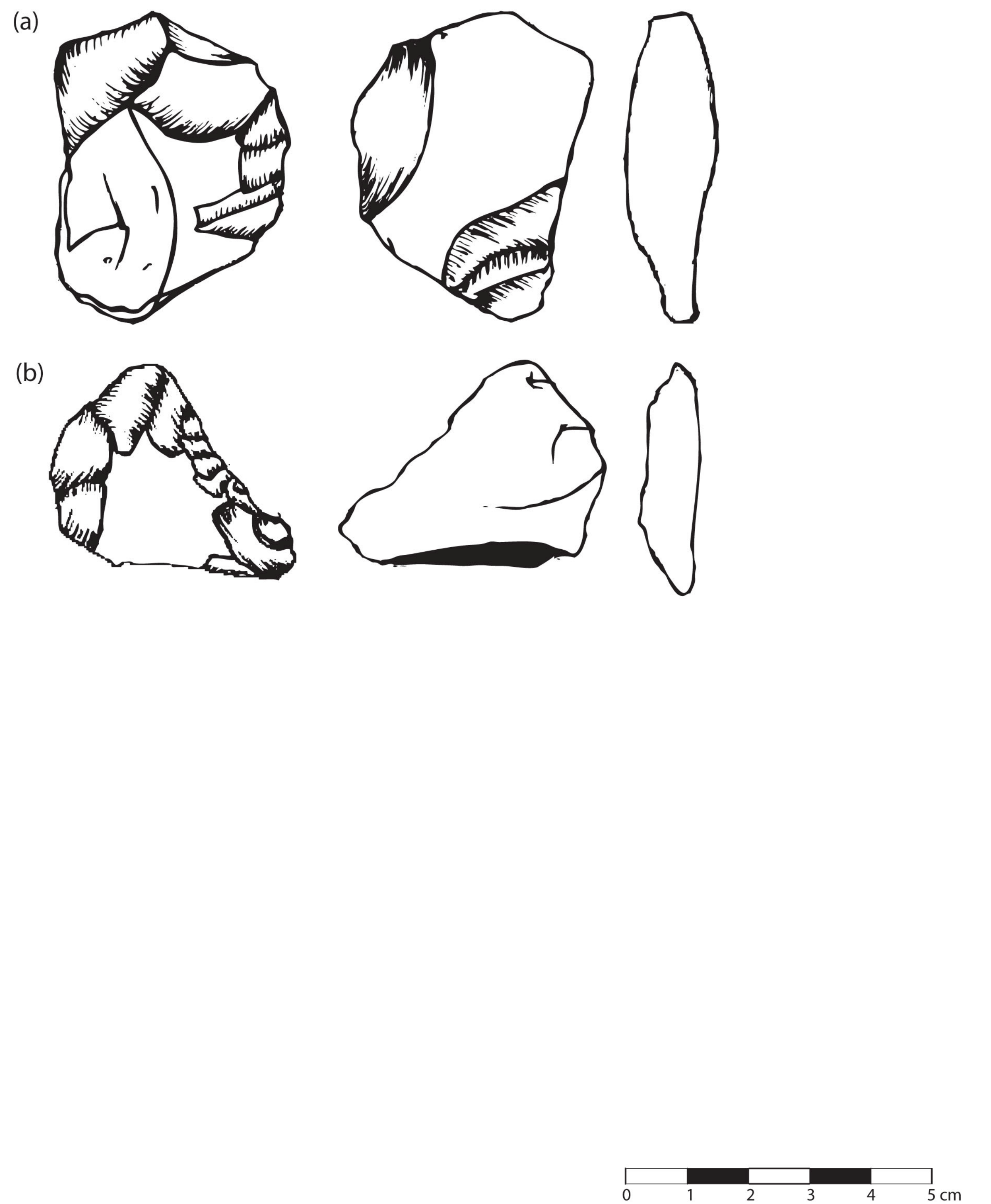
Figure H - 22. Illustrations of bifaces from 26EU2126.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) FS# 33-1; (b) FS# 34-1; (c) FS# 36; (d) FS# 37; (e) FS# 301.

SWCA ENVIRONMENTAL CONSULTANTS

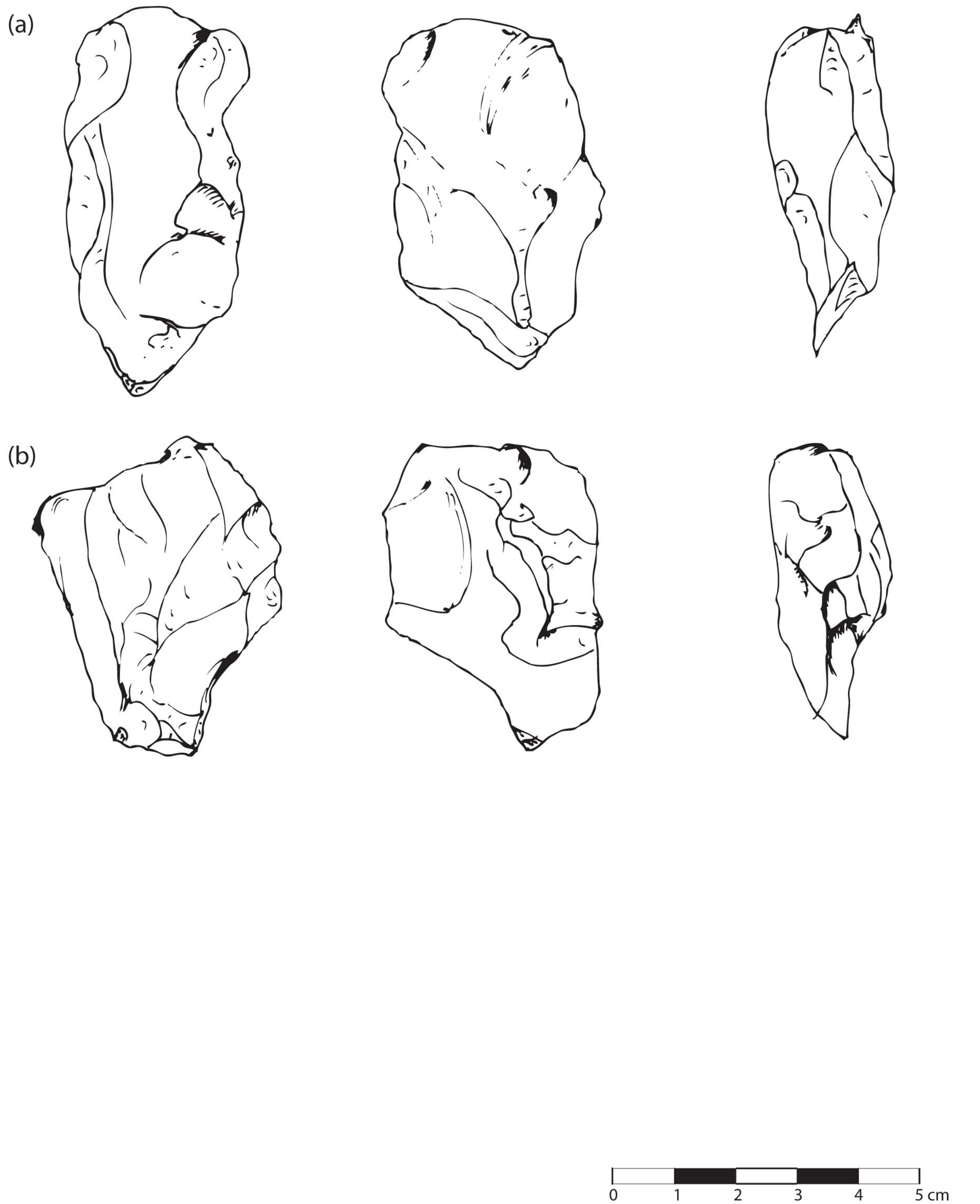
Figure H - 23. Illustrations of utilized flakes from 26EU2126.



Illustrations of utilized flakes recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) FS# 1011, (b) FS# 1148-2.

SWCA
ENVIRONMENTAL CONSULTANTS

Figure H - 24. Illustrations of utilized flakes from 26EU2126.



Illustrations of cores recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) FS# 9, (b) FS# 1063.

Figure H - 25. Illustrations of cores from 26EU2126.

Illustrations of cores recovered from 2007 BGMI Data Recovery Project and 2006 Probing, Site 26EU2126: (a) FS# 1300, (b) FS# 2006-02.

SWCA ENVIRONMENTAL CONSULTANTS

Figure H - 26. Illustrations of cores from 26EU2126.