Appendix G
List of Abbreviations and Glossary of Terms – Lithic Analysis
LIST OF ABBREVIATIONS

ABR = ABRADER OR REDUCTION BY ABRASION
ALT = ALTERNATE FLAKE
ANV = ANVIL
BAS = BASALT
BEAD = BEAD
BEND = BENDING FRACTURE
BIF = BIFACE
BIFE = BIFACE PERCUSSION EARLY FLAKE
BIFL = BIFACE PERCUSSION LATE FLAKE
BKN = BROKEN
BLB = BULB REMOVAL FLAKE
BLK = BLANK
BLKA = ARROW-SIZED BLANK
BLKD = DART-SIZED BLANK
BLKU = BLANK OF UNKNOWN TYPE
BLKP = PESTLE BLANK
BNO = BASAL-NOTCHED
BOUL = BOULDER
BOWL = STONE MORTAR/BOWL
BPERC = BIFACIAL PERCUSSION REDUCTION
BPRES = BIFACIAL PRESSURE REDUCTION
BPO = BIPOLAR FLAKE, BIPOLAR CORE, OR BIPOLAR REDUCTION
BRKN = BROKEN
BURIN = BURIN OR BURINATED
CCS = CRYPTOCRSTALLINE SILICATE
CHP = CHOPPER
COOK = COOKING STONE
CNO = CORNER-NOTCHED
COB = COBBLE
COMP = COMPOSITION
CONT = CONTRACTING
CONV = CONVEX
COR = CORE
CORE = CORE PERCUSSION EARLY FLAKE
CORL = CORE PERCUSSION LATE FLAKE
CRBR = CRENATED BREAK
CTOL = COBBLE TOOL
CZ = CRAZING
D = REMNANT DORSAL SURFACE
DEB = DEBITAGE
DIST = DISTAL FRAGMENT OR DISTAL MARGIN
DIFCOL = DIFFERENTIAL COLOR
DIFLUS = DIFFERENTIAL LUSTER
DRI = DRILL OR REDUCTION BY DRILLING
DSN = DESERT SIDE-NOTCHED
EDG = EDGE PREPARATION FLAKE
EGS = EDGE GROUND STONE
EXPN = EXPANDING
FRAG = FRAGMENT
FRM = FRACTURED RAW MATERIAL
PROX = PROXIMAL FRAGMENT OR PROXIMAL MARGIN
PTLD = POTLID OR POTLIDDED
PY = PYROCLASTIC CORTEX
QTZ = QUARTZITE
QUA = QUARTZ
RAL = (BLOOD) RESIDUE ANALYSIS LAB
RBR = RADIAL BREAK OR RADIAL BREAK REDUCTION
RD = ROUNDING
REJ = REJUVENATION
RHO = RHYOLITE
RPS = REMNANT PLATFORM SURFACE
RVDS = REMNANT VENTRAL AND DORSAL SURFACES
RVS = REMNANT VENTRAL SURFACE
SC = SCRATCHES
SCR = SCRAPER
SERR = SERRATION OR SERRATED
SIL = SILTSTONE
SNO = SIDE-NOTCHED
SAN = SANDSTONE
SS = SOIL SHEEN CORTEX
ST = STRIATIONS
STEM = STEM OR STEMMED
SZ 1 = <1/16 inch (<1.6 mm), DEBITAGE SIZE CLASS
SZ 2 = 1/16 - 1/8 inch (1.6 - 3.2 mm), DEBITAGE SIZE CLASS
SZ 3 = 1/8 - 1/4 inch (3.2 - 6.4 mm), DEBITAGE SIZE CLASS
SZ 4 = 1/4 - 1/2 inch (6.4 - 12.7 mm), DEBITAGE SIZE CLASS
SZ 5 = 1/2 - 1 inch (12.7 - 25.4 mm), DEBITAGE SIZE CLASS
SZ 6 = 1 - 2 inches (25.4 - 50.8 mm), DEBITAGE SIZE CLASS
SZ 7 = 2 - 4 inches (50.8 - 101.6 mm), DEBITAGE SIZE CLASS
THE = THERMAL FLAKE (POTLID) OR THERMAL BREAK
TERM = TERMINATION
TRES = TRIFACIAL PRESSURE REDUCTION
TRI = TRIANGULAR
TRM = TESTED RAW MATERIAL
UFL = USED FLAKE
UND = UNDETERMINED FLAKE, PERCUSSION OR PRESSURE
UNDB = UNDETERMINED FLAKE, PERCUSSION OR PRESSURE FROM A BIFACE
UNI = UNIFACE
UNIDIR = UNIDIRECTIONAL CORE
UPERC = UNIFACIAL PERCUSSION REDUCTION
UPRES = UNIFACIAL PRESSURE REDUCTION
V = REMNANT VENTRAL SURFACE
VQU = VEIN QUARTZ
Wb = WIDTH OF STEM AT BASE
Wn = WIDTH OF STEM BETWEEN NOTCHES OR BELOW SHOULDERS
Wt = WEIGHT IN GRAMS
WFL = WORKED FLAKE
LITHIC TECHNOLOGY GLOSSARY

ALTERNATE FLAKE (ALT): Alternate flakes are the byproduct of creating a bifacial (beveled) edge using a technique called alternate flaking. Alternate flaking involves removing a flake through a square or thick edge and then turning over the piece being worked and utilizing the previous flake scar as a platform for the next flake off of the opposing face. This process begins at one end of a square or thick edge and proceeds on alternate faces into the unbeveled edge. Beveling an edge prepares it for bifacial thinning or shaping by producing edge angles appropriate for use as platforms. Alternate flaking can be done by percussion or by pressure and is a common technique used to prepare edges of tabular or angular materials, the thick margins of flake blanks (especially at the proximal end), margins with stacked step terminations, and broken flakes or bifaces. Alternate flakes are often triangular in cross section and exhibit the original square or thick edge on the dorsal surface near the platform. The contact point is usually skewed toward one side of the platform. The orientation of the flake reflects the angle of applied force in the direction of the adjacent edge rather than perpendicular to the edge being worked as is most common in percussion bifacial thinning.

ANVIL (ANV): A stone block used as a rest or support on which materials are hammered usually with another stone, such as for splitting long bones to extract marrow or for making radial breaks on lithic artifacts. Also used in the bipolar technique of lithic reduction, the artifact to be flaked is held with one end firmly against a stone anvil then struck with the hammerstone on the opposite end. Bipolar reduction anvils are identified by the pock marks and crushing scars left where the impact is absorbed. When small rounded pebbles are reduced, the pock marks generally form a circular pattern that is deepest in the center and is located near the middle of the anvil surface. The anvil stone must be massive enough to absorb the shock of bipolar hammering and have flat or slightly convex upper and lower surfaces but are of various sizes and shapes.

ARRIS: A ridge formed by the intersection between two flake scars on an artifact.

BASALT (BAS): An igneous volcanic rock, with a grain size of less than 1 mm, and generally low in silica dioxide content (approximately 50%), although basalts used in flaked stone technologies may be selected for their higher silica contents. Basalt's basic chemistry, composed predominantly of ferromagnesian minerals (especially pyroxene) and feldspar (calcic plagioclase), distinguishes it from other fine-grained volcanic rocks such as rhyolite (acidic) which is composed predominantly of feldspar and quartz, and from andesite (intermediate) which is composed predominantly of feldspar. Basalt is usually black or gray and darker colored than other volcanic rocks.

BENDING FRACTURE (BEND): A non-concordal fracture caused by flexing that exceeds the elasticity of the material. The fracture is characterized by the lack of a bulb of force, fracture initiation near the center of an artifact's face rather than at the margin, and fracture plane propagation oriented nearly perpendicular to the initiation face. The fracture exhibits compression rings, radial striations, and often a distinctive finial termination. Bending fractures occur during stone tool manufacture as a result of percussive shock waves (end shock) or from bending thin items in the hand during pressure flaking, during stone tool use such as from impact on projectile points, and from post-depositional effects like trampling.
BIFACE (BIF): A lenticular or plano-convex artifact with flakes removed from two opposing sides. Bifaces are operationally distinguished from other tools with partial bifacial edges (such as worked flakes) by being flaked all or most of the way around the margin and having flake scars that extend across the faces toward the center of the piece.

BIFACIAL THINNING FLAKE, EARLY STAGE (BIFE): Percussion flakes with multi-faceted platforms, relatively acute platform angles, relatively small but thick platforms, a simple dorsal flake scar pattern, curved and thin longitudinal section, slightly curved and thin cross section, and parallel to expanding margins. May exhibit evidence for edge preparation, alternate, or bulb removal flaking. May retain remnants of ventral surface from flake blank.

BIFACIAL THINNING FLAKE, LATE STAGE (BIFL): Percussion flakes with same attributes as BIFE but with more complex dorsal flake scar patterns (some scars from previous flakes originating from the opposite margin of the biface), thinner, sometimes lipped and isolated platforms, thinner and more uniform cross-sections, more pronounced curvature, and usually expanding margins.

BIPOLAR REDUCTION / BIPOLAR FLAKE (BPO): This reduction technique involves holding a core, or item to be flaked on an anvil and then striking that core with a hammerstone, using necessary force to split the parent piece or detach flakes. Bipolar fractures are initiated by wedging, propagate under compressive force, and terminate axially. These fractures are characterized by a lack of bulbs of force, crushed platforms and terminations, pronounced compression rings and radial striations, and a relatively flat fracture plane oriented perpendicular to the initiation surface. Flake scars on cores and the dorsal surface of flakes often are oriented parallel to each other and initiate from opposite directions. Bipolar technologies are frequently employed to reduce small rounded lithic materials such as alluvial pebbles and in the lateral cycling of bifaces.

BLANK (BLK): A piece of lithic material modified to a particular stage of reduction and intended for further reduction. In analysis of artifacts, blanks are distinguished from preforms on the basis of manufacturing technique such that the negative flake scars indicate percussion reduction for the blanks and pressure reduction for the preforms. Blanks are usually identified from fragments broken and discarded during the manufacturing process.

BULB OF FORCE (BULB): This feature can be found on the ventral surface of a concoidal flake, towards the proximal end, below the platform. It appears as a dome-like form created as a partial Hertzian cone expanding from the ring crack around the contact point on the platform. Although the bulb of force is the hallmark attribute of concoidal (literally "shell-like" meaning curved with concentric ribs) fractures, its size and distinctiveness varies with technique and magnitude of force application as well as with characteristics of the lithic material.

BULB REMOVAL FLAKE (BULB): A flake that removes part or all of the bulb of force from a flake blank, usually in the early stages of percussion bifacial thinning. In addition to a portion of the bulb of force, the dorsal surface of this flake frequently exhibits other distinctive features of the ventral surface of the original flake blank including the contact point, ring crack, erallure scar, or part of the platform. This flake is a classic example of RVS.

CHATTOYANT: Changing in luster or color, a term used for obsidian that reflects light from interior flow banding at certain angles as a sheen.
CHOPPER (CHP): A heavy core tool manufactured by percussion flaking of restricted areas along the sides or ends of a cobble. These tools were probably used for a variety of tasks that required a heavy-duty work edge, including cutting, crushing, pulping, scraping, and chopping.

CORE (COR): An artifact from which flakes are removed, in order to provide useful flake tools or flake blanks. Cores take many forms described according to predominant orientation of the flake scars and reduction techniques (e.g., unidirectional, multidirectional, bifacial, bipolar).

CORE BLANK: A core (often the remnant of a core left after some initial flake blank production) that is worked into a blank (usually a bifacial blank) through percussion flaking. Also referred to as a blank produced from a core nucleus reduction trajectory. In analysis, core blank (or core nucleus) reduction can be distinguished from flake blank reduction by the locations of cortex remnants, absence of remnant ventral, dorsal, or platform surfaces,debitage attributes, and other contextual information. Core blank or core nucleus reduction commonly occurs when bifaces are produced from tabular materials or when the sizes of available materials are only minimally adequate for tool size requirements.

CORE REDUCTION FLAKE, EARLY STAGE (CORE): Percussion flakes with cortical or single facet platforms, relatively wide (nearly 90°) platform angles, relatively large, thick platforms, dorsal cortex (usually present), few dorsal flake scars, dorsal flake scars oriented parallel to the margins of the flake and initiated from the same platform area, roughly parallel margins, longitudinal section straight or slightly curved, and triangular or blocky cross-section. Attributes of core reduction flakes are highly dependent on the nature of the raw material, method of reduction, and intended product.

CORE REDUCTION FLAKE, LATE STAGE (CORL): Percussion flakes with same attributes as CORE but with evidence of platform preparation, thinner platforms, more dorsal flake scars, expanding margins, and usually lacking cortex.

CORTEX (CTX): This refers to the outer surface or "rind" of a naturally occurring piece of lithic raw material. Cortex may be part of the matrix in which the material is formed (e.g., chalky material surrounding chert nodules in marine deposits), or a weathering or erosional surface. Three different types of cortex are identified for our purposes: primary geological (PG), incipient cone (IC), and pyroclastic (PY).

CREASENATED BREAK (CRBR): A thermally initiated break that follows a wavy line, to form rounded teeth that would fit together on the two fragments formed by the break.

CRYPTOCRystalline SILICATE (CCS): A term used by archaeologists to refer to microcrystalline varieties of quartz that exhibit brittle, homogeneous, and isotropic qualities conducive to concoidal flaking. These include cherts, flints, jaspers, chalcedonies, and agates.

CRAZING (CZ): Thermal damage caused by differential expansion in CCS materials. The damage consists of a network of small intersecting cracks in the artifact.
DIFFERENTIAL LUSTER (DIFLUS): Luster refers to the light reflective qualities of fracture surfaces on CCS materials. Microscopically smoother or flatter fracture surfaces reflect light more brightly and appear more vitreous than microscopically rough surfaces which appear more dull. Smoother fracture surfaces are often produced on thermally altered or heat-treated CCS artifacts. Heat treatment is an intentional alteration of the material to improve its flakability. Flakes removed from an artifact prior to heat alteration will exhibit the materials "natural" luster, not only on the flakes but also in the scars left on the parent artifact. After heat alteration, flakes removed will reveal more vitreous fracture surfaces on the interior of the artifact. When these flake scars exist on an artifact side by side, or the ventral surface of a flake exhibits more vitreous luster than its dorsal surface, this is considered good evidence for intentional heat treatment. Differential luster observed in thermal damage features, such as in a postid scar, or on the interior of a crazed break are not attributable to intentional heat treatment and are not recorded.

DISTAL (DIST): Orientation term that refers to the termination end of a flake, working end of a tool, or tip of biface (especially a projectile point).

DORSAL SURFACE: The dorsal surface of a flake is that face which corresponds to the exterior of the artifact from which it was detached.

DRILL (DRI): A tool (usually bifacial), with a worked projection presumably used for perforating materials such as stone, wood, bone, or antler.

EDGE PREPARATION FLAKE (EDG): A flake removed from a margin in order to change the angle of the edge to facilitate flaking. Usually to bevel an edge in preparation for bifacial reduction. These flakes usually have thick and wide multifaceted platforms and are short in length.

GLASS (GLA): Modern or historic manufactured (from quartz sand) material suitable for flintknapping.

GROUND ARRIS (GND ARR): An arris that has been ground or abraded. Arris grinding is used in flintknapping to facilitate flaking and to prepare artifacts for transportation.

HAMMERSTONE (HAM): Lithic percussion indenter or percussor used as a flintknapping tool to detach flakes.

incipient cone cortex (IC): A cortex type that occurs on alluvial (and sometimes colluvial) gravels as a result of surface erosion caused by natural battering of gravels against one another. Battering occurs from tumbling in the traction load of streams as materials are transported. The battering causes Hertzian cone fractures to be set into the surface making it weak susceptible to further erosion. Incipient cone cortex exhibits ring cracks and cone fractures initiated on flat surfaces and extending perpendicularly into the stone without detaching, a rounded surface topography, and often a smooth finish.

MARGIN: Edge of an artifact (tool or flake).

MARGIN REMOVAL FLAKE (MRG OR MRF): Half-moon or semi-circular fragment of a biface or flake blank edge produced from a bending fracture initiated near the edge. These flakes result from flintknapping errors (application of force at an inappropriate angle and too far from the edge) or from inadvertent or careless reduction of a thin edge.
MEDIAL (MED): Orientation term that refers to the midsection or middle of an artifact.

MULTIDIRECTIONAL (MULTIDIR): Core type with flakes removed in more than one direction or from more than one platform, or both.

OBSIDIAN (OBS): Volcanic glass.

OVERSHOT FLAKE (OVS): A flake with a reverse hinge termination that removes part of the core or biface on the opposite margin from which it is initiated. Usually considered a flintknapping error. Also outrepasse (French), overpass, or plunging flake. If complete, such flakes provide evidence for the length or width or bifaces and may also indicate platform preparation techniques used and sequence of flake removals.

PERCUSSION FLAKE, INDETERMINATE (PERC): Flake fragment with attributes of percussion reduction (discriminate ventral features and remnant percussion scars on dorsal surface) but lacking distinctive characteristics of a particular technology or reduction stage.

PRIMARY GEOLOGICAL CORTEX (PG): Natural exterior rind produced as a result of formation processes or weathering of lithic materials at or near the location of their flow or bed (outcrop). Examples include the chalky exterior of marine chert nodules, the crystalline cavity lining of hydrothermal cherts, the frothy exterior of an obsidian flow, and the smooth to scratched or pitted weathering of a naturally fractured outcrop.

PERVERSE FRACTURE (PERV): Concoidal fracture initiated at the margin of a biface usually by a misdirected percussion blow. The fracture propagates diagonally through the biface along a twisting path.

PETRIFIED WOOD (PET): Stone produced by siliceous replacement of organic material.

PLATFORM: Surface of a flake which contains the contact point of force applied to initiate the fracture for its detachment. The surface of a core, biface, or other piece on which force is applied to initiate a fracture to detach a flake.

PLATFORM PREPARATION FLAKE (PLT OR PLP): A short flake removed from the platform end of a core face to strengthen the platform for subsequent reduction. These flakes usually have thick and wide platforms and vary in shape depending on the configuration of the core. Platform preparation flakes are diagnostic of certain types of core maintenance.

PRESSURE FLAKE, EARLY STAGE (PREE): Flakes with small isolated platforms oriented to one side of the flake, acute platform angles, remnant ventral surface or remnants of percussion scars on dorsal surface (arises oriented in varying directions), margins are generally parallel to one another, and the flake is usually curved and twisted in longitudinal section.

PRESSURE FLAKE, LATE STAGE (PREL): Flakes with same attributes as PREE but with remnants of previous pressure scars on dorsal surface (arises oriented parallel to flake margins) and may exhibit attributes of final edge shaping such as for serrations or notches.

PROJECTILE POINT (PPT): A specific biface, made for use with a lance, dart, or arrow.

PREFORM (PRE): An unfinished pressure flaked tool, usually arrested in the manufacturing process because of a deleterious break.
PROXIMAL [PROX]: Orientation term that refers to the platform end of flake or the base of tool, especially a projectile point.

POTLID/POTLIDDING (PTLD): A flake or the scar from detachment of a flake, usually on CCS materials, caused by thermally induced differential expansion. The flake usually initiates near a flaw beneath the surface of the material and propagates under Hertzian principles toward the surface. The flake has a circular planview outline and leaves a shallow, smooth depression. The flake exhibits a shape resembling that of a lid of a pot. Potlids are usually the result of accidental, incidental or postdepositional damage to lithic materials in a fire. Although potlidding may occur as the result of mistakes in heat treatment, they do not usually reflect heat treating of materials where they are found.

PYROCLASTIC CORTEX (PY): Rind that occurs on obsidian or other volcanic rock that has been explosively (within an ash flow) or aerially ejected as lava from a volcanic vent. The cortex visually suggests its molten genesis with a mildly undulating rounded shape and wrinkled (as a result of contraction during cooling) texture. This type of cortex may visually resemble incipient cone cortex, but lacks the overlapping ring cracks characteristic of IC cortex.

QUARTZ (QUA): Macrocristalline silicate, usually monocrystalline quartz or metamorphosed (massive) quartz.

QUARTZITE (QTZ): Metamorphosed sandstone.

RADIAL BREAK (RBR): Fracture caused by applying force (percussion) to the middle of a flake or tool, on an anvil. The resulting fragments are pie shaped and exhibit square or obtuse edges along the broken surfaces.

RHYOLITE (RHO): An igneous volcanic rock, with a fine ground mass (grain size of less than 1 mm), and often larger phenocrysts. Rhyolite’s acidic chemistry is composed predominantly of potassium feldspar and quartz. Rhyolite is usually white, yellow, brown, or red and often flow banded or streaked. Most obsidians are glassy rhyolites.

REMNANT DORSAL SURFACE (RDS): A portion of the dorsal surface of the flake blank from which a flaked stone artifact is made. This surface may survive as a depression or a protrusion surrounded by flake scars removed in subsequent reduction. The surface exhibits cortex or negative flake scar attributes that are larger than the same attributes of surrounding flake scars and signifies a flake blank reduction trajectory. A remnant dorsal surface is difficult to identify on flakes but may be readily apparent on tools that have been minimally reduced from flake blanks.

REMNANT PLATFORM SURFACE (RPS): A portion of the original platform of a flake or flake blank which usually exhibits a single facet. This attribute is sometimes found at the base of projectile points such as Cascade and Coquille Broad-stemmed types. This attribute can indicate a particular manufacturing sequence involving linear flake blanks.

REMNANT VENTRAL SURFACE (RVS): A portion of the original detachment scar of a flake or flake blank. This attribute can be identified as a positive flake scar on the dorsal surface of a flake or on a tool and signifies a flake blank reduction trajectory. This surface may survive as a depression or a protrusion surrounded by flake scars removed in subsequent reduction. RVS is distinguished from other flake scars by relatively disproportionate (larger) attributes such as radial striations and compression rings. Since the remnant is only a portion of a larger surface, it often appears flat and featureless (because the features are widely spaced).
SANDSTONE (SAN): A sedimentary rock consisting primarily of cemented sand-size quartz grains.

SCRAPE (SCR): A uniface with a bit that exhibits use wear or rejuvenation. Presumably used for scraping organic materials, such as animal hides, which will give it a characteristic polish.

SERRATION (SERR): A series of small notches along the lateral margins of a tool (usually a projectile point).

SILTSTONE (SIL): A sedimentary rock consisting primarily of consolidated silt particles.

TERMINATION (TERM): The edge or margin of a flake or flake scar where the fracture ends (leaves the parent artifact).

USED FLAKE (UFL): A flake that exhibits edge wear indicative of use in some processing activity.

UNIFACE (UNI): An artifact with flakes removed from one surface.

UNIDIRECTIONAL (UNI): Core type with flakes removed in one direction or from one platform, or both.

VEIN QUARTZ (VQU): A lithic material from a hydrothermal CCS deposit formed in a crack or cavity of another rock.

VENTRAL SURFACE: The face or side of a flake that corresponds to interior of the artifact from which it was detached.

WORKED FLAKE (WFL): A flake intentionally altered at its margin to create a tool or to resharpen the edge for use as a tool.