ARIZONA DEPARTMENT OF TRANSPORTATION

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APPLICATION OF HEC-6 TO EPHEMERAL RIVERS OF ARIZONA

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16. Abstract

The U.S. Army Corps of Engineers, computer program HEC-6 - "Scour and Deposition in Rivers and Reservoirs" was applied to three ephemeral rivers of Arizona - Agua Fria River, Salt River, and Rillito Creek. The input data development techniques and results from these three case studies were used to develop general input data development/calibration strategies. The theoretical and numerical bases of HEC-6 were reviewed and documented to clarify and further define the important aspects of the sediment routing portion of the program. The overall result of this study is a document designed to aid "users" in the application of HEC-6 to ephemeral rivers of Arizona.

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stream/river: sediment transport, scour, deposition, computer programs, models; bridge/hydraulic structure design; fluvial geomorphology, alluvial channels.	

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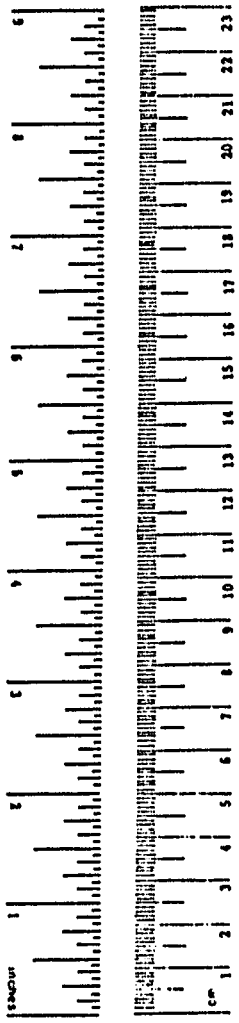
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

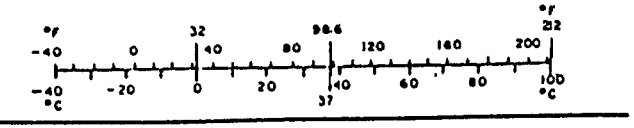
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



METRIC CONVERSION FACTORS

PREFACE

The objective of this report is to present and discuss various aspects of the generalized computer program HEC-6, in order to aid in its application to rivers of Arizona. More specifically, this report includes discussion of the theoretical/numerical bases of HEC-6, input data development, supplemental programs, and case studies. The report is essentially a compilation of both available literature and insights gained from the application of HEC-6 to three rivers in Arizona.

ABSTRACT

The computer program HEC-6 - "Scour and Deposition in Rivers and Reservoirs" was applied to three ephemeral rivers of Arizona - Agua Fria River, Salt River, and Rillito Creek. The input data development techniques and results from these three case studies were used to develop general input data development/calibration strategies. The theoretical and numerical bases of HEC-6 were reviewed and documented to clarify and further define the important aspects of the sediment routing portion of the program. Hence, the overall result of this study was a document designed to aid "users" in the application of HEC-6 to ephemeral rivers of Arizona.

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