

Cumulative (2013 & 2014) Geomorphic Surface Mapping

Shapefile



Tags

Susitna-Watana Hydroelectric Project, Susitna River, Alaska, Geomorphic Assessment Area, Focus Area, 2013, 2014

Summary

This shapefile is a product of the geomorphic surface mapping effort as part of the Geomorphology Study (Revised Study Plan [RSP] Study 6.5) and identifies a genetically-linked suite of geomorphic surfaces. The shapefile is a series of polygons that were delineated in ArcGIS based on in-situ mapping within 10 studied Focus Areas (FA) of the cumulative (2013 and 2014) field data collection effort (Initial Study Report [ISR] Study 6.6 Section 4.1.2.9). Aerial reconnaissance, field observations and measurements of geomorphic surface heights above a water-surface datum, aerial photography (2012 and 2013) and shaded relief mapping based on 2011 Matanuska-Susitna Borough LiDAR were used to develop the geomorphic surface mapping. This shapefile is part of Study Component 1 of the Geomorphology Study: Delineate Geomorphically Similar (Homogeneous) Reaches and Characterize the Geomorphology of the Susitna River (ISR Study 6.5). This characterization is directed toward identifying processes and controls that create, influence and maintain the fluvial geomorphic features that comprise the river and floodplain and represent the important aquatic habitats that may be affected by the Project.

Description

The overall goal of this effort was to collect geomorphic surface data in areas with the potential to be affected by construction and operation of the proposed Susitna-Watana Hydroelectric Project in Alaska.

The shapefile was developed as part of the Geomorphology Study (RSP Study 6.5). The overall goal of the Geomorphology Study is to characterize the geomorphology of the Susitna River, and to evaluate the effects of the Project on the geomorphology and dynamics of the river by predicting the trend and magnitude of geomorphic response. This will inform the analysis of potential Project-induced impacts to aquatic and riparian habitats. The results of this study, along with results of the Fluvial Geomorphology Modeling below Susitna-Watana Dam Study (Initial Study Report [ISR] Study 6.6 and Study Implementation Report [SIR] Study 6.6), will be used in combination with geomorphic principles and criteria/thresholds defining probable channel forms to predict the potential for alteration of channel morphology from Project operation. This information will be used to assist in determining whether protection, mitigation, or enhancement measures may be needed, and if so, what those measures may be.

Area of Study: The geomorphic surface mapping effort was concentrated within the 10 Focus Areas of the Middle Susitna River Segment. Because it was necessary to identify governing geologic controls in order to explain the genesis and spatial distribution of geomorphic features within the 10 Focus Areas, the area of study was often expanded either upstream, downstream, or both from the defined Focus Area limits. This expanded area is intended to include all geomorphic surfaces encompassed between upstream and downstream lateral constrictions such as bedrock, moraines, terraces and alluvial fans. These expanded areas of geomorphic study are referred to as Geomorphic Assessment Areas (GAAs) and correspond with each of the studied Focus Areas. Table 5.1-4 of Study 6.5's SIR identifies each GAA and defining PRM boundaries. Names of GAAs correspond to the numerical and common naming convention for Focus Areas.

Focus Areas involve portions of the Susitna River and its floodplain where detailed study efforts are being jointly conducted by several study teams including the Fish and Aquatics Instream Flow (RSP Study 8.5), Riparian Instream Flow (Section 8.6), Geomorphology (Section 6.5), Ice Processes (Section 7.6), Groundwater (Section 7.5), and Characterization and Mapping of Aquatic Habitats (Section 9.9) studies. The 10 Focus Areas involved in this mapping effort included FA-104 Whiskers Slough, FA-113 Oxbow I, FA-115 Slough 6A, FA-128 Slough 8A, FA-138 Gold Creek, FA-141 Indian River, FA-144 Slough 21, FA-151 Portage Creek, FA-173 Stephan Lake Complex, and FA-184 Watana Dam. More information on Focus Areas is documented in R2 Resource Consultants, Inc.'s 2013 Technical Memorandums, "Selection of Focus Areas and Study Sites in the Middle and Lower Susitna River for Instream Flow and Joint Resource Studies – 2013 and 2014" and "Adjustments to the Middle River Focus Areas"; both documents can be found on the Susitna-Watana project site (<http://www.susitna-watanahydro.org/>).

The digitized lateral limits of the mapping effort are intended to include all active alluvial surfaces and a portion of the bounding geologic or geomorphic surface. The bounding surfaces include: bedrock (BR), specified by type, either Kahiltna Flysch, Granite, or Metasedimentary; moraines (MORAINE); terraces (OUTWASH TCE); alluvial fans (FAN); or rip-rap (RIP RAP).

Surface Classifications:

The geologic mapping efforts (ISR Study 6.5 Section 4.1.2.3.1) supported the concentrated geomorphic surface mapping effort within the 10 Focus Areas. The geomorphic surface mapping is based on the geomorphic succession models presented in ISR Study 6.5 Section 5.1.3.3. The suite of geomorphic surfaces that are defined within this shapefile were classified based on heights of various in channel and out-of-channel features, vegetation succession patterns, observations of ice effects and trends identified by conceptual geomorphic models (ISR Study 6.5 Section 5.1.3.3). Mapping was guided by the geomorphic surface classification system as well as field observations and measurements including identification of lateral controls, lateral stability (e.g., eroding banks), tree ages and succession, overbank deposition and effects of ice-processes. Detailed methods pertaining to the collection of field observations can be found in ISR Study 6.6 Section 4.1.2.9. The mapping illustrates the distribution of valley floor alluvial surfaces as well as inactive alluvial surfaces including bedrock outcrop, lateral moraines and outwash terraces.

Gravel Bar (GB): The primary unit of all the geomorphic surfaces is the unvegetated gravel bar (GB) (Labelle et al. 1985; Osterkamp 1998; Gurnell et al. 2001; Harvey et al. 2003) that on average is 2 to 3 ft high. When shrub-type vegetation (willows, alders) becomes established on the exposed gravel bar surface, the hydraulic roughness increases which promotes about 1-2 ft of deposition of primarily sand-size sediment on top of the gravel core. The vegetation roots provide effective cohesion to the essentially cohesionless sands and gravels and promote stability of the vegetated bar (VB). Within a 10-20 year period, dense stands of balsam poplars (diameter less than 0.5 ft) establish and attain a height of up to about 30 ft, provided that ice processes and moose browsing (Collins and Helm 1997) do not reset the vegetation succession. Within this shapefile, gravel bars are specified as either part of the main channel (MC GB) or side channel (SC GB).

Vegetated Bar (VB): Within 50 to 60 years there is an additional approximately 2 ft of primarily sand deposition on the VB surface that creates a young floodplain surface (YFP) that is on average 5 to 6 ft high. The density of the balsam poplars on the YFP surface is reduced but the diameter of the individual trees increases (approximately 1 ft) and white spruce trees become established under the poplar canopy on sand deposits.

Young Floodplain (YFP): At about 80 years, there is an additional approximately 1 ft of primarily sand deposition on the YFP surface that creates a mature floodplain surface (MFP) that is on average 6-7 ft high. Balsam poplars are 70-80 ft high and the density of the trees is low with individual trees having diameters in excess of 2 ft. White spruce trees are up to 40 ft in height and ostrich ferns are ubiquitous as an understory species, especially where there is evidence of recent sand deposition.

Mature Floodplain (MFP) and Old Floodplain (OFF): After about 100 years, there is little increase in the height of the MFP surface, but there is a change in the vegetation on the surface as a result of the natural successional pathway that is essentially independent of fluvial processes, which is then characterized as an old floodplain surface (OFF). Balsam poplar trees are decadent (they can be as old as about 150 years), white spruce trees have grown in height to 70-80 feet and paper birch

trees have become established on the mineral soils exposed by the root balls of downed balsam poplars (Kevin Fetherston, R2 personal communication). Overall tree density is low and the understory tends to be dominated by ostrich ferns. Based on field observations and review of the time-sequential aerial photography (1951, 1983, 2012), as well as ice-breakup photography (HDR 2013a; HDR 2013b), it appears that the combined effects of low density of trees and the fact that the ostrich ferns have died back over the winter create relatively low overbank roughness pathways that may predispose ice scour and ice-jam affected overbank flows in the spring to create chute channels across the floodplain and islands that ultimately widen and lead to dissection and erosion of the OFP surfaces.

Terrace (TCE): Holocene-age terraces and dissected terrace remnants with similar vegetation characteristics as the OFP surfaces are located throughout the Middle River. The terraces are distinguishable from the floodplain surfaces by the thickness of the exposed gravel cores which tend to be 2 to 3 times thicker than those of the floodplain surfaces and by their additional height (9-10 ft). The vegetation assemblage on the terraces is dominated by paper birch and white spruce with a few very large diameter (> 3 ft) decadent balsam poplars. Tree density is low and the understory is primarily composed of ostrich ferns. Based on the sizes of the largest spruce and paper birch trees growing on the terraces it is possible that the terraces are 300-400 years old (Kevin Fetherston R2, personal communication).

Channel types in the Middle River were defined and classified in the 1980s studies (EWTA 1984, 1985; Entrix 1986). The classifications were somewhat arbitrary (EWTA 1985) but have persisted and thus are used in the current studies. The channel types and their distinguishing characteristics are described as follows.

Mainstem Channel (MC): This channel type may be single or split by the presence of vegetated islands and in general conveys more than 10 percent of the total flow during the summer open-water season. Except in the winter low-flow period it conveys turbid water.

Side Channel (SC): This channel type conveys less than 10 percent of the total flow and is in general hydraulically connected to the mainstem channel for more than 50 percent of the time in the summer open-water season and thus conveys turbid water. Breaching flows (i.e. flows when the SC and MC are hydraulically connected) are in general less than 20,000 cfs, but during the late Fall-Winter low-flow season the channels can be dry or conveying clear groundwater because the gravel berm or lateral weir at the head of the channel is at a higher elevation than the water-surface in the MC.

Side Slough (SS): This channel type by definition conveys only clearwater and thus the breaching flow is greater than 20,000 cfs and it is disconnected hydraulically from the mainstem for more than 50 percent of the time in the summer open-water season. The berms or lateral weirs formed by gravel deposition at the upstream end of the SS channels are not vegetated. By definition, when the breaching flow is exceeded, the SS becomes a SC, thus the classification of the SC and SS channel types is flow dependent.

Upland Slough (US): This channel type only conveys clearwater that is derived from local runoff, small tributaries and groundwater. The berms or lateral weirs at the upstream ends of the US channels are vegetated and are very rarely overtopped by mainstem flows. The US channels are often inhabited by beavers because they represent low energy zones.

Tributary (TR): This surface is the portion of a tributary channel flowing across the floodplain. Tributaries are typically clear water except in the case of the large channels such as the Yentna, Talkeetna and Chulitna Rivers, which were not classified as tributaries but rather as separate reaches of the Lower Susitna River Segment. Tributaries can contain tributary mouth habitat on their downstream end to the extent of the backwater condition. (Definition derived from Tetra Tech 2013)

Where present, the current, cumulative, mapping effort included 2 additional channel types (not identified in the 1980s):

Overbank Channel (OCH): This channel type is a periodically active erosional feature that has no direct connection with the MC and is located on OFP and Holocene-age terrace surfaces and appears to be the result of concentration of overbank flows most probably generated by

downstream ice jams.

Paleo Channel (PC): This channel type represents the former MC and probably SC channels that are located on Holocene-age terraces and are currently hydraulically disconnected from the MC, except under the most-extreme, most likely ice-jam generated flood events. Most of the channels have been filled in and support both wetland (alder, black spruce) and upland (river birch and white spruce) shrub and tree species. Local runoff and minor tributaries are the sources of water observed in these paleo-channels and in a number of locations they are occupied by large beaver-dam complexes, some of which are active and some of which appear to be abandoned.

Conclusion: The geomorphic surface mapping and conceptual geomorphic models are the products of an initial understanding of the geomorphology of the Susitna River. This understanding will be reviewed and updated as various study results are made available. See ISR Study 6.5 Sections 5.1.3.2, 6.1.3.2 and 7.1.1.3.2 for results and discussion.

References:

E. Woody Trihey and Assoc. 1984. Response of aquatic habitat surface areas to mainstem discharge in the Talkeetna to Devil Canyon reach of the Susitna River, Alaska. Final report, June. E.W. Trihey & Associates. Report for Alaska Power Authority. Document 1693. 1 vol.

E. Woody Trihey and Assoc. 1985 . Characterization of aquatic habitats in the Talkeetna to Devil Canyon segment of the Susitna River. Final Report to Alaska Power Authority, Document 2919.

Entrix, 1986. Downstream aquatic impacts assessment. Draft Report to Alaska Power Authority, February, 1986. Document 3417.

Harvey, M.D., Mussetter, R.A., Anthony, D.J., 2003. Island Aging and Dynamics in the Snake River, Western Idaho, USA. Abstract: Proceedings of Hydrology Days 2003. American Geophysical Union. Fort Collins, Colorado.

HDR Alaska, Inc. 2013a. Susitna River Ice Processes Study Report. Prepared for Alaska Energy Authority, March 2013.

HDR Alaska, Inc. 2013b. Susitna River Ice Processes Study Draft Report. Prepared for Alaska Energy Authority, August 2013.

Helm, D.J. and Collins, W.B., 1997. Vegetation succession and disturbance on a boreal forest floodplain, Susitna River, Alaska. Canadian Field Naturalist 111 (4), 553-566.

Labelle, J.C., Arend, M., Leslie, L., and Wilson, W. 1985. Geomorphic Change in the Middle Susitna River since 1949. Report by Arctic Environmental Information and Data Center. Prepared for the Alaska Power Authority.

Osterkamp, W.R., 1998. Processes of island formation, with examples from Plum Creek, Colorado and Snake River, Idaho. Wetlands, 18: 530-545.

Tetra Tech, 2013. Mapping of Geomorphic Features and Assessment of Channel Change in the Middle and Lower Susitna River Segments from 1980s and 2012 Aerials. Susitna-Watana Hydroelectric Project. 2012 Study Technical Memorandum. Prepared for the Alaska Energy Authority. Anchorage, Alaska.

Credits

Alaska Energy Authority;
Tetra Tech

Use limitations

None

Extent

West -150.187609 **East** -148.579588
North 62.843732 **South** 62.356479

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000

ArcGIS Metadata ▶**Topics and Keywords** ▶

* **CONTENT TYPE** Downloadable Data
EXPORT TO FGDC CSDGM XML FORMAT AS RESOURCE DESCRIPTION No

PLACE KEYWORDS Susitna River, Alaska

TEMPORAL KEYWORDS 2013, 2014

THEME KEYWORDS Susitna-Watana Hydroelectric Project, Focus Area, Susitna River, Geomorphic Assessment Area

Hide Topics and Keywords ▲

Citation ▶

TITLE Cumulative (2013 & 2014) Geomorphic Surface Mapping
ALTERNATE TITLES SuWa_6_6_GeomSurface_Mapping_20170630
PUBLICATION DATE 2017-06-30 00:00:00

PRESENTATION FORMATS digital map
FGDC GEOSPATIAL PRESENTATION FORMAT vector digital data

Hide Citation ▲

Citation Contacts ▶

RESPONSIBLE PARTY
ORGANIZATION'S NAME Tetra Tech
CONTACT'S ROLE originator

Hide Citation Contacts ▲

Resource Details ▶

DATASET LANGUAGES English (UNITED STATES)
DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

STATUS completed
SPATIAL REPRESENTATION TYPE vector

* **PROCESSING ENVIRONMENT** Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.4.1.5686

CREDITS

Alaska Energy Authority;
Tetra Tech

ARCGIS ITEM PROPERTIES

- * NAME SuWa_6_6_GeomSurface_Mapping_20170630
- * SIZE 0.637
- * LOCATION file:///\\DIVD-HK31VR1
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- * ACCESS PROTOCOL Local Area Network

[Hide Resource Details ▲](#)

Extents ►

EXTENT

DESCRIPTION

ground condition

TEMPORAL EXTENT

BEGINNING DATE 2013-08-01 00:00:00

ENDING DATE 2014-07-01 00:00:00

EXTENT

GEOGRAPHIC EXTENT

BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching

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* EAST LONGITUDE -148.579588

* NORTH LATITUDE 62.843732

* SOUTH LATITUDE 62.356479

* EXTENT CONTAINS THE RESOURCE Yes

EXTENT IN THE ITEM'S COORDINATE SYSTEM

* WEST LONGITUDE 1609063.311588

* EAST LONGITUDE 1877840.120332

* SOUTH LATITUDE 3055875.847582

* NORTH LATITUDE 3231464.640857

* EXTENT CONTAINS THE RESOURCE Yes

[Hide Extents ▲](#)

Resource Points of Contact ►

POINT OF CONTACT

ORGANIZATION'S NAME Alaska Energy Authority

CONTACT'S ROLE owner

CONTACT INFORMATION ►

PHONE

VOICE 907-771-3000

FAX 907-771-3044

ADDRESS

TYPE both

DELIVERY POINT 813 West Northern Lights Boulevard

CITY Anchorage

ADMINISTRATIVE AREA AK

POSTAL CODE 99503

COUNTRY US

E-MAIL ADDRESS SUWAhelp@aidea.org

[Hide Contact information ▲](#)

POINT OF CONTACT

ORGANIZATION'S NAME Tetra Tech
 CONTACT'S POSITION Principal Investigator for Geomorphology Study
 CONTACT'S ROLE principal investigator

CONTACT INFORMATION ►

PHONE

VOICE 206.728.9655
 FAX 206.728.9670

ADDRESS

TYPE both
 DELIVERY POINT 1420 5th Ave., Suite 550
 CITY Seattle
 ADMINISTRATIVE AREA WA
 POSTAL CODE 98101
 COUNTRY US
 E-MAIL ADDRESS info@tetrattech.com

[Hide Contact information ▲](#)

[Hide Resource Points of Contact ▲](#)

Resource Maintenance ►

RESOURCE MAINTENANCE

UPDATE FREQUENCY not planned

[Hide Resource Maintenance ▲](#)

Resource Constraints ►

LEGAL CONSTRAINTS

LIMITATIONS OF USE

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CONSTRAINTS

LIMITATIONS OF USE

None

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Spatial Reference ►

ARCGIS COORDINATE SYSTEM

* TYPE Projected

* GEOGRAPHIC COORDINATE REFERENCE GCS_North_American_1983
 * PROJECTION NAD_1983_StatePlane_Alaska_4_FIPS_5004_Feet
 * COORDINATE REFERENCE DETAILS
 PROJECTED COORDINATE SYSTEM
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 Y ORIGIN -52448700
 XY SCALE 137255069.87923574
 Z ORIGIN -100000
 Z SCALE 10000
 M ORIGIN -100000
 M SCALE 10000
 XY TOLERANCE 0.0032808333333333331
 Z TOLERANCE 0.001
 M TOLERANCE 0.001
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 ["Esri",102634]]

REFERENCE SYSTEM IDENTIFIER

* VALUE 102634
 * CODESPACE Esri
 * VERSION 8.0.1

[Hide Spatial Reference ▲](#)

Spatial Data Properties ►

VECTOR ►

* LEVEL OF TOPOLOGY FOR THIS DATASET geometry only

GEOMETRIC OBJECTS

FEATURE CLASS NAME SuWa_6_6_GeomSurface_Mapping_20170630
 * OBJECT TYPE composite
 * OBJECT COUNT 767

[Hide Vector ▲](#)

ARCGIS FEATURE CLASS PROPERTIES ►

FEATURE CLASS NAME SuWa_6_6_GeomSurface_Mapping_20170630
 * FEATURE TYPE Simple
 * GEOMETRY TYPE Polygon
 * HAS TOPOLOGY FALSE
 * FEATURE COUNT 767
 * SPATIAL INDEX FALSE
 * LINEAR REFERENCING FALSE

[Hide ArcGIS Feature Class Properties ▲](#)

[Hide Spatial Data Properties ▲](#)

Geoprocessing history ►

[Hide Geoprocessing history ▲](#)

Distribution ►

DISTRIBUTOR ►

CONTACT INFORMATION

ORGANIZATION'S NAME Alaska Energy Authority
 CONTACT'S ROLE distributor

CONTACT INFORMATION ►

PHONE

VOICE 907-771-3000
 FAX 907-771-3044

ADDRESS

TYPE both
 DELIVERY POINT 813 West Northern Lights Boulevard
 CITY Anchorage
 ADMINISTRATIVE AREA AK
 POSTAL CODE 99503
 COUNTRY US
 E-MAIL ADDRESS SUWAhelp@aidea.org

[Hide Contact information ▲](#)

ORDERING PROCESS

TERMS AND FEES None

[Hide Distributor ▲](#)

DISTRIBUTION FORMAT

* NAME Shapefile

TRANSFER OPTIONS

* TRANSFER SIZE 0.637

ONLINE SOURCE

LOCATION http://gis.suhydro.org/SuWa/06-GEO/6.06-GEOMOD/GIS/Field_Data

ONLINE SOURCE

LOCATION <http://www.susitna-watanahydro.org/type/documents/>

NAME There are three reports that present and describe this data: (A) "06.06 Fluvial Geomorphology Modeling below Watana Dam - 2014-2015 Study Implementation Report (Part 1 of 4)" under "November 2015; Study Completion and 2014/2015 Implementation Reports"; (B) "6.6 Fuvial Geomorphology Modeling below Watana Dam Study: Part A" under "June 3, 2014; Initial Study Report - Part A, B, and C". Report B has 3 links: (1) Report and Tables [Part A 1 of 3], (2) Figures [Part A 2 of 3], and (3) Appendices A-E and Attachment A [Part A 3 of 3]; and (C) "6.5 Geomorphology Study: Part A" under "June 3, 2014; Initial Study Report - Part A, B, and C". Report C has 3 links: (1) Report and Tables [Part A 1 of 3], (2) Figures [Part A 2 of 3], and (3) Appendices A-E [Part A 3 of 3].

[Hide Distribution ▲](#)

Fields ►

DETAILS FOR OBJECT [SuWa_6_6_GeomSurface_Mapping_20170630](#) ►

* TYPE Feature Class

* ROW COUNT 767

DEFINITION

Mapped polygons of geomorphic surfaces within Geomorphic Assessment Areas in the Middle River.

DEFINITION SOURCE

Tetra Tech

FIELD [Focus_Area](#) ▶

- * ALIAS Focus_Area
- * DATA TYPE String
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- * PRECISION 0
- * SCALE 0

FIELD DESCRIPTION

Numerical Indicator and Common Name of Focus Area

DESCRIPTION SOURCE

AEA

DESCRIPTION OF VALUES

The associated Focus Area of the mapped polygon within a GAA.

[Hide Field Focus_Area](#) ▲

FIELD [Area_ft2](#) ▶

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- * WIDTH 19
- * PRECISION 0
- * SCALE 0

FIELD DESCRIPTION

Area in feet squared

DESCRIPTION SOURCE

Tetra Tech

DESCRIPTION OF VALUES

Area of polygon in feet squared.

[Hide Field Area_ft2](#) ▲

FIELD [Shape](#) ▶

- * ALIAS Shape
- * DATA TYPE Geometry
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- * PRECISION 0
- * SCALE 0

FIELD DESCRIPTION

Feature geometry.

DESCRIPTION SOURCE

ESRI

DESCRIPTION OF VALUES

Coordinates defining the features.

[Hide Field Shape ▲](#)

FIELD [Geom_Surf ▶](#)

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- * PRECISION 0
- * SCALE 0

FIELD DESCRIPTION

Geomorphic Surface. Please refer to the Abstract/Description section for a complete description of the classification codes.

DESCRIPTION SOURCE

Tetra Tech

LIST OF VALUES

VALUE RIP RAP
 DESCRIPTION Rip-rap
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE SS
 DESCRIPTION Side Slough
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE MORaine
 DESCRIPTION Moraine
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE MC GB
 DESCRIPTION Mainstem Channel Gravel Bar
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE SC GB
 DESCRIPTION Side Channel Gravel Bar
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE MFP
 DESCRIPTION Mature Floodplain
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE OCH
 DESCRIPTION Overbank Channel
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE Till / Outwash Mix
 DESCRIPTION Till and Outwash Terrace Mix
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE OUTWASH TCE
 DESCRIPTION Outwash Terrace
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE OFP
 DESCRIPTION Old Floodplain
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE BR - Metasedimentary

DESCRIPTION Bedrock (Metasedimentary)
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE US
 DESCRIPTION Upland Slough
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE BR - Granite
 DESCRIPTION Bedrock (Granite)
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE SC
 DESCRIPTION Side Channel
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE TR
 DESCRIPTION Tributary
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE YFP
 DESCRIPTION Young Floodplain
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE VB
 DESCRIPTION Vegetated Bar
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE MC
 DESCRIPTION Mainstem Channel
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE TCE
 DESCRIPTION Terrace
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE BR - Kahiltna Flysch
 DESCRIPTION Bedrock (Kahiltna Flysch)
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE PC
 DESCRIPTION Paleo Channel
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

VALUE FAN
 DESCRIPTION Alluvial Fan
 ENUMERATED DOMAIN VALUE DEFINITION SOURCE Tetra Tech

DESCRIPTION OF VALUES
 Geomorphic Surface type.

Hide Field Geom_Surf ▲

FIELD FID ►

- * ALIAS FID
- * DATA TYPE OID
- * WIDTH 4
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FIELD DESCRIPTION

Internal feature number.

DESCRIPTION SOURCE

ESRI

DESCRIPTION OF VALUES

Sequential unique whole numbers that are automatically generated.

Hide Field FID ▲

FIELD DataLink ►

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- * SCALE 0

FIELD DESCRIPTION

Hyperlink to downloadable dataset on AEA server

DESCRIPTION SOURCE

Tetra Tech/AEA

DESCRIPTION OF VALUES

Hyperlink to downloadable dataset on AEA server: http://gis.suhydro.org/SuWa/06-GEO/6.06-GEOMOD/GIS/Field_Data

Hide Field DataLink ▲

FIELD DocLink ►

- * ALIAS DocLink
- * DATA TYPE String
- * WIDTH 254
- * PRECISION 0
- * SCALE 0

FIELD DESCRIPTION

Link to associated downloadable report on AEA server

DESCRIPTION SOURCE

Tetra Tech/AEA

DESCRIPTION OF VALUES

Link to associated downloadable reports on AEA server: There are three reports that present and describe this data: (A) "06.06 Fluvial Geomorphology Modeling below Watana Dam - 2014-2015 Study Implementation Report (Part 1 of 4)" under "November 2015; Study Completion and 2014/2015 Implementation Reports"; (B) "6.6 Fuvial Geomorphology Modeling below Watana Dam Study: Part A" under "June 3, 2014; Initial Study Report - Part A, B, and C". Report B has 3 links: (1) Report and Tables [Part A 1 of 3], (2) Figures [Part A 2 of 3], and (3) Appendices A-E and Attachment A [Part A 3 of 3]; and (C) "6.5 Geomorphology Study: Part A" under "June 3, 2014; Initial Study Report - Part A, B, and C". Report C has 3 links: (1) Report and Tables [Part A 1 of 3], (2) Figures [Part A 2 of 3], and (3) Appendices A-E [Part A 3 of 3].

Hide Field DocLink ▲

[Hide Details for object SuWa_6_6_GeomSurface_Mapping_20170630 ▲](#)

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Metadata Details ►

METADATA LANGUAGE English (UNITED STATES)
 METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset
 SCOPE NAME * dataset

* LAST UPDATE 2017-06-29

ARCGIS METADATA PROPERTIES

METADATA FORMAT ArcGIS 1.0
 METADATA STYLE FGDC CSDGM Metadata
 STANDARD OR PROFILE USED TO EDIT METADATA FGDC

CREATED IN ARCGIS FOR THE ITEM 2014-12-18 15:18:36
 LAST MODIFIED IN ARCGIS FOR THE ITEM 2017-06-29 18:13:13

AUTOMATIC UPDATES

HAVE BEEN PERFORMED Yes
 LAST UPDATE 2017-06-29 18:13:13

[Hide Metadata Details ▲](#)

Metadata Contacts ►

METADATA CONTACT
 ORGANIZATION'S NAME Alaska Energy Authority
 CONTACT'S ROLE owner

CONTACT INFORMATION ►

PHONE
 VOICE 907-771-3000
 FAX 907-771-3044

ADDRESS

TYPE both
 DELIVERY POINT 813 West Northern Lights Boulevard
 CITY Anchorage
 ADMINISTRATIVE AREA AK
 POSTAL CODE 99503
 COUNTRY US
 E-MAIL ADDRESS SUWAhelp@aidea.org

[Hide Contact information ▲](#)

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Metadata Maintenance ►

MAINTENANCE

UPDATE FREQUENCY not planned

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Thumbnail and Enclosures ▶

THUMBNAIL

THUMBNAIL TYPE JPG

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FGDC Metadata (read-only) ▼