DIVISION DE ESTUDIOS DE POSGRADO
DE LA FACULTAD DE INGENIERIA
SECCION DE HIDRAULICA

ESTRUCTURAS DE MEDICION EN SISTEMAS DE RIEGO POR GRAVEDAD

IV. INVESTIGACION BIBLIOGRAFICA RETROSPECTIVA

Elaborado para:

COMISION DEL PLAN NACIONAL HIDRAULICO

diciembre de 1981

RESUMEN

Se presenta a continuación la investigación bibliográfica retrospectiva, realizada en el centro de investigación científica y humanística, UNAM.

Se consultaron los bancos de datos BHRA y COMPENDEX, en un lapso de 10 años. Estos bancos son especializados en hidráulica y mecánica de fluidos.

FACULTAD DE INGENIERIA.

81-327 "Instrumentos de medición en canales".

FUENTE S) CONSULTADA(S) :

COMPENDEX 1970-1981 / Abr.
BHRA 1974-1980 / Mar.

6 de Mayo de 1981.

CENTRO DE INFORMACION CIENTIFICA Y HUMANISTICA
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Set Items Description
1 0 BIBLIOGRAFIA #327
2 57 FLUME? ?/TI,DE,ID
3 1050 OPEN(W)CHANNEL? ?/TI,DE,ID
4 16 2AND3

Print 4/5/1-16

Search Time: 0.037 Prints: 16 Descs.: 3

1095260 ID NO.- EI801295260 estancamiento pendiente.
WEIR AND FLUME CALIBRATION BY PONDAGE DRAWDOWN
Johnson, F. Allan; Green, Christopher S.
Univ of Sheffield, Engl
ASCE J Hydraul Div v 106 n 11 Nov 1980 p 1903-1913 CODEN: JYCEAJ
ISSN 0044-796X
The results of a laboratory study into the pondage drawdown method of weir and flume calibration are described. The accuracy of the method is assessed by application to five different types of flow measuring structures, and, as a result, a general calibration technique and procedure for analysis is developed. When compared with volumetric calibrations, differences are within those obtainable by more conventional techniques. 6 refs.
DESCRIPTORS: (*WEIRS, *Mathematical Models), (FLOW OF WATER, Open Channels),
IDENTIFIERS: FLUME CALIBRATION
CARD ALERT: 441, 631

986679 ID NO.- EI791186679
FLOW MEASUREMENT IN OPEN CHANNELS WITH WEIRS AND FLUMES.
Boiten, W.
Delft Hydraul Lab, Wageningen, Neth
Flow Meas of Fluids, Proc of FLOMEKO 1978, IMEKO (Int Meas Confed Tech Comm on Flow Meas) Conf, Groningen, Neth, Sep 11-15 1978 Publ by North-Holland Publ Co, Amsterdam, Neth and New York, NY 1978 p 343-34
A general introduction is given to the application of discharge measuring structures and the selection of the type of structure. Recent investigations carried out by the laboratory provide information about the simplified design of V-notch boxes, the lateral contraction of weir flow, a conversion for Parshall flumes, the Dutch flap weirs, and the design of V-shaped broad-crested weirs. 6 refs.
DESCRIPTORS: (*FLOW OF FLUIDS, *Measurements), (WEIRS, Applications),
CARD ALERT: 631, 441

846925 ID NO.- EI780646925
COMPENSATING FOR CONSTRUCTION ERRORS IN CRITICAL-FLOW FLUMES AND BROAD-CRESTED WEIRS.
Replogle, John A.
US Water Conserv Lab, Agric Res Serv, USDA, Phoenix, Ariz
Natl Bur Stand Spec Publ n 484, Proc of the Symp on Flow Meas in Open Channels and Closed Conduits, NBS, Gaithersburg, Md, Feb 23-25 1977, Publ by NBS, Washington, DC, 1977, Available from Supt of Doc, GPO, Washington, DC v 1 p 201-218 CODEN: XNBSAV
Critical-flow flumes and broad-crested weirs can now be routinely and accurately calibrated ($plus or minus$ 2%) by computer techniques over a wide range of flow rates and flume cross sections, including trapezoidal and complex shapes. Procedures were developed and used on a series of primary devices in irrigation canals, including trapezoidal flumes and broad-crested weirs, which identified construction errors and accurately related a readout mechanism to the primary device, as constructed so that the original intended accuracy could be restored. Templates were used to accurately define field dimensions of the flume throat section, its most sensitive portion. Errors in defining the throat cross-sectional area can be shown to be nearly equal to the error in discharge. 8 refs.
DESCRIPTORS: *WEIRS, (FLOW OF FLUIDS, Open Channels),
IDENTIFIERS: FLUMES
CARD ALERT: 441, 631

841554 ID NO.- EI780641554
NUMERICAL MODELING OF TWO-DIMENSIONAL FLUMES.
Davis, Ronald W.
NBS, Mech Div, Washington, DC
Natl Bur Stand Spec Publ n 484, Proc of the Symp on Flow Meas in Open Channels and Closed Conduits, NBS, Gaithersburg, Md, Feb 23-25 1977, Publ by NBS, Washington, DC, 1977, Available from Supt of Doc, GPO, Washington, DC v 1 p 219-242 CODEN: XNBSAV
This study is concerned with extending the operational range of a particular type of flume (the two-dimensional version of the Palmer-Bowlus flume) into areas where one-dimensional theory loses its validity. The determination of the head-discharge relationship for this flume is done numerically by use of the SOLA finite difference routine for two-dimensional free-surface flows. Effects of changes in flume geometry, channel slope, and upstream velocity profile are investigated. The numerical results are verified experimentally. 10 refs.
DESCRIPTORS: (*FLOW OF FLUIDS, *Open Channels), WEIRS,
IDENTIFIERS: FLUMES
CARD ALERT: 441, 631

802729 ID NO.- EI780102729
GEOMETRIC PARAMETERS THAT INFLUENCE FLOODPLAIN FLOW.
James, Maurice; Brown, Bobby J.
US Army Eng Waterw Exp Stn, Hydraul Lab, Vicksburg, Miss
Res Rep US Army Eng Waterw Exp Stn H-77-1 Jun 1977 141 p
CODEN: XWRRAZ
Laboratory tests were conducted in a tilting flume to study the effects of overbank flow on the resistance coefficient. Testing was accomplished on a straight and meandering main channel for a symmetrical and asymmetrical floodplain of various widths. Results indicated that a correction must be applied to the resistance formula for shallow-flow depths over the overbank, and the correction factors are presented graphically. 10 refs.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), FLOODS,
IDENTIFIERS: FLOODPLAINS, OVERBANK FLOW, TILTING FLUMES
CARD ALERT: 442, 631

757540 ID NO.- EI770857540
DISCHARGE MEASUREMENT STRUCTURES.
Bos, M. G. (Ed.)
Int Inst Land Reclam Improv, Netherlands, Publ n 20 1976 464 p CODEN: PILIAU
This book presents instructions, standards, and procedures for the selection, design, and use of structures, which measure or regulate the flow rate in open channels. The topics discussed cover list of principal symbols, auxiliary equipment for measuring structures, the selection of structures, broad-crested weirs, sharp-crested weirs, short-crested weirs, flumes, orifices, miscellaneous structures, basic equations of motion in fluid mechanics, the overall accuracy of the measurement of flow, side weirs and oblique weirs, and suitable stilling basins.
DESCRIPTORS: *HYDRAULIC STRUCTURES, STRUCTURAL ANALYSIS, STRUCTURAL DESIGN, (FLOW OF WATER, Open Channels), WEIRS, STILLING BASINS,
IDENTIFIERS: FLUMES, ORIFICES, FLUID MECHANICS
CARD ALERT: 408, 441, 632, 931, 631

724259 ID NO.- EI770424259
TRAPEZOIDAL VENTURI FLUMES: A DESIGN METHOD.
Diskin, M. H.
Univ of Ariz, Tucson
Int Water Power Dam Constr v 28 n 12 Dec 1976 p 21-27
CODEN: IWPCDM
The paper presents a design procedure that was found useful for the selection of the dimensions of the throat trapezoidal Venturi flumes and shows that venturi flumes have a number of advantages over other methods of measuring flows in discharge channels. Trapezoidal flumes are suited to adaption for different flow rates and channel characteristics. The author describes a method used to obtain suitable dimensions for the flume which should facilitate the use of these devices. 21 refs.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), (FLOW OF FLUIDS, Measurements),
IDENTIFIERS: TRAPEZOIDAL VENTURI FLUMES
CARD ALERT: 631

703175 ID NO.- EI770103175
DISCHARGE MEASUREMENT STRUCTURES.
Boa, M. G. (Ed.)
Int Inst for Land Reclam and Improv (ILRI), Wageningen, Neth
Int Inst Land Reclam Improv, (Neth) Bull n 20 1976 464 p
CODEN: BILRA5
This book presents instructions, standards, and procedures for the selection, design, and use of structures, which measure or regulate the flow rate in open channels. The fundamental principles involved in evaluating the flow pattern in weirs, flumes, orifices and other measuring structures are explained. Auxiliary equipment for measuring structures is described. Flow pattern in broad-crested weirs, sharp-crested weirs, short-crested weirs and orifices is evaluated. 173 refs.
DESCRIPTORS: *HYDRAULIC STRUCTURES, (FLOW OF WATER, Open Channels), WEIRS, (FLOW OF FLUIDS, Orifices), STANDARDS,
IDENTIFIERS: FLUMES, DISCHARGE MEASUREMENT STRUCTURES
CARD ALERT: 441, 631, 632, 902

312753 ID NO.- EI730312753
LONGITUDINAL DISPERSION IN SINUOUS CHANNELS.
Fukuoka, Shoji; Sayre, William W.
James Cook Univ of North Queensland, Aust
ASCE J Hydraul Div v 99 n HY1 Jan 1973 pap n 9479 p 195-217
CODEN: JYCEAJ
The longitudinal spreading of tracer solution and the distribution of velocity are investigated experimentally in a laboratory flume having a series of 13 uniform bends in alternating directions. The dispersion process behaves like a one-dimensional diffusion process, as in a straight channel. Analysis of the flume data together with available river data indicates that the dispersion coefficient tends to increase with increasing radius of curvature, and decrease with increasing bend length and depth. 24 refs.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), WATER POLLUTION, RIVERS,
IDENTIFIERS: FLUMES, DISPERSION, SINUOUS CHANNELS, TRACERS
CARD ALERT: 444, 453, 631

307415 ID NO.- EI730207415
CRITERION FOR ALTERNATE BAR FORMATION IN EXPERIMENTAL FLUMES.
Sukegawa, Noboru
Proc Jap Soc Civ Eng n 207 Nov 1972 p 47-50 CODEN: DGRHAD
24 refs. In Japanese.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), SEDIMENTATION, STREAM FLOW.
IDENTIFIERS: CHANNELS, FLUMES
CARD ALERT: 631, 931

307408 ID NO.- EI730207408
GENERALIZED DISCHARGE RELATIONS FOR CUTTHROAT FLUMES.
Skogerboe, Gaylord V.; Bennett, Ray S.; Walker, Wynn R.
Colorado State Univ, Fort Collins
ASCE J Irrig Drain Div v 98 n IR4 Dec 1972 Pap n 9438 p 569-583 CODEN: JRCEA4
A group of Cutthroat flumes were rated under both free flow and submerged flow conditions. Generalized discharge rating curves can be developed due to the simplicity of the structure and the geometric similarity between flume sizes. Twelve flumes were used in this study, including three flume lengths of 1. 5 ft, 3 ft, and 4. 5 ft with four different throat widths for each length.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), (MECHANICAL VARIABLES MEASUREMENT, Flow), DRAINAGE.
IDENTIFIERS: FLUMES
CARD ALERT: 631, 943

212118 ID NO.- EI72X012118
Uniform flow formula for flumes and canals
VERMA BP; MCWHORTER JC
Univ of Georgia, Georgia Station
Trans Amer Soc Agr Eng, Gen Ed v 14 n 2 Mar-Apr 1971 p 225-8, 231 CODEN: TAAEA
Study to develop a reliable relation for describing uniform, turbulent flow of water in open channels which would not resort to ambiguous constants or coefficients. The study was conducted in the steps of a dimensional analysis of the problem, the design of an experiment and conduct of flume tests for appropriate data collection, the analysis of data to establish a prediction equation which described uniform flow, and the comparison of the prediction equation with data obtained from literature on uniform flow in flumes and fixed canals. 7 refs. Paper 69- 746.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), (IRRIGATION, Canals).
CARD ALERT: 631, 821

209234. ID NO.- EI72X009234
Critical- depth flumes for determining flow in canals and natural channels
REPLOGLE JA
U S Water Conservation Lab, ARS, USDA, Phoenix, Ariz
Trans Amer Soc Agr Eng, Gen Ed v 14 n 3 May-June 1971 p 428-33, 436 CODEN: TAAEA
A computer program was developed to compute the discharge rating curves while applying all of the corrections discussed. The program was applied to predicting the laboratory calibrations for six flumes designed and constructed specifically to test the procedure. Restults showed that critical- depth flumes can be proportioned so that the resulting flow conditions can be determined by rigorous mathematical analysis and the flumes can be designed by computer. 11 refs. Paper 70- 215.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels).
CARD ALERT: 631

138997 ID NO.- EI71X038997
Flume experiments on alternate bar formation
CHANG HY; SIMONS DB; SOOLHISHER DA
San Diego State Coll, Calif
ASCE J Waterways Harbors Div v 97 n WW1 Feb 1971 paper 7869 p 155-65 CODEN: JWHEA
A series of laboratory experiments were performed to determine relationships between alternate bar geometry, bed material properties and hydraulic parameters. The experiments were conducted in a recirculating laboratory flume 100 ft long and 3 ft wide. The flume has smooth rigid walls and a movable bed. Sand, expanded clay aggregate and plastic pellets were used as the bed materials. A linear relationship existed between the longarithm of the dimensionless parameter lambda S/D and the Froude number, where lambda is the meandering wave length, S is the slope and D is the mean depth. 14 refs.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), (RIVERS, Sedimentation), HYDRAULICS.
IDENTIFIERS: MEANDERS
CARD ALERT: 407, 444, 631, 632

053603 ID NO.- EI70X153603
Study of bed- material transport based on the analysis of flume experiments
COOPER RH
Univ of Alberta, Dept of Civ Eng, Edmonton, Alberta, Spring 1970, 223 p
Analysis of the behavior of flow in alluvial channels resulted in two graphical relationships. A densimetric form of the Froude number was related to the concentration of bed-material discharge and the ratio between average depth of flow and median diameter of the bed- material particles; slope replaced the densimetric Froude number in the second relationship. The parameters were also used for predicting the type of bed- form that develops for given flow conditions. The relationships were based on the results of %experiments on bed- materials with specific gravities approximately equal to 2. 65. 42 refs.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), MASS TRANSFER, (RIVERS, Sedimentation),
CARD ALERT: 407, 631, 641

037134 ID NO.- EI70X037134
Effect of flume width on bed- form characteristics
CRICKMORE MJ
Ministry of Technol, Wallingford, Berkshire, England
ASCE J Hydraul Div v 96 n NY2 Feb 1970 paper 7077 p 473-96
The dimensions of bed- forms developed in laboratory channels are found to be a function of channel width. Standardized parameters for the dimensional description of bed- form profile, and the adoption of significant form height and the average distance between alternate zero- crossings are advised. The distribution of bed elevations conforms reasonably well with accepted theoretical distributions for water waves, provided allowance is made for the greater spectral width values that characterize the bed- form profiles. Sediment movement occurs as surface creep. 22 refs.
DESCRIPTORS: (*FLOW OF WATER, *Open Channels), HYDRAULICS, (RIVERS, Sedimentation), (RESERVOIRS, Sedimentation), WAVES, WATER,
CARD ALERT: 407, 441, 471, 631, 632

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  4    130 2AND3

Print 4/5/1-130

Search Time:  0.028   Prints: 130   Descs.:  3
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089073 FM
Methods of measurement of liquid flow in open channels. part 4. Weirs and flumes. Part 4E. Free overfall weirs of finite crest width (rectangular braod-crested weirs).
British Standards Inst.
London U.K., British Standards Inst., 1980. 12p. (BS 3680:Part 4E: 1980; ISO 3846-1977) .
Languages: English
This International Standard lays down requirements for the use of full-width rectangular free overfall weirs of finite crest width for the measurement of flow of clear water in open channels. The advantages and disadvantages of this type and other types of weirs and flumes, as well as the relative accuracies of each of these devices, are given. (from paper).
Section Heading Codes: M24

088450 X
Simplified application of Palmer-Bolus flow meters.
Ludwig, R.G. ; Parkhurst, J.D.
J. Water Pollut. Control Fed., vol.46, no.12, Dec. 1974, pp.27644-2769. ,
Languages: English
Descriptors: venturi flume; waste water; open channel; flume ; Palmer-Bowlus meter; advantage; hydraulic; principle; circular; rectangular; conduit

078502 SL
Hydrohandling of sweet potatoes in flumes.
Trykowski, T. ; Abrams, C.F.
North Carolina Univ.
Trans. Am. Soc. Agric. Engr.(Gen.Ed.), vol.22, no.5, Sep.-Oct. 1979, pp.1171-1174 , Coden: TAAEAJ ISSN 0001-2351
Languages: English
Flumng is a viable handling alternative which can be used in on farm sweet potato grading, packing and storing operations. Sweet potatoes were found easily flumable in water for water flow velocities from 30-46 m/min in practical sized channels. Allowable concentration by volume was found to be approximately 30%. (A)
Descriptors: foodstuff; hydraulic transport; open channel
Section Heading Codes: D12

077029 CH
Liquid flow measurment in open channels by weirs and flumes - end - depth method for estimation of flow in rectangular channels with a free overfall.
International Organization for ~Standardization
International Organization for Standardization
Geneva, Switzerland, International Organization for Standardization, 1977, 7pp. (ISO 3847-1977E) .
Languages: English
This International Standard specifies a method for the estimation of sub-critical flow of clear water in smooth, straight, rectangular prismatic open channels with a vertical drop and discharging freely. Using the measured depth at the end, the flow in rectangular channels (horizontal or sloping) with confined nappe and unconfined nappe may be estimated. The advantages and disadvantages of this device and other types of weirs and flumes, as well as the relative accuracies of each of these devices, are given in the annex. (A)
Section Heading Codes: C16

077028 CH
Liquid flow measurement in open channels by weirs and flumes - free overfall weirs of finite crest width (rectangular broad-creasted weirs).
Internation Orgnanization for ~Standardization
International Organization for Standardization
Geneva, Switzerland, International Organization for Standardization, 1977, 9pp. (ISO 3846-1977 E) .
Languages: English
This International Standard lays down requirements for the use of full-width rectangular free overfall weirs of finite crest width for the measurement of flow of clear water in open channels. The advantages and disadvantages of this type and other types of weirs and flumes, as well as the relative accuracies of each of these devices, are given in the annex. (A)
Section Heading Codes: C16

072474 FM
Flow metering flumes monitor water in coastal forest watershed.
Replogle, J.A. ; Riekerk, H. ; Swindel, B.F.
U.S. Water Conservation Lab.-Florida Univ. at Gainesville-Southeastern Forest Exp. Stn.
Water & Sewage Works, vol.125, no.7, Jul. 1978, pp.64-67. , Coden: WSIWAY
Languages: English
Flow metering flumes have been used successfully in three experimental forest watersheds in Florida, as part of a programme to investigate the effects of attempts to regenerate the forests on variety of environmental factors. The design of the flumes, and their construction and operation and discussed.
Descriptors: water; stream; open channel
Section Heading Codes: M24

072408 FM
Liquid flow measurement in open channels by weirs and flumes - end - depth method for estimation of flow in rectangular channels with a free overfall.
Int. Stand. Organization
Geneva, Switzerland, Int. Stand. Organization, 1977, 7Pp. (Ref. No. ISO 3847-1977 E) .
Languages: English
Free overfall occurs in many hydraulic structures when the bottom of a flat channel is abruptly discontinued. Such an overfall forms a control section and offers an approximate means for the estimation of flow. The flow at the brink is curvilinear and therefore the depth at the drop or end is not equal to the critical depth as computed by the principle based on the parallel flow assumption. However, the ratio between the end depth and the critical depth (as in the case of the assumption of parallel flow) has a unique value for each condition of the nappe, namely confined and unconfined. Therefore, from the depth measured at the end, the flow may be estimated. This International Standard specifies a method for the estimation of sub-critical flow of clear water in smooth, stright, rectangular prismatic open channels with a vertical drop and discharging freely. Using the measured depth at the end, the flow in rectangular channels (horizontal or sloping) with confined nappe and unconfined nappe may be estimated. The advantages and disadvantages of this device and other types of weirs and flumes, as well as the relative accuracies of each of these devices, are given. (from paper)
Section Heading Codes: M25; M4

072405 FM
Liquid flow measurement in open channels by weirs and flumes - free overfall weirs of finite crest width (rectangular broad-crested weirs).
Int. Stand. Organization
Geneva, Switzerland, Int. Stand. Organization, 1977, 9pp. (Ref. No. ISO 3846-1977 E) .
Languages: English
This International Standard lays down requirements for the use of full-width rectangular free overfall weirs of finite crest width for the measurement of flow of clear water in open channels. The advantages and disadvantages of this type and other types of weirs and flumes, as well as the relative accuracies of each of these devices, are given. (from paper)
Descriptors: installation; maintenance; head; measurement; discharge; equation; uncertainty; flow rate
Section Heading Codes: M4

072395 FM
Interesting aspects of flow measurements in a canal.
Siitonen, K.
Vesitalous, vol.19, no.1, 1978, pp.35-37. .
Languages: Finnish
measurement closely resembles dam measurement. Dam and canal measurements are quite similar. If the width and effective depth of the flow is the same in both measurement methods the flow is also nearly the same. The main differences between the two measurement types are as follows: In canal measurements the water speed, and thus also its kinetic energy, remains after the entrance. In dam measurements, on the other hand, the speed and this energy are almost completely lost. As a result, a large part of the surface height, i.e. the potential energy lost, which causes water to flow through the entrance, returns below the entrance in the form of a standing wave. Thus the true surface height loss is fairly small. This is the main advantage of canal measurement. If there is no barrier behind the entrance in the canal, no standing wave is formed. Usually, however, the canal ends at some basin or other place with a bordered barrier which forms a standing wave. A standing wave is not, thus, imperative but it is normally used. The canal itself can be constricted from the side, the bottom, or from both places. The entrance can have a rectangular, trapezoid, or round cross-section. (A) The article concentrates mostly on measurements of waste water and raw water in a standing wave canal. Canal measurement is a very useful and important method especially in places where surface height losses can be used only to a limited extent. It is fairly exact and is almost automatically selfcleaning. Canal
Descriptors: open channel; flume
Section Heading Codes: M24; M4

072357 FM
Weirs and flumes for flow measurement.
Ackers, P. ; White, W.R. ; Perkins, J.A. ; Harrison, A.J.M.
John Wiley & Sons
Chichester, U.K., John Wiley & Sons, 1978, xix + 327pp. .
0-471-99637-8
Languages: English
Contents: Introduction ; Theoretical concepts; Thin-plate weirs and notches; The Crump weir and other weirs of triangular profile; V-form triangular profile weirs; The rectangular profile weir; The round-nosed horizontal crested weir; Critical depth flumes; Stage/discharge relationships for long throated flumes; Measurement of stage; Environmental considerations; Field calibration of flow measuring structures; Tolerance on measurement; Appendixes; Indexes
Descriptors: open channel; book; theory; practice
Section Heading Codes: M24; M4

072347 FM
Hydrometry Principles and practices.
Herschy, R.W.
John Wiley & Sons
Chichester, U.K., John Wiley & Sons, 1978, xi + 511pp. . 0-471-99649-1
Languages: English
Contents : Measurement of flow - velocity-area methods; Current meters; Flow measuring structures; Dilution methods; Indirect methods; Aspects of unsteady flow and variable backwater; New methods; Flow measuring instruments; Weed growth - a factor of channel roughness; Accuracy; The acquisition and processing of river flow data; The use of satellites in hydrometry; River flow in arid regions; Aerial methods of measuring river flow; The work of the World Meteorological Organization ; International standardisation in river flow measurement; Index
Descriptors: open channel; book; river gauging; water; instrumentation; weir; flume; tracer; electromagnetic flowmeter; ultrasonic flowmeter; velocity measurement
Section Heading Codes: M24; M4; M6; M19; M10

070401 SL
Marcopper's tailing disposal system - mill to sea in pipes, flumes, drop boxes.
World Min., vol.30, no.9, Aug.1977, pp.52-55. . Coden: WOMIAI
Languages: English
25000 tons/day of tailings is being transported from a flotation mill to an undersea disposal site on the north shore of Marinduque Island in the Philippines. The design and operation of this system is described.
Descriptors: hydraulic transport; open channel
Section Heading Codes: D23

069596 X
Instrumental methods of measurement of flow - the state of the art in the United Kingdom.
Green, M.J.
Water Res. Centre
Water Res. Centre,
In: Proc. Conf. on Instruments and Control Systems for the Water Industry, (Reading Univ., U.K.: Sep.15-17, 1975). Medmenham, U.K., Water Res. Centre, 1975, Paper 6, 9pp. .
Languages: English
This paper presents an account of the instruments in current use to measure surface and groundwater flow in the United Kingdom, with emphasis on new techniques available, but not wideley used. (from paper)
Descriptors: x76; x78; x60; velocity; recording; continuous ; velocity area method; variable; head; area; method; weir; flume; ultrasonic; electromagnetic; open channel

067653 FM
Flumes and broadcrested weirs, mathematical modeling and laboratory ratings.
Replogle, J.A.
U.S. Dept. Agric.
North-Holland Publishing Co.
In: Proc. FLOMEKO 1978, IMEKO-Conf. on Flow Measurement of Fluids, (Groningen, The Netherlands: Sep.11-15,1978), H.H. Dystelbergen and E.A. Spencer (eds.), Amsterdam, The Netherlands, North-Holland Publishing Co., 1978, pp.321-328. .
0-444-85214X
Languages: English
Laboratory tests of a variety of flume cross-sections are combined with field ratings and historical data from other researchers to establish the validity of a mathematicalmodel designed to predict the flowcharacteristics of critical-flow flumes and broadcrested weirs. The model, which is adapted to computer solution, predicts the discharge rating to within + or !2 to 3% for rectangular, triangular, circular, or most any complex-shaped flume or broadcrested weir whose crosssectional shape can be described mathematically. (A)
Descriptors: open channel
Section Heading Codes: M4

065207 FM
Standing wave flume, a measuring device, some prototype observations.
Nagarkar, P.K. ; Pattihal, M.S. ; Desai, B.S.
Maharashtra Engng. Res. Inst.
North-Holland Publishing Co.
In: Proc. FLOMEKO 1978. IMEKO-Conf. on Flow Measurement of Fluids. (Groningen, The Netherlands: Sep.11-15,1978), H.H. Dystelbergen and E.A. Spencer (eds.), Amsterdam, The Netherlands, North-Holland Publishing Co., 1978, pp.351-356. .
0-444-85214X
Languages: English
Irrigation in Maharashtra (India) is mostly by a network of canals, which has a discharge variation from 0.25 comecs to 50 cumecs . Some of the canals are very old and standing wave flumes are used for quantitative records since last 5 to 6 decades. The flumes are designed on the basis of Technical Paper No.15 by Sir C.C. Inglis, the then Executive Engineer from the defunct Bombay State . The device is preferred in view of its inherent advantages viz. simplicity of construction, single point measurement, high modular range and ease of maintenance etc. Substantial model data is on record for these structures, and the same is being freely applied for large scale structures in the field. For verification prototype studies were planned. The paper presented discusses these observations on about eight field structures having throat widths varying from 0.6 m to 1.5 m and the conclusions drawn therefrom. (A)
Descriptors: open channel
Section Heading Codes: M4

065206 FM
Flow measurement in open channels with weirs and flumes.
Boiten, W.
Delft Hyraul. Lab.
North-Holland Publishing Co.
In: Proc. FLOMEKO 1978. IMEKO-Conf. on Flow Measurement of Fluids. (Groningen, The Netherlands: Sep.11-15,1978), H.H. Dystelbergen and E.A. Spencer (eds.), Amsterdam, The Netherlands, North-Holland Publishing Co., 1978, pp.343-349. .
0-444-85214X
Languages: English
A general introduction is given to the application of discharge measuring structures and the selection of the type of structure. Recent investigations carried out provide information about the simplified design of V-notch boxes, the lateral contraction of weir flow, a conversion for Parshall flumes, the Dutch flap weirs, and the design of V-shaped broad-crested weirs. (A)
Descriptors: classification; selection; application
Section Heading Codes: M4

062220 FM
Portable, adjustable flow-measuring flume for small canals.
Replogle, J.A.
U.S. Water Conservation Lab., Phoenix
Trans. Am. Soc. Agric. Engr. (Gen. Ed.), vol.20, no.5, Sep.-Oct.1977, pp.928-933. .
Languages: English
A portable flume capable of throat height adjustment above a canal bottom and special stilling well and depth sensing arrangements is being used as a field-survey device before casting low-cost concrete throat sections. This 'caliper-flume' can be installed and removed from a flowing canal by two persons. (A)
Descriptors: irrigation; system; design; calibration; open channel

056897 FM
Flow measuring weirs. !Part 2.
Boiten, W.
Polytech. Tijdschr. Bouwk. Wegen- & Waterbouw, vol.32, .
Languages: English
(REF CONTD)no.6, Jun.1977, pp.343-354. (In Dutch)
Descriptors: measurement; open channel; flume

056872 FM
Compensating for construction errors in critical-flow flumes and broad-crested weirs.
Replogle, J.A.
U.S. Dept. Agric.
In: Proc. Symp. on Flow Measurement in Open Channels and Closed Conduits. (Gaithersburg, U.S.A. : Feb.23-25, 1977). Irwin, L.K. (ed.), vol.1, Washington, D.C., U.S.A., U.S. Nat. Bureau of Standards, Oct.1977, pp.201-218. (NBS Special Publ.484).
Languages: English
and accurately calibrated (+ or !2%) by computer techniques over a wide range of flow rates and flume crosssections, including trapezoidal and complex shapes. This ability permits detailed compensation for errors introduced by construction anomalies. Procedures were developed and used on a series of primary devices in irrigation canals, including trapezoidal flumes and broad-crested weirs, which identified construction errors and accurately related a readout mechanism to the primary device, as constructed, so that the original intended accuracy could be restored. Templates were used to accurately define field dimensions of the flume throat section, its most sensitive portion. Errors in defining the throat cross-sectional area can be shown to be nearly equal to the error in discharge. Errors in the approach and converging sections are about one-tenth as important. The accurate field measurements of flume dimensions were then used to compute a tailored calibration table for the particular construction. The template can also be used to accurately relate the readout device to the flume. Direct reading discharge gauges that were prestamped could be mounted, using a modification of the technique, to reserve the highest accuracy for any selected flow rate on the gauge. Discharge errors, if any, could thus be relegated to the least used flow range. (A) Critical-flow flumes and broad-crested weirs can now be routinely
Descriptors: open channel

036880 FM (Fluid Flow Measurement Abstracts)
TURBULENCE MEASUREMENTS WITH THE SPLIT-FILM ANEMOMETER PROBE.
SPENCER, B.W. ; JONES, B.G.
ILLINOIS UNIV. AT URBANA-CHAMPAIGN, U.S.A.-ARGONNE NAT. LAB., U.S.A.
PROCS. SYMP. ON TURBULENCE IN LIQUIDS, %NAT. SCI. FOUNDATION: MISSOURI ROLLA UNIV., U.S.A.<, %EDS: ZAKIN, J. L. AND PATTERSON, G. K.<, PP. 7-15. %OCTOBER 4-6, 1971<.
Languages: English
THE NEWLY DEVELOPED SPLIT-FILM ANEMOMETER PROBE, MANUFACTURED BY THERMOSYSTEMS, INC., HAS BEEN APPLIED TO THE MEASUREMENT OF TWO-DIMENSIONAL TURBULENCE CHARACTERISTICS, INCLUDING TURBULENT SHEAR STRESS, IN MIXING LAYER AND BOUNDARY LAYER SHEAR FLOWS. PROBES OF BOTH 6-MIL AND 2-MIL DIAMETERS WERE USED WHICH HAD THE SAME PHYSICAL DIMENSIONS AS ORDINARY HOT-FILM ANEMOMETER PROBES. THE FILM ON THIS SENSOR IS SPLIT INTO TWO 170 DEGREE ELEMENTS RESULTING IN TWO INDEPENDENT SENSORS. THIS ENABLES THE PROBE TO DETECT VERTICAL AS WELL AS AXIAL COMPONENTS OF THE INSTANTANEOUS VELOCITY VECTOR. IT THEREFORE SERVES THE SAME PURPOSE AS AN X-PROBE, BUT BECAUSE OF ITS VERY SMALL SIZE IT HAS SIGNIFICANT ADVANTAGES IN REGIONS OF VERY HIGH SHEAR, PARTICULARLY IN THE REGION CLOSE TO THE WALL IN THE BOUNDARY LAYER. THE RESPONSE EQUATIONS USED TO EVALUATE FLOW CHARACTERISTICS FROM THE ANEMOMETER SIGNALS ARE PRESENTED. OPERATING FEATURES SUCH AS FREQUENCY RESPONSE, AXIMUTHAL YAW SENSITIVITY, SIGNAL-TO-NOISE, AND STABILITY ARE DISCUSSED AND COMPARISONS ARE MADE WITH THOSE OF AN X-PROBE. MEASUREMENTS IN TURBULENT AIR FLOW USING A HOT-WIRE, X-PROBE, AND SPLIT-FILM PROBE ARE PRESENTED AND THE PERFORMANCE OF THE LATTER IS DISCUSSED. THE RESULTS SHOW THAT THE SPLIT-FILM PROBE IS A PROMISING DEVICE FOR MEASURING TWO-DIMENSIONAL TURBULENCE INFORMATION, PARTICULARLY WHEN HIGH TRANSVERSE SPATIAL RESOLUTION IS REQUIRED. HOWEVER, UNTIL IMPROVEMENTS CAN BE MADE, ADEQUATE FREQUENCY RESPONSE SHOULD BE VERIFIED EXPERIMENTALLY FOR EACH FLOW REGIME OF ANTICIPATED USE. %A< M650Q)
Descriptors: ROUGHNESS ELEMENTS; OPEN CHANNELS; WATER; FLUMES; VELOCITY MEASUREMENT; TURBULENT FLOW; ANEMOMETERS-HOT FILM; EXPERIMENTAL STUDIES; BED OF HEMISPHERES; TURBULENT FREE SURFACE FLOW; ROUGH BOUNDARY; VELOCITY DISTRIBUTION; TURBULENCE INTENSITIES; TILTABLE FLUME; CONICAL HOT FILM PROBE ; EXPERIMENTAL PROCEDURE; DATA ANALYSIS; EFFECTS OF FLOW DEPTH
Section Heading Codes: M8

036847 FM (Fluid Flow Measurement Abstracts)
A GUIDE TO METHODS AND STANDARDS FOR THE MEASUREMENT OF WATER FLOW.
KULIN, G.; COMPTON, P.R.
U.S. DEPT. OF COMMERCE.
U.S. DEPT. OF COMMERCE, NAT. BUREAU OF STANDARDS, NBS SPECIAL PUBL. 421, 97PP. %MAY, 1975<.,
Languages: English
SELECTED INFORMATION SOURCES ON METHODS AND STANDARDS FOR MAKING MEASUREMENTS OF WATER AND WASTEWATER FLOW IN THE FIELD ARE LISTED AND DESCRIBED. BOTH CLOSED CONDUIT AND FREE SURFACE FLOWS ARE TREATED, BUT EMPHASIS IS ON OPEN CHANNEL FLOW MEASUREMENTS NEEDED IN WATER RESOURCE ENGINEERING AND IN WATER POLLUTION CONTROL. INSTRUMENTS AND METHODS COVERED INCLUDE WEIRS, FLUMES, CURRENT METERS %AND VELOCITY TRAVERSE METHODS<, DILUTION TECHNIQUES, PIPE FLOW INSTRUMENTS, ACOUSTIC METERS AND OTHERS. IN ADDITION TO SUMMARIZING THE BASIC PROPERTIES OF EACH INSTRUMENT OR METHOD AND REFERRING USERS TO THE BEST AVAILABLE SOURCES OF DETAILED INFORMATION ON PERFORMANCE AND FIELD APPLICATION, POTENTIAL SOURCES OF ERROR ARE DESCRIBED AND QUANTIFIED WHERE POSSIBLE. %A< M617M)
Descriptors: FLOW MEASUREMENT; OPEN CHANNELS; MEASUREMENT TECHNIQUES; STANDARDS; CLOSED CONDUITS; WATER; WASTE WATER; WATER RESOURCES; WATER RESOURCE ENGINEERING; POLLUTION CONTROL ; WEIRS; FLUMES; CURRENT METERS; VELOCITY TRAVERSE METHODS; DILUTION TECHNIQUES; ACOUSTIC FLOWMETERS; INSTRUMENT PROPERTIES; PERFORMANCE; FIELD APPLICATION; ERRORS; REFERENCES
Section Heading Codes: M2; M24

036793 FM (Fluid Flow Measurement Abstracts)
SYNCHRO OPERATED OPEN CHANNEL FLOW METER.
RAY, S.
DAVY ASHMORE %INDIA< LTD., CALCUTTA.
J. INST. ENG. %INDIA< ME, VOL. 56, ME4, PP. 168-70. %JANUARY, 1976<.,
Languages: English
FLOW METER FOR LIQUIDS FLOWING THROUGH OPEN CHANNELS IS PRINCIPALLY AN INSTRUMENT TO INDICATE RATE OF FLOW BY MEASURING THE DEPTH OF LIQUID AT A SPECIFIC POINT OF A WEIR OR FLUME IN THE CHANNEL. THE METER, IN ADDITION, MAY HAVE FACILITIES FOR CONTINUOUS RECORDING OF CHANGING RATE OF FLOW AND CONTINUOUS INTEGRATION OF FLOW PASSING THROUGH THE CHANNEL. IN THIS PAPER, PRINCIPLES OF OPERATION AND CERTAIN DESIGN FEATURES OF A NEWLY DEVELOPED FLOW METER, WHERE THE RATE OF FLOW INDICATION RECORDING AND FLOW INTEGRATION HAVE TO BE DONE AT A REMOTE PLACE FROM THE CHANNEL HAVE BEEN DESCRIBED. %A< M563E)
Descriptors: DEPTH SENSORS; OPEN CHANNELS; WEIRS; FLUMES FLOW MEASUREMENT; PRIMARY FLOW ELEMENTS; CRITICAL SECTION, HEAD OR DEPTH MEASUREMENT; FLOATS; SYNCHRO OPERATED TRANSMITTING UNIT; RATE OF FLOW; FLOW INTEGRATION; DATA STORAGE; REMOTE OPERATION
Section Heading Codes: M25; M24

036724 FM (Fluid Flow Measurement Abstracts)
A GUIDE TO METHODS AND STANDARDS FOR THE MEASUREMENT OF WATER FLOW.
KULIN, G.; COMPTON, P.R.
U.S. DEPT. OF COMMERCE.
U.S. DEPT. OF COMMERCE; NAT. BUREAU OF STANDARDS, SPECIAL REPORT SP 421, 100PP. %MAY, 1975<. %COM-75-10683<.,
Languages: English
SELECTED INFORMATION SOURCES ON METHODS AND STANDARDS FOR MAKING MEASUREMENTS OF WATER AND WASTEWATER FLOW IN THE FIELD ARE LISTED AND DESCRIBED. BOTH CLOSED CONDUIT AND FREE SURFACE FLOWS ARE TREATED, BUT EMPHASIS IS ON OPEN CHANNEL FLOW MEASUREMENTS NEEDED IN WATER RESOURCE ENGINEERING AND IN WATER POLLUTION CONTROL. 9INSTRUMENTS AND METHODS COVERED INCLUDE WEIRS, FLUMES, CURRENT METERS %AND VELOCITY TRAVERSE METHODS<, DILUTION TECHNIQUES, PIPE FLOW INSTRUMENTS, ACOUSTIC METERS AND OTHERS. IN ADDITION TO SUMMARIZING THE BASIC PROPERTIES OF EACH INSTRUMENT OR METHOD AND REFERRING USERS TO THE BEST AVAILABLE SOURCES OF INFORMATION ON PERFORMANCE AND FIELD APPLICATION, POTENTIAL SOURCES OF ERROR ARE DESCRIBED AND QUANTIFIED WHERE POSSIBLE. %A< %MICROFICHE<. M494D)
Descriptors: FLOW MEASUREMENT; WATER; CLOSED CONDUITS; OPEN CHANNELS; INSTRUMENTATION; WASTE WATER; METHODS; STANDARDS; SELECTED INFORMATION SOURCES; FIELD MEASUREMENTS; WATER RESOURCE ENGINEERING; WATER POLLUTION CONTROL; WEIRS; FLUMES; CURRENT METERS; VELOCITY TRAVERSE METHODS; DILUTION TECHNIQUES ; ACOUSTIC FLOWMETERS; PIPE FLOW INSTRUMENTATION; INSTRUMENT PROPERTIES; PERFORMANCE; FIELD APPLICATIONH; SOURCES OF ERROR
Section Heading Codes: M2; M4

036672 FM (Fluid Flow Measurement Abstracts)
THE MEASUREMENT OF FLOW IN BRAIDED RIVER CHANNEL - APPLICABILITY OF DYE- DILUTION METHOD.
TAKAHASI, T.
LINCOLN COLL., NEW ZEALAND.
PROC. FIFTH AUSTRALASIAN CONFERENCE ON HYDRAULICS AND FLUID MECHANICS, %CANTERBURY UNIV., NEW ZEALAND<, VOL. 2, PP. 125-32. %DECEMBER 9-13, 1974<.,
Languages: English
LABORATORY FLUME EXPERIMENTS HAVE BEEN CARRIED OUT TO EVALUATE THE POTENTIAL OF DISCHARGE MEASUREMENT BY THE DYE-DILUTION METHOD IN BRAIDED RIVER CHANNELS. THREE CHANNEL TYPES WERE SIMULATED, WITH GRAVEL BEDS, AND DYE WAS APPLIED FROM ONE OR SEVERAL POINTS ACROSS THE UPSTREAM END OF THE CHANNEL. THE RESULTING DISTRIBUTION OF DYE CONCENTRATION WAS MEASURED AT VARIOUS POINTS DOWNSTREAM. THE MINIMUM MIXING LENGTH WAS ACHIEVED BY MULTIPLE-POINT INJECTION INTO THE MAIN FLOW REGION ONLY; THIS LENGTH WAS CONSIDERABLY LESS THAN THAT NEEDED FOR A 1-POINT INJECTION. FORMULAE TO PREDICT MIXING LENGTHS IN A PARABOLIC, GRAVEL-BED CHANNEL ARE PROPOSED. THEY SHOW THAT 90 PERCENT MIXING CAN BE ACHIEVED IN HALF THE LENGTH NEEDED FOR 100 PERCENT MIXING, AND 100 PERCENT MIXING IN A COARSE, PARABOLIC CHANNEL TAKES HALF THE LENGTH NEEDED FOR 100 PERCENT MIXING IN A SMOOTH, RECTANGULAR CHANNEL. THE FORMULAE CAN ALSO BE USED FOR ASYMMETRICAL CHANNELS PROVIDED INJECTION OCCURS AT THE CENTRE OF DISCHARGE %RATHER THAN THE CENTRE OF WIDTH<. A DISCUSSION OF DISCHARGE ESTIMATION ERROR DUE TO INCOMPLETE MIXING LEAD TO THE CONCLUSION THAT THE DYE-DILUTION METHOD WILL PROVE SUITABLE FOR BRAIDED RIVERS. %A< M442R)
Descriptors: RIVERS; OPEN CHANNELS; FLOW MEASUREMENT; DILUTION TECHNIQUES; DYES; MODEL TESTS; BRAIDED RIVER CHANNELS; DYE DILUTION METHOD; DISCHARGE MEASUREMENT; LABORATORY FLUME STUDIES; THREE CHANNEL TYPES; SIMULATION; GRAVEL BEDS; MIXING LENGTH; PREDICTION; FORMULAE; ERROR ESTIMATION; INCOMPLETE MIXING
Section Heading Codes: M25; M24; M4

036670 FM (Fluid Flow Measurement Abstracts)
LIQUID FLOW MEASUREMENT IN OPEN CHANNELS USING THIN-PLATE WEIRS AND VENTURI FLUMES.
INT. STANDARD, ISO 1438-1975 %E<, 41PP. %1975<.,
Languages: English
THIS INTERNATIONAL STANDARD SPECIFIES METHODS FOR THE MEASUREMENT OF LIQUID FLOW IN OPEN CHANNELS USING RECTANGULAR THIN-PLATE WEIRS, TRIANGULAR THIN-PLATE WEIRS %V-NOTCH< AND VENTURI FLUMES. THE FLOW CONDITIONS CONSIDERED ARE LIMITED TO STEADY FLOWS WHICH ARE UNIQUELY DEPENDENT ON THE UPSTREAM HEAD. THUS SUBMERGED FLOWS, WHICH DEPEND ON DOWNSTREAM AS WELL AS UPSTREAM WATER LEVELS, ARE NOT CONSIDERED HEREIN. %FROM PAPER<. M440Y)
Descriptors: FLOW MEASUREMENT; OPEN CHANNELS; LIQUIDS; WEIRS-THIN PLATE; VENTURI FLUMES; STANDARDS %ISO<; LIQUID FLOW; RECTANGULAR THIN PLATE WEIRS; TRIANGULAR THIN PLATE WEIRS; WEIRS-V NOTCH; STEADY FLOW CONDITIONS; DEPENDENT ON UPSTREAM HEAD; PRINCIPLES; INSTALLATION; MEASUREMENT OF HEAD; DISCHARGE EQUATIONS; DISCHARGE COEFFICIENTS; ERRORS
Section Heading Codes: M24; M4

036562 FM (Fluid Flow Measurement Abstracts)
METHODS OF MEASUREMENT OF LIQUID FLOW IN OPEN CHANNELS. PART 4C. FLUMES.
BRITISH STANDARDS INST., BS3680, PART 4C, 52PP. %JUNE, 1974<.,
Languages: English
THIS PART OF THIS BRITISH STANDARD DEALS WITH THE MEASUREMENT OF FLOW IN RIVERS AND ARTIFICIAL CHANNELS UNDER STEADY FLOW CONDITIONS, USING CERTAIN TYPES OF STANDING-WAVE FOR CRITICAL DEPTH FLUME. A WIDE VARIETY OF FLUMES HAS BEEN DESIGNED BUT ONLY THOSE WHICH HAVE RECEIVED GENERAL ACCEPTANCE AFTER ADEQUATE RESEARCH AND FIELD TESTING AND WHICH THEREFORE DO NOT REQUIRE IN-SITU CALIBRATION, ARE CONSIDERED. THE THREE WHICH WILL COVER A WIDE RANGE OF USE ARE: %I< RECTANGULAR THROATED, %II< TRAPEZOIDAL THROATED, %III< U-SHAPE, I.E. ROUND BOTTOMED. A STANDING-WAVE FLUME IS ESSENTIALLY A STREAMLINED STRUCTURE BUILT INTO AN OPEN CHANNEL TO FORM A CONTRACTION THROUGH WHICH THE VELOCITY OF THE FLOWING WATER IS INCREASED WITH A CONSEQUENT FALL IN WATER LEVEL. THE FLOW CONDITIONS CONSIDERED ARE LIMITED TO STEADY OR SLOWLY VARYING FLOWS, WHICH ARE UNIQUELY DEPENDENT ON THE UPSTREAM HEAD, I.E. SUBCRITICAL FLOW MUST EXIST UPSTREAM OF THE FLUME, AFTER WHICH THE FLOW ACCELERATES THROUGH THE CONTRACTION AND PASSES THROUGH ITS CRITICAL DEPTH, AND THE WATER LEVEL BEYOND THE STRUCTURE IS LOW ENOUGH TO HAVE NO INFLUENCE UPON ITS PERFORMANCE. CONTENTS: METHODS, GENERAL; INSTALLATION; MEASUREMENT OF HEAD; DETERMINATION OF DISCHARGE; RECTANGULAR THROATED STANDING WAVE FLUME; TRAPEZOIDAL THROATED FLUMES; U-SHAPE %ROUND BOTTOMED< FLUMES; ERRORS IN FLOW MEASUREMENT; APPENDICES, TABLES, FIGURES. M331C)
Descriptors: FLOW MEASUREMENT; OPEN CHANNELS; LIQUIDS; FLUMES; STANDARDS %BSI<; STANDING-WAVE FLUME; CRITICAL DEPTH FLUME; STEADY FLOW CONDITIONS; FLUME GEOMETRY; INSTALLATION; MEASUREMENT OF HEAD; DISCHARGE DETERMINATION; RECTANGULAR THROATED FLUMES; TRAPEZOIDAL THROATED FLUMES; U-SHAPE FLUMES; ROUND BOTTOM FLUMES; ERRORS IN FLOW MEASUREMENT
Section Heading Codes: M24; M4

036435 FM (Fluid Flow Measurement Abstracts)
NEW ELECTRONIC FLOW MEASUREMENT FOR WASTE WATER
SCHONTZLER, J.G.
MANNING ENVIRONM. CORP., U.S.A.
PROC. INT. SEMINAR AND EXPOSITION ON WATER RESOURCES INSTRUMENTATION, %CHICAGO, U.S.A.<, VOL. 1, MEASURING AND SENSING METHODS, PP. 489-507, %JUNE 4-6, 1974<.
Languages: English
TRADITIONAL FRESH WATER LEVEL AND FLOW MEASUREMENT TECHNIQUES HAVE BEEN ATTEMPTED TO BE APPLIED TO WASTEWATER MEASUREMENT. DUE TO THE HOSTILE ENVIRONMENT PRESENTED BY WASTEWATER THESE MEASURES HAVE BEEN UNSUCCESSFUL IN PROVIDING RELIABLE AND ACCURATE DATA. A NEW SURFACE SEEKING TECHNIQUE %THE DIPPER< MEASURES EASILY THE LIQUID LEVEL AND FLOW WITHOUT BEING AFFECTED BY THE CORROSIVE AND DEBRIS LADEN WASTEWATER. IN OPEN CHANNEL FLOW %PIPES, WEIRS AND FLUMES< THE HEIGHTS DATA PROVIDED BY THE DIPPER IS CONVERTED TO FLOWRATE DATA AND TOTAL FLOW INFORMATION BY VARIOUS ELECTRONIC AND ELECTRO-MECHANICAL MEANS. THESE VARIOUS INSTRUMENTS IN ADDITION CAN BE USED TO PROVIDE CONTROL FOR AUTOMATIC SAMPLING ON A FLOW PROPORTIONAL BASIS. %A< M202M)
Descriptors: FLOWMETERS; WASTE WATER; FLOW MEASUREMENT; OPEN CHANNELS; WEIRS; FLUMES; DIPPER FLOWMETER; LIQUID LEVEL; FLOWRATE; OPEN CHANNEL FLOW MEASUREMENT METHODS; FLOATS; BUBBLER TUBES; ULTRASONIC METHODS; CAPACITIVE METHODS; ELECTRONIC DIPPER FLOWMETER; OPERATING PRINCIPLES; FLOW PROPORTIONAL SAMPLING; WEIR CONFIGURATIONS; FLUME CONFIGURATIONS; MANNING FORMULA
Section Heading Codes: M25; M24; M36; M5

036356 FM (Fluid Flow Measurement Abstracts)
STEVENS WATER RESOURCES DATA BOOK
BOOK: PUBL. BY LEUPOLD AND STEVENS, INC., OREGON, U.S.A., 2ND ED., 159 PP.,
Languages: English
CONTENTS:- THE HYDROLOGIC CYCLE; WATER LEVEL MEASUREMENT METHODS; FLOAT WELLS AND INSTRUMENT SHELTERS; OPEN CHANNEL FLOW MEASUREMENT; MEASURING FLOWS IN MANHOLES; WELL MEASUREMENT; TELEMETERING; ERRORS IN FLOAT OPERATED DEVICES; WEIRS AND FLUME TABLES; CIRCULAR DIMENSION TABLES; METRIC SYSTEM TABLES; HANDY CONVERSION TABLES. M121F)
Descriptors: WATER RESOURCES; WELLS; HYDROLOGY; FLOAT METERS ; INSTRUMENTATION; OPEN CHANNELS; WEIRS; FLUMES; DATA HANDBOOK : HYDROLOGIC CYCLE; WATER LEVEL MEASUREMENT METHODS; FLOAT WELLS; INSTRUMENT SHELTERS; OPEN CHANNELS; FLOW MEASUREMENT; MEASURING FLOWS IN MANHOLES; WELL MEASUREMENT; TELEMETERING; ERRORS IN FLOAT OPERATED DEVICES; WEIR AND FLUME TABLES; CIRCULAR DIMENSION TABLES; METRIC SYSTEM TABLES; CONVERSION TABLES
Section Heading Codes: M1

036292 FM (Fluid Flow Measurement Abstracts)
WATER RESOURCES IN THE SEVERN BASIN. SOME PROBLEMS ENCOUNTERED IN RIVER FLOW MEASUREMENT
BODDANO, R.
SEVERN RIVER AUTH., U.K.
MIN-PAPER PRESENTED AT THE I.W.E. MEETING, SOUTH WEST WORCS. WAT. BOARD, %JULY, 1973<. J. INST. WATER ENG. AND SCI., VOL. 29, NO. 2, PP. 95-8, %MARCH, 1975<.
Languages: English
RIVER FLOW IS PERHAPS THE MOST DIFFICULT AND IS CERTAINLY THE MOST COSTLY OF THE HYDROLOGICAL PARAMETERS TO MEASURE ACCURATELY. BEING A WIDELY VARIABLE QUANTITY THERE IS NO DIRECT WAY OF CONTINUOUSLY MONITORING FLOWS IN A NATURAL RIVER. ALL EXISTING METHODS RELY ON THE CONTINUOUS MEASUREMENT OF THE WATER LEVELS AT A SECTION OF THE RIVER AND DETERMINING BY MEANS OF A SERIES OF CURRENT METER GAUGINGS, OR IN THE CASE OF A FLOW MEASURING STRUCTURE, ARTIFICIALLY ESTABLISHING, THE RELATIONSHIP BETWEEN THE LEVELS AND DISCHARGES AT THAT SECTION. IT IS ON THE SELECTION OF THE SITE AND ON THE RIGHT CHOICE OF MEASURING STRUCTURE IN A GIVEN SITUATION THAT THE FUTURE RELIABILITY AND ACCURACY OF A FLOW MEASUREMENT STATION DEPENDS. THIS PAPER BRIEFLY DESCRIBES BY MEANS OF THREE RECENT EXAMPLES SOME OF THE PROBLEMS ENCOUNTERED IN PLANNING AND CONSTRUCTING STATIONS ON RIVERS IN THE SEVERN CATCHMENT AREA WHICH ARE TO BE REGULATED TO WITHIN FINELY PRESCRIBED LIMITS. %A<. M57P)
Descriptors: OPEN CHANNELS; FLUMES; WEIRS; RIVERS; U.K.; RIVER FLOW MEASUREMENT; GAUGING STATIONS; PLANNING AND CONSTRUCTION; SITING; RIVER SEVERN CATCHMENT AREA; RIVER DULAS ; FLUMES; NEW DESIGN; DROP FLUME; STEEP RIVER; RIVER SEVERN; CABLEWAY STATION; SMALL STREAMS; THIN PLATE WEIRS; FLAT-VEE WEIRS
Section Heading Codes: M24

036291 FM (Fluid Flow Measurement Abstracts)
FLOW METERS FOR OPEN CHANNEL LIQUID FLOW
LOBACHEV, P.V.
PRIBORY I. SISTEMY UPRAVLENIIYA, VOL. 7, NO. 10, PP. 20-2. %1972<.
Languages: RUSSIAN
THIS PAPER MAKES A GENERAL SURVEY OF MODERN TECHNIQUES USED IN THE MEASUREMENT OF LIQUID FLOW THROUGH OPEN CHANNELS. IT GIVES THE FLOW EQUATIONS FOR STANDING WAVE FLUMES - REFERRED TO AS VENTURI FLUMES - AND MAKES MENTION OF STANDING WAVE FLUMES OF VARIOUS CROSS SECTIONS, E.G. TRIANGULAR AND TRAPEZOIDAL. RECOMMENDATIONS RELATING TO FLUME GEOMETRY ARE GIVEN TOGETHER WITH TABLES OF DESIGN PARAMETERS. REFERENCE IS ALSO MADE TO THE PARSHALL FLUME %U.S.A.<, AND STANDING WAVE FLUMES WITH HUMPS. A DESIGN IS GIVEN FOR AN OPENING OF PARABOLIC SHAPE FOR USE IN AN OPEN CHANNEL WHICH, UNDER FREE DISCHARGE CONDITIONS, GIVES A RATE OF FLOW BEARING A LINEAR RELATIONSHIP TO THE DEPTH OF FLOW. THE CO-ORDINATES FOR THE CURVE OF THE CONTOUR CAN BE CALCULATED FROM THE FORMULA GIVEN. THE AUTHOR CONSIDERS THAT THERE IS STILL SCOPE FOR STANDARDIZATION OF DESIGNS AND DISCHARGE COEFFICIENTS. %A.L.<. M56B)
Descriptors: FLOW MEASUREMENT; OPEN CHANNELS; SURVEYS; FLUMES; STANDING WAVE FLUMES; VENTURI FLUMES; EQUATIONS; FLUME CROSS SECTION; TRIANGULAR; TRAPEZOIDAL; FLUME GEOMETRY; PARSHALL FLUMES; STANDING WAVE FLUMES WITH HUMPS; PARABOLIC SHAPE OPENING; LINEAR RELATIONSHIP; FLOW RATE; DEPTH OF FLOW; CURVE CONTOUR CO-ORDINATES
Section Heading Codes: M24; M4

036130 DA (International Dredging Abstracts)
SILTATION IN DREDGED CHANNELS.
O'CONNOR, B.
MANCHESTER UNIV., U.K.
PROC. 1ST INT. SYMP. ON DREDGING TECHNOLOGY %KENT UNIV., U.K.; BHRA FLUID ENGNG.<, PAPER E2, PP. E2-13 - E2-24. %SEPTEMBER 17-19, 1975<. DISCUSSION PP. X42-X43.,
Languages: English
A METHOD OF CALCULATING THE SILTATION RATE IN CHANNELS DREDGED AT RIGHT ANGLES TO THE MAIN DIRECTION OF FLOW IS PRESENTED AND TESTED AGAINST A SIMPLIFIED LABORATORY SITUATION. THE METHOD CONSISTS OF CALCULATING THE NEAR-BED CONCENTRATION OF SUSPENDED SEDIMENT WITHIN THE CHANNEL BY MEANS OF A SEMI-IMPLICIT FINITE-DIFFERENCE SOLUTION OF THE GOVERNING PARTIAL-DIFFERENTIAL EQUATION FOR SUSPENDED SEDIMENT. THE NEAR-BED CONCENTRATION IS THEN COMBINED WITH AN EQUATION FOR THE MOVEMENT OF SEDIMENT ALONG THE BED OF THE CHANNEL IN ORDER TO GIVE THE NECESSARY SILTATION RATE. THE METHOD ALSO REQUIRES THE DEPTH DISTRIBUTION OF VELOCITY AND SEDIMENT OUTSIDE THE CHANNEL, THE VELOCITY DISTRIBUTION WITHIN THE CHANNEL, AND THE FALL VELOCITY OF THE SEDIMENT PARTICLES. IN ADDITION, VARIOUS BOUNDARY EROSION PARAMETERS AND VERTICAL DIFFUSION COEFFICIENTS MUST BE CALCULATED. THE PROPOSED METHOD WAS APPLIED TO A LABORATORY FLUME IN ORDER TO PREDICT THE SEDIMENTATION PATTERN WITHIN A RIGID BED CHANNEL RESULTING FROM AN INJECTION OF POLYSTYRENE PARTICLES INTO THE FLOW. COMPARISON OF LABORATORY AND COMPUTED SILTATION RATES WAS FOUND TO BE GOOD PROVIDED AN APPROPRIATE RE-ENTRAINMENT COEFFICIENT WAS USED. THE RE-ENTRAINMENT COEFFICIENT WAS FOUND TO VARY SPATIALLY IN THE LABORATORY TESTS AND TO BE RELATED TO THE PRESENCE OF FRICTION STRIPS ON THE BED OF THE CHANNEL. FURTHER TESTS ARE REQUIRED IN PROTOTYPE SITUATIONS IN ORDER TO CHECK THE ACCURACY OF THE PROPOSED METHOD. HOWEVER, EARLIER PROTOTYPE WORK INVOLVING A HORIZONTAL SEDIMENT BED OF FLOCCULATED SILT AND CLAY MATERIAL INDICATES THE POTENTIAL USEFULNESS OF THE PROPOSED APPROACH. %A<. G412E)
Descriptors: OPEN CHANNELS; SILTATION; SEDIMENTATION; BEDS; SEDIMENT CONCENTRATION; SEDIMENT TRANSPORT; DIFFUSION; EXPERIMENTAL STUDIES; FLUMES; ANALAYSIS-MATHEMATICAL; FINITE DIFFERENCE TECHNIQUES; DREDGED CHANNELS; PERPENDICULAR TO FLOW ; VERTICAL DIFFUSION; SUSPENDED SEDIMENT; POLYSTYRENE PARTICLES
Section Heading Codes: G4

033267 CH (Civil Engineering Hydraulics Abstracts)
VENTURI FLUMES FOR CIRCULAR CHANNELS.
DISKIN, M.H.
ISRAEL INST. TECHNOL.
J. IRRIG. AND DRAIN. DIV. - PROC. A.S.C.E., VOL. 102, IR3, TECH. NOTE, PP. 383-387. %SEPTEMBER, 1976<.,
Languages: English
THE PAPER PRESENTS RESULTS TO PROVIDE DESIGNERS WITH DATA ON VENTURI FLUMES WITH THROATS MADE OF PLANE SURFACES. TESTS WERE CARRIED OUT ON FIVE DESIGNS OF SMOOTH PRECAST CONCRETE FLUMES IN CIRCULAR CHANNELS. THE LONGITUDINAL SECTIONS OF THE FLUMES TESTED WERE TRAPEZOIDAL, AND THE THROAT LENGTHS EQUALLED THE PIPE DIAMETERS. THE DEPTH OF FLOW UPSTREAM WAS MEASURED BY POINT GANGES, DIRECTLY INTO THE CHANNEL THROUGH SLOTS IN THE CROWN OF THE PIPE, AND THE DISCHARGE WAS MEASURED BY A PRECALIBRATED REHBOCK WEIR UPSTREAM OF THE ENTRANCE TO THE CHANNEL. %C.R.S.< C2157B)
Descriptors: OPEN CHANNELS; VENTURI FLUMES; DESIGN; EXPERIMENTAL STUDIES; CIRCULAR OPEN CHANNELS; SEWERS; DRAINS; MILD SLOPE; SMOOTH PRECAST CONCRETE ELEMENTS; DISCHARGE MEASUREMENT; FLOW DEPTH; SUBMERGENCE TESTS
Section Heading Codes: C16; C9

033221 CH (Civil Engineering Hydraulics Abstracts)
LONG WAVES IN NEARLY RECTANGULAR PRISMATIC CHANNEL.
ENGELUND, F.
DENMARK TECH. UNIV., INST. HYDRODYN. AND HYDRAUL. ENGNG., PROG. REP. 39, PP. 3-8. %AUGUST, 1976<.,
Languages: English
IN A CHANNEL WITH RECTANGULAR CROSS SECTION A LONG WAVE PROPAGATES WITH THE VELOCITY SQROOTGD. THE WAVE FRONTS BEING PERPENDICULAR TO THE CHANNEL AXIS. IF THE CROSS SECTION DEVIATES FROM THE RECTANGULAR SHAPE, SO THAT THE ACTUAL DEPTH Y IN SOME REGIONS IS SMALLER THAN THE MEAN DEPTH D AND IN OTHER REGIONS IS LARGER, A WAVE OF PERMANENT FORM CAN STILL EXIST, BUT THE WAVE MOTION CANNOT BE TWO-DIMENSIONAL. THIS PROBLEM IS INVESTIGATED USING THE TRADITIONAL EQUATIONS FOR LONG WAVE MOTION. %A< C2111K)
Descriptors: OPEN CHANNELS; WAVE PROPAGATION; EXPERIMENTAL STUDIES; ANALYSIS-MATHEMATICAL; RECTANGULAR PRISMATIC CHANNELS ; LONG WAVES; SINUSOIDAL WAVE MOTION; TEST FLUME; AMPLITUDE DISTRIBUTION
Section Heading Codes: C9

033218 CH (Civil Engineering Hydraulics Abstracts)
TURBULENCE CHARACTERISTICS IN FLOW OVER LARGE ROUGHNESS ELEMENTS.
BAYAZIT, M.
ISTANBUL TECH. UNIV., TURKEY
D.I.S.A. INF., NO. 19, PP. 26-9. %MARCH, 1976<.,
Languages: English
MEASUREMENTS WITH A HOT-FILM ANEMOMETER WERE PERFORMED IN FREE SURFACE FLOW OVER A BED COMPOSED OF HEMISPHERES. THE MEAN-VELOCITY-TO-SHEAR-VELOCITY RATIO AT A CERTAIN DISTANCE FROM THE THEORETICAL WALL WAS FOUND TO DECREASE WHEN THE FLOW DEPTH WAS REDUCED. COEFFICIENTS IN THE LOGARITHMIC LAW OF VELOCITY DISTRIBUTION WERE DETERMINED AS FUNCTIONS OF RELATIVE ROUGHNESS. RELATIVE TURBULENCE INTENSITY OHTSIDE SEPARATION POCKETS ALSO DECREASED WITH THE INCREASE OF RELATIVE ROUGHNESS. THE PROBABILITY DENSITY FUNCTION OF VELOCITY FLUCTUATIONS NEAR THE BED WAS FOUND TO BE SKEWED AND MORE PEAKED THAN IS NORMALLY THE CASE. %A< C2108J)
Descriptors: OPEN CHANNELS; BEDS; ROUGHNESS ELEMENTS; TURBULENCE; ANEMOMETERS-HOT FILM; HEMISPHERICAL ROUGHNESS ELEMENTS; SMALL DEPTHS; MOUNTAIN STREAMS; VELOCITY DISTRIBUTION; SEPARATION ZONES; SELF-CIRCULATING TILTABLE FLUME; QUASI-UNIFORM FLOWS; DATA ANALYSIS; PROBABILITY DISTRIBUTION
Section Heading Codes: C9; C11; C10; C16

033037 CH (Civil Engineering Hydraulics Abstracts)
EFFECTS OF MEANDERING IN ALLUVIAL STREAMS.
KENNEDY, J.F.
BATTELLE PACIFIC NORTHWEST LABS., U.S.A.-IOWA UNIV., U.S.A.
J. HYDRAUL. DIV.-PROC. A.S.C.E., VOL. 102, HY7, PP. 899-917. PAPER 12248. %JULY, 1976<.,
Languages: English
IT WAS FOUND THAT FOR A GIVEN MEAN DEPTH AND VELOCITY OF FLOW, THE SEDIMENT DISCHARGE PER UNIT WIDTH IN THE FULL-WIDTH MEANDERING CHANNEL WAS GREATER THAN THAT IN THE STRAIGHT FLUME, WHICH IN TURN WAS GREATER THAN THAT OF THE HALF-WIDTH MEANDERING CHANNEL. THE BEND-LOSS COEFFICIENT, DEFINED AS THE HEAD LOSS %PLUS OR MINUS< DUE JUST TO CHANNEL CURVATURE NORMALIZED BY THE MEAN-VELOCITY HEAD, INCREASES WITH FROUDE NUMBER, THE RATIO OF BED HYDRAULIC RADIUS TO MEDIAN SAND DIAMETER, AND THE RATIO OF WIDTH TO CENTER LINE RADIUS OF CURVATURE. AT THE SMALLER DEPTHS INVESTIGATED, THE FRICTION FACTORS OF THE SINUOUS CHANNEL FLOWS ARE LESS THAN THOSE OF THE STRAIGHT CHANNEL FLOWS. THESE EFFECTS APPARENTLY RESULT PRIMARILY FROM THE LARGE CHANGES PRODUCED IN THE BED CONFIGURATIONS BY THE SECONDARY FLOWS. %A< C1925F)
Descriptors: OPEN CHANNELS, ALLUVIAL; MEANDERING FLOW; SEDIMENT TRANSPORT; EXPERIMENTAL STUDIES; BENDS; ALLUVIAL OPEN CHANNELS; DIMENSIONAL ANALYSIS; MEANDERING FLUME; LOW FROUDE NUMBERS; BEND-LOSS COEFFICIENT; SECONDARY CURRENT; BEND-FORM DRAG
Section Heading Codes: C9; C10

032867 CH (Civil Engineering Hydraulics Abstracts)
A THEORY OF FLOW RESISTANCE FOR VEGETATED CHANNELS.
THOMPSON, G.T.; ROBERSON, J.A.
WASHINGTON STATE UNIV., U.S.A.
TRANS. AM. SOC. AGRIC. ENG. %GEN. ED.<, VOL. 19, NO. 2, PP. 288-93. %MARCH-APRIL, 1976<.,
Languages: English
A THEORY IS DEVELOPED TO PREDICT THE FLOW RESISTANCE IN VEGETATED OPEN CHANNELS. THE SOLUTION TECHNIQUE IS BASED ON AN ANALYTICAL METHOD ORIGINALLY PROPOSED BY ROBERSON FOR SMOOTH CONDUITS ROUGHENED WITH DISCRETE SUBMERGED ROUGHNESS ELEMENTS. THE THEORY USES SMALL DIAMETER CYLINDERS TO SIMULATE VEGETATIVE ROUGHNESS ELEMENTS. FLOW CONDITIONS MAY EITHER PARTIALLY OR FULLY SUBMERGE THE CYLINDERS. INCLUDED IN THE ANALYSIS IS A METHOD TO PREDICT THE EFFECT OF FLEXIBLE VEGETATION ON FLOW RESISTANCE. THE MODEL ALSO PREDICTS RESISTANCE EFFECTS OF A SMOOTH BOUNDARY OR ONE ROUGHENED BY DENSE CONCENTRATIONS OF SMALL ELEMENTS SUCH AS SOIL PARTICLE AGGREGATES. AN INITIAL COMPARISON OF FLUME MEASUREMENTS OF RESISTANCE FOR SMALL DIAMETER CYLINDERS IS GIVEN. THE ANALYTICAL MODEL PROVIDES, IN ADDITION TO RESISTANCE FACTOR, OTHER FLOW PARAMETERS INVOLVED IN ANALYTICAL SOLUTIONS OF VEGETATED OPEN CHANNEL FLOW. %A<. C1724S)
Descriptors: OPEN CHANNELS; FLOW; RESISTANCE COEFFICIENT; ROUGHNESS ELEMENTS; FLUMES; ANALYSIS-MATHEMATICAL
Section Heading Codes: C9

032866 CH (Civil Engineering Hydraulics Abstracts)
DISCHARGE EQUATIONS FOR HS, H, AND HL FLUMES.
GWINN, W.R.; PARSONS, D.A.
U.S. DEPT. AGRIC.
J. HYDRAUL. DIV. PROC. ASCE, VOL. 102, HY1, PP. 73-88. PAPER 11874. %JANUARY, 1976<.,
Languages: English
GENERALIZED DISCHARGE EQUATIONS FOR HS AND H FLUMES WERE DEVELOPED FROM THE ORIGINAL DATA. DISCHARGE EQUATIONS FOR THE HL FLUME WERE DEVELOPED FROM A PUBLISHED RATING TABLE FOR A 4-FT %1 2M< FLUME. THE EQUATIONS ARE EXPRESSED IN THE BASIC DIMENSIONS OF THE CONTROL SECTION. A DIRECT SOLUTION FOR THE EFFECT OF SUBMERGENCE ON H FLUMES IS PRESENTED IN EQUATION FORM. %A<. C1723V)
Descriptors: OPEN CHANNELS; FLUMES; DISCHARGE COEFFICIENTS; EQUATIONS
Section Heading Codes: C9

032755 CH (Civil Engineering Hydraulics Abstracts)
LIQUID FLOW MEASUREMENT IN OPEN CHANNELS USING THIN-PLATE WEIRS AND VENTURI FLUMES.
INT. STANDARD. ISO 1438-1975%E<, 41 PP. %1975<.,
Languages: English
THIS INTERNATIONAL STANDARD SPECIFIES METHODS FOR THE MEASUREMENT OF LIQUID FLOW IN OPEN CHANNELS USING RECTANGULAR THIN-PLATE WEIRS, TRIANGULAR THIN-PLATE WEIRS %V-NOTCH< AND VENTURI FLUMES. THE FLOW CONDITIONS CONSIDERED ARE LIMITED TO STEADY FLOWS WHICH ARE UNIQUELY DEPENDENT ON THE UPSTREAM HEAD. THUS, SUBMERGED FLOWS, WHICH DEPEND ON DOWNSTREAM AS WELL AS UPSTREAM WATER LEVELS, ARE NOT CONSIDERED HEREIN. %FROM PAPER<. C1602Z)
Descriptors: FLOW MEASUREMENT; WEIRS-V NOTCH; FLOW MEASUREMENT; VENTURI FLUMES
Section Heading Codes: C16; C11

032166 CH (Civil Engineering Hydraulics Abstracts)
INSTABILITY OF FLOW IN A CURVED ALLUVIAL CHANNEL.
ENGELUND, F.
DENMARK TECH. UNIV.
J. FLUID MECH., VOL. 72, NO. 1, PP. 145-60. %NOVEMBER 11, 1975<.,
Languages: English
THIS PAPER DEALS WITH TWO MAIN PROBLEMS CONCERNING FLOW IN CURVED ALLUVIAL CHANNELS. FIRST, THE LARGE-SCALE BOTTOM GEOMETRY THAT DEVELOPS THROUGH THE INTERACTION OF FLOW AND SEDIMENT MOTION IS DETERMINED. SECOND, EXPERIMENTS IN AN ANNULAR FLUME INDICATE THAT THE BED IS UNSTABLE AND THAT THIS PARTICULAR INSTABILITY LEADS TO THE FORMATION OF A CERTAIN NUMBER OF SCOUR HOLES. THIS IS EXPLAINED BY A LINEAR STABILITY ANALYSIS. %A<. C998L)
Descriptors: OPEN CHANNELS; BEDS-FORMS; SCOUR; EXPERIMENTAL STUDIES; ANALYSIS-MATHEMATICAL; CURVED ALLUVIAL CHANNELS; FLOW SEDIMENT MOTION INTERACTION; CLOSED ANNULAR FLUME; COUETTE FLOW; BASIC FLOW; PERTURBATION EQUATIONS; LINEAR STABILITY ANALYSIS
Section Heading Codes: C9; C10

031891 CH (Civil Engineering Hydraulics Abstracts)
FLOW METERS FOR OPEN CHANNEL LIQUID FLOW
LOBACHEV, P.V.
PRIBORY I SISTEMY UPRAVLENIIYA, VOL.7, NO.10, PP.20-2. %1972<.,
Languages: %IN RUSSIAN<.
THIS PAPER MAKES A GENERAL SURVEY OF MODERN TECHNIQUES USED IN THE MEASUREMENT OF LIQUID FLOWS THROUGH OPEN CHANNELS. IT GIVES THE FLOW EQUATIONS FOR STANDING WAVE FLUMES - REFERRED TO AS VENTURI FLUMES - AND MAKES MENTION OF STANDING WAVE FLUMES OF VARIOUS CROSS SECTIONS, E.G. TRIANGULAR AND TRAPEZOIDAL. RECOMMENDATIONS RELATING TO FLUME GEOMETRY ARE GIVEN TOGETHER TABLES OF DESIGN PARAMETERS. REFERENCE IS ALSO MADE TO THE PARSHALL FLUME %U.S.A.<, AND STANDING WAVE FLUMES WITH HUMPS. A DESIGN IS GIVEN FOR AN C672C)
Descriptors: FLOW EQUATIONS; STANDING WAVE FLUMES; PARSHALL FLUME; STANDARDISATION; DESIGN; ANALYSIS-MATHEMATICAL
Section Heading Codes: C16; C8

031857 CH (Civil Engineering Hydraulics Abstracts)
FLOW IN OPEN CHANNELS : BOUNDARY STRESSES AND RESISTANCE COEFFICIENTS
ADVANI, R.M.
MALAWIYA REG. ENGNG. COLL., INDIA
PROC. I.A.H.R. INT. SEMINAR ON HYDRAULICS OF ALLUVIAL STREAMS. %NEW DELHI, INDIA<, BACKGROUND PAPERS, PP. 1-7. %JANUARY 15-19, 1973<.,
Languages: English
INTRODUCTION, SHEAR DISTRIBUTION AT THE PERIPHERY, VELOCITY DISTRIBUTION, RESISTANCE IN CHANNELS WITH SAND GRAIN ROUGHNESS, RESISTANCE TO FLOW WITH GRAVEL ROUGHNESS, RESISTANCE TO FLOW OVER TWO-DIMENSIONAL ROUGHNESSES. C635T)
Descriptors: OPEN CHANNELS; IRRIGATION; BOUNDARY FLOW; STRESSES; RESISTANCE COEFFICIENT; ROUGHNESS; ANALYSIS-MATHEMATICAL; IRRIGATION; SHEAR DISTRIBUTION; RECTANGULAR FLUME; VELOCITY DISTRIBUTION; RESISTANCE; SAND GRAIN ROUGHNESS; FLOW RESISTANCE; TWO-DIMENSIONAL ROUGHNESS
Section Heading Codes: C9; C21

024854 FM (Fluid Flow Measurement Abstracts)
LABORATORY CALIBRATION OF THE WALNUT GULCH SUPERCRITICAL FLOW-MEASURING FLUME.
GWINN, W.R.
AGRIC. RES. SERVICE, U.S.A.
PROC. KOBLENZ SYMP. ON HYDROMETRY, ORGANISED BY UNESCO/WMO/IAHS, VOL. 1, PP.310-18. (SEPTEMBER, 1970).
Languages: English
A NEW SUPERCRITICAL MEASURING FLUME IS BEING USED TO GAUGE SEDIMENT-LADEN EMPHEMERAL FLOWS IN STEEP CHANNELS. THE TRANSITION FROM THE NATURAL CHANNEL TO THE STRAIGHT MODIFIED TRAPEZOIDAL MEASURING SECTION OF THE FLUMES CONSISTS OF A CYLINDROID SURFACE. THE FLUME IS KEPT FREE OF DEPOSITION BY A V-SHAPED FLOOR WHICH SLOPES IN THE DIRECTION OF FLOW. THE HEAD IS MEASURED AT THE MIDPOINT OF THE STRAIGHT SECTION. TEN OF THESE CONCRETE FLUMES HAVE BEEN INSTALLED IN THE WALNUT GULCH WATERSHED NEAR TOMBSTONE, ARIZONA. EIGHT OF THE FLUMES HAVE ALREADY BEEN CALIBRATED WITH MODELS IN THE LABORATORY. THE LARGEST HAS A BOTTOM WIDTH OF 36.6 METRES AND A CAPACITY OF ABOUT 740 M/SUP 3//SEC. THIS STRUCTURE IS THE LARGEST KNOWN PRECALIBRATED FLUME NOW IN OPERATION. THE DESIGN OF THE FLUMES, THE LABORATORY CALIBRATION DATA AND SOME OBSERVATIONS OF THE FIELD OPERATION ARE DISCUSSED. (A). M670D)
Descriptors: FLUMES; CALIBRATION; OPEN CHANNELS; RIVERS; U.S.A.; MODEL TESTS; SUPERCRITICAL FLOW MEASURING FLUME; SEDIMENT LADEN FLOWS; STEEP CHANNELS; CYLINDROID SURFACE; FLUME DESIGN; MODEL STUDIES; DATA ANALYSIS; FLUME THEORY; RESULTS; WALNUT GULCH,ARIZONA
Section Heading Codes: M24

024851 FM (Fluid Flow Measurement Abstracts)
THE MAGNITUDE OF ERRORS AT FLOW MEASUREMENT STATIONS.
HERSCHY, R.W.
WATER RESOUR. BOARD., U.K.
PROC: KOBLENZ SYMP. ON HYDROMETRY, ORGANISED BY UNESCO/WMO/IAHS, VOL. 1, PP.109-131. (SEPTEMBER, 1970),
Languages: English
AN ASSESSMENT OF THE ACCURACY OF HYDROMETRIC DATA PRODUCED FROM FLOW MEASUREMENT STATIONS IS IMPORTANT TO THE USERS OF THE DATA. THIS IS PARTICULARLY SO IN THE CASE OF WATER RESOURCES DEVELOPMENT. THE PAPER USES A STATISTICAL APPROACH AND OUTLINES SIMPLE STATISTICAL METHODS FOR OBTAINING THE ERROR IN A SINGLE DETERMINATION OF DISCHARGE AT BOTH VELOCITY-AREA STATIONS AND AT WEIRS AND FLUMES. IN CONNECTION WITH VELOCITY-AREA STATIONS, A METHOD OF OBTAINING THE STANDARD ERROR OF THE STAGE-DISCHARGE CURVE IS DISCUSSED AND A STATISTICAL TEST FOR SIGNIFICANCE OF CHECK GAUGING IS DEMONSTRATED. STATISTICAL DEFINITIONS AS THEY APPLY TO HYDROMETRY ARE INCLUDED IN AN APPENDIX. (A). M667X)
Descriptors: OPEN CHANNELS; FLOW MEASUREMENT; ACCURACY/PREISION; STATISTICAL METHODS; FLOW MEASUREMENT STATIONS; VELOCITY AREA STATIONS; STAGE DISCHARGE CURVE STANDARD ERROR; ERROR MAGNITUDE; HYDROMETRIC DATA; ERROR ANALYSIS; KINDS OF ERRORS; OVERALL TOLERANCE ON DISCHARGE; CONTRIBUTING OR PARTIAL ERRORS; STAGE DISCHARGE CURVE; TEST FOR CHECK GAUGING; ERROR IN RECORDING STAGE; WEIRS AND FLUMES; PRECISION OF DAILY MEAN DISCHARGE
Section Heading Codes: M24

024796 FM (Fluid Flow Measurement Abstracts)
WATER MEASUREMENT MANUAL
U.S. DEPT. OF INTERIOR
BOOK: PUBL. BY U.S. DEPT. OF THE INTERIOR, BUREAU OF RECLAMATION. A WATER RESOUR. TECH. PUBLICATION 2ND ED. 327PP (1974),
Languages: English
CONTENTS: INTRODUCTION; WEIRS; PARSHALL FLUMES; SUBMERGED ORIFICES; CURRENT METERS; WATER-STAGE GAUGES, RECORDERS AND STILLING WELLS; SPECIAL MEASUREMENTS IN OPEN CHANNELS; MEASUREMENTS IN PRESURE CONDUITS; ENCODING AND TRANSMITTING WATER MEASUREMENT DATA; APPENDIX-HYDRAULICS FOR THE NOVICE M612G)
Descriptors: WATER; WEIRS; FLUMES; ORIFICES; CURRENT METERS; FLOW MEASUREMENT; OPEN CHANNELS; BOOKS; PARSHALL FLUMES; STILLING WELLS; PRESSURE CONDUITS; WATER STAGE RECORDERS; SUBMERGED ORIFICES; DATA TRANSMISSION
Section Heading Codes: M2; M24; M10

024636 FM (Fluid Flow Measurement Abstracts)
CHARACTERIZERS FOR FLUMES AND WEIRS
SHINSKEY, G.
THE FOXBORO CO., U.S.A.
INSTRUMENTS AND CONTROL SYSTEMS, VOL.47, NO.9, P.111. (SEPTEMBER, 1974),
Languages: English
THE FLOW OF LIQUIDS IN OPEN CHANNELS IS USUALLY MEASURED BY SUCH HEAD-PRODUCING DEVICES AS FLUMES AND WEIRS. THE RELATIONSHIP BETWEEN HEAD AND FLOW IS SIMILAR TO THAT USED WITH ORIFICES AND NOZZLES, EXCEPT FOR THE ADDITION OF A NEW DIMENSION, THE CROSS-SECTIONAL AREA OF THE FLOWING STREAM PASSING OVER A RECTANGULAR WEIR VARYING WITH THE HEAD. M452G)
Descriptors: FLUMES;WEIRS; OPEN CHANNELS; RECTANGULAR WEIR; CROSS SECTIONAL AREA; RELATIONSHIP BETWEEN HEAD AND FLOW; LINEARIZING OF HEAD MEASUREMENT
Section Heading Codes: M24

024632 FM (Fluid Flow Measurement Abstracts)
TAILORING CRITICAL-DEPTH MEASURING FLUMES
REPLOGLE, J.A.
U.S. WATER CONSERVATION LAB.
PROC. 1ST SYMP. ON FLOW - ITS MEASUREMENT AND CONTROL IN SCIENCE AND INDUSTRY, HELD IN PITTSBURGH, PENNSYLVANIA, VOL.1, PART 1, FLOW CHARACTERISTICS, PP.123-32. (MAY 9-14, 1971). PUBL. INSTRUMENT SOC. OF AMERICA. (1974).
Languages: English
MOST OF THE DIFFERENTIAL-HEAD FLUID METERS FAMILIAR TO ENGINEERS HAVE A FIXED FLOW AREA, SUCH AS ORIFICE METERS OR VENTURI METERS, AND INDICATE DISCHARGE RATE WITH RESPECT TO THE PRESSURES MEASURED AT TWO LOCATIONS. FAMILIAR ALSO, BUT TO A LESSER DEGREE, ARE THE DIFFERENTIAL HEAD DEVICES THAT HAVE A VARIABLE FLOW AREA, SUCH AS WEIRS AND CRITICAL-DEPTH FLUMES, AND INDICATE DISCHARGE WITH RESPECT TO A PRESSURE READING AT ONE LOCATION. FLUMES AND WEIRS ARE USED EXTENSIVELY BY HYDROLOGISTS FOR STUDYING STORM RUNOFF AND STREAMFLOW CHARACTERISTICS, BY IRRIGATIONISTS FOR METERING WATER APPLICATIONS TO CROPS, AND BY SANITATION ENGINEERS FOR MEASURING RATES OF WASTE WATER FLOW. FLUMES, THOUGH USUALLY MORE EXPENSIVE TO CONSTRUCT THAN WEIRS, CAN PASS SEDIMENT AND DEBRIS MORE READILY, ARE STURDY, AND, USING THE TECHNIQUES DESCRIBED IN THIS PAPER, CAN BE PROPORTIONED FOR A WIDE RANGE OF DISCHARGES WITH LESS THAN P2PERCENT ERROR. CRITICAL-DEPTH FLUMES MAY BE GROUPED INTO TWO CATEGORIES: (I) FLUMES FOR WHICH THE DIMENSIONS ARE SUCH THAT CRITICAL FLOW OCCURS IN A REGION WHERE THE FLOW LINES ARE PARALLEL, OR NEARLY PARALLEL, AND (II) FLUMES WHERE CRITICAL DEPTH OCCURS IN A REGION OF CURVILINEAR FLOW. FOR FLUMES IN THE FIRST GROUP, WHICH ARE THE CONCERN OF THIS PAPER, THE CALIBRATION CURVES CAN BE PREDICTED FOR A WIDE VARIETY OF BASIC SHAPES. SINCE THE PARAMETERS INVOLVED IN CURVILINEAR FLOW ARE NUMEROUS, LIKEWISE CRITICAL-DEPTH METERING DESIGNS ARE NUMEROUS. THE MOST PRACTICAL APPROACH TO EVALUATING THE OPERATING CHARACTERISTICS OF THE SECOND CATEGORY OF FLUMES IS THROUGH DIRECT LABORATORY CALIBRATION OR BY MODEL STUDY. FLUMES OF THE SECOND CATEGORY ARE IN WIDE USE, BUT FLEXIBILITY IN SIZE AND SHAPE IS LACKING BECAUSE CALIBRATIONS ARE AVAILABLE FOR ONLY SPECIFIC SIZES. (A) M448F)
Descriptors: FLUMES DISCHARGE RATE; OPEN CHANNELS; ANALYSIS-MATHEMATICAL; CRITICAL DEPTH FLUMES; THEORETICAL CONSIDERATIONS; PREDICTION OF HEAD LOSSES; EVALUATION OF ENERGY DISTRIBUTION COEFFICIENTS; EFFECTS OF INCOMPLETE FLOW PROFILE DEVELOPMENT; COMPUTATIONAL PROCEDURES; LABORATORY EVALUATION; CONSTRUCTION RECOMMENDATIONS AND TECHNIQUES; APPLICATIONS
Section Heading Codes: M24

024630 FM (Fluid Flow Measurement Abstracts)
FLOW-MEASURING FLUME FOR WASTEWATER TREATMENT PLANTS
WALKER, W.R.; SKOGERBOE, G.V.; BENNETT, R.S.
J. WATER POLLUT. CONTROL FED., VOL.45, NO.3, PP.542-51. (MARCH, 1973).
Languages: English
ACCURATE YET SIMPLE WATER MEASUREMENT IS THE FIRST ESSENTIAL TO MANAGING NOT ONLY WATER QUANTITY BUT WATER QUALITY AS WELL. THE GROWING PUBLIC CONCERN OVER URBAN EFFLUENTS HAS PROMPTED WASTEWATER TREATMENT OFFICIALS TO IMPLEMENT MORE EFFECTIVE PROCEDURES. WATER MEASUREMENT IS ESSENTIAL TO THE SUCCESS OF SUCH MEASURES. THE CUTTHROAT FLUME PRESENTED HERE IS A SIMPLE YET ACCURATE, FLOW-MEASURING DEVICE THAT HAS BEEN STUDIED IN SUFFICIENT DETAIL TO DERIVE GENERALISED RELATIONSHIPS THAT MAKE THE UTILITY OF THE STRUCTURE HIGH. (FROM PAPER) M446J)
Descriptors: FLUMES; WATER TREATMENT PLANT; EFFLUENTS; OPEN CHANNELS; WATER QUALITY; URBAN EFFLUENTS; CUTTHROAT FLUME
Section Heading Codes: M24

024495 FM (Fluid Flow Measurement Abstracts)
FLOW-MEASURING FLUME FOR WASTEWATER TREATMENT PLANTS.
WALKER, W.R.; SKOGERBOE, G.V.; BENNETT, R.S.
JNL. WATER POLLUTION CONTROL FED., VOL.45, NO.3, PP. 542-51. (MARCH, 1973)..
Languages: English
THIS ARTICLE DISCUSSES A METHOD OF FLOW ANALYSIS, FOUND VERY APPLICABLE IN OTHER OPEN CHANNEL MEASURING STRUCTURES, THAT HAS BEEN APPLIED TO A CUTTHROAT FLUME ESPECIALLY ADAPTABLE TO WASTEWATER TREATMENT PLANT FACILITIES. M311D)
Descriptors: FLUMES; OPEN CHANNELS; WASTE WATER; WATER TREATMENT PLANT; CUT THROAT FLUMES; OPEN CHANNEL MEASURING STRUCTURES; WASTEWATER TREATMENT PLANTS
Section Heading Codes: M24

024494 FM (Fluid Flow Measurement Abstracts)
MEASURING OPEN CHANNEL WASTEWATER FLOWS
HYDROMIKE, NO. 72, 4PP. INCL. 5 FIGS. (SUMMER, 1974).
Languages: English
WASTEWATER FLOW RECORDERS PROVIDE AN ESSENTIAL RECORD FOR INDUSTRIES AND MUNICIPALITIES PRESENTLY REQUIRED TO KEEP DAILY ACCOUNTS OF THEIR DISCHARGES UNDER THE 1972 FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS. THE DIFFERENT TYPES OF SHARP-CRESTED WEIRS AND FLUMES AVAILABLE ARE DISCUSSED AND DESCRIBED. M310T)
Descriptors: WEIRS-SHARP CRESTED; FLUMES; WASTE WATER; OPEN CHANNELS; WASTE WATER FLOW RECORDERS; DAILY DISCHARGE ACCOUNTS ; INDUSTRIES; MUNICIPALITIES; DIFFERENT TYPES OF WEIRS AND FLUMES
Section Heading Codes: M24

024493 FM (Fluid Flow Measurement Abstracts)
IRRIGATION DESIGN AND PRACTICE.
WITHERS, B.; VIPOND, S.
BOOK: PUBL. BY B. T. BATSFORD LTD., LONDON, U.K., (1974)..
Languages: English
CONTENTS: FEASIBILITY STUDIES; IRRIGATION PRACTICES; THE MOISTURE IN SOILS; CROP WATER USE; SALINE AND ALKALI SOILS; THE DESIGN OF FIELD IRRIGATION SYSTEMS; DRAINAGE FOR IRRIGATED LANDS; THE CANAL SYSTEM; FLOW MEASUREMENT (FUNDAMENTAL EQUATIONS; WEIRS; ORIFICES, AND SIPHONS; MEASURING FLUMES; CURRENT METERS; OTHER METHODS FOR DISCHARGE MEASUREMENTS IN OPEN CHANNELS); MECHANISATION AND LAND PREPARATION FOR IRRIGATION. M309N)
Descriptors: IRRIGATION; SOILS; DRAINAGE; CANALS; WEIRS; ORIFICES; FLUMES; DISCHARGE RATE; CURRENT METERS; OPEN CHANNELS; BOOKS; IRRIGATION DESIGN AND PRACTICE; IRRIGATION SYSTEMS; FLOW MEASUREMENT; FUNDAMENTAL EQUATIONS; WEIRS ORIFICES AND SIPHONS; MEASURING FLUMES; OTHER METHODS OF OPEN CHANNEL DISCHARGE MEASUREMENTS
Section Heading Codes: M24; M10; M25

024372 FM (Fluid Flow Measurement Abstracts)
MEASUREMENT OF LIQUID FLOW IN OPEN CHANNELS BY WEIRS AND FLUMES - END DEPTH METHOD FOR ESTIMATION OF FLOW IN NON-RECTANGULAR CHANNELS WITH A FREE OVERFALL (APPROXIMATE METHOD)
INDIAN STANDARD BDC 17 (1747), 9PP. INCL. 4 FIGS. (MARCH, 1972)..
Languages: English
FREE OVER-FALL OCCURS IN MANY HYDRAULIC STRUCTURES WHEN THE BOTTOM OF A FLAT CHANNEL IS ABRUPTLY DISCONTINUED. SUCH AN OVER-FALL FORMS A CONTROL SECTION AND OFFERS AN APPROXIMATE MEANS FOR THE ESTIMATION OF FLOW. THE FLOW AT THE DROP (OR END) IS CURVILINEAR AND THEREFORE, THE DEPTH AT THE DROP IS NOT EQUAL TO THE CRITICAL DEPTH AS COMPUTED BY THE PRINCIPAL BASED ON PARALLEL FLOW ASSUMPTION. HOWEVER, THE RATIO BETWEEN THE END DEPTHS AND THE CRITICAL DEPTH (AS PER THE ASSUMPTION OF PARALLEL FLOW) HAS AN UNIQUE VALUE. THEREFORE, FROM THE DEPTH MEASURED AT THE DROP, THE DISCHARGE MAY BE ESTIMATED. (FROM STANDARD) M188G)
Descriptors: OPEN CHANNELS; MEASUREMENT TECHNIQUES; WEIRS; FLUMES; LIQUIDS; STANDARDS; END DEPTH METHOD; NON RECTANGULAR CHANNELS WITH FREE OVERFALL; ABRUPT DISCONTINUATION IN CHANNEL BOTTOM; FORMS CONTROL SECTION; CURVILINEAR FLOW OVER END; END DEPTH AND CRITICAL DEPTH RATIO GIVES DISCHARGE ESTIMATE; INDIAN STANDARD
Section Heading Codes: M24

021949 SL (Solid Liquid Flow Abstracts)
CORRELATION OF SEDIMENT INCIPIENT MOTION AND DEPOSITION IN PIPES AND OPEN CHANNELS WITH FIXED SMOOTH BEDS
NOVAK, P.; NALLURI, C.
NEWCASTLE-UPON-TYNE UNIV., U.K.
PROC. 3RD. INT. CONF. ON HYDRAULIC TRANSPORT OF SOLIDS IN PIPES, HYDROTRANSPORT 3, (GOLDEN, COLORADO, U.S.A.: BHRA FLUID ENGNG.), PAPER E4, PP.E4.45-56. (MAY 15-7, 1974)..
Languages: English
THE PROBLEM OF INCIPIENT MOTION OF A LOOSE BOUNDARY HAS BEEN EXTENSIVELY INVESTIGATED IN OPEN CHANNEL FLOW BY MANY INVESTIGATORS. ALSO SUBSTANTIAL AMOUNT OF INFORMATION IS AVAILABLE ON LIMIT DEPOSIT VELOCITIES OR INCIPIENT DEPOSITION CONDITIONS IN FULL PIPE FLOW. THE PAPER FORMING AN EXTENSION OF THE AUTHORS' EARLIER STUDIES PRESENTED AT THE SECOND INTERNATIONAL CONFERENCE ON THE HYDRAULIC TRANSPORT OF SOLIDS IN PIPES, 1972, DEALS WITH A STUDY OF INCIPIENT MOTION IN OPEN CHANNELS OF RECTANGULAR AND CIRCULAR CROSS-SECTION WITH FIXED SMOOTH BEDS. IT HAS BEEN ATTEMPTED TO ANALYSE AND SUMMARISE THE SIMILARITIES AND DIFFERENCES BETWEEN SEDIMENT MOTION IN OPEN CHANNELS WITH SMOOTH FIXED BOUNDARIES AND WITH MOVEABLE BED AND IN FULL PIPE FLOW WITH PARTICULAR REFERENCE TO INCIPIENT MOTION. THE EXPERIMENTAL RESULTS ARE ALSO DISCUSSED IN THE LIGHT OF TURBULENCE MEASUREMENTS CARRIED OUT BY THE AUTHORS. (A) D316A)
Descriptors: OPEN CHANNELS; CLOSED CONDUITS; SEDIMENT TRANSPORT; BED LOAD TRANSPORT; CRITICAL VELOCITY; DEPOSITION; TURBULENCE; EXPERIMENTAL STUDIES; WITH FIXED SMOOTH BEDS; INCIPIENT SEDIMENT MOTION; SEDIMENT MOTION OVER FIXED BOUNDARY LAYER; SEDIMENT MOTION AS BED LOAD; CIRCULAR CONDUITS; RECTANGULAR CROSS SECTION FLUMES; EFFECT OF CROSS SECTIONAL SHAPE; FREE WATER SURFACE; FIXED FLOW GEOMETRY; SEPARATE STUDY TO ESTABLISH TURBULENCE CHARACTERISTICS OF FLOW IN CIRCULAR CHANNELS FOR VARIOUS DEGREES OF FILLING; COMPARISON OF RESULTS WITH THOSE FOR RECTANGULAR CHANNELS AND PIPES
Section Heading Codes: D8

021539 CH (Civil Engineering Hydraulics Abstracts)
ON THE DEVELOPMENT OF SAND WAVES IN TIME.
YALIN, M.S.
QUEEN'S UNIV., CANADA
PROC. 16TH IAHR CONGRESS ON FUNDAMENTAL TOOLS TO BE USED IN ENVIRONMENTAL PROBLEMS, (SAO PAULO - BRAZIL), VOL. 2, PAPER B27, PP.212-9. (JULY 27 TO AUGUST 1, 1975).
Languages: English
THE PAPER CONCERNS THE TIME DEVELOPMENT OF RIPPLES AND DUNES FORMING ON THE MOVABLE BED OF A TWO-DIMENSIONAL TRANQUIL FLOW WITH A FREE SURFACE. THE EMPHASIS IS ON THE DURATION AND THE MANNER OF THE DEVELOPMENT. THE RESULTS PRESENTED WERE OBTAINED FROM THE LABORATORY MEASUREMENTS CARRIED OUT FOR FOUR COHESIONLESS GRANULAR MATERIALS. THE STUDY IS GUIDED BY A THEORETICAL APPROACH WHICH RESTS MAINLY ON THE DIMENSIONLESS FORMULATION OF THE TWO-PHASE MOTION. THE EXPONENTIAL FORMS ARE SUGGESTED TO CHARACTERISE THE TIME GROWTH OF SAND WAVES. (A.) C2114G)
Descriptors: SAND WAVES; SAND DUNES; BEDS-FORMS; OPEN CHANNELS; EXPERIMENTAL STUDIES; FLUMES; SAND WAVES DEVELOPMENT IN TIME; RIPPLE AND DUNE FORMATION; TWO-DIMENSIONAL TRANQUIL FLOW MOVABLE BED; FOUR COHESIONLESS GRANULAR BED MATERIALS; TWO PHASE MOTION DIMENSIONLESS FORMULATION
Section Heading Codes: C8

021533 CH (Civil Engineering Hydraulics Abstracts)
AN EXPRESSION OF BED LOAD TRANSPORT IN OPEN CHANNEL FLOWS.
WANG, F.Y.
MUSASHI INST. TECHNOL., JAPAN
PROC. 16TH IAHR CONGRESS ON FUNDAMENTAL TOOLS TO BE USED IN ENVIRONMENTAL PROBLEMS, (SAO PAULO - BRAZIL), VOL. 2, PAPER B16, PP.125-32. (JULY 27 TO AUGUST 1, 1975).
Languages: English
ACCORDING TO THE MEASURED LEVELS OF GRAVEL SUMMITS IN THE SURFACE ZONE OF FLATTENED BED, THE GRAINS IN THE MOVING ZONE FOLLOW THE GAMMA DISTRIBUTION WITH THE STATIC FRICTION FACTOR OF THE GRAIN AS PROBABILITY VARIABLE. THE DETACHING PROBABILITY IS OBTAINED BY INTEGRATION UP TO A VALUE WHICH CORRESPONDS TO A GIVEN BED SHEAR. TO DETERMINE THE UPPER LIMIT OF INTEGRATION, EXPERIMENTS ON THE CRITERIA OF INITIAL DETACHMENT FOR A SINGLE SPHERE WITH VARIOUS EXPOSURES WERE CARRIED OUT. WRITING THE MEAN VELOCITY OF THE GRAIN GROUP AS AN INTEGRATION WITH CONSIDERATION OF THE MEAN VELOCITY OF ONE GRAIN AND THE DETACHING PROBABILITY, AN EXPRESSION FOR BED LOAD TRANSPORT WAS ACQUIRED. DETERMINING CONSTANTS WITH EXISTING DATA OR FORMULAE TWO TYPES OF EMPIRICAL FORMULA WERE OBTAINED. (A.) C2108J)
Descriptors: BED LOAD TRANSPORT; OPEN CHANNELS; GRAVEL BEDS; GRAINS; EXPERIMENTAL STUDIES; FLUMES-TILTING; ANALYSIS-MATHEMATICAL; BED LOAD TRANSPORT IN OPEN CHANNEL FLOWS; DETACHMENT CRITERIA FOR SINGLE GRAVEL SPHERE; GRAIN SUMMIT LEVEL MEASUREMENT IN GRAVEL BED SURFACE ZONE; GRAIN DETACHMENT PROBABILITY IN MOVING ZONE OR BED LAYER; GRAIN GROUP MEAN VELOCITY; BED LOAD TRANSPORT RATE FORMULA
Section Heading Codes: C8

021346 CH (Civil Engineering Hydraulics Abstracts)
REAERATION IN OPEN CHANNEL FLOW
LAU, Y.L.
CANADA CENTRE FOR INLAND WATERS
PROC. 1ST CANADIAN HYDRAULICS CONF. (CAN. SOC. CIV. ENG.: ALBERTA UNIV.), ALBERTA UNIV., WAT. RES. CENTRE, PUBL. 4, PP.257-72. (MAY 10-11, 1973).
Languages: English
THEORETICAL MODELS OF THE MECHANISM OF OXYGEN ABSORPTION IS SHOWN TO BE DEFICIENT AS FAR AS PREDICTION OF THE REAERATION RATE IS CONCERNED. ON THE OTHER HAND, EMPIRICAL PREDICTION EQUATIONS RESULTING FROM REGRESSION ANALYSIS OF LABORATORY OR FIELD DATA HAVE BEEN SHOWN TO BE APPLICABLE OVER ONLY SMALL RANGES OF FLOW CONDITIONS. THROUGH USE OF DIMENSIONAL ANALYSIS, THE GOVERNING PARAMETERS IN THE PROCESS OF REAERATION IN OPEN-CHANNEL FLOW ARE IDENTIFIED. SUITABLE FLUME AND FIELD DATA ARE ANALYSED USING THE RESULTS OF THE DIMENSIONAL ANALYSIS. IT IS SHOWN THAT THE DISCREPANCY WHICH HAS BEEN SUGGESTED TO EXIST BETWEEN SOME SETS OF FLUME DATA WAS ACTUALLY THE RESULT OF THE METHOD OF ANALYSIS. A NEW PREDICTION EQUATION IS PROPOSED. (A) C1921G)
Descriptors: AERATION; OPEN CHANNELS; ABSORPTION; OXYGEN; REYNOLDS NUMBER EFFECTS; FLUID FLOW; ANALYSIS-MATHEMATICAL; REAERATION IN OPEN CHANNEL FLOW; OXYGEN ABSORPTION THEORETICAL MODELS; EMPIRICAL PREDICTION EQUATIONS; LIMITATIONS; FLUME AND FIELD DATA DIMENSIONAL ANALYSIS; NEW PREDICTION EQUATION
Section Heading Codes: C9

021344 CH (Civil Engineering Hydraulics Abstracts)
LABORATORY STUDY OF SCOUR AT CHANNEL BENDS
NUACHUKWU, B.A.
RES. COUNCIL ALBERTA, CANADA
PROC. 1ST CANADIAN HYDRAULICS CONF. (CAN.SOC.CIV. ENG.: ALBERTA UNIV.), ALBERTA UNIV., WAT. RES. CENTRE, PUBL. 4, PP.144-64. (MAY 10-11, 1973).
Languages: English
A NUMBER OF EMPIRICAL AND SEMI EMPIRICAL FORMULAS RELATE MAXIMUM DEPTHS AT BENDS TO RELATIVE CURVATURE ONLY. FIELD DATA TEND TO SCATTER WIDELY ABOUT THE IMPLIED TREND LINES. IT WAS CONSIDERED NECESSARY TO SEEK OTHER GEOMETRICAL AND/OR FLOW PARAMETERS WHICH WOULD ACCOUNT FOR THE SCATTER AND TO DEFINE THE LOCATION OF MAXIMUM DEPTH IN THE CHANNEL BENDS. LABORATORY TESTS WERE CONDUCTED TO DEFINE THE RELATIONSHIP BETWEEN MAXIMUM DEPTH OF SCOUR, BEND GEOMETRY AND FLOW VARIABLES. THE FLUME WAS FABRICATED FROM PLYWOOD AT THE STRAIGHT LENGTHS AND GALVANIZED STEEL AT THE BEND SECTION. THE BED MATERIAL CONSISTED OF SAND HAVING A MEDIAN SIEVE DIAMETER OF 0.35MM. GRAPHS ARE PRESENTED SHOWING THE VARIATION OF THE RATIOS OF MAXIMUM TO MEAN DEPTH WITH DEFLECTION ANGLE, CURVATURE RATIO, DEPTH/WIDTH RATIO AND FROUDE NUMBER. BESIDES THE CURVATURE IT WAS FOUND THAT FLOW CONDITION AND DEFLECTION ANGLE COULD BE SIGNIFICANT PARAMETERS AFFECTING THE MAXIMUM DEPTH AT BENDS. (A) C19190)
Descriptors: OPEN CHANNELS:SCOUR; BENDS; FLOW CHARACTERISTICS; BEDS-FORMS; EXPERIMENTAL STUDIES; FLUMES; SINGLE BEND IN RECTANGULAR CHANNEL; MAXIMUM DEPTH LOCATION AT CHANNEL BENDS; EMPIRICAL AND SEMIEMPIRICAL RELATIONS; FACTORS AFFECTING MAXIMUM SCOUR; MAXIMUM TO MEAN DEPTH RATIO VARIATION WITH DEFLECTION ANGLE; CURVATURE RATIO; DEPTH TO WIDTH RATIO; FROUDE NUMBER; MAXIMUM DEPTH AFFECTED BY FLOW CONDITION AND DEFLECTION ANGLE
Section Heading Codes: C9

021276 CH (Civil Engineering Hydraulics Abstracts)
MAJOR RESULTS IN HYDRAULIC RESEARCH, SECOND VOLUME (1965-72)
HASZPRA, O.
VITUKI, RES. INST. FOR WATER RESOUR. DEV., HUNGARY, 104 PP. (1974).
Languages: English
THE REPORT GIVES INFORMATION ON THE ACTIVITY OF THE HYDRAULIC LABORATORY OF VIKUKI (RESEARCH INSTITUTE FOR WATER RESOURCES DEVELOPMENT) DURING THE EIGHT YEARS 1965-1972. C18510)
Descriptors: HYDRAULIC RESERACH; OPEN CHANNELS:RIVERS; DAM AND BARRAGES; FLOOD FLOWS; BED LOAD TRANSPORT; POWER STATIONS; GROUNDWATER; TRACERS; EXPERIMENTAL STUDIES; MODEL TESTS; REVIEW OF SEVENTY THREE PROJECTS; SPILLWAYS; SHIP LOCK; RESERVOIR; NUCLEAR SEDIMENT DENSITY GAGES; SUCTION SUMP TYPES; WAVE BATHS; SEEPAGE; TOWING FLUME; COOLING WATER CIRCULATION SYSTEM; OUTLET WORKS; KARMAN VORTEX TRAILS; TURBINE GATE; HARBOUR ENTRANCE MAINTENANCE
Section Heading Codes: C3; C11; C17

021150 CH (Civil Engineering Hydraulics Abstracts)
FACTORS CONTROLLING SIZE, FORM AND SLOPE OF STREAM CHANNELS.
BLENCH, T.
ALBERTA UNIV., CANADA-T. BLENCH AND ASSOC., CANADA
PROC. I.A.H.R. INT. SEMINAR ON HYDRAULICS OF ALLUVIAL STREAMS (NEW DELHI, INDIA), LECTURE 16, PP. 1-9. (JANUARY 15-19, 1973).
Languages: English
THE BASIC PRINCIPLES AND FORMULAS FOR CHANNELS FORMED IN SEDIMENT ARE OUTLINED WITH MAXIMUM GRAPHICAL AID. TWO PARTICULARLY USEFUL FORMULAS RECEIVE SPECIAL MENTION. ATTENTION IS DRAWN TO RECENT ADVANCES. (A.) C1725Y)
Descriptors: OPEN CHANNELS; MEANDERING FLOW; FLUMES; SCOUR; SEDIMENT; RIVERS; BED LOAD TRANSPORT; OPEN CHANNELS SIZE FORM AND SHAPE; CONTROLLING FACTORS; LACEY EQUATION; REGIME FORMULAE; FLUME EXPERIMENTS ON SCOUR PHENOMENA; MEANDERING RIVERS NODAL POINT; SYSTEMATIC LABORATORY INVESTIGATION; FROUDE NUMBER VIG NUMBER; CHARGE IN LACEY CANALS; EXPERIMENTAL DATA
Section Heading Codes: C10

021143 CH (Civil Engineering Hydraulics Abstracts)
EROSION AND DEPOSITION OF COHESIVE SEDIMENTS
IPPEN, A.T.
MASS. INST. TECHNOL., RALPH M. PARSONS LAB., U.S.A.
PROC. I.A.H.R. INT. SEMINAR ON HYDRAULICS OF ALLUVIAL STREAMS (NEW DELHI, INDIA), LECTURE 6, PP.1-12 (JANUARY 15-19, 1973).
Languages: English
CONTENTS: IMPORTANCE OF COHESIVE MATERIALS IN CHANNEL FLOW PROCESSES; CHARACTERISTICS OF COHESIVE MATERIALS; PHYSICO-CHEMICAL PROPERTIES OF CONSTITUENTS, PROPERTIES OF AGGREGATES, FLOCCULATION PHENOMENA, SHEAR AND FLOCCULATION IN STREAM FLOW. COHESIVE MATERIALS IN STREAMS:EXPERIMENTAL APPROACH TO RESEARCH, EXPERIMENTAL RESULTS ON DEPOSITION, CORRELATION AND GENERALISATION OF RESULTS. CHANNEL DESIGN: STABLE CHANNEL FORMS, ESTUARINE NAVIGATION CHANNELS. C1718K)
Descriptors: SEDIMENT; DEPOSITION; EROSION; OPEN CHANNELS; ESTUARIES/INLETS(COASTAL); CLAY; FLUMES:EXPERIMENTAL STUDIES; COHESIVE SEDIMENT EROSION CHARACTERISTICS; JET TEST RESULTS; PROPOSED FURTHER RESEARCH; STABLE CHANNEL DESIGN; EROSION PATTERNS; NATURE OF EROSIVE FORCE; ESTUARINE NAVIGATION CHANNELS; AGGREGATE PROPERTIES; FLOCCULATION
Section Heading Codes: C8

021138 CH (Civil Engineering Hydraulics Abstracts)
INVESTIGATION OF DIFFUSION IN OPEN-CHANNEL FLOWS
KEEFER, T.N. AND MCQUIVEY, R.S.
BAY ST. LOUIS, U.S.A.
U.S. GEOL. SURVEY, J. RES., VOL.2, NO.4, PP. 501-9. (1974).
Languages: English
C1713X)
Descriptors: OPEN CHANNELS; TURBULENCE MEASUREMENTS; DISPERSION; FLOW FIELDS; FLUMES; TRACERS-FLUORESCENT; EXPERIMENTAL STUDIES; OPEN CHANNEL FLOW; TURBULENT DIFFUSION COEFFICIENTS; TURBULENCE STATISTICAL PROPERTIES; SMOOTH BOUNDARIES; COBBLED BOUNDARIES; EULERIAN LANGRANGIAN TIME SCALE RATIOS
Section Heading Codes: C8

021136 CH (Civil Engineering Hydraulics Abstracts)
BOUNDARY SHEAR DISTRIBUTION IN ELLIPTICAL AND COSINE CURVED CHANNEL SECTIONS
RAJAGOPALAN, K.S.
CENTRAL WATER AND POWER RES. STN., INDIA
IRRIG. AND POWER, VOL.32, NO.1, PP. 45-54 (JANUARY, 1975).
Languages: English
A DETAILED KNOWLEDGE OF THELOCAL BOUNDARY SHEAR ALONG THE WETTED PERIMETER IS NEEDED WHILE DESIGNING CANAL SECTIONS IN ERODIBLE SOIL RATHER THAN AVERAGE SHEAR STRESS. IT HAS BEEN OBSERVED THAT INCISED CANAL SECTIONS ARE SEEN TO ASSUME MOSTLY THE SHAPE OF AN ELLIPSE FOR THE SIDES WHILE THE ALLUVIAL CANALS ARE FOUND TO ADOPT THE SHAPE OF COSINE CURVES. IN THE LITERATURE THE DISTRIBUTION OF BOUNDARY SHEAR FOR THESE TWO SHAPES ARE NOT AVAILABLE. AN ATTEMPT HAS BEEN MADE IN THIS PAPER TO GIVE THE BOUNDARY SHEAR DISTRIBUTION FOR THE ELLIPTICAL AND COSINE CURVED SHAPES BASED ON EXPERIMENTAL DATA ON FLUMES. THE DISTRIBUTIONS OF SHEAR ALONG THE WETTED PERIMETER HAVE BEEN OBTAINED AS LOGARITHMIC. AN ANALYSIS OF PROTOTYPE DATA ALSO INDICATED THAT THE DIMENSIONLESS SHEAR VALUES (TAU/SUB O//TAU/SUB O/') OF FIELD CHANNELS PLOT REASONABLY WELL ON CURVES CORRESPONDING TO LABORATORY CHANNELS. (A) C1711L)
Descriptors: SHEAR STRESS; BOUNDARY LAYERS; OPEN CHANNELS; EROSION; FLUMES; EXPERIMENTAL STUDIES; BOUNDARY SHEAR STRESS DISTRIBUTION ALONG WETTED PERIMETER; ERODIBLE CHANNELS; SOIL EROSION; ELLIPTICAL CHANNELS; COSINE CHANNELS; FLUME DATA ANALYSIS; LOGARITHMIC PLOTS; PROTOTYPE DATA ANALYSIS; COMPARISON OF FIELD AND LABORATORY CHANNELS
Section Heading Codes: C8

021133 CH (Civil Engineering Hydraulics Abstracts)
LAMINAR OPEN CHANNEL FLOW
SHAFIQUL NABI, S.; JAMIL, M. ; SALAHUDDIN SHAH, S.D. (NABI, S. SHAFIQUL; SHAH, S. SALAHUDDIN);
ALIGARH MUSLIM UNIV., INDIA-L.S.G.E.D., INDIA
IRRIG. AND POWER, VOL.32, NO.1, PP. 87-94 (JANUARY, 1975).
Languages: English
AN ATTEMPT HAS BEEN MADE TO OBTAIN A RELATIONSHIP BETWEEN THE FRICTION FACTOR VERSUS REYNOLDS' NUMBER AND FRICTION FACTOR VERSUS DIMENSIONLESS FLOW PARAMETER 'WU'. THE STUDY IS CONFINED TO THIN SHEET FLOW OVER SMOOTH STRUCTURAL STEEL SURFACE AND A ROUGH SURFACE CONSISTING OF 4MM DIAMETER BEADS. FOR VARYING SLOPES. SLOPES VARYING FROM 0.0006 TO 0.0013 FOR SMOOTH AS WELL AS FOR ROUGH SURFACE ARE USED FOR THE PRESENT STUDY. THE RANGE OF REYNOLDS' NUMBER IS GIVEN BY 65*RE*4952 AND THE RANGE OF B/Y VARIES FROM 12 TO 172. THE RESULTS FOR BOTH LAMINAR AND TRANSITION RANGES ARE PRESENTED GRAPHICALLY TO PERMIT COMPARISON WITH THEORETICAL VALUES FOR SMOOTH AND ROUGH SURFACES. THE PRESENT INVESTIGATION MAY BE USEFUL FOR STUDIES OF OVERLAND FLOW PARTICULARLY FOR SOIL EROSION PROBLEMS. (A) C1708S)
Descriptors: LAMINAR FLOW; BOUNDARY LAYERS; OPEN CHANNELS; SHEET FLOW; ROUGHNESS; FRICTION; EXPERIMENTAL STUDIES; FLUMES-TILTING; LAMINAR OPEN CHANNEL FLOW; POISSON'S EQUATION; SIDE WALL EFFECTS; REYNOLDS NUMBER VS FRICTION FACTOR; FRICTION FACTOR VS DIMENSIONLESS FLOW PARAMETER; SMOOTH STRUCTURAL STEEL BOTTOM; ROUGH SURFACE OF BEADS ON STEEL SURFACE; VARYING SLOPES; GRAPHICAL DATA ANALYSIS
Section Heading Codes: C8

020997 CH (Civil Engineering Hydraulics Abstracts)
EFFECTS OF RIVER CURVATURE ON A RESISTANCE TO FLOW AND SEDIMENT DISCHARGES OF ALLUVIAL STREAMS.
ONISHI, Y.; JAIN, S.C.; KENNEDY, J.F.
IOWA STATE UNIV. WATER RESOURCES RES. INST., U.S.A.
IOWA STATE WATER RESOURCES RES. INST., COMPLETION REPORT ISWRRI 46, 163PP. (DECEMBER, 1972) (PB 220 249).
Languages: English
THE EFFECTS OF CHANNEL MEANDERING AND WIDTH OF SINUOUS STREAMS ON THE SEDIMENT LOADS AND THE FRICTION FACTORS OF ALLUVIAL STREAMS WERE INVESTIGATED IN LABORATORY FLUMES. EXPERIMENTS WERE CONDUCTED IN THE SUBCRITICAL FLOW DOMAIN IN STRAIGHT AND MEANDERING LABORATORY CHANNELS WITH SAND BEDS AND RIGID WALLS. FOR GIVEN FLOW CONDITIONS, THE SEDIMENT DISCHARGE PER UNIT WIDTH IN THE FULL-WIDTH MEANDERING CHANNEL WAS GREATER THAN SEDIMENT DISCHARGE IN THE STRAIGHT FLUME WHICH IN TURN WAS GREATER THAN SEDIMENT DISCHARGE IN THE HALF-WIDTH MEANDERING CHANNEL. THE BEND-LOSS COEFFICIENT, DEFINED AS THE HEAD LOSS DUE TO CHANNEL CURVATURE, NORMALIZED BY THE MEAN-VELOCITY HEAD, INCREASES WITH FROUDE NUMBER, THE RATIO OF BED HYDRAULIC RADIUS TO MEDIAN SAND DIAMETER, AND THE RATIO OF WIDTH TO CENTERLINE RADIUS OF CURVATURE. THE BED FORMS, ESPECIALLY THE POINT BARS ALONG THE INNER BANKS, PLAY A DOMINANT ROLE IN REGULATING THE QUASI-STEADY CHARACTERISTICS OF MEANDERING ALLUVIAL STREAMS. (A.) C1572S)
Descriptors: OPEN CHANNELS; FLUMES; SEDIMENT TRANSPORT; MEANDERING FLOW; BED LOAD TRANSPORT; SEDIMENT TRANSPORT; BEDS; EXPERIMENTAL STUDIES; CHANNEL MEANDERING; WIDTH; SINUOUS STREAMS; SEDIMENT LOADS; FRICTION FACTORS; ALLUVIAL STREAMS; LABORATORY FLUMES; SEDIMENT DISCHARGE; ROLE OF BED FORMS
Section Heading Codes: C10

020995 CH (Civil Engineering Hydraulics Abstracts)
VERTICAL MIXING OF HEATED EFFLUENTS IN OPEN-CHANNEL FLOW.
SCHILLER, E.J.
IOWA UNIV., U.S.A. : DEPT. OF MECH. AND HYDRAUL., PH.D. THESIS, OWRR-A-040-IA(2), 167PP. (JULY, 1973) (PB 230 212).
Languages: English
A METHOD FOR PREDICTION OF VERTICAL MIXING OF HEATED SURFACE EFFLUNETS IN THE FAR-FIELD MIXING REGION WAS STUDIED USING LABORATORY FLUME EXPERIMENTS WHICH COVERED A RANGE OF FLOWS FROM WELL MIXED TO NEARLY STABLE STRATIFIED CONDITIONS. THE VELOCITY AND DEPTH OF FLOW, AS WELL AS THE TEMPERATURE DIFFERENCE AND DISCHARGE RATIO BETWEEN AMBIENT AND EFFLUENT FLOWS WERE VARIED TO SIMULATE THE RANGE OF CONDITIONS COMMONLY ENCOUNTERED. TEMPERATURES WERE RECORDED DOWNSTREAM BY MOBILE THERMISTORS. VELOCITY MEASUREMENTS WERE ALSO TAKEN FOR SELECTED RUNS. FROM THE DATA TOGETHER WITH AN ANALYSIS BASED ON THE CONVECTION-DIFFUSION EQUATION, IT IS POSSIBLE TO DETERMINE (1) THE DISTANCE FOR NEARLY COMPLETE MIXING, (2) A BULK MIXING COEFFICIENT FOR MODERATELY AND RAPIDLY MIXING FLOW AND FLOW AND (3) THE VERTICAL DISTRIBUTION OF THE OVERALL VERTICAL HEAT TRANSFER COEFFICIENT AT CROSS SECTIONS DOWNSTREAM. THE BUOYANCY EFFECTS WERE ABSORBED INTO THE TRANSFER COEFFICIENT. THE LESS DENSE WATER INHIBITS MIXING NEAR THE SURFACE, AND CREATES REDUCTION IN MIXING THROUGHOUT MOST OF THE DEPTH FOR THE MORE STRATIFIED FLOWS. FOR THE RAPIDLY MIXING FLOWS, THE VERTICAL HEAT TRANSFER COEFFICIENT AGREED CLOSELY WITH THE TURBULENT MOMENTUM TRANSFER COEFFICIENT. PREDICTIONS OF THE DOWNSTREAM TEMPERATURE PROFILES WERE OBTAINED USING A FINITE DIFFERENCE REPRESENTATIVE OF THE STEADY STATE CONVECTION-DIFFUSION EQUATION. THE PREDICTED PROFILES AGREED CLOSELY WITH THE EXPERIMENTAL ONES. (A.) (MICROFICHE) C157ON)
Descriptors: EFFLUENTS; MIXING; OPEN CHANNELS; FLUMES; STRATIFIED FLOW; TEMPERATURE DISTRIBUTION; EXPERIMENTAL STUDIES; MATHEMATICAL MODELS; PREDICTION; VERTICAL MIXING; HEATED SURFACE EFFLUENTS; FAR-FIELD MIXING REGION; FLUME EXPERIMENTS; FLOWS RANGING FROM WELL MIXED TO NEARLY STABLE STRATIFIED CONDITIONS; PREDICTION OF DOWNSTREAM TEMPERATURE PROFILES
Section Heading Codes: C9

020993 CH (Civil Engineering Hydraulics Abstracts)
SEDIMENT TRANSPORT THEORIES: A REVIEW.
WHITE, W.R.; CRABBE, A.D. ; MILLI, H.
HYDRAUL. RES. STN., U.K.-LAB. DE HIDRAULICA APLICADA, ARGENTINA
INST. CIV. ENG. PROC. PART 2, VOL. 59, PP.265-92. (JUNE, 1975).
Languages: English
THE ENGINEER IS FACED WITH A MULTITUDE OF SEDIMENT TRANSPORT THEORIES, EACH ONE DERIVED IN GOOD FAITH BY A REPUTABLE AUTHOR BUT OFTEN FOR A LIMITED RANGE OF SEDIMENT SIZES AND HYDRAULIC CONDITIONS. COMPUTED TRANSPORT RATES VARY CONSIDERABLY FROM THEORY TO THEORY AND CHOOSING WHICH METHOD TO ADOPT IN A SPECIFIC SITUATION IS NOT EASY. IN A RECENT INVESTIGATION THE HYDRAULICS RESEARCH STATION HAS EVALUATED ALL THE COMMONLY USED THEORIES AGAINST A LARGE QUANTITY OF FLUME AND FIELD DATA. THIS PAPER PROVIDES A SUMMARY OF THE WORK CONCENTRATING ON EIGHT OF THE THEORIES. (A.) C1568H)
Descriptors: SEDIMENT TRANSPORT; OPEN CHANNELS; FLUMES; EXPERIMENTAL STUDIES; REVIEWS; SEDIMENT TRANSPORT THEORIES; EVALUATION AGAINST A LARGE QUANTITY OF FLUME AND FIELD DATA
Section Heading Codes: C9

020635 CH (Civil Engineering Hydraulics Abstracts)
HISTORY AND APPLICATIONS OF EXPERIMENTAL AIDS IN HYDRAULIC ENGINEERING
JAIN, A.K.; ASAWA, G.L.
ROORKEE UNIV., INDIA
CIV. ENGNG. CONSTR. AND PUBLIC WORKS J., VOL.6, NO.6, PP.23-6. (NOVEMBER/DECEMBER, 1973).
Languages: English
THE PAPER DISCUSSES THE VAST POTENTIAL OF EXPERIMENTAL AIDS IN INVESTIGATING VARIOUS HYDRAULIC PROBLEMS. BESIDES, HISTORY AND DEVELOPMENT OF EXPERIMENTAL INVESTIGATION HAVE ALSO BEEN DEALT WITH. AN ATTEMPT HAS BEEN MADE TO ENUMERATE THE FIELDS OF APPLICATION OF THE MOST USED EXPERIMENTAL AIDS LIKE FLUMES, WIND-TUNNELS AND MODELS. IN ADDITION, LIMITATIONS OF THESE AIDS HAVE ALSO BEEN STATED WITHOUT THE KNOWLEDGE OF WHICH NO FRUITFUL RESULTS CAN BE OBTAINED. (A) C1210X)
Descriptors: HYDRAULIC RESEARCH; MODEL TESTS; OPEN CHANNELS; EXPERIMENTAL METHODS; DISCUSSION OF EXPERIMENTAL AIDS USED IN HYDRAULIC ENGINEERING INCLUDING FLUMES, WIND-TUNNELS, AND MODELS; APPLICATIONS AND LIMITATIONS; HISTORICAL BACKGROUND
Section Heading Codes: C15; C17; C7; C9

020535 CH (Civil Engineering Hydraulics Abstracts)
VORTEX EXCITED OSCILLATIONS OF A PAIR OF FLEXIBLE CIRCULAR CYLINDERS IN FLOWING WATER
KING, R.
BHRA FLUID ENGNG., U.K.
BHRA FLUID ENGNG., TECH. NOTE TN 1272, 27PP. (FEBRUARY, 1975) (AVAILABLE TO MEMBERS OF BHRA ONLY).
Languages: English
AN EXAMINATION IS MADE OF WAKE INTERACTION EFFECTS BETWEEN TWO IDENTICAL FLEXIBLE CIRCULAR CYLINDERS IN FLOWING WATER. THE TWO VERTICAL CYLINDERS ARE SEPARATED BY A VARIABLE DISTANCE G ALONG A COMMON CENTRE-LINE IN THE DIRECTION OF FLOW FOR THE RANGE 0.25LG/DLG. OSCILLATIONS IN THE FUNDAMENTAL AND SECOND NORMAL MODES IN THE FLOW DIRECTION AND IN THE FUNDAMENTAL MODE CROSS-FLOW ARE INDUCED BY COHERENT VORTEX SHEDDING. REYNOLDS NUMBERS OF THE INDIVIDUAL CYLINDERS ARE IN THE RANGE 10/SUP 3/LREL2M10/SUP 4/, AND THE TWO ONE INCH DIAMETER CYLINDERS WERE TESTED IN DEPTHS OF WATER VARYING FROM 22 DIAMETERS TO 30 DIAMETERS. RESULTS ARE PRESENTED FROM TESTS ON THE UNCOUPLED CYLINDERS AND ALSO FROM TESTS WITH THE CYLINDERS COUPLED BY ELASTIC OR RIGID MEMBERS. THE STABILITY OF THE TWO CYLINDERS IS EXPLAINED BY REFERENCE TO OSCILLATORY MODE SHAPES AND FROM CONSIDERATIONS OF THE TWO POSSIBLE TYPES OF VORTEX SHEDDING (SYMMETRIC AND ALTERNATE). WHERE POSSIBLE, COMPARISONS ARE MADE WITH RESULTS FROM WIND TUNNEL INVESTIGATIONS. (A) C1110B)
Descriptors: BODIES-CYLINDERS(CIRCULAR); VORTEX SHEDDING; FLOW-INDUCED VIBRATIONS; WAKES; OPEN CHANNELS; FLUMES; EXPERIMENTAL STUDIES; FLEXIBLE CIRCULAR CYLINDERS; FLOWING WATER; WAKE INTERACTION EFFECTS; INDUCED OSCILLATIONS DUE TO COHERENT VORTEX SHEDDING; SYMMETRIC VORTEX SHEDDING; ALTERNATE VORTEX SHEDDING; ISOLATED CYLINDER; COMPARISON WITH WIND TUNNEL INVESTIGATIONS
Section Heading Codes: C3

020432 CH (Civil Engineering Hydraulics Abstracts)
RANGE ANALYSIS OF TURBULENCE IN WATER
HANSEN, E.; ROSBJERG, D.
DENMARK TECH. UNIV.
TECH. UNIV., DENMARK, INST. HYDRODYN. AND HYDRAUL. ENGNG. PROG. REPORT 32, PP.9-16. (APRIL, 1974).
Languages: English
THIS NOTE IS A CONTRIBUTION TO THE DISCUSSION OF WHETHER THE HURST PHENOMENON IS PRESENT OR NOT IN EULERIAN TURBULENT VELOCITY FLUCTUATIONS IN LABORATORY FLUMES. FOR A PARTICULAR UNIFORM OPEN CHANNEL FLOW WITH MEAN DEPTH D # 5.5CM, MEAN VELOCITY V # 30.0CM/SEC, AND FRICTION VELOCITY U/SUB F/ # 3.6CM/SEC, A LARGE NUMBER OF VERY LONG VELOCITY RECORDS WAS COLLECTED FOR SPACE-TIME CORRELATION MEASUREMENTS PREVIOUSLY REPORTED. 15 INDEPENDENT RECORDS, EACH OF A LENGTH OF T # 270 SEC, HAVE BEEN INCORPORATED IN THE PRESENT RANGE ANALYSIS. (FROM PAPER) C1007P)
Descriptors: TURBULENT FLOW; VELOCITY FLUCTUATIONS; FLUMES; RIVERS; ANALYSIS-MATHEMATICAL; HURST PHENOMENON; EULERIAN TURBULENT VELOCITY FLUCTUATIONS; LABORATORY FLUMES; UNIFORM OPEN CHANNEL; VERY LONG VELOCITY RECORDS COLLECTED; SPACE-TIME CORRELATION MEASUREMENTS
Section Heading Codes: C9

020301 CH (Civil Engineering Hydraulics Abstracts)
CHARACTERIZERS FOR FLUMES AND WEIRS
SHINSKY, G.
FOXBORO CO., U.S.A.
INSTRUM. AND CONTROL SYST., VOL. 47, NO. 9, P.111. (SEPTEMBER 1974).
Languages: English
C876A)
Descriptors: FLUMES; WEIRS; OPEN CHANNELS; FLOW CHARACTERISTICS; WEIRS-VNOTCH; ANALYSIS-MATHEMATICAL; VOLUMETRIC FLOW THROUGH HEAD-PRODUCING DEVICE; PARSHALL FLUME; RECTANGULAR WEIR; FLOW RELATION TO MEASURED HEAD
Section Heading Codes: C16; C11; C9

020255 CH (Civil Engineering Hydraulics Abstracts)
EVALUATION OF THE EROSIVE CAPACITY OF FLOW IN TERMS OF THE SPECIFIC WEIGHT OF A SINGLE SPHERE IN LIMITING EQUILIBRIUM
RAKHMANOV, A.N.
TRANS.VEDENEEV ALL-UNION SCIENTIFIC RES.INST.OF HYDRAUL.ENG-NG., VOL 91, PP.5-28 (1969). (TRANSLATED FROM RUSSIAN; ISRAEL PROGRAM SCI.,TRANS.,JERUSALEM 1971).
Languages: English
THE PAPER DEALS WITH THE POSSIBILITY OF EVALUATING THE EROSIVE CAPACITY OF A FLOW IN TERMS OF THE SPECIFIC WEIGHT OF AN INDIVIDUAL SPHERE IN LIMITING EQUILIBRIUM. THE SPHERE IS ASSUMED TO BE LOCATED AT THE BOTTOM OF THE CHANNEL IN A SMALL RECESS OF GIVEN SHAPE AND SIZE. THE AUTHOR ANALYZES EXPERIMENTAL DATA FOR A SMOOTHLY OR APPROXIMATELY SMOOTHLY VARYING FLOW AND ESTABLISHES RELATIONSHIPS BETWEEN THE CRITICAL SPECIFIC WEIGHT OF INDIVIDUAL SPHERES OF GIVEN SIZE AND THE CRITICAL SIZE OF GRAINS OF NATURAL NONCOHESIVE SOIL OF NORMAL SPECIFIC WEIGHT. (A) C830P)
Descriptors: EROSION; OPEN CHANNELS; EXPERIMENTAL STUDIES; FLUMES; SPHERES, SINGLE SPHERE IN RECESS; SOIL; EROSIVE CAPACITY OF FLOWS; SINGLE SPHERE IN LIMITING EQUILIBRIUM; SPHERE IN SMALL RECESS IN BOTTOM OF CHANNEL; NATURAL NONCOHESIVE SOIL
Section Heading Codes: C8

020065 CH (Civil Engineering Hydraulics Abstracts)
SUMMARY OF TURBULENCE DATA FROM RIVERS, CONVEYANCE CHANNELS AND LABORATORY FLUMES.
MCQUIVEY, R.S.
U.S. GEOLOG. SURVEY
U.S. GEOLOG. SURVEY, PROF. PAPER 802-B, 66PP. (1973).
Languages: English
THE PRIMARY PURPOSE OF THIS REPORT IS TO SUMMARIZE AND MAKE AVAILABLE TO OTHER INVESTIGATORS SOME TURBULENCE CHARACTERISTICS OF TURBULENT SHEAR FLOWS OBTAINED BY USE OF HOT-FILM ANEMOMETRY. RELATED HYDRAULIC AND SEDIMENT DATA WERE ALSO COLLECTED AND ARE INCLUDED. DATA WERE COLLECTED FROM THE STUDY OF FLOW IN 20-CENTIMETER, 2-FOOT, 4-FOOT, AND 8-FOOT WIDE RE-CIRCULATING FLUMES, AT THE COLORADO STATE UNIVERSITY, OVER RIGID AND ALLUVIAL BOUNDARIES. ALLUVIAL BOUNDARY DATA WERE ALSO COLLECTED IN THE ATRISCO FEEDER CANAL NEAR BERNALILLO, M. MEX., THE RIO GRANDE CONVEYANCE CHANNEL NEAR BERNARDO, N. MEX., THE COLUMBIA RIVER ESTUARY NEAR ASTORIA, OREG., THE MISSOURI RIVER NEAR VICKSBURG, MISS. THE DATA COLLECTED AND REPORTED INCLUDE SUCH VARIABLES AND PARAMETERS AS THE LONGITUDINAL AND VERTICAL COMPONENTS OF THE TURBULENT INTENSITY, THE MACROSCALE AND MICROSCALE OF TURBULENCE, THE EULERIAN INTEGRAL TIME SCALE, THE MEASURED TURBULENT SHEAR STRESS, THE LOCAL MEAN VELOCITIES, THE SLOPE, THE DEPTH, THE WIDTH, THE DISCHARGE, THE TEMPERATURE, THE SUSPENDED-SEDIMENT CONCENTRATION, AND THE TOTAL BED-MATERIAL DISCHARGE. POWER SPECTRA, SOME SPACE-TIME, AND SPACE-CORRELATION RELATIONS WERE OBTAINED BUT ARE NOT INCLUDED IN THIS REPORT. ALSO, NOT ALL THE ABOVE CHARACTERISTICS WERE COLLECTED AT EACH LOCATION. SOME LONGITUDINAL TURBULENCE INTENSITIES WERE OBTAINED FROM A STANDARD PRICE CURRENT METER AND A SMALL PROPELLER METER AT THREE OF THE FIELD LOCATIONS. THESE DATA ARE REPORTED ALONG WITH THE HOT-FILM ANEMOMETER MEASUREMENTS. (A.) CG40Q)
Descriptors: TURBULENT FLOW; TURBULENCE MEASUREMENTS; ANEMOMETERS-HOT FILM; SEDIMENT SAMPLING; RIVERS; FLUMES; OPEN CHANNELS; U.S.A.; CHARACTERISTICS OF TURBULENT SHEAR FLOWS; RECIRCULATING LABORATORY FLUMES; CONVEYANCE CHANNELS; RIGID AND ALLUVIAL BOUNDARIES; TURBULENT INTENSITY; MACROSCALE AND MICROSCALE OF TURBULENCE; EULERIAN INTEGRAL TIME SCALE; MEASURED TURBULENT SHEAR STRESS; LOCAL MEAN VELOCITIES; SUSPENDED SEDIMENT CONCENTRATION; TOTAL BED-MATERIAL DISCHARGE ; MISSOURI RIVER; MISSISSIPPI RIVER; COLUMBIA RIVER; ATRISCO FEEDER CANAL; RIO GRANDE CONVEYANCE CHANNEL
Section Heading Codes: C9; C10; C16

019884 CH (Civil Engineering Hydraulics Abstracts)
HOSCAR SEWAGE WORKS EXTENSIONS: LABORATORY EXPERIMENTS ON THE INLET STRUCTURES.
WHITTINGTON, R.B.; ALI, K.H.M.
LIVERPOOL UNIV., U.K.
INST. CIV. ENG. PROC. PART 2, VOL.57, TN107, PP.727-42. (DECEMBER, 1974).
Languages: English
C459T)
Descriptors: OPEN CHANNELS; SEWAGE DISPOSAL; FLUMES; MODEL TESTS; U.K.; REPORT OF MODEL STUDIES ON THE EXTENSIONS TO THE HOSCAR SEWAGE DISPOSAL WORKS IN THE COUNTY BOROUGH OF WIGAN; MODIFICATIONS TO POSITIONS OF INLET FLUMES, CURVATURE OF PRINCIPAL BENDS, AND POSITIONS AND WIDTHS OF OUTLET FLUMES
Section Heading Codes: C11; C24; C17

019880 CH (Civil Engineering Hydraulics Abstracts)
RESISTANCE OF TWO-DIMENSIONAL STRIPS IN OPEN CHANNELS.
RANGA RAJN, K.G.; CHANDRA, S. (RAJN, K.G.; RANGA);
ROORKEE UNIV., INDIA
IRRIG. AND POWER, VOL.31, NO.2, PP.193-204. (APRIL, 1974).
Languages: English

STUDIES CONCERNING THE RESISTANCE TO FLOW IN OPEN CHANNEL HAVING TWO-DIMENSIONAL STRIP ROUGHNESSES ON THE BED ARE REPORTED. FIRSTLY, THE RESISTANCE OF A SINGLE STRIP PLACED ON A SMOOTH BED HAS BEEN STUDIED; THE DRAG COEFFICIENT HAS BLEN RELATED TO THE RATIO OF THE DEPTH OF FLOW TO THE HEIGHT OF THE STRIP AND THIS RELATION HAS BEEN COMPARED WITH PREVIOUS WIND TUNNEL RESULTS ON THE SUBJECT. SECONDLY, THE RESISTANCE OF A SERIES OF STRIP ROUGHNESSES PLACED ON A GRAVEL BED HAS BEEN COMPARED WITH THAT OF THE SAME SERIES PLACED ON A SMOOTH BED. THE COMPARISON IS SEEN TO SUPPORT THE PREMISE BOUNDARY FRICTION IS NEGLIGIBLE FOR RELATIVE SPACING LESS THAN 40.0. FINALLY, THE CHANGE IN RESISTANCE TO FLOW CAUSED BY THE SUPERPOSITION OF ONE SERIES OF STRIP ROUGHNESSES ON ANOTHER HAS ALSO BEEN STUDIED. (A.) C455M)

Descriptors: ROUGHNESS ELEMENTS; BEDS-FORMS; OPEN CHANNELS; FLOW CHARACTERISTICS; FLUMES-TILTING; EXPERIMENTAL STUDIES; TWO DIMENSIONAL STRIPS IN OPEN CHANNELS; ANALYSIS OF FLUME DATA ON THE RESISTANCE CHARACTERISTICS OF TWO DIMENSIONAL SHARP EDGED STRIPS OF NEGLIGIBLE THICKNESS; STUDIES ON SMOOTH BED AND ON FIXED GRAVEL BED; RESISTANCE OF SINGLE STRIP; RESISTANCE OF SEVERAL STRIPS
Section Heading Codes: C11

019764 CH (Civil Engineering Hydraulics Abstracts)
METHODS OF MEASUREMENT OF LIQUID FLOW IN OPEN CHANNELS.
BRITISH STANDARDS INST.
BRITISH STANDARDS INST., BS 3680, PART 4C, 52PP. (JUNE, 1974).,
Languages: English

CONTENTS: LMETHODS, GENERAL: INSTALLATION; MEASUREMENT OF HEAD; DETERMINATION OF DISCHARGE; RECTANGULAR THROATED STANDING WAVE FLUME; TRAPEZOIDAL THROATED FLUMES; U-SHAPED (ROUND BOTTOMED) FLUMES; ERRORS IN FLOW MEASUREMENT; APPENDICES, TABLES, FIGURES. C338G)

Descriptors: FLOW MEASUREMENT; OPEN CHANNELS; RIVERS; FLUMES; STANDARDS(BSI); FLUME SELECTION AND INSTALLATION; MEASUREMENT OF HEAD; DETERMINATION OF DISCHARGE; RECTANGULAR THROATED STANDING WAVE FLUME; TRAPEZOIDAL THROATED FLUMES; ROUND BOTTOMED(U-SHAPED) FLUMES
Section Heading Codes: C16; C9; C11

019709 CH (Civil Engineering Hydraulics Abstracts)
BOUNDARY PRESSURE FLUCTUATIONS DUE TO MACROTURBULENCE IN HYDRAULIC JUMPS.
SCHIEBE, F.R.; BOWERS, C.E.
MINNESOTA UNIV., U.S.A.
PROC. SYMP ON TURBULENCE IN LIQUIDS, (MISSOURI-ROLLA UNIV.), PP.134-8. (OCTOBER 4-6, 1971). DISCUSSION PP.138-9.,
Languages: English

DATA CONCERNING THE STATISTICAL PROPERTIES OF PRESSURE FLUCTUATIONS ON THE CONTAINMENT STRUCTURE ASSOCIATED WITH THE HYDRAULIC JUMP HAVE BEEN STUDIED AT THE ST. ANTHONY FALLS HYDRAULIC LABORATORY. THE INCIDENT FROUDE NUMBERS WERE INVESTIGATED THROUGH THE PRACTICAL RANGE FROM 4 TO 9. THE MEAN SQUARE OF THE FLUCTUATING PRESSURE, THE MEAN PRESSURE, AND THE POWER SPECTRUM WERE DETERMINED AS A FUNCTION OF POSITION UNDER THE JUMP. IN ADDITION, MEAN AND RMS TURBULENT VELOCITY PROFILES AND ENTRAINED AIR CONCENTRATION PROFILES THROUGHOUT THE JUMP VOLUME WERE DETERMINED. THE PRINCIPAL TESTS WERE PERFORMED IN A CHANNEL 20 INCHES WIDE AND 3 FEET DEEP. OTHER TESTS AT A LARGER SCALE WERE PERFORMED IN A FLUME 9 FEET WIDE AND 6 FEET DEEP TO ASSIST IN AN EVALUATION OF THE SCALING PROPERTIES OF THE VARIOUS STATISTICAL PARAMETERS. THE DATA INDICATES THAT THE RAPID RATE OF ENERGY DISSIPATION NEAR THE TOE OF THE JUMP LEADS TO A MAXIMUM RMS FLUCTUATION PRESSURE ON THE BED OF ABOUT 5 PER CENT OF THE INCOMING VELOCITY HEAD. THE LOCATION OF THE MAXIMUM PRESSURE FLUCTUATION IS APPROXIMATELY MIDWAY UNDER THE ROLLER OF THE JUMP. (A). C283W)

Descriptors: TURBULENCE; PRESSURE FLUCTUATIONS; HYDRAULIC JUMP; OPEN CHANNELS; FLOW CHARACTERISTICS; FLUMES; PROBES; VELOCITY PROFILES; HYDRAULIC STRUCTURES; EXPERIMENTAL STUDIES; MACROTURBULENCE; STUDY TO ESTABLISH EXPERIMENTALLY THE STOCHASTIC NATURE OF THE PRESSURE FLUCTUATIONS ON THE FLAT, HORIZONTAL BED UNDER A HYDRAULIC JUMP AND THE FLOW CHARACTERISTICS WITHIN THE JUMP WHICH PRODUCE AND INFLUENCE THEM; LABORATORY TESTS MEASURED THE MEAN SQUARE OF THE FLUCTUATING PRESSURE, THE MEAN PRESSURE AND POWER SPECTRUM AS A FUNCTION OF THE POSITION UNDER THE JUMP; MEAN AND RMS VELOCITY PROFILES AND ENTRAINED AIR CONCENTRATION PROFILES THROUGH THE JUMP VOLUME WERE DETERMINED; INCIDENT FROUDE NUMBERS INVESTIGATED THROUGH THE PRACTICAL RANGE 4 TO 9
Section Heading Codes: C11

O19705 CH (Civil Engineering Hydraulics Abstracts)
HYDRAULICS OF FLOW IN ROUGH CHANNEL.
BHATTACHARYA, A.K.
INDIAN AGRIC. RES. INST.
INDIAN J. TECHNOL., VOL. 11, NO. 1, PP.6-9. (JANUARY, 1973).

Languages: English

FLOW BEHAVIOUR IN A CONCRETE CHANNEL BUILT UP FROM PRECAST CHANNEL SECTIONS OF 1 M LENGTH MADE FROM CEMENT SAND COARSE AGGREGATE (6 MM SIZE) IN 1:2:3 PROPORTION AND JOINED END TO END BY CEMENT PLASTER WAS STUDIED UNDER DIFFERENT DISCHARGE AND SLOPE CONDITIONS ON A TILTING FRAME. IT WAS FOUND THAT MANNING'S ROUGHNESS COEFFICIENT WAS SIGNIFICANTLY CORRELATED TO FROUD NUMBER OF FLOW IN THE RANGES OF DISCHARGES AND SLOPES STUDIED. LINEAR REGRESSION ANALYSES WERE DONE AND EQUATIONS OF LINES OF REGRESSION WERE DEVELOPED. THESE EQUATIONS MAY BE USED IN DESIGNING IRRIGATION CHANNELS OF ROUGH SURFACE UNDER DIFFERENT SLOPES. (A). C279M)

Descriptors: OPEN CHANNELS; FLUMES; ROUGHNESS; FLOW CHARACTERISTICS; EXPERIMENTAL STUDIES; FLOW BEHAVIOUR IN ROUGH ARTIFICIAL OPEN CHANNELS; MANNING'S ROUGHNESS COEFFICIENT; DIFFERENT SLOPE AND DISCHARGE CONDITIONS; CORRELATION OF ROUGHNESS COEFFICIENT WITH HYDRAULIC DEPTH AND FROUDE NUMBER; APPLICATION TO DESIGN OF IRRIGATION DITCHES

Section Heading Codes: C10

O19699 CH (Civil Engineering Hydraulics Abstracts)
THE HYDRAULICS OF SPATIALLY VARIED FLOW IN AN IRRIGATION DISTRIBUTION CHANNEL WITH FURROW OUTLETS.
GARTON, J.E.
OKLAHOMA STATE UNIV., U.S.A.
OKLAHOMA STATE UNIV., AGRIC. ENGNG. DEPT., TECH. COMPLETION REPORT, 57 PP. (1971).(PB 210 917)..

Languages: English

THIS PROJECT CONSISTED OF THREE PHASES (I) THE HYDRAULICS OF A CONCRETE LINED TRAPEZOIDAL CHANNEL WITH RECTANGULAR SIDE WEIR OUTLETS, (II) THE HYDRAULICS OF A SEMI-PORTABLE SHEET METAL FLUME WITH CIRCULAR OUTLETS, AND (III) FIELD TESTS OF A SEMI-PORTABLE SHEET METAL FLUME WITH CIRCULAR OUTLETS. FOR PHASE I, DISCHARGE RELATIONSHIPS WERE DETERMINED FOR DIFFERENT SIZES OF RECTANGULAR WEIRS WITH 459 SLOPE. THE CHANNEL HYDRAULIC PROPERTIES WERE DEFINED AND A METHOD DERIVED FOR DIRECTLY COMPUTING WATER SURFACE PROFILES. THE VARIATIONS IN INDIVIDUAL FURROW DISCHARGE RESULTING FROM VARIOUS FLOW, DEPTHS, WEIR SPACING AND SIZE WERE DETERMINED. FOR PHASE II, A GALVANIZED SHEET METAL FLUME WAS DESINGED FOR STRUCTURAL STABILITY AND HYDRAULIC EFFICIENCY. THIS FLUME WAS TESTED IN THE OUTDOOR HYDRAULIC LABORATORY TO DETERMINE THE MANNING'S ROUGHNESS COEFFICIENTS FOR SPATIALLY VARIED FLOW. TESTS WERE RUN ON CIRCULAR ORIFICES WITH FULL FLOW AND WITH WEIR FLOW. UNIFORMITY OF DISCHARG WAS DETERMINED FOR A TWO BAY SYSTEM. FOR PHASE III, THE SHEET METAL FLUME DESIGN WAS REVISED, 710 FEET OF CHANNEL WAS BUILT, AND TWO YEARS OF FIELD TESTS WERE CONDUCTED TO DETERMINE ITS PERFORMANCE UNDER FIELD CONDITIONS. THE STABILITY TESTS OF THE SYSTEM INDICATE A NEED FOR IMPROVED SUPPORTS. (A). C273H)

Descriptors: OPEN CHANNELS; WEIRS; IRRIGATION; FLUMES; EXPERIMENTAL STUDIES; IRRIGATION DISTRIBUTION CHANNEL WITH FURROW OUTLETS HYDRAULICS OF A CONCRETE LINED TRAPEZOIDAL CHANNEL WITH RECTANGULAR SIDE WEIR OUTLETS; THE HYDRAULICS OF A SEMI-PORTABLE SHEET METAL FLUME WITH CIRCULAR OUTLETS; FIELD TESTS OF SEMI-PORTABLE SHEET METAL FLUMENINGS' ROUGHNESS COEFFICIENT FOR SPATIALLY VARIED FLOW; TESTS WITH FULL FLOW AND WITH WEIR FLOW

Section Heading Codes: C9; C21

019696 CH (Civil Engineering Hydraulics Abstracts)
AN EXPERIMENTAL INVESTIGATION IN A TURBULENT CHANNEL FLOW WITH A THICK VISCOUS SUBLAYER. (HOT-FILM MEASUREMENTS IN OIL)
ECKELMANN, H.; REICHARDT, H.
MAX PLANCK INST., GERMAN FED. REPBL.
PROC. SYMP. ON TURBULENCE IN LIQUIDS, (MISSOURI-ROLLA UNIV.), PP.144-8. (OCTOBER 4-6, 1971). DISCUSSION P.148.,
Languages: English
IN A TURBULENT CHANNEL-FLOW HOT-FILM MEASUREMENTS HAVE BEEN MADE. TO ACHIEVE A SUBLAYER THICKNESS OF APPROXIMATELY 1 CM AT Y/SUP +/ # 10, OIL WAS USED. THE REYNOLDS NUMBERS USED FOR THE INVESTIGATIONS WERE 5,600 AND 8,200 BASED ON THE CHANNEL-WIDTH OF 22 CM AND THE CHANNEL CENTER-LINE VELOCITY. IN THE VICINITY OF THE WALL, Y/SUP +/ + 0.1, THE U'-FLUCTUATIONS WERE FOUND TO BE PROPORTIONAL TO THE WALL DISTANCE, Y/SUP +/. THE U'-VALUES OBTAINED WITH A HOT-FILM PROBE FOR Y/SUP +/ = 0.7 WERE ALL GREATER THAN THOSE OBTAINED WITH A HOT-FILM WALL PROBE, BUT EXTRAPOLATION OF THE DATA FROM THE MOVABLE HOT-FILM PROBE TO THE WALL GAVE GOOD AGREEMENT WITH THE DATA FROM THE FLUSH-MOUNTED WALL-FILM PROBE. THE INSTANTANEOUS VALUES OF THE U'-FLUCTUATIONS IN THE REGION 0 + Y/SUP +/ + 5 ARE VERY SIMILAR TO THE INSTANTANEOUS VALUES OF THE WALL-GRADIENT, BUT THERE IS A TIME SHIFT WHICH IS PROPORTIONAL TO THE WALL DISTANCE, Y/SUP +/. DISTURBANCES IN THE FLOW IN THIS REGION WERE OBSERVED TO BE CONVECTED WITH A CONSTANT VELOCITY TOWARD THE WALL. THE MEAN VALUE OF THE CONVECTION VELOCITY WAS FOUND TO BE APPROXIMATELY EQUAL TO THE FRICTION VELOCITY, U/SUB T/. THE REYNOLDS STRESS WAS FOUND TO BE INTERMITTENT IN THE VICINITY OF THE WALL WITH HIGH PEAK TO MEAN RATIOS. IT WAS FOUND THAT THE PROBABILITY DENSITY OF THE INSTANTANEOUS STREAMWISE VELOCITY IS SKEWED FOR ALL Y/SUP +/ VALUES EXCEPT Y/SUP +/ # 13. FOR Y/SUP +/ + 13 THE MOST PROBABLE INSTANTANEOUS VELOCITY IS LESS THAN THE MEAN VELOCITY, FOR Y/SUP +/ = 13 THE OPPOSITE WAS FOUND. (A). C27OY)
Descriptors: TURBULENT FLOW; VISCOUS FLOW; OPEN CHANNELS; OILS; WALLS; FLUMES; ANEMOMETERS-HOT FILM; EXPERIMENTAL STUDIES; TURBULENT FLOW IN CHANNELS WITH THICK VISCOUS SUBLAYER; WALL MOUNTED HOT FILM PROBES; MOVEABLE HOT FILM PROBES; MEASUREMENTS WITH OIL AS VISCOUS SUBLAYER; EXPERIMENTS SHOWED THAT NEW EFFECTS IN THE FULLY DEVELOPED CHANNEL FLOW COULD BE OBSERVED
Section Heading Codes: C10; C16

019497 CH (Civil Engineering Hydraulics Abstracts)
DYNAMICS OF ESTABLISHMENT OF SELECTIVE WITHDRAWAL OF A STRATIFIED FLUID FROM A LINE SINK. PART 2. EXPERIMENT.
KAO, T.W.; PAO, H-P.; WEI, S. N.
CATHOLIC UNIV. OF AMERICA
J. FLUID MECH., VOL. 65, NO. 4, PP. 689-710. (OCTOBER 2, 1974).,
Languages: English
EXPERIMENTS WERE CONDUCTED TO EXAMINE THE DEVELOPMENT AND ESTABLISHMENT OF THE WITHDRAWAL CURRENT IN THE SELECTIVE WITHDRAWAL OF A STRATIFIED FLUID FROM A LINE SINK. THE EXPERIMENTS WERE PERFORMED IN A PLEXEGLAS CHANNEL 30.5FT LONG 14IN. WIDE, AND FILLED WITH A LINEARLY STRATIFIED SALT SOLUTION TO A DEPTH OF 18IN. THE LINE SINK WAS LOCATED AT MID - DEPTH. THE FLOW WAS SYMMETRIC ABOUT THE MID - DEPTH. VELOCITY MEASUREMENTS AND FLOW VISUALISATION WERE OBTAINED BY NEUTRALLY BUOYANT LIQUID DROPLETS AND VERTICAL DYE LINES. DENSITY MEASUREMENTS WERE MADE BY A SALINITY PROBE. THE DEVELOPMENT OF THE UPSTREAM VELOCITY FIELD WAS FOUND BY MEASUREMENT TO BE BROUGHT ABOUT BY THE SUCCESSIVE ARRIVAL OF 'COLUMNAR DISTURBANCE MODES', DISCUSSED IN PART 1. AGREEMENT WITH THE THEORETICAL PREDICTIONS IS EXCELLENT. A SIMILARITY PROFILE OF THE STEADY - STATE HORIZONTAL VELOCITY IS OBTAINED, AND THE FROUDE NUMBER BASED ON THE THICKNESS OF THE FLOWING ZONE IS FOUND TO APPROACH A CONSTANT VALUE IN THE ESSENTIALLY INVISCID REGION. THE RESULTS ARE COMPARED WITH FIELD DATA FROM THE TENNESSEE VALLEY AUTHORITY (TVA) RESERVOIRS. (A). (FOR PART 1, SEE 1.70CH8). C71P)
Descriptors: STRATIFIED FLOW; FLUMES; OPEN CHANNELS; FLOW VISUALISATION; VELOCITY MEASUREMENT; DENSITY; SALINITY; EXPERIMENTAL STUDIES; RESERVOIRS; SELECTIVE WITHDRAWAL OF STRATIFIED FLUID FROM A LINE SINK IN A CHANNEL; LINE SINK LOCATED AT MID DEPTH OF CHANNEL; FLOW SYMMETRIC ABOUT THE MID DEPTH; VELOCITY MEASUREMENTS AND FLOW VISUALISATION OBTAINED USING BUOYANT LIQUID DROPLETS AND DYE LINES; DENSITY MEASUREMENTS MADE USING SALINITY PROBE; COMPARISON WITH FIELD DATA
Section Heading Codes: C9; C14

015097 FM (Fluid Flow Measurement Abstracts)
CALIBRATION OF WALNUT GULCH SUPERCRITICAL FLUMES.
GWINN, W.R.
U.S. DEPT. OF AGRICULTURE
J. HYDRAUL. DIV., A.S.C.E., VOL. 96, HY8, PP. 1681-9. %AUGUST, 1970<.,
Languages: English
A NEW SUPERCRITICAL FLUME IS BEING USED TO GAUGE SEDIMENT LADEN EPHEMERAL FLOWS IN STEEP CHANNELS. THE TRANSITION FROM THE NATURAL CHANNEL TO THE STRAIGHT MODIFIED TRAPEZOIDAL MEASURING SECTION OF THE FLUME CONSISTS OF A CYLINDROID SURFACE. THE FLUME IS KEPT FREE OF DEPOSITION BY A V-SHAPED FLOOR WHICH SLOPES IN THE DIRECTION OF THE FLOW. THE HEAD IS MEASURED AT THE MIDPOINT OF THE STRAIGHT SECTION. TEN OF THESE CONCRETE FLUMES WER INSTALLED IN THE WALNUT GULCH WATERSHED NEAR TOMBSTONE, ARIZONA. EIGHT OF THE FLUMES HAD ALREADY BEEN CALIBRATED WITH MODELS IN THE LABORATORY. THE LARGEST HAS A BOTTOM WIDTH OF 120 FT AND A CAPACITY KNOWN PRE-CALIBRATED FLUME NOW IN OPERATION. THE DESIGN OF THE FLUMES, THE LABORATORY CALIBRATION DATA AND SOME OBSERVATIONS OF THEIR FIELD OPERATION ARE ANALYSED. %FROM SUMMARY< M654D)
Descriptors: OPEN CHANNELS; FLOW MEASUREMENT; FLUMES; SUPERCRITICAL FLUMES; CALIBRATION; U.S.A.; WALNUT GULCH, U.S.A.; SEDIMENT TRANSPORT; GAUGING OF SEDIMENT LADEN FLOWS IN STEEP CHANNELS; FLUME CONFIGURATION; INSTALLATION OF FLUMES IN WALNUT GULCH WATERSHED; FLUMES PRECALIBRATED AGAINST LABORATORY MODELS; FLUME DESIGN; CALIBRATION DATA; FIELD OPERATION
Section Heading Codes: M24; M4

015096 FM (Fluid Flow Measurement Abstracts)
CRITICAL-DEPTH FLUMES FOR DETERMINING FLOW IN CANALS AND NATURAL CHANNELS.
REPLOGLE, J.A.
U.S. WATER CONSERVATION LAB.
TRANS. A.S.A.E., VOL. 14, NO. 3, PP. 428-33, 436. %MAY/JUNE, 1971<.,
Languages: English
CRITICAL-DEPTH FLUMES CAN BE PROPORTIONED SO THAT THE RESULTING FLOW CONDITIONS CAN BE DETERMINED BY RIGOROUS MATHEMATICAL ANALYSIS AND THE FLUMES CAN BE DESIGNED BY COMPUTER. ALTHOUGH CONFORMANCE TO STANDARD SIZES IS NOT NECESSARY, 42 SIZES ARE PROPOSED FOR MEASURING THE EXPECTED DISCHARGE ON SEVEN STANDARD SLIP-FORMED CALAN SECTIONS TO ASSIST THOSE THAT DO NOT HAVE READY ACCESS TO A COMPUTER.LCONSTRUCTION CRITERIA ARE NOT RIGOROUS, REQUIRING DIMENSIONAL ACCURACY IN THE THROAT SECTION OF THE FLUME TO BE APPROXIMATELY THE SAME AS THAT DESIRED IN THE RESULTING DISCHARGE RATE WHILE ALL OTHER DIMENSIONS CAN BE ABOUT +OR- 10 PER CENT. ROUGH-DIMENSIONED, HAND-PLASTERED CONSTRUCTION IS USUALLY SUFFICIENT EXCEPT IN THE THROAT SECTION.LTHE FLUMES ARE DESIGNED TO CAUSE ENOUGH PONDING TO AVOID THE SUBMERGED-FLOW RANGE. ON EXISTING CANALS ALREADY RUNNING TO CAPACITY, THIS PONDING WOULD REQUIRE INCREASING THE UPSTREAM FREEBOARD. BECAUSE THE FLUMES ARE NOT TO BE OPERATED IN THE SUBMERGED FLOW RANGE, DEPTH MEASUREMENTS ARE TAKEN AT ONLY THE UP-STREAM SECTION. THIS MEASUREMENT SHOULD BE AS ACCURATE AS PRACTICAL SINCE 1 PER CENT ERROR IN THIS READING PRODUCES ABOUT 2.5 PER CENT ERROR IN DISCHARGE RATE. M653T)
Descriptors: OPEN CHANNELS; FLOW MEASUREMENT; FLUMES; CRITICAL DEPTH FLUMES; CANALS; NATURAL CHANNELS; FLUME DESIGN AND PROPORTIONING; CONSTRUCTION CRITERIA; ACCURACY REQUIRED IN THROAT SECTION OF FLUME; DESIGN TO CAUSE ENOUGH PONDING TO AVOID SUBMERGED FLOW RANGE; DEPTH MEASUREMENTS TAKEN IN UPSTREAM SECTION; ACCURACY/PRECISION
Section Heading Codes: M24; M4

015095 FM (Fluid Flow Measurement Abstracts)
FLOW MEASUREMENT BY WEIRS AND FLUMES.
ACKERS, P.
HYDRAUL. RES. STN., U.K.
INT. CONF. ON MODERN DEVELOPMENTS IN FLOW MEASUREMENT %U.K.A.E.A. - A.E.R.E. AND N.E.L: HELD AT HARWELL<. PAPER 1-3, PP. 21-37. %SEPTEMBER 21-23, 1971<.,
Languages: English
THE PERFORMANCE OF WEIRS AND FLUMES IS REVIEWED WITHIN THE FRAMEWORK OF A GENERALISED FLOW EQUATION. THIS CONTAINS COEFFICIENTS WHICH AMOUNT FOR: %I< FLUID PROPERTIES AND CREST ROUGHNESS, %II< THE PROFILE OF THE STRUCTURE; %III< THE INFLUENCE OF APPROACH VELOCITY, %IV< THE SHAPE OF THE CROSS-SECTION, %V< THE INFLUENCE OF TAILWATER LEVEL.LTHE TYPES OF GAUGING STRUCTURE REVIEWED INCLUDED BROAD-CRESTED WEIRS, TRIANGULAR PROFILE WEIRS, V WEIRS, AND TRAPEZOIDAL FLUMES. RESEARCH CARRIED OUT AT WALLINGFORD OVER THE LAST DECADE HAS INCREASED THE UNDERSTANDING OF THE PERFORMANCE OF SUCH DEVICES, AND METHODS HAVE BEEN DEVELOPED FOR DESIGNING THEM, FOR ESTABLISHING CALIBRATIONS THEORETICALLY INCLUDING ALLOWING FOR BOUNDARY LAYER EFFECTS, FOR ASSESSING DROWNED FLOW PERFORMANCE AND THE EFFECT OF APPROACH CONDITIONS INCLUDING AN UPSTREAM BEND. THE SPECIAL PROBLEMS IN NATURAL RIVERS, FOR EXAMPLE SEDIMENT TRANSPORT, ARE EXCLUDED. %A< M652Z)
Descriptors: FLOW MEASUREMENT; OPEN CHANNELS; WEIRS; FLUMES; PERFORMANCE; GENERALISED FLOW EQUATION; COEFFICIENTS; FLUID PROPERTIES AND CREST ROUGHNESS; STRUCTURE PROFILE; INFLUENCE OF APPROACH VELOCITY; CROSS SECTION SHAPE; INFLUENCE OF TAILWATER LEVEL; WEIRS-BROAD CRESTED; WEIRS-FLAT VEE; TRIANGULAR PROFILE WEIRS; TRAPEZOIDAL FLUMES; DESIGN AND STRUCTURE; CALIBRATION; THEORETICAL CALIBRATIONS; EXCLUSION OF PROBLEMS CAUSED BY NATURAL RIVERS; SEDIMENT TRANSPORT EFFECTS NOT CONSIDERED
Section Heading Codes: M24; M4

O14732 FM (Fluid Flow Measurement Abstracts)
USE OF WEIRS AND FLUMES IN STREAM GAUGING.
WORLD METEOROL. ORG. WMO 280. TECH. NOTE 117, 57PP. INCL. 47 FIGS. %1971<.,
Languages: English
THE AUTHOR PRESENTS INFORMATION ON FLOW-MEASURING METHODS UTILISING ARTIFICIAL CONTROL SECTIONS OF SUCH A SHAPE THAT HEAD-DISCHARGE RELATIONSHIPS CAN BE DETERMINED FROM MEASURED WATER LEVELS WITHOUT THE NECESSITY OF CALIBRATION - I.E. BY APPLICATION OF A DISCHARGE FORMULA. CHAPTER 1 PROVIDES GENERAL GUIDELINES ON THE USE AND INSTALLATION OF SUCH ARTIFICIAL CONTROLS. DETAILS DESCRIPTION, BASIC EQUATIONS, DESIGN AND RELEVANT FIGURES AND TABLES ARE GIVEN FOR DIFFERENT TYPES OF THINPLATE WEIRS, FOR BROAD-CRESTED AND OTHER LONG-BASE WEIRS, AND FOR STANDING-WAVE FLUMES IN CHAPTERS 2, 3, AND 4 RESPECTIVELY. M285W)
Descriptors: OPEN CHANNELS; RIVERS; STREAM GAUGING; FLOW MEASUREMENT; DISCHARGE; WEIRS; FLUMES; ARTIFICIAL CONTROL SECTIONS; HEAD DISCHARGE RELATION DETERMINED FROM MEASURED WATER LEVELS; DISCHARGE FORMULA; USE AND INSTALLATION OF ARTIFICIAL CONTROLS; DESCRIPTION; DESIGN AND BASIC EQUATIONS; THINPLATE WEIRS; WEIRS-BROADCRESTED; STANDING WAVE FLUMES
Section Heading Codes: M24; M4

O14632 FM (Fluid Flow Measurement Abstracts)
SLOPE-DISCHARGE RATINGS FOR CUTTHROAT FLUMES.
SKOGERBOE, G.V; WALKER, W.R; WU, T.-Y; BENNETT, R.S.
COLORADO STATE UNIV., U.S.A.
TRANS. A.S.A.E., VOL. 16, NO. 1, PP.78-81. %JANUARY-FEBRUARY, 1973<.,
Languages: English
IN THIS STUDY, HYDRAULIC DATA WERE COLLECTED UNDER BOTH FREE FLOW AND SUBMERGED FLOW CONDITIONS FOR EACH FLUME AT VARIOUS DEGREES OF FLUME FLOOR SLOPE. IN ALL CASES, THE FLUME FLOOR WAS SLOPED DOWNWARD IN THE DIRECTION OF FLOW %POSITIVE SLOPE<. THE FREE FLOW AND SUBMERGED FLOW RATINGS DEVELOPED FROM THE EXPERIMENTAL DATA ARE COMPARED WITH THE RATINGS WHEN THE FLUME FLOOR IS HORIZONTAL. %A< M185K)
Descriptors: FLUMES %METERING<; CUT THROAT FLUMES; FLOW MEASUREMENT; OPEN CHANNELS; SLOPE DISCHARGE RATINGS; FREE FLOW CONDITIONS; SUBMERGED FLOW CONDITIONS; VARIOUS DEGREES OF FLUME FLOOR SLOPE; POSITIVE SLOPE; EXPERIMENTAL STUDIES; COMPARISON OF DATA WITH THAT FOR HORIZONTAL FLUME FLOOR
Section Heading Codes: M24

O14518 FM (Fluid Flow Measurement Abstracts)
GENERALISED DISCHARGE RELATIONS FOR CUTTHROAT FLUMES.
SKOGERBOE, G.V.; BENNETT, R.S.; WALKER, W.R.
COLORADO STATE UNIV., U.S.A.
J.IRRIG. DRAIN. DIV., A.S.C.E., VOL. 98, IR4, PP.569-83. %PAPER 9438<. %DECEMBER, 1972<.,
Languages: English
A GROUP OF CUTTHROAT FLUMES WERE RATED UNDER BOTH FREE FLOW AND SUBMERGED FLOW CONDITIONS. GENERALISED DISCHARGE RATING CURVES CAN BE DEVELOPED DUE TO THE SIMPLICITY OF THE STRUCTURE AND THE GEOMETRIC SIMILARITY BETWEEN FLUME SIZES. TWELVE FLUMES WERE USED IN THIS STUDY, INCLUDING THREE FLUME LENGTHS OF 1.5 FT %0.45 M<, 3 FT %0.90 M< AND 4.5 FT %1.35 M<, WITH FOUR DIFFERENT THROAT WIDTHS FOR EACH LENGTH. IN ADDITION, THE FLUME SIEZES WERE SELECTED SO AS TO PERMIT CORRELATION WITH INITIAL CUTTHROAT FLUME STUDIES, WHERE IN A FLUME LENGTH OF 9 FT %2.7 M<, AND THROAT WIDTHS VARYING FROM 1 FT %0.3 M< TO 6 FT %1.8 M<, WERE STUDIED. %A<. M71D)
Descriptors: FLUMES; CUT THROAT FLUMES; OPEN CHANNELS; FLOW MEASUREMENT; DISCHARGE RATING CURVES; GENERALISED CURVES; FREE FLOW CONDITIONS; SUBMERGED FLOW CONDITIONS; STUDY OF TWELVE FLUMES; VARIATION IN FLUME LENGTH AND THROAT WIDTH; EXPERIMENTAL STUDIES
Section Heading Codes: M24; M4

O14514 FM (Fluid Flow Measurement Abstracts)
OPEN CHANNEL FLOW MEASUREMENT.
BALL, E.F.
INST. OF MEASUREMENT CONTROL, MANCHESTER SECTION. SYMFLO 72, PAPER 12, 8 PP. 10 FIGS. %APRIL 19-20, 1972<.
Languages: English
M67C)
Descriptors: OPEN CHANNELS; FLOW MEASUREMENT; SURVEYS; REQUIREMENTS OF MEASURING SYSTEM; MEASURING EQUIPMENT; PRIMARY DEVICES; WEIRS; FLUMES; RECTANGULAR WEIRS; WEIRS-V-NOTCH; WEIRS-THIN PLATE; TRAPEZOIDAL WEIRS; RECTANGULAR FLUMES; SEMI-CIRCULAR FLUMES; TRAPEZOIDAL FLUMES; PARSHALL FLUMES; NUMP FLUMES; COMPOUNDING; RELATION BETWEEN DISCHARGE AND LEAD; INSTALLATION REQUIREMENTS; TURBULENCE EFFECTS; MEASUREMENT OF HEAD; FLOATS; RECORDERS; DATA RECORDING; DISPLAYING INFORMATION; INTEGRATION
Section Heading Codes: M24; M4

014513 FM (Fluid Flow Measurement Abstracts)
MEASURING FLOW IN OPEN CHANNELS.
BALL, E.F.
INSTRUM. AND CONTROL SYSTEMS, VOL. 46, NO. 4. PP. 50-1. %APRIL, 1973<.
Languages: English
FLUID OFTEN FLOWS IN UNCOVERED CHANNELS, AS IN CONDUITS WHERE FREE SURFACES EXIST. WHEN CLOSED PIPE MEASUREMENT IS REQUIRED, POSITIVE DISPLACEMENT METERS CAN BE USED. HOWEVER COST, POTENTIAL BLOCKAGE, AND HIGH IMPEDANCE ARE DETERRANT FACTORS WHEN EFFLUENT MEASUREMENTS ARE CARRIED OUT. FOR SUCH FLUIDS, OPEN-CHANNEL METHODS ARE MOST SUITABLE, WITH RESTRICTIONS SUCH AS WEIRS OR FLUMES PLACED IN THE CHANNELS. SINCE THE LIQUIDS FLOW ONLY DUE TO GRAVITATIONAL FORCES, THE PRESSURES REQUIRED TO OVERCOME THE RESTRICTIONS ARE OBTAINED BY AN INCREASE IN CHANNEL DEPTH OR HEAD. FLOW RATE CAN BE INFERRRED FROM MEASUREMENT OF THIS HEAD. %A1. M66L)
Descriptors: OPEN CHANNELS; FLOW MEASUREMENT; EFFLUENTS; WEIRS; FLUMES; GRAVITY FLOW; PRESSURE TO OVERCOME RESTRICTIONS ; INCREASE IN CHANNEL DEPTH OR HEAD; FLOW RATE INFERRED FROM MEASUREMENT OF THIS HEAD
Section Heading Codes: M24; M4

012314 SL (Solid Liquid Flow Abstracts)
PARTICLE OVERPASSING ON FLAT GRANULAR BOUNDARIES.
EVERTS, C.H.
COASTAL ENGNG. RES. CENTER, U.S.A.
JNL. WATERWAYS, HARB. COASTAL ENGNG. DIV., ASCE, VOL. 99, WW4, PP. 425-38 PAPER 10125. %NOVEMBER, 1973<.
Languages: English
SAND-SIZED SEDIMENT UNDER CERTAIN BOUNDARY SHEAR CONDITIONS MAY OVERPASS, I.E., MAY MOVE AS BED LOAD, ACROSS A LOOSE, FLAT BOUNDARY OF UNLIKE SIZE AND DENSITY WITHOUT BEING DEPOSITED AND WITHOUT APPRECIABLY DISTURBING THE BOUNDARY STABILITY. TO DEFINE THE BOUNDARY SHEAR STRESS NECESSARY FOR OVERPASSING, AND SHEAR STRESS AT INCIPIENT MOTION FOR BED PARTICLES, A SERIES OF FLAT BED, UNIFORM FLOW TESTS WERE CONDUCTED IN A FLUME USING UNIFORM SAND SIZES IN THE RANGE 0.13 MM TO 3.57 MM AND DENSITY 2.65 G/CC AND 4.70 G/CC. FLOW DEPTHS WERE VARIED FROM 1.0CM TO 8.8 CM AND MEAN FLOW VELOCITIES RANGED FROM 13.1 CM/S TO 50.3 CM/S PRODUCING CRITICAL BOUNDARY SHEAR STRESSES BETWEEN 0.8 DYNES/CM/SUP 2/ AND 16.5 DYNES/CM/SUP 2/. WITH A BED GRAIN DIAMETER SMALLER THAN 0.9 MM, AND A GRAIN DENSITY OF 2.65 G/CC, THE SIZE RANGE OF OVERPASSING PARTICLES WAS GREATEST FOR GRAINS LARGER THAN THE BOUNDARY. MINIMUM OVERPASSING BOUNDARY SHEAR APPEARS TO BE A FUNCTION OF BOUNDARY ROUGHNESS AND OF THE THICKNESS OF THE LAMINAR SUBLAYER WITH RESPECT TO THE DIAMETER OF THE OVERPASSING GRAIN. %A< D418T)
Descriptors: PARTICLES; SAND; BED LOAD TRANSPORT; OVERPASSING; SEDIMENT TRANSPORT; OPEN CHANNELS; EXPERIMENTAL STUDIES; PARTICLE OVERPASSING ON FLAT GRANULAR BOUNDARIES; BOUNDARY SHEAR STRESS FOR OVERPASSING; SHEAR STRESS FOR INCIPIENT MOTION; SERIES OF FLAT BED UNIFORM FLOW TESTS IN FLUME; VARIATION IN PARTICLE SIZE; VARIED FLOW DEPTHS AND FLOW VELOCITIES; BEDGRAIN DIAMETER AND DENSITY EFFECTS
Section Heading Codes: D22

011673 CH (Civil Engineering Hydraulics Abstracts)
STABLE CHANNELS IN ALLUVIUM.
ALVAREZ, J.A.M.; VILLANUEVA, C.C.
MEXICO NAT. UNIV.
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A61, PP. 715-22. %JANUARY 9-12, 1973<.
Languages: English
THE STABILITY OF A STREAM IN ALLUVIUM HAS BEEN THE SUBJECT OF A GREAT DEAL OF EMPIRICAL AND THEORETICAL RESEARCH DURING THE PRESENT CENTURY, STARTING WITH LACEY MINUTES S REGIME EQUATIONS. SUCH INTEREST IS DUE TO THE NECESSITY OF KNOWING STABLE SECTION CHARACTERISTICS WHEN DESIGNING EARTH CHANNELS AND RIVER RECTIFYING WORKS, OR TO DETERMINE RIVER CHANGES PRODUCED BY STRUCTURES BUILT ON THE RIVER. IN ORDER TO DESCRIBE THE THREE DEGREES OF FREEDOM OF A STREAM IN ALLUVIONS, THREE INDEPENDENT EQUATIONS ARE NEEDED TO DETERMINE ITS STABLE SHAPE. IT HAS BEEN SHOWN THAT SUCH EQUATIONS MAY BE: A RESISTANCE EQUATION, A LOAD TRANSPORT EQUATION AND A GEOMETRIC RELATIONSHIP FOR THE HYDRAULIC SECTION %E.G.: A WIDTH TO DEPTH RATIO<. CURIOUSLY ENOUGH, THE MORE PROBLEMATIC OF THESE EQUATIONS IS THE GEOMETRY OF THE SECTION, WHICH IS, TO A GREAT EXTENT, DETERMINED BY THE RESISTANCE TO EROSION OF THE BANKS, WHICH IN TURN IS DETERMINED BY THE COMPOSITION OF THE LOAD TRANSPORTED BY THE STREAM. THE PRESENT STUDY MAKES POSSIBLE A DISCUSSION OF THE GEOMETRIC WIDTH TO DEPTH RATIO, STARTING F ROM THE BASIS GIVEN BY RESISTANCE AND BED LOAD TRANSPORTED EQUATIONS WHICH HAVE BEEN PROVED SATISFACTORY WHEN COMPARED WITH MEASUREMENTS. SUCH DISCUSSION LEADS TO GENERAL CRITERIA AS TO WHICH GEOMETRY SHOULD BE CHOSEN IN DESIGN OF CANALS AND WHAT CHANGES MAY OCCUR IN RIVERS WHEN THEY SUFFER ALTERATIONS, ACCORDING TO CHANNEL OR RIVER CHARACTERISTICS. THIS DISCUSSION IS BASED UPON OBSERVATIONS AND RESULTS OF OTHER INVESTIGATIONS AS WELL AS ON SEVERAL M MEASUREMENTS IN MEXICAN RIVERS. %A< C1929Z)
Descriptors: OPEN CHANNELS; RIVERS; SEDIMENT TRANSPORT; FLUMES; ANALYSIS-MATHEMATICAL; EXPERIMENTAL STUDIES; CHANNEL STABILITY; IMPLICATIONS FOR RIVER ENGINEERING PROJECTS; EQUILIBRIUM FORMULAE FOR SANDY BOTTOM CHANNELS; STATIC STABILITY; MORPHOLOGICAL STABILITY; RESISTANCE EQUATION; BED LOAD TRANSPORT EQUATION; GEOMETRY; MEXICAN RIVERS; EARTH CHANNELS; RIVER RECTIFYING WORKS
Section Heading Codes: C10

011664 CH (Civil Engineering Hydraulics Abstracts)
STATISTICAL REGULARITIES IN THE MOVEMENT OF BED LOAD.
STELCZER, K.
RES. INST. WATER RESOUR. DEV., HUNGARY
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A51, PP. 585-601. %JANUARY 9-12. 1973<.,
Languages: English
THE PARAMETERS DESCRIBING THE MOVEMENT OF BEDLOAD ARE INFLUENCED BY A NUMBER OF FACTORS AND DISPLAY A RANDOM FLUCTUATION. A PARTICLE AT ANY POINT IN THE BED REMAINS STATIONARY FOR A WHILE, THEN IS SET INTO MOTION, WHEREAFTER IT BECOMES STATIONARY AGAIN. ITS TRAVEL IS THUS INTERMITTENT AND THE PATH TRAVELLED IN A SINGLE STEP MAY DIFFER FROM STEP TO STEP AND BEHAVES, CONSEQUENTLY, AS A RANDOM VARIABLE. IN THE LABORATORY GLASS FLUME THE DISTANCES TRAVELLED BY BED-LOAD PARTICLES FROM 16 TO 50 MM IN SIZE AND THE TIME SPENT AT REST BETWEEN SUCCESSIVE STEPS HAVE BEEN OBSERVED AT DIFFERENT BOTTOM SLOPES. THE NUMBER OF STEPS DURING TIME T WAS THUS ALSO AVAILABLE. EACH RUN WAS REPEATED AT LEAST 30 TIMES FOR STATISTICAL ANALYSIS. THE SAMPLES WERE EXAMINED FOR INDEPENDENCE, UNIFORMITY AND THE DISTRIBUTION FUNCTION OF DISTANCES TRAVELLED IN INDIVIDUAL STEPS WAS ESTABLISHED TO BE AN EXPONENTIAL ONE. THE PROBABILITY OF THE DISTANCE TRAVELLED IN N/SUB -/ STEPS WAS DEMONSTRATED TO FOLLOW A GAMMA DISTRIBUTION COMPUTED FROM THE SUM OF EXPONENTIAL DISTRIBUTIONS. THE NUMBER OF STEPS DURING TIME T WAS APPROXIMATED BY A POISSON-TYPE DISTRIBUTION. %A< C19190)
Descriptors: OPEN CHANNELS; FLUMES; BED LOAD TRANSPORT; SEDIMENT TRANSPORT; EXPERIMENTAL STUDIES; STATISTICAL METHODS; STATISTICAL REGULARITIES; MOVEMENT; BED LOAD; SLOPING BED; RANDOM FLUCTUATION; LABORATORY TESTS; STATISTICAL ANALYSIS; DISTANCE TRAVELLED; APPROXIMATION; POISSON TYPE DISTRIBUTION
Section Heading Codes: C10

011662 CH (Civil Engineering Hydraulics Abstracts)
FACTORS DETERMINING BED FORMS OF ALLUVIAL STREAMS.
VANONI, V.A.
CALIF. INST. TECHNOL., U.S.A.
J. HYDRAUL. DIV., PROC. ASCE, VOL. 100, HY3, PP. 363-77, PAPER 10396, %MARCH, 1974<.,
Languages: English
BASED ON THE ANALYSIS OF LABORATORY AND FIELD DATA ACCORDING TO SIMILARITY METHODS, IT IS FOUND THAT THE FOLLOWING VARIABLES ARE IMPORTANT IN DETERMINING THE BED FORM OF SAND BED STREAMS: FLOW DEPTH D AND MEAN VELOCITY, V, DENSITY, P, AND VISCOSITY, V, OF THE WATER; MEDIAN SIZE OF SEDIMENT D/SUB 50/ AND THE ACCELERATION OF GRAVITY, G. THE DATA THUS ANALYSED ARE PRESENTED IN SIX GRAPHS OF D/D/SUB 50/ AGAINST FROUDE NUMBER F FOR EACH OF SIX RANGES OF R/SUB G/ EQUALS D/SUB 50/%GD/SUB 50/</SUP 1/2// GN WHICH ACCOUNTS FOR THE EFFECTS OF SEDIMENT SIZE AND WATER VISCOSITY OR TEMPERATURE. FLUME DATA INDICATE THAT THE SIZE DISTRIBUTION OF THE BED SEDIMENT ALSO AFFECTS BED FORM, BUT THE EXTENT OF THIS AFFECT COULD NOT BE DETERMINED. THE EFFECT OF GRAIN SHAPE AND CHANNEL WIDTH COULD NOT BE DETERMINED WITH THE AVAILABLE DATA. A RELATION IS DEVELOPED BETWEEN R/SUB G/ AND U*%GD/SUB 50/</SUP 1/2/ WHICH PREDICTS QUITE WELL THE OCCURRENCE OF RIPPLE AND DUNE BEDS IN WHICH U* EQUALS SHEAR VELOCITY. %A< C1914W)
Descriptors: BEDS-FORMS; OPEN CHANNELS; SEDIMENT TRANSPORT; FLUMES; EXPERIMENTAL STUDIES; LABORATORY FIELD DATA ANALYSIS; ALLUVIAL SAND BED CHANNELS; VARIABLES DETERMINING BED FORM; BED FORM CHARTS; SEDIMENT SIZE DISTRIBUTION; FLUME WIDTH; WATER TEMPERATURE; VELOCITY; DENSITY; VISCOSITY
Section Heading Codes: C10

011646 CH (Civil Engineering Hydraulics Abstracts)
FLUME STUDIES WITH FINE AND COARSE SAND, A PRELIMINARY ANALYSIS.
NORDIN, C.F. ; RUNDQUIST, L.A.
U.S. GEOLOG. SURVEY-COLORADO STATE UNIV., U.S.A.
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A44, PP. 501-11. %JANUARY 9-12. 1973<.,
Languages: English
TWO SERIES OF STUDIES OF SEDIMENT TRANSPORT IN A RECIRCULATING FLUME 8 FT WIDE AND 200 FT LONG AT CONSTANT FLOW DEPTHS OF 1.0 FT, 2.0 FT, AND 2.8 FT WITH A FINE SAND, MEDIAN DIAMETER OF 0.25 MM, AND A COARSE SAND, MEDIAN DIAMETER OF 1.1 MM ARE SUMMARISED. TRANSPORT RATES ARE CLOSELY RELATED TO STREAM POWER, WITH INCREASING TRANSPORT RATES ASSOCIATED WITH SHALLOWER DEPTHS FOR A GIVEN STREAM POWER. OBSERVED CONCENTRATIONS AND VELOCITIES AGREE WELL WITH THOSE PREDICTED BY ENGELUND MINUTES S METHODS. THE VARIABILITY OF THE TRANSPORT RATES FOR EQUILIBRIUM FLOW CONDITIONS, MEASURED BY THE COEFFICIENT OF VARIABILITY OF THE OBSERVED CONCENTRATIONS, IS RELATED TO BED CONFIGURATION, TO MEAN VELOCITY, AND TO PARTICLE SIZE. BED CONFIGURATIONS WITH THE COARSER SAND ARE APPRECIABLY DIFFERENT FROM THOSE WITH THE FINER SAND, ESPECIALLY AT FLOWS NEAR CRITCAL DEPTH, WHERE DUNE FORMS EXIST WITH IN PHASE SINUSOIDAL WATER-SURFACE WAVES. AT HIGHER FROUDE NUMBERS, THE DUNES DISAPPEAR AND CLASSICAL ANTIDUNES WITH IN-PHASE SINUSOIDAL BED WAVES AND WATER-SURFACE WAVES APPEAR. %A< END C1897N)
Descriptors: SAND COARSE AND FINES; BEDS; 'DUNES%BED FORMS<; FLUMES; OPEN CHANNELS; SEDIMENT TRANSPORT; EXPERIMENTAL STUDIES; RECIRCULATING FLUME; COARSE SAND; FINE SAND; STREAM POWER; ENGELUNDS EQUATION; EQUILIBRIUM FLOW CONDITIONS; BED CONFIGURATION; VELOCITY; PARTICLE SIZE; SINUSOIDAL SURFACE WAVES
Section Heading Codes: C9

O11643 CH (Civil Engineering Hydraulics Abstracts)
TURBULENCE MEASUREMENTS OVER SAND BEDS.
PRASHUHN, A.L.
CALIF. STATE UNIV., U.S.A.
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A29, PP. 325-36. %JANUARY 9-12, 1973<..
Languages: English
RESULTS ARE PRESENTED OF TURBULENCE MEASUREMENTS IN WATER FLOWS OVER SAND BEDS. A HOT-FILM ANEMOMETERS WITH A CONICAL PROBE WAS USED AND THE LONGITUDINAL TURBULENCE DETERMINED. RESTRICTED PRIMARILY TO THE FLAT BED REGIME. MEAN AND FLUCTUATING VELOCITY PROFILES ARE GIVEN. THE TURBULENCE LEVELS ARE COMPARED WITH EXISTING SMOOTH AND ROUGH BOUNDARY TURBULENCE DATA AND ANALYSED WITH RESPECT TO THE REYNOLDS NUMBER. %A< C1894L)
Descriptors: BEDS; OPEN CHANNELS; FLUMES; TURBULENT FLOW; VELOCITY PROFILES; ANEMOMETERS-HOT FILM; FLOW MEASUREMENT; EXPERIMENTAL STUDIES; ANALYSIS-MATHEMATICAL; WATER FLOWS OVER SAND BEDS; TURBULENCE MEASUREMENT; HOT-FILM ANEMOMETER WITH CONICAL PROBE; LONGITUDINAL TURBULENCE; BOUNDARY TURBULENCE DATA; SMOOTH BOUNDARIES; ROUGH BOUNDARIES
Section Heading Codes: C9

O11641 CH (Civil Engineering Hydraulics Abstracts)
EFFECT OF CHARACTERISTICS OF BED MATERIAL AND FLUID ON RIPPLE FORMATION.
SAHGAL, P.P.
ROORKEE UNIV., INDIA
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A56, PP. 653-65. %JANUARY 9-12, 1973<..
Languages: English
THIS PAPER PRESENTS THE RESULTS OF THE EXPERIMENTS CONDUCTED IN A RECIRCULATING 15 CM X 15 CM BY 5M LONG FLUME TO STUDY THE MECHANISM OF RIPPLE FORMATION ON GRANULAR BED. IT WAS FOUND THAT THE FROUDE NUMBER, SHEAR STRESS, PARTICLE SIZE DENSITY OF THE BED MATERIAL AND THE VISCOSITY OF THE FLUID HAVE A MARKED EFFECT ON THE RIPPLING PHENOMENON AND THE PLANE BED ZONE IS SEPARATED FROM RIPPLED BED ZONE ON/SUB %FR,//SUP U*D//SUB SQROOT/GDGGSGGFGN< PLANE QUITE WELL. %A< C1892B)
Descriptors: BEDS; SAND WAVES; RIVERS; OPEN CHANNELS; FLUMES; FLOW RATE; PARTICLE SIZE; ANALYSIS-MATHEMATICAL; EXPERIMENTAL STUDIES; RIPPLE FORMATION; BED MATERIAL; FLUID CHARACTERISTICS; FLOW VELOCITY; INITIATION OF PARTICLE MOVEMENT; SCOUR; DEPOSITION; CONDITIONS FOR NON-FORMATION OF RIPPLES; RECIRCULATING FLUME; GRANULAR BED; PARTICLE SIZE DENSITY
Section Heading Codes: C9

O11639 CH (Civil Engineering Hydraulics Abstracts)
THE VELOCITY DEFECT LAW AND THE SEDIMENT TRANSFER COEFFICIENT IN AN OPEN CHANNEL.
COLEMAN, N.L.
U.S. DEPT. AGRIC. SEDIMENTATION LAB.
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A28, PP. 317-23. %JANUARY 9-12, 1973<..
Languages: English
THE SEDIMENT TRANSFER FUNCTION AND THE VELOCITY DEFECT LAWS FOR BOUNDARY LAYER FLOW IN A SMOOTH RECTANGULAR CHANNEL WERE INVESTIGATED FOR A CONSTANT FLOW WITH SYSTEMATICALLY INCREASING SUSPENDED SEDIMENT CONCENTRATION. THE SEDIMENT TRANSFER FUNCTION APPEARED TO BE THE SAME FOR ALL VALUES OF AVERAGE SUSPENDED SEDIMENT CONCENTRATION. UNIVERSAL FORMS OF THE VELOCITY DEFECT LAW, INCLUDING THE SEDIMENT TRANSFER COEFFICIENT AS A VARIABLE, WERE FOUND FOR BOTH THE INNER AND OUTER PARTS OF BOUNDARY LAYER. %A< C1889N)
Descriptors: OPEN CHANNELS; FLUMES; SEDIMENT TRANSPORT; SEDIMENT CONCENTRATION; BOUNDARY LAYERS; SHEAR STRESS; EXPERIMENTAL STUDIES; ANALYSIS-MATHEMATICAL; VELOCITY DEFECT LAWS; SEDIMENT TRANSFER COEFFICIENT; PLEXIGLAS CHANNEL 50 FT LONG AND 14 INCHES WIDE; VELOCITY MEASUREMENT; NON-CONSTANT SEDIMENT TRANSFER FUNCTION IN OUTER BOUNDARY LAYER
Section Heading Codes: C9

O11635 CH (Civil Engineering Hydraulics Abstracts)
COMPREHENSIVE GRAPHS OF REGIME DATA.
BLENCH, T.; PETERSON, A.W. ; COOPER, R.H.
ALBERTA UNIV., CANADA
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A60, PP. 703-14. %JANUARY, 9-12, 1973<..
Languages: English
A PRESENTATION AND DISCUSSION ARE GIVEN OF GRAPHS COMPETENT TO COORDINATE UNLIMITED REGIME DATA FROM RIVERS, CANALS AND FLUMES IN WHICH AVERAGE-STEADY DEPTH AND SLOPE HAVE BEEN ACHIEVED IN THE SEDIMENT MOVED BY THE FLOW. %A< C1885P)
Descriptors: RIVERS; OPEN CHANNELS; FLUMES; CANALS; SEDIMENT TRANSPORT; GRAPHICAL METHODS; ANALYSIS-MATHEMATICAL; UNLIMITED REGIME DATA; AVERAGE-STEADY DEPTH; MOBILE BED HYDRAULICS; CHANGES IN RIVER REGIME AFTER ENGINEERING PROJECTS; ENVIRONMENTAL CHANGES
Section Heading Codes: C8

011631 CH (Civil Engineering Hydraulics Abstracts)
SEDIMENT DIFFUSION OVER A WAVY, MOBILE BED.
APMANN, R.P.
NEW YORK STATE UNIV., U.S.A.
PROC. IAHR INT. SYMP. ON RIVER MECHANICS, %BANGKOK, THAILAND<, VOL. 1, PAPER A49, PP. 561-72. %JANUARY 9-12, 1973<..
Languages: English
STUDIES ON SEDIMENT DIFFUSION HAVE LARGELY TAKEN PLACE IN FLUMES WHERE WITHER A MOBILE BED WAS ABSENT OR WHERE THE BED WAS PLANE. ON THE OTHER HAND, FLOWS IN NATURAL STREAMS AND RIVERS OFTEN TAKE PLACE OVER BEDS WHICH HAVE BEEN DEFORMED INTO SHAPES HAVING SIGNIFICANT DEVIATIONS FROM PLANE SURFACES. INTUITIVELY, ONE WOULD EXPECT THAT THE CHARACTERISTICS OF THE TURBULENCE GENERATED BY THESE WAVY BEDS WOULD BE DIFFERENT THAN THAT BY PLANE BEDS. IN TURN, THE CHARACTERISTICS OF THE DIFFUSION OF SEDIMENT OUGHT TO BE DIFFERENT IN THE TWO FLOW CASES. THE ANALYSIS OF A LIMITED AMOUNT OF EXPERIMENTAL DATA FAILED TO SUBSTANTIATE THE HYPOTHESIS AND INDICATED THE OPPOSITE, THAT EXPERIMENTS MADE UNDER SIMILAR CONDITIONS OF FLOW AND USING SIMILAR SEDIMENTS, BUT IN THE ONE CASE PERMITTING THE FORMATION OF A MOBILE BED AND IN THE OTHER, NOT PERMITTING THAT CONDITION TO EXIST, WILL YIELD SIMILAR RESULTS. THESE OBSERVATIONS ARE IMPORTANT BOTH TO THE RIVER ENGINEER WHO WOULD USE LABORATORY DATA TO PREDICT FIELD CONDITIONS, AND TO THE INVESTIGATOR WHO WOULD STUDY SEDIMENT DIFFUSION UNDER THE GREATLY SIMPLIFIED AND BETTER-CONTROLLED CONDITIONS OF A FLUME HAVING A PLANE BED. THE ROLE OF THE PARTICLE FALL VELOCITY IN SEDIMENT DIFFUSION WAS EXPLORED AND DISCUSSED. ADDITIONAL INVESTIGATIONS AR E NEEDED TO CLARIFY THE RELATIONSHIP BETWEEN DIFFUSIVITY AND FALL VELOCITY. %A< C1881Z)·
Descriptors: BEDS; FLUMES; OPEN CHANNELS; SEDIMENT TRANSPORT ; DIFFUSION; EXPERIMENTAL STUDIES; SEDIMENT DIFFUSION; WAVY MOBILE BEDS; NATURAL STREAMS; RIVERS; FALL VELOCITY; FIELD DATA; ANALYSIS
Section Heading Codes: C8

011605 CH (Civil Engineering Hydraulics Abstracts)
WATER EXCHANGE IN TWO-LAYER STRATIFIED WATERS.
HYDEN, H.
ROYAL INST. TECH., SWEDEN
J. HYDRAUL. DIV. PROC. ASCE, VOL. 100, HY3, PP. 345-61. PAPER 10402. %MARCH, 1974<..
Languages: English
A MATHEMATICAL MODEL OF TWO-LAYER STRATIFIED FLOW IS PRESENTED. ONE DIMENSIONAL AND RADIAL FLOWS ARE CONSIDERED. THE NUMERICAL SOLUTION IS BASED ON THE METHOD OF CHARACTERISTICS. THE RELIABILITY OF THE MATHEMATICAL MODEL IS INVESTIGATED WITH THE HELP OF ONE-DIMENSIONAL LABORATORY EXPERIMENTS AND A HYDRAULIC MODEL OF A REAL BAY. AGREEMENT BETWEEN CALCULATIONS AND EXPERIMENTS IS ACHIEVED BUT SINCE THE NUMERICAL METHOD OF SOLUTION DOES NOT ALLOW COURANT NUMBERS EXCEEDING ONE THE CALCULATIONS ARE TIME CONSUMING. %A< C1849Z)
Descriptors: STRATIFIED FLOW; DENSITY DIFFERENCE SITUATIONS; SEICHES; OPEN CHANNELS; FLUMES; BAYS%COASTAL<; MATHEMATICAL MODELS; MODEL TESTS; TWO LAYER DENSITY STRATIFIED FLOW; CHARACTERISTICS METHOD SOLUTION; LABORATORY FLUME EXPERIMENTS; REAL BAY HYDRAULIC MODEL; COMPARATIVE CALCULATED AND TEST RESULTS
Section Heading Codes: C7

011502 CH (Civil Engineering Hydraulics Abstracts)
STOCHASTIC ANALYSIS OF DUNE BED PROFILES.
LEE, B.K.; JOBSON, H.E.
HARZA ENGNG. CO., U.S.A.~U.S. GEOLOG. SURVEY
J. HYDRAUL. DIV. PROC. ASCE, VOL. 100, HY7, PP. 849-67. PAPER 10657. %JULY, 1974<..
Languages: English
APPLICATION OF STOCHASTIC MODELS OF BED-LOAD TRANSPORT AND DISPERSION REQUIRES A KNOWLEDGE OF THE PROBABILITY DISTRIBUTIONS OF THE STEP LENGTHS AND THE REST PERIODS OF THE PARTICLES. THE PROBABILITY DISTRIBUTIONS OF THE REST PERIODS, THE ELEVATION OF PARTICLE DEPOSITION, AND THE ELEVATION OF PARTICLE EROSION WERE OBTAINED IN A LARGE FLUME FROM A CONTINUOUS RECORD OF BED ELEVATION AT A FIXED POINT AS A CONTINUOUS FUNCTION OF TIME. THE PROBABILITY DISTRIBUTION OF THE STEP LENGTHS WAS OBTAINED FROM A SERIES OF INSTANTANEOUS LONGITUDINAL BED PROFILES AND THE DISTRIBUTION OF THE ELEVATION OF PARTICLE DEPOSITION AND EROSION. USING AN EXISTING TRANSPORT EQUATION, THE TOTAL SEDIMENT TRANSPORT IN THE FLUME WAS PREDICTED FOR THREE FLOW CONDITIONS. THE ERRORS IN THE PREDICTED TOTAL SEDIMENT TRANSPORT RATES WERE +OR- 3.0 PER CENT, # 3.5 PER CENT AND # 80.1 PER CENT. %A< C1719K)
Descriptors: OPEN CHANNELS; BEDS-FORMS; SEDIMENT TRANSPORT; DIFFUSION; DUNES %BED FORMS<; BED LOAD TRANSPORT; STOCHASTIC METHODS; FLUMES; EXPERIMENTAL STUDIES; MATHEMATICAL MODELS; STOCHASTIC MODELS; PREDICT; TRANSPORT; DISPERSION; BED MATERIAL PARTICLES; ALLUVIAL CHANNEL; FLUME STUDIES; PROBABILITY DISTRIBUTIONS; DUNE BED CONDITIONS; SOUNDING RECORDS; BED ELEVATION
Section Heading Codes: C9

011501 CH (Civil Engineering Hydraulics Abstracts)
TRANSVERSE DISPERSION IN OSCILLATORY CHANNEL FLOW.
WARD, P.R.B.
BRITISH COLUMBIA UNIV., CANADA.
J. HYDRAUL. DIV. PROC. ASCE, VOL. 100, HY6, PP. 755-72, PAPER 10589. %JUNE, 1974<.
Languages: English
AN ANALYSIS OF PUBLISHED DATA ON DYE DISPERSION IN HOMOGENEOUS ESTUARIES SHOWS THAT THE DIMENSIONLESS TRANSVERSE DISPERSION COEFFICIENT IS LARGE COMPARED WITH RESULTS IN STEADY FLOW IN STRAIGHT CHANNELS. THE HYPOTHESIS IS MADE THAT TRANSVERSE CURRENTS OF THREE KINDS ARE RESPONSIBLE FOR THE LARGE COEFFICIENTS. THE RESULTS OF LABORATORY TESTS WITH OSCILLATORY FLOW IN MEANDERING CHANNELS ARE DESCRIBED. POINT INJECTIONS OF DYE AND SUBSEQUENT MEASUREMENTS OF THE DYE CLOUD ARE MADE. THESE RESULTS SUPPORT THE HYPOTHESIS THAT THE TRANSVERSE CURRENTS CAUSE THE LARGE TRANSVERSE DISPERSION COEFFICIENTS. THE RESULTS SUGGEST THAT THE SPIRAL SECONDARY CURRENTS ASSOCIATED WITH THE CHANNEL MEANDERS ARE THE PRINCIPAL REASON FOR THE LARGE COEFFICIENTS. %A< C1717Y)
Descriptors: DIFFUSION; OSCILLATORY FLOW; TRACERS-DYES; OPEN CHANNELS; FLUMES; EXPERIMENTAL STUDIES; ANALYSIS-MATHEMATICAL; ANALYSIS OF PUBLISHED DATA; DYE DISPERSION; HOMOGENEOUS ESTUARIES; TRANSVERSE DISPERSION COEFFICIENT; STEADY FLOW; STRAIGHT CHANNELS; OSCILLATORY FLOW; MEANDERING CHANNELS; TRANSVERSE CURRENTS
Section Heading Codes: C9

011500 CH (Civil Engineering Hydraulics Abstracts)
ENHANCED DISPERSION IN DRAG REDUCING OPEN CHANNEL FLOW.
PETERSON, J.P.; CASTRO, W.E.; ZIELINSKI, P.B.; BECKWITH, W.F.
CLEMSON UNIV., U.S.A.
J. HYDRAUL. DIV. PROC. ASCE, VOL. 100, HY6, PP.773-85. PAPER 10622. %JUNE, 1974<.
Languages: English
RESULTS ARE PRESENTED CONCERNING THE EFFECT OF HIGH POLYMER DRAG REDUCING ADDITIVES ON TURBULENT DISPERSION IN OPEN CHANNEL FLOW. THEORETICAL ANALYSIS SHOWS THAT THE DISPERSION COEFFICIENT SHOULD BE GREATLY ENHANCED IN A DRAG REDUCING FLOW. THE DATA OBTAINED FOR THE LONGITUDINAL TURBULENT DISPERSION COEFFICIENT INCREASES WITH INCREASING POLYMER CONCENTRATION FOR DILUTE POLYMER SOLUTIONS AT A GIVEN REYNOLDS NUMBER. THE DATA FOR THE FLOW OF WATER AND DILUTE POLYMER SOLUTIONS SHOW THAT THE DISPERSION COEFFICIENT VARIES LINEARLY WITH THE REYNOLDS NUMBER FOR EACH CONCENTRATION. ABOVE A REYNOLDS NUMBER OF 10,000 THE DISPERSION COEFFICIENT COULD BE PREDICTED FROM THEORETICAL EQUATIONS WITH A SINGLE EMPIRICAL CONSTANT. %A< C1716S)
Descriptors: OPEN CHANNELS; FLUMES; ADDITIVES-DRAG REDUCING; POLYMERS; DIFFUSION; TURBULENCE; EXPERIMENTAL STUDIES; DRAG REDUCING POLYMERS; LONGITUDINAL TURBULENT DISPERSION; TWO-DIMENSIONAL FLOW; LONGITUDINAL TURBULENT DISPERSION COEFFICIENT; POLYMER CONCENTRATION; DILUTE POLYMER SOLUTIONS; REYNOLDS NUMBER
Section Heading Codes: C9

011499 CH (Civil Engineering Hydraulics Abstracts)
FLOW AUGMENTING EFFECTS OF ADDITIVES ON OPEN CHANNEL FLOWS.
DERICK, C.; LOGIE, K.
U.S. ENVIRON. PROTECTION AGENCY.
U.S. ENVIRON. PROTECTION AGENCY, REPORT EPA-R2-73-238, 80PP. %JUNE, 1973<. %PB 222 911<.
Languages: English
TWO MODEL OPEN CHANNEL CONFIGURATIONS %TRAPEZOIDAL AND RECTANGULAR< AND THREE WATER SOLUBLE POLYMERS %POLYOX <COAGULANT, POLYOX WSR-301, AND SEPARAN AP-30< WERE USED TO EXPERIMENTALLY DETERMINE THE EFFECTS OF INJECTING DILUTE POLYMER SOLUTIONS INTO OPEN CHANNEL WATER FLOWS. IT WAS FOUND THAT FOR ALL TEST CASES, INJECTION OF THE THREE POLYMER ADDITIVES PRODUCED FLOW CHARACTERISTIC CHANGES REFLECTED AS EITHER A WATER SURFACE LEVEL DECREASE AT CONSTANT FLOW RATES OR A FLOW RATE INCREASE AT CONSTANT STATIC HEADS. THESE FLOW CHARACTERISTIC CHANGES WERE FOUND TO BE DEPENDENT, IN VARYING DEGREES, ON CHANNEL SLOPE, SURFACE ROUGHNESS, INJECTION POINT LOCATION, POLYMER INJECTION METHOD, FLOW REYNOLDS NUMBER, AND INJECTED POLYMER CONCENTRATION. IN ADDITION, TWO FLUMES %PARSHALL AND LEOPOLD-LAGCO< AND TWO MODEL SIDE CHANNEL SPILLWAYS %90 DEGREES V-NOTCH WEIR AND SHARP-CRESTED RECTANGULAR WEIR< WERE USE D TO DETERMINE EXPERIMENTALLY THE EFFECTS OF POLYMER ADDITIVES ON THE FLOW MEASURING CHARACTERISTICS OF ENERGY DISSIPATORS. IT WAS FOUND THAT FOR SPECIFIC FLOW SYSTEMS, THE FLUMED AND SPILLWAYS COULD BE RECALIBRATED FOR USE WITH POLYMER/WATER FLOWS. HOWEVER, FOR THE LEOPOLD-LAGCO FLUME AND SHARP-CRESTED WEIR, IT WAS FOUND THAT AS THE FLOW INCREASED, THE HYDRAULIC JUMP INHERENT TO THESE DEVICES WAS DISSIPATED BY POLYMER INJECTION, THUS PREVENTING FURTHER RECALIBRATION. %A< %MICROFICHE<. C1715V)
Descriptors: OPEN CHANNELS; FLOW RATE; POLYMERS; FLUMES; WEIRS-V NOTCH; WEIRS-SHARP CRESTED; ENERGY DISSIPATORS; HYDRAULIC JUMP; MODEL TESTS; EXPERIMENTAL STUDIES; TRAPEZOIDAL OPEN CHANNELS; RECTANGULAR OPEN CHANNELS; POLYOX COAGULANT; POLYOX WSR-301; SEPARAN AP-30; WATER SOLUBLE POLYMERS; FLOW CHARACTERISTIC CHANGES; WATER SURFACE LEVEL DECREASE AT CONSTANT FLOW RATE; FLOW RATE INCREASE AT CONSTANT STATIC HEAD ; PARSHALL FLUMES; LEOPOLD LAGCO FLUMES; FLOW MEASURING CHARACTERISTICS OF ENERGY DISSIPATORS; RECALIBRATION; HYDRAULIC JUMP DISSIPATION
Section Heading Codes: C9

011465 CH (Civil Engineering Hydraulics Abstracts)
HEATED XATER JET IN COFLOWING TURBULENT STREAM.
SHIRAZI, M. A.; MCQUIVEY, R.S.; KEEFER, T.N.
U.S. ENVIRON. PROTECTION AGENCY-U.S. GEOLOG. SURVEY
J. HYDRAUL. DIV., ASCE, VOL. 100, HY7, PP. 919-34. PAPER 10661. %JULY, 1974<.,
Languages: English
THE EFFECTS OF AMBIENT TURBULENCE ON TEMPERATURE AND SALINITY DISTRIBUTIONS OF HEATED WATER AND NEUTRALLY BOUYANT SALT WATER JETS WERE STUDIED FOR A WIDE RANGE OF DENSIMETRIC JET FROUDE NUMBERS, JET DISCHARGE VELOCITIES, AND AMBIENT TURBULENCE LEVELS IN A 4-FT WIDE CHANNEL. ESTIMATES OF VERTICAL AND LATERAL DIFFUSIVITY COEFFICIENTS FOR HEAT AND FOR SALT WERE OBTAINED FROM SALINITY AND TEMPERATURE DISTRIBUTIONS TAKEN AT SEVERAL STATIONS DOWNSTREAM OF THE INJECTION POINT. READILY USABLE CORRELATIONS ARE PRESENTED FOR PLUME CENTER-LINE TEMPERATURE, PLUME WIDTH, AND TRAJECTORY. %A< C1666W)
Descriptors: JETS; TEMPERATURE DISTRIBUTION; SALINITY; DIFFUSION; TURBULENCE; PLUMES; FLUMES; OPEN CHANNELS; EXPERIMENTAL STUDIES; AMBIENT TURBULENCE; TEMPERATURE AND SALINITY DISTRIBUTIONS; HEATED WATER AND NEUTRALLY BUOYANT SALT WATER JETS; 4 FT WIDE CHANNEL; VERTICAL AND LATERAL DIFFUSIVITY COEFFICIENTS
Section Heading Codes: C5

011374 CH (Civil Engineering Hydraulics Abstracts)
BOUNDARY PRESSURE FLUCTUATIONS DUE TO MACROTURBULENCE IN HYDRAULIC JUMPS.
SCHIEBE, F.R.; BOWERS, C.E.
MINNESOTA UNIV., U.S.A.
PROC. OF SYMP. ON TURBULENCE IN LIQUIDS, UNIV. MISSOURI-ROLLA, PP.134-9. %OCTOBER 4-6, 1971<.,
Languages: English
DATA CONCERNING THE STATISTICAL PROPERTIES OF PRESSURE FLUCTUATIONS ON THE CONTAINMENT STRUCTURE ASSOCIATED WITH THE HYDRAULIC JUMP HAVE BEEN STUDIED AT THE ST. ANTHONY FALLS HYDRAULIC LABORATORY. THE INCIDENT FROUDE NUMBERS WERE INVESTIGATED THROUGH THE PRACTICAL RANGE FROM 4 TO 9. THE MEAN SQUARE OF THE FLUCTUATING PRESSURE, THE MEAN PRESSURE, AND THE POWER SPECTRUM WERE DETERMINED AS A FUNCTION OF POSITION UNDER THE JUMP. IN ADDITION, MEAN AND RMS TURBULENT VELOCITY PROFILES AND ENTRAINED AIR CONCENTRATION PROFILES THROUGHOUT THE JUMP VOLUME WERE DETERMINED. THE PRINCIPAL TESTS WERE PERFORMED IN A CHANNEL 20 INCHES WIDE AND 3 FEET DEEP. OTHER TESTS AT A LARGER SCALE WERE PERFORMED IN A FLUME 9 FEET WIDE AND 6 FEET DEEP TO ASSIST IN AN EVALUATION OF THE SCALING PROPERTIES OF THE VARIOUS STATISTICAL PARAMETERS. THE DATA INDICATE THAT THE RAPID RATE OF ENERGY DISSIPATION NEAR THE TOE OF THE JUMP LEADS TO A MAXIMUM RMS FLUCTUATION PRESSURE ON THE BED OF ABOUT 5 PER CENT OF THE INCOMING VELOCITY HEAD. THE LOCATION OF THE MAXIMUM PRESSURE FLUCTUATION IS APPROXIMATELY MIDWAY UNDER THE ROLLER OF THE JUMP. %A< C1553X)
Descriptors: TURBULENCE; HYDRAULIC JUMP; PRESSURE FLUCTUATIONS; ENTRAINMENT; OPEN CHANNELS; ENERGY DISSIPATORS; FLUMES; EXPERIMENTAL STUDIES; STATISTICAL METHODS; STATISTICAL PROPERTIES OF PRESSURE FLUCTUATIONS; INCIDENT FROUDE NUMBERS FROM 4 TO 9; MEAN SQUARE FLUCTUATING PRESSURE; MEAN PRESSURE; POWER SPECTRUM; TURBULENT VELOCITY PROFILES; ENTRAINED AIR CONCENTRATION PROFILES; RAPID ENERGY DISSIPATION NEAR THE TOE OF THE JUMP; MAXIMUM RMS FLUCTUATION PRESSURE ON THE BED; MAXIMUM PRESSURE FLUCTUATION
Section Heading Codes: C9

011239 CH (Civil Engineering Hydraulics Abstracts)
IMPROVING THE ACCURACY OF POINT-GAUGE MEASUREMENT IN HIGH-VELOCITY FLOWS.
JAYARAMAN, R.; SETHURAMAN, V.
INDIAN INST. TECHNOL.
J. HYDRAUL. RES., VOL. 11, NO. 4, PP. 317-23. %1973<.,
Languages: FRENCH AND ENGLISH.
C1405A)
Descriptors: INSTRUMENTS; SUPERCRITICAL FLOW; PULSED FLOW; FLUMES; OPEN CHANNELS; MEASUREMENT TECHNIQUES; CONTACT TIME INDICATOR; POINT-GAUGE MEASUREMENT; HIGH-VELOCITY FLOWS
Section Heading Codes: C16

O11216 CH (Civil Engineering Hydraulics Abstracts)
STILLING BASIN DESIGN FOR CANAL REGULATORS.
SHARMA, H.D.; VARSHNEY, D.V.
IRRIG. RES. INST., INDIA.
IRRIG. AND POWER, VOL. 30, NO. 4, PP. 367-76. %OCTOBER, 1973<.
Languages: English

THERE ARE NO DESIGN STANDARDS FOR THE DESIGN OF STILLING BASIN FOR REGULATORS WITH SUB-CRITICAL FLOW AT FULL SUPPLY DISCHARGE. THE STILLING BASINS ARE GENERALLY DESIGNED ON THE BASIS OF THE CRITERIA AVAILABLE FOR THE DESIGN OF HYDRAULIC JUMP TYPE BASINS WHICH OFTEN RESULTS INTO UNECONOMIC AND INEFFICIENT DESIGNS. THE AUTHORS HAVE MADE SYSTEMATIC MODEL STUDIES TO ARRIVE AT A DESIGN STANDARD, WHICH HAS BEEN SUPPORTED BY THE NUMBER OF MODEL STUDIES CONDUCTED AT U.P. IRRIGATION RESEARCH INSTITUTE FOR SIMILAR WORKS. THE MOST SEVERE SCOUR CONDITIONS ARE OBTAINED WITH THE REGULATORS OPERATING UNDER' UNDERSHOT CONDITIONS WITH 70 TO 80 PERCENT OF THE FULL SUPPLY DISCHARGE. THIS STAGE CORRESPONDS TO THE CONDITION OF CRITICAL FLOW AT THE VENA-CONTRACTA. THIS DISCHARGE CAN BE MORE EXACTLY WORKED OUT BY ADOPTING A VALUE OF 0.8 FOR COEFFICIENT OF CONTRACTION AND THE VALUES OF COEFFICIENT OF DISCHARGE ON THE BASIS OF ANY OF THE AVAILABLE CURVES. THE DESIGN OF STILLING BASINS CONSISTS OF %I< THE LENGTH OF BASIN MAY BE KEPT AS 10 TIMES THE CRITICAL DEPTH %DC< CORRESPONDING TO THE WORST CONDITION OF OPERATION; %II< A ROW OF BAFFLE BLOCKS OF 1.1 DC PLACED AT A DISTANCE OF 4.5 DC FROM THE TOE OF GLACIS. IN THE CASE OF CRESTLESS REGULATORS THIS DISTANCE MAY BE KEPT AS 5.0 DC AND %II< SUPPLEMENTED WITH A ROW OF 0.35 DC CUBE BLOCKS AT THE END OF CISTERN. %A< C1378N)

Descriptors: STILLING BASINS; CANALS; ENERGY DISSIPATORS; SCOUR; FLUMES; OPEN CHANNELS; MODEL TESTS; CANAL REGULATORS; SUB-CRITICAL FLOW; FULL SUPPLY DISCHARGE; HYDRAULIC MODEL TESTS DESIGN STANDARD; WORST CONDITION OF OPERATION; LENGTH OF STILLING BASIN; COEFFICIENTS OF CONTRACTION AND DISCHARGE; BAFFLE BLOCKS; CUBE BLOCKS
Section Heading Codes: C11

O11198 CH (Civil Engineering Hydraulics Abstracts)
MECHANISM OF RIPPLE FORMATION ON GRANULAR BEDS.
SAHGAL, P.P.; SINGH, B.
ROORKEE UNIV., INDIA.
IRRIG. AND POWER, VOL. 30, NO. 4, PP. 387-96. %OCTOBER, 1973<.
Languages: English

THE DEVELOPMENT OF BED FORMATIONS ON GRANULAR BEDS IS ONE OF THE MOST PUZZLING PHENOMENA IN FLUID MECHANICS. AN EXPERIMENTAL STUDY CARRIED OUT ON FOUR UNIFORM SANDS OF MEDIAN SIZES 0.25 MM, 0.51 MM, 0.75 MM AND 1.0 MM, AND ONE GRADED SAND OF 0.45 MM IS DESCRIBED. BESIDES, WATER, WATER-GLYCERINE MIXTURES AND KEROSENE-OIL-MOBILE OIL MIXTURES WERE USED TO GIVE A KINEMATIC VISCOSITY RANGE OF 7 TO 1 TIMES THAT OF WATER. DATA IS EXAMINED IN THE LIGHT OF BAGNOLD'S THEORY, AND IT IS SHOWN THAT IT DOES NOT ACCORD WITH IT. WITH THE HELP OF EXPERIMENTAL DATA A CORRELATION IS OBTAINED BETWEEN KENNEDY'S J VALUE AND A DIMENSIONLESS PARAMETER, /SUP G1/2/ /SUP D3/2//GN. IT IS CONCLUDED THAT KENNEDY'S CURVES WITH J DEFINED AS ABOVE ESTABLISH A SATISFACTORY LINE OF DEMARCATION BETWEEN PLANE AND RIPPLED BEDS. IT IS SHOWN THAT GRAIN SIZES WHICH DO NOT RIPPLE UNDER WATER CAN BE MADE TO RIPPLE DISTINCLY UNDER MORE VISCOUS LIQUIDS. THE STUDY IS IN ACCORD WITH THE VIEW THAT RIPPLES DEVELOP AT SOME STRESS INTERVAL AFTER THE START OF BED MOVEMENT AND NOT IMMEDIATELY AT THE THRESHOL D STRESS. %A<. C1358P)

Descriptors: BEDS-FORMS GRANULAR; OPEN CHANNELS; FLUMES-TILTING; SAND WAVES; SEDIMENT TRANSPORT; EXPERIMENTAL STUDIES; ANALYSIS-MATHEMATICAL; MECHANISM OF RIPPLE FORMATION ON GRANULAR BEDS; RESULTS OF FLUME STUDIES; BAGNOLD'S THEORY; KENNEDY'S CURVES; STRESS INTERVAL; START OF BED MOVEMENT; THRESHOLD STRESS; WATER; GLYCERINE; KEROSENE OIL; KINEMATIC VISCOSITY; KENNEDY'S CURVES; INTERFACIAL INSTABILITY
Section Heading Codes: C9

011196 CH (Civil Engineering Hydraulics Abstracts)
VERTICAL MIXING OF HEATED EFFLUENTS IN OPEN-CHANNEL FLOW.
SCHILLER, E.J.; SAYRE, W.W.
IOWA UNIV., U.S.A.
IOWA UNIV., U.S.A., INST. HYDRAUL. RES., REPORT 148, 146 PP. %SEPTEMBER, 1973<.,
Languages: English
FLUME EXPERIMENTS WERE MADE TO DEVELOP A METHOD OF PREDICTION OF VERTICAL MIXING OF HEATED EFFLUENT IN THE FAR FIELD. FLOWS WERE VARIED FROM WELL MIXED TO NEARLY STABLE STRATIFICATION. FLOW DEPTH AND VELOCITY WERE VARIED AS WELL AS THE TEMPERATURE DIFFERENCE AND DISCHARGE RATIO BETWEEN AMBIENT AND EFFLUENT FLOW. RESULTS, CONSIDERED TOGETHER WITH AN ANALYSIS BASED ON THE CONVECTION-DIFFUSION EQUATION, ALLOW THE DETERMINATION OF %I< THE DISTANCE FOR NEARLY COMPLETE MIXING, %II< A BULK MIXING COEFFICIENT FOR MODERATELY AND RAPIDLY MIXING FLOW' %III< THE VERTICAL DISTRIBUTION OF THE OVERALL VERTICAL HEAT TRANSFER COEFFICIENT DOWNSTREAM. THE EFFECT OF LESS DENSE WATER IS TO INHIBIT MIXING NEAR THE SURFACE AND TO REDUCE IT THROUGH MOST OF THE DEPTH FOR THE MORE STRATIFIED FLOWS. FOR RAPIDLY MIXING FLOWS THE VERTICAL HEAT TRANSFER COEFFICIENT WAS FOUND TO AGREE CLOSELY WITH THE TURBULENT TRANSFER COEFFICIENT. FOR SELECTED RUNS, PREDICTIONS OF THE DOWNSTREAM TEMPERATURE PROFILES WERE OBTAINED FROM A FINITE DIFFERENCE REPRESENTATION OF THE STEADY STATE CONVECTION-DIFFUSION EQUATION. %A< C1355T)
Descriptors: OPEN CHANNELS; FLUMES; THERMAL EFFECTS; DIFFUSION; MIXING; CONVECTION; HEAT TRANSFER; EFFLUENT DISCHARGE; EXPERIMENTAL STUDIES; PREDICTION OF VERTICAL MIXING OF HEATED EFFLUENT IN THE FAR FIELD; CONVECTION-DIFFUSION EQUATION; BULK MIXING COEFFICIENT FOR MODERATELY AND RAPIDLY MIXING FLOW; VERTICAL DISTRIBUTION OF OVERALL VERTICAL HEAT TRANSFER COEFFICIENT DOWNSTREAM
Section Heading Codes: C9

011195 CH (Civil Engineering Hydraulics Abstracts)
TURBULENCE CHARACTERISTICS IN A SMOOTH OPEN CHANNEL OF CIRCULAR CROSS-SECTION.
NALLURI, C.; NOVAK, P.
NEWCASTLE UPON TYNE UNIV., U.K.
J. HYDRAUL. RES., VOL. 11, NO. 4, PP. 343-68. %1973<.,
Languages: FRENCH AND ENGLISH
IN THIS PAPER THE AUTHORS PRESENT SOME RESULTS OF RECENT RESEARCH WORK DEALING WITH DETERMINATION OF TURBULENCE INTENSITIES AND ENERGY SPECTRA IN WATER FLOWING IN A SMOOTH OPEN CHANNEL OF CIRCULAR CROSS-SECTION. %FROM PAPER<. C1354Z)
Descriptors: OPEN CHANNELS; FLUMES; TURBULENCE; TURBULENCE MEASUREMENTS; EXPERIMENTAL STUDIES; TURBULENCE INTENSITIES; ENERGY SPECTRA; SMOOTH OPEN CHANNEL OF CIRCULAR CROSS-SECTION, MICRO AND MACRO SCALES OF TURBULENCE
Section Heading Codes: C9

011194 CH (Civil Engineering Hydraulics Abstracts)
ON THE BASIC CHARACTERISTICS OF TURBULENCE IN FREE SURFACE SHEAR FLOWS.
IMAMOTO, H.
KYOTO UNIV., JAPAN
TRANS. JSCE, VOL. 4, PP. 92-3. %NOVEMBER, 1973<. TRANS. FROM PROC. JSCE, VOL. 197, PP. 83-91. %JANUARY, 1972<.,
Languages: English
THIS PAPER DEALS WITH THE EULERIAN AND THE LAGRANGIAN TURBULENCE CHARACTERISTICS IN A TWO-DIMENSIONAL FREE SURFACE SHEAR FLOW. USING THE KOLMOGOROV'S SIMILARITY THEORY, A WHOLE ASPECT OF EULERIAN ONE-DIMENSIONAL WAVE-NUMBER SPECTRUM IS CHARACTERISED BY TWO AMONG THREE FUNDAMENTAL PARAMETERS, THAT IS, THE TURBULENCE INTENSITY, THE EULERIAN INTEGRAL SCALE AND THE TURBULENCE ENERGY DISSIPATION RATE. THESE PARAMETERS MAY BE DESCRIBED IN THE FORM OF A UNIVERSAL FUNCTION BY THE APPLICATION OF THE REYNOLDS NUMBER SIMILARITY PRINCIPLE, AND SPECIFIC FORMS OF UNIVERSAL FUNCTION ARE PROPOSED THROUGH THEORETICAL AND DIMENSIONAL CONSIDERATIONS. THE EULERIAN MEASUREMENTS OF TURBULENCE IN FREE SURFACE SHEAR FLOWS WERE CARRIED OUT WITH A HOT-FILM ANEMOMETER IN A LABORATORY CHANNEL AND WITH A PROPELLER-DYNAMO CURRENT METER IN A FIELD CANAL, WHILE THE LAGRANGIAN MEASUREMENTS WERE MADE BY THE TRACKING OF FLOATING PARTICLE-TRACERS ON THE FREE SURFACE IN A LABORATORY FLUME. THE EXPERI MENTAL RESULTS SHOW THE VERIFICATION OF THE KOLMOGOROV'S SIMILARITY THEORY, AND WILL DETERMINE THE SPECIFIC FORMS OF UNIVERSAL FUNCTIONS FOR THE FUNDAMENTAL PARAMETERS OF TURBULENCE IN A FREE SURFACE SHEAR FLOW. %FROM PAPER<. C1353E)
Descriptors: SHEAR FLOW; TURBULENCE; TURBULENCE MEASUREMENTS; OPEN CHANNELS; FLUMES; ANEMOMETERS-HOT FILM; ANALYSIS-MATHEMATICAL; EXPERIMENTAL STUDIES; EULERIAN AND LAGRANGIAN TURBULENCE CHARACTERISTICS; TWO-DIMENSIONAL FREE SURFACE SHEAR FLOW; SPECTRAL SIMILARITY; KOLMOGOROV'S SIMILARITY THEORY; REYNOLDS NUMBER SIMILARITY; ENERGY DISSIPATION RATE; WAVE NUMBER SPECTRA; HOT-FILM ANEMOMETER; PROPELLER-DYNAMO CURRENT METER
Section Heading Codes: C9

011149 CH (Civil Engineering Hydraulics Abstracts)
HYDROELASTIC EXCITATION OF CYLINDERS.
RAUDKIVI, A.J.; SMALL, A.F.
AUCKLAND UNIV., NEW ZEALAND.
J. HYDRAUL. RES., VOL. 12, NO. 1, PP. 99-131. %1974<.,
Languages: FRENCH AND ENGLISH
C1299V)
Descriptors: BODIES - CYLINDERS; ELASTICITY; OSCILLATIONS; FLOW-INDUCED VIBRATIONS; VORTEX SHEDDING; WAKES; FLUMES; OPEN CHANNELS; EXPERIMENTAL STUDIES; HYDROELASTIC EXCITATION OF CYLINDERS; SPECTRAL STUDY; MOVEMENT OF SEPARATION POINTS ON CYLINDER; SURFACE PRESSURE DISTRIBUTION; FORCES ACTING ON CYLINDER; PHASE RELATIONSHIP BETWEEN LATERAL FORCES AND CYLINDER DISPLACEMENT
Section Heading Codes: C3

011144 CH (Civil Engineering Hydraulics Abstracts)
ON THE INTERACTION OF INTERNAL WAVES AND SURFACE GRAVITY WAVES.
LEWIS, J.E. ; LAKE, B.M. ; KO, D.R.S.
TECHMATE INC., U.S.A.-TRW SYSTEMS GROUP, U.S.A.-FLOW RES. INC., U.S.A.
J. FLUID MECH., VOL. 63, NO. 4, PP. 773-800. %MAY 15, 1974<.
Languages: English
THE PERTURBATION OF PRE-EXISTING SURFACE GRAVITY WAVES CAUSED BY THE PRESENCE OF AN INTERNAL WAVE WAS STUDIED BOTH EXPERIMENTALLY AND ANALYTICALLY. AN EXTENSIVE SERIES OF EXPERIMENTS WAS PERFORMED, AND QUANTITATIVE RESULTS WERE OBTAINED FOR THE ONE-DIMENSIONAL MONOCHROMATIC INTERACTION OF INTERNAL WAVES AND SURFACE GRAVITY WAVES. INTERNAL WAVE-INDUCED SURFACE SLOPE, AMPLITUDE AND WAVENUMBER MODULATIONS WERE MEASURED FOR A WIDE RANGE OF INTERACTION CONDITIONS. A COMPLEMENTARY THEORETICAL ANALYSIS, BASED ON THE CONSERVATION APPROACH OF WHITHAM AND LONGUET-HIGGINS AND STEWART, WAS PERFORMED AND A CLOSED FORM SOLUTION OBTAINED FOR THE ONE-DIMENSIONAL WAVE INTERACTION. BOTH THE THEORY AND THE EXPERIMENT DEMONSTRATE THAT THE EFFECT INCREASES WITH INTERACTION DISTANCE. THE MAXIMUM INTERACTION EFFECT IS FOUND TO OCCUR WHEN THE PHASE SPEED OF THE INTERNAL WAVE AND THE GROUP VELOCITY OF THE SURFACE WAVE ARE MATCHED. THE PHASE OF THE INTERNAL WAVE AT WHICH MAXIMUM SURFACE-WAVE MODULATION OCCURS IS FOUND TO BE A SENSITIVE AND CONTINUOUS FUNCTION OF THE RELATIVE WAVE SPEEDS. THE EXPERIMENTAL DATA ARE IN GOOD AGREEMENT WITH THE PRESENT THEORETICAL ANALYSIS. %A< C1294P)
Descriptors: INTERNAL WAVES; SURFACE WAVES; GRAVITY WAVES; WAVE INTERACTION; STRATIFICATION; FLUMES; OPEN CHANNELS; ANALYSIS - MATHEMATICAL; EXPERIMENTAL STUDY; SURFACE GRAVITY WAVES, ONE-DIMENSIONAL MONOCHROMATIC INTERACTION; SURFACE SLOPE; AMPLITUDE AND WAVENUMBER MODULATIONS; WAVE TANKS; TWO FLUID SYSTEM
Section Heading Codes: C3

011041 CH (Civil Engineering Hydraulics Abstracts)
THE THAMES BARRIER RISING SECTOR GATE' VIBRATION STUDIES ON A 1/20 SCALE HYDROELASTIC MODEL.
CROW, D.
BHRA FLUID ENGNG., U.K.
BHRA FLUID ENGNG., U.K., REPORT RR1225, 82 PP. %FEBRUARY, 1974<.,
Languages: English
A BRIEF INTRODUCTION TO THE THAMES BARRIER PROJECT IS GIVEN TOGETHER WITH A DESCRIPTION OF THE DESIGN AND OPERATION OF THE MAIN RISING SECTOR GATES. RELEVANT EARLIER VIBRATION STUDIES OF THE RISING SECTOR GATE ARE SUMMARISED AN AN OUTLINE OF THE THEORY AND CRITERIA FOR HYDROELASTIC MODELLING IS PRESENTED. %A<. C1184Q)
Descriptors: GATES - SECTOR TYPE; FLOW INOUCED VIBRATIONS; OSCILLATION; VIBRATION; RIVERS; OPEN CHANNELS; FLUMES; U.K.; MODEL TESTS; SCALE EFFECTS; RISING SECTOR GATES; THAMES BARRIER PROJECT; DESIGN AND OPERATION; HYDROELECTRIC MODELLING ; TEST PROGRAMME; RANDOM AND PERIODIC EXCITATION; RESONANCE; MASS OSCILLATIONS; TORTIONAL MODES; STRUCTURAL VIBRATIONS; STRAIN GAUGES; ACCELEROMETERS; STILL WATER; FLOWING WATER
Section Heading Codes: C11

011016 CH (Civil Engineering Hydraulics Abstracts)
TIME-DEPENDENT BEHAVIOUR OF STRATIFIED FLOW IN A CHANNEL TOWARDS A LINE SINK.
KAO, T.W.; PAO, A.P.; WEI, S.N.
CATHOLIC UNIV. OF AMERICA.
IAHR INT. SYMP. ON STRATIFIED FLOWS, %NOVOSIBIRSK, U.S.S.R.<, COMMUNICATION 13, 8 PP. %AUGUST 29-31, 1972<..
Languages: English
THEORETICAL AND EXPERIMENTAL INVESTIGATIONS WERE MADE ON THE UNSTEADY FLOW OF A STRATIFIED FLUID IN A CHANNEL OF FINITE DEPTH TOWARDS A LINE SINK. THE FLOW WAS STARTED FROM REST. THE INITIAL-BOUNDARY VALUE PROBLEM WAS FIRST LINEARIZED BY A SYSTEMATIC PERTURBATION SCHEME IN TERMS OF THE OVERALL DENSIMETRIC FROUDE NUMBER. IN ALL PRACTICAL PROBLEMS, SUCH AS SELECTIVE WITHDRAWAL FROM RESERVOIRS, THIS NUMBER IS ALWAYS SMALL, NAMELY OF ORDER 10/SUP -1/ OR LESS. THE LINEARIZED PROBLEM IS THEN SOLVED BY THE METHOD OF FOURIER-LAPLACE TRANSFORMS. IT IS FOUND THAT THE EXCITED MODES OF INTERNAL WAVES HAVE FINITE HORIZONTAL GROUP VELOCITY AND NO SINUSOIDAL DEPENDENCE IN THE LENGTH-WISE DIRECTION. THE DEVELOPMENT OF FLOW PATTERN AND DENSITY PERTURBATION IS FOLLOWED FOR SUCCESSIVE TIMES. THE EXPERIMENTS WERE CARRIED OUT IN A CHANNEL 33 FT. LONG AND 14 INS. WIDE AND FILLE D TO A HEIGHT OF 18 INS. WITH WATER LAYERS OF VARYING SALINITY. THE RESULTANT STRATIFICATION A DAY AFTER FILLING WAS ESSENTIALLY LINEAR. THE LINE SINK WAS LOCATED AT MID-DEPTH. VERTICAL DYE LINES AND TRACER PARTICLES WERE INTRODUCED TO TRACE THE FLOW PATTERN. PHOTOGRAPHS WERE TAKEN AT SUCCESSIVE INTERVALS OF TIME AFTER THE OPENING OF THE SINK. THE PROPAGATION OF MODES AT FINITE VELOCITY WAS OBSERVED, AND THE EXPERIMENTAL RESULTS SHOWED GOOD AGREEMENT WITH THE THEORY. %A<. C1157A)
Descriptors: STRATIFIED FLOW; SALINITY; UNSTEADY FLOW; OPEN CHANNELS; FLUMES; TRACERS - DYES; PHOTOGRAPHY; ANALYSIS - MATHEMATICAL; STRATIFIED FLUID TIME DEPENDENT BEHAVIOUR; FINITE DEPTH CHANNEL TOWARDS LINE SINK; PERTURBATION SCHEME IN TERMS OF OVERALL DENSIMETRIC FROUDE NUMBER; FOURIER LAPLACE TRANSFORMS; FLOW PATTERN DEVELOPMENT; DENSITY PERTURBATION; VERTICAL DYE LINES AND TRACER PARTICLES; PROPAGATION OF MODES AT FINITE VELOCITY; COMPARATIVE EXPERIMENTAL AND THEORETICAL RESULTS
Section Heading Codes: C9

011015 CH (Civil Engineering Hydraulics Abstracts)
INVESTIGATION OF THE FORMS OF INTERFACE BY THE DENSITY CURRENT OF SALT AND FRESH WATER IN A RECTANGULAR CHANNEL.
ROZOVSKY, I.L.; SHABRIN, A.N.; MARKOV, S.B.
UKRANIAN ACAD. SCI., U.S.S.R.
IAHR INT. SYMP. ON STRATIFIED FLOWS, %NOVOSIBIRSK, U.S.S.R.<, COMMUNICATION 22, 9 PP. %AUGUST 29-31' 1972<..
Languages: English
FLOW PATTERN AT THE INTERFACE BETWEEN SALT AND FRESH WATER BY WEDGE PROPAGATION IN A RECTANGULAR CHANNEL WAS INVESTIGATED BY MEANS OF LARGE SCALE FILMING IN A WIDE CHANGE OF THE CHARACTERISTIC REYNOLDS NUMBERS. THE EXPERIMENTS SHOWED THAT THE INTERFACE IS MORE INSTABLE NEAR THE SALT AND FRESH WATER FRONTS THAN WITHIN THE MAIN FLOW. %A<. C1156J)
Descriptors: INTERFACES - FLUID; SALINITY; STRATIFIED FLOW; OPEN CHANNELS; PHOTOGRAPHY; FLUMES; EXPERIMENTAL STUDIES; INTERFACE BETWEEN SALT AND FRESH WATER; WEDGE PROPAGATION; RECTANGULAR CHANNEL; LARGE SCALE FILMING; WIDE REYNOLDS NUMBER RANGE
Section Heading Codes: C9

011013 CH (Civil Engineering Hydraulics Abstracts)
EXPERIMENTAL COMPARISON OF THE NON-LINEAR BEHAVIOUR OF STRATIFIED AND UNSTRATIFIED SHEAR LAYERS.
WINANT, C.D.
S. CALIF. UNIV., U.S.A.
IAHR INT. SYMP. ON STRATIFIED FLOWS, %NOVOSIBIRSK, U.S.S.R.<, COMMUNICATION 28, 8 PP. %AUGUST 29-31, 1972<..
Languages: English
THE GROWTH OF SHEAR LAYERS IN A HOMOGENEOUS FLOW AND IN A STABLY STRATIFIED FLOW ARE EXAMNINED EXPERIMENTALLY IN A CONTINUOUSLY OPERATING TWO-LAYERFLOW VISUALIZATION TECHNIQUES ARE USED TO SHOW THE VORTEX ROLL-UP MECHANISM BY WHICH TURBULENT HOMOGENEOUS SHEAR LAYERS GROW. A SIMPLE THEORY IS PRESENTED WHICH ACCOUNTS FOR THIS GROWTH MECHANISM AND GIVES REMARKABLE AGREEMENT WITH EXPERIMENT. IN THE PRESENCE OF EVEN MILD STABLE STRATIFICATION, THE TURBULENT GROWTH STOPS AND THE LAYER GROWS THEREAFTER AT A SLOWER RATE. SOME PRELIMINARY MEASUREMENTS OF THE VELOCITY FIELDS ARE ALSO INCLUDED. %A<. C1153H)
Descriptors: SHEAR LAYERS; STRATIFIED FLOW; VELOCITY DISTRIBUTION; TURBULENCE; OPEN CHANNELS; FLUMES; FLOW VISUALISATION; EXPERIMENTAL STUDIES; FLOW MEASUREMENT; GROWTH OF SHEAR LAYERS; HOMOGENEOUS FLOW; STABLY STRATIFIED FLOW; VORTEX ROLL-UP MECHANISM BY WHICH TURBULENT HOMOGENEOUS SHEAR LAYERS GROW; PRELIMINARY MEASUREMENTS OF VELOCITY FIELDS
Section Heading Codes: C9

O10897 CH (Civil Engineering Hydraulics Abstracts)
THE MIXING CHARACTERISTICS OF SUBMERGED MULTIPLE-PORT DIFFUSERS FOR HEATED EFFLUENTS IN OPEN CHANNEL FLOW.
ARGUE, J.R.; SAYRE, W.W.
IOWA UNIV., U.S.A.
IOWA UNIV., U.S.A., INST. HYDRAUL. RES. REPORT 147, 138 PP. %JULY, 1973<.
Languages: English
THE BEHAVIOUR OF A SET OF HEATED WATER JETS DISCHARGING INTO A SHALLOW, CO-FLOWING ENVIRONMENT WAS CONSIDERED IN A LABORATORY STUDY; THE CONDITIONS EXAMINED IN THE MODEL SIMULATED THE FLOW OF COOLING WATER FROM PROTOTYPE MULTI-PORT DIFFUSER DISCHARGING INTO A RIVER OR OCEAN CURRENT. THE RELATIVE EFFECTS OF JET INTERACTION AND SURFACE DISTORTION WERE CONSIDERED AND THREE ASPECTS OF THIS PROBLEM SINGLED OUT FOR PARTICULAR ATTENTION: FIRSTLY, SOME MEANS %QUANTITATIVE< WHEREBY STRATIFIED FLOW MIGHT BE DISTINGUISHED FROM MIXED FLOW; SECONDLY, THE MANNER IN WHICH MIXING %AS MEASURED BY A COEFFICIENT OF VARIATION< VARIES WITH DISTANCE DOWNSTREAM FROM THE DISCHARGE PORTS; THIRDLY, THE FLOW REGIMES ARISING FROM COMBINED MIXING AND BUOYANCY EFFECTS WHICH CAN BE EXPECTED IN THIS TYPE OF FLOW SYSTEM. APART FROM THE QUANTITIES WHICH DEFINE THE AMBIENT AND JET CHARACTERISTICS, THE PORT SPACING DISTANCE WAS FOUND TO BE THE MOST SIGNIFICANT VARIABLE. THE ENTIRE PROGRAM WAS CONDUCTED USING AN INJECTION ANGLE OF 20 DEGREES. CRITERIA FOR DIFFERENTIATING AMONG WELL-MIXED FLOWS, MODERATELY WELL-MIXED FLOWS AND STRATIFIED FLOWS WERE DETERMINED, TOGETHER WITH THE RELATIONSHIP BETWEEN MIXING AND DISTANCE. A SCHEME FOR CLASSIFYING FLOW REGIMES WAS SUGGESTED AND THE PUBLISHED RESULTS OF OTHER STUDIES BROUGHT TOGETHER WITH THOSE OF THE PRESENT STUDY. SATISFACTORY AGREEMENT IS REPORTED. A PROCEDURE FOR SECONDS SIZINGSECONDS MULTI-PORT DIFFUSER INSTALLATIONS, USING THE RELATIONSHIPS REFERRED TO ABOVE, IS SUGGESTED. %A< C10308)
Descriptors: POLLUTION; THERMAL EFFECTS; JETS; COOLING WATER SYSTEMS; WASTE WATER; RIVERS; OPEN CHANNELS; SEA OUTFALLS; DIFFUSERS - MULTIPLE PORT; FLUMES; STRATIFIED FLOW; MIXING; EXPERIMENTAL STUDIES; MIXING AND BUOYANCY EFFECTS; LABORATORY TESTS; SURFACE DISCHARGE; SUBSURFACE DISCHARGE; FLUME AND HEATED WATER SUPPLY; RECORDING; ANALYSIS; CALIBRATION; MIXED AND STRATIFIED FLOWS; MIXING DISTANCE FOR NON-STRATIFIED FLOWS ; FLOW REGIMES; DESIGN OF MULTI-PORT DIFFUSERS
Section Heading Codes: C11

O10866 CH (Civil Engineering Hydraulics Abstracts)
VERTICAL MIXING OF HEATED EFFLUENTS IN OPEN-CHANNEL FLOW.
SCHILLER, E.J.; SAYRE, W.W.
IOWA UNIV., U.S.A.
IOWA UNIV., U.S.A., INST. OF HYDRAUL. RES., REPORT 148, 163 PP. %SEPTEMBER, 1973<.
Languages: English
THE EXTENSIVE USE OF RIVERS AS A SINK FOR HEATED EFFLUENTS FROM THERMAL POWER PLANTS HAS CREATED WIDESPREAD CONCERN FOR THE AQUATIC LIFE IN THESE WATERWAYS. THE PRESENT STUDY IS AN ATTEMPT TO DETERMINE RELEVANT PARAMETERS THAT CAN BE USED IN THE PREDICTION OF VERTICAL MIXING OF HEATED SURFACE EFFLUENTS IN THE FAR-FIELD MIXING REGION. A SET OF LABORATORY FLUME EXPERIMENTS WAS CONDUCTED WHICH COVERED A RANGE OF FLOWS FROM WELL MIXED TO NEARLY STABLE STRATIFIED CONDITIONS. THE VELOCITY AND DEPTH OF FLOW, AS WELL AS THE TEMPERATURE DIFFERENCE AND DISCHARGE RATIO BETWEEN AMBIENT AND EFFLUENT FLOWS WERE VARIED TO SIMULATE THE RANGE AND CONDITIONS COMMONLY ENCOUNTERED IN PRACTICE. TEMPERATURES WERE RECORDED DOWNSTREAM COUPLED TO AN IBM-1801 DIGITAL DATA ACQUISITION SYSTEM. VELOCITY MEASUREMENTS WERE ALSO TAKEN FOR SELECTED RUNS. FROM THE DATA TOGETHER WITH AN ANALYSIS BASED ON THE CONVECTION-DIFFUSION EQUATION, IT IS POSSIBLE TO DETERMINE %I< THE DISTANCE F OR NEARLY COMPLETE MIXING, %II< A BULK MIXING COEFFICIENT, K/SUB Y/, FOR MODERATELY AND RAPIDLY MIXING FLOW AND %III< THE VERTICAL DISTRIBUTION OF THE OVERALL VERTICAL HEAT TRANSFER COEFFICIENT AT CROSS SECTIONS DOWNSTREAM. THE BUOYANCY EFFECTS WERE ABSORBED INTO THE TRANSFER COEFFICIENT. THE LESS DENSE WATER INHIBITS MIXING NEAR THE SURFACE, AND CREATES REDUCTION IN MIXING THROUGHOUT MOST OF THE DEPTH FOR THE MORE STRATIFIED FLOWS. FOR THE RAPIDLY MIXING FLOWS, THE VERTICAL HEAT TRANSFER COEFFICIENT WAS FOUND TO AGREE CLOSELY WITH THE TURBULENT MOMENTUM TRANSFER COEFFICIENT. FINALLY, FOR SELECTED RUNS, PREDICTIONS OF THE DOWNSTREAM TEMPERATURE PROFILES WERE OBTAINED USING A FINITE DIFFERENCE REPRESENTATION OF THE STEADY STATE CONVECTION-DIFFUSION EQUATION. THE PREDICTED PROFILES WERE FOUND TO AGREE CLOSELY WITH THE EXPERIMENTAL ONES. %A< C997P)
Descriptors: MIXING; JETS; OPEN CHANNELS; RIVERS; POWER STATIONS - THERMAL; COOLING WATER SYSTEMS; EFFLUENTS DISCHARGE ; TEMPERATURE; DIFFUSION; STRATIFICATION; ENVIRONMENT EFFECTS; FLUMES; EXPERIMENTAL STUDIES; COMPUTER ANALYSIS; VERTICAL MIXING; FAR FIELD MIXING; SURFACE DISCHARGE OF HEATED EFFLUENTS; HEAT LOSS TO ATMOSPHERE; SUBMERGED JET DISCHARGE; TURBULENT MIXING; CONVECTION DIFFUSION EQUATION; CONSERVATION OF HEAT EQUATION; THEORY; EXPERIMENTAL APPARATUS
Section Heading Codes: C10

010862 CH (Civil Engineering Hydraulics Abstracts)
VORTEX PAIRING: THE MECHANISM OF TURBULENT MIXING - LAYER GROWTH AT MODERATE REYNOLDS NUMBER.
WINANT, C.D. ; BROWAND, F.K.
CALIF. UNIV., U.S.A.-SOUTHERN CALIF. UNIV., U.S.A.
J. FLUID MECH., VOL. 63, PART 2, PP. 237-55. %APRIL, 1974<.,
Languages: English
A MIXING LAYER IS FORMED BY BRINGING TWO STREAMS OF WATER, MOVING AT DIFFERENT VELOCITIES, TOGETHER IN A LUCITE-WALLED CHANNEL. THE REYNOLDS NUMBER, BASED ON THE VELOCITY DIFFERENT AND THE THICKNESS OF THE SHEAR LAYER, VARIES FROM ABOUT 45, WHERE THE SHEAR LAYER ORIGINATES, TO ABOUT 850 AT A DISTANCE OF 50 CM. DYE IS INJECTED BETWEEN THE TWO STREAMS JUST BEFORE THEY ARE BROUGHT TOGETHER, MARKING THE VORTICITY-CARRYING FLUID. UNSTABLE WAVES GROW, AND FLUID OS OBSERVED TO ROLL UP INTO DISCRETE TWO-DIMENSIONAL VORTICAL STRUCTURES. THESE TURBULENT VORTICES INTERACT BY ROLLING AROUND EACH OTHER, AND A SINGLE VORTICAL STRUCTURE, WITH APPROXIMATELY TWICE THE SPACING OF THE FORMER VORTICES, IS FORMED. THIS PAIRING PROCESS IS OBSERVED TO OCCURE REPEATEDLY, CONTROLLING THE GROWTH OF THE MIXING LAYER. A SIMPLE MODEL OF THE MIXING LAYER CONTAINS, AS THE IMPORTANT ELEMENTS CONTROLLING GROWTH, THE DEGREE OF NON-UNIFORMITY IN THE VORTEX TRAIN AND THE 'LUMPINESS' OF THE VORTICITY FIELD. %A< C992E)
Descriptors: MIXING LAYERS; TURBULENT FLOW; SHEAR LAYERS; WAVES; VORTICES; EXPERIMENTAL STUDIES; OPEN CHANNELS; FLUMES; VELOCITY MEASUREMENT; FLOW MEASUREMENT; FLOW VISUALISATION; NUMERICAL SOLUTION; PARALLEL WATER STREAMS MOVING AT DIFFERENT VELOCITIES; LUCITE WALLED CHANNEL; DYE INJECTION; UNSTABLE WAVES; VORTEX PAIRING; GROWTH OF MIXING LAYER; MEAN FLOW MEASUREMENTS; LARGE SCALE STRUCTURE; SHEAR LAYER TRANSITION; MIXING LAYER GROWTH
Section Heading Codes: C9

010861 CH (Civil Engineering Hydraulics Abstracts)
FLOW AUGMENTING EFFECTS OF ADDITIVES ON OPEN CHANNEL FLOWS.
DERICK, C.; LOGIE, K.
U.S. ENVIRON. PROTECTION AGENCY
U.S. ENVIRONM. PROTECTION AGENCY' EDA-R2-73-238, 74 PP. %JUNE, 1973<.,
Languages: English
THREE DIFFERENT WATER SOLUBLE POLYMERS WERE USED IN EXPERIMENTS TO DETERMINE THE EFFECTS OF INJECTING POLYMER SOLUTIONS INTO OPEN CHANNEL FLOW IN TRAPEZOIDAL AND RECTANGULAR CHANNELS. THE EFFECT WAS FOUND TO BE EITHER A DECREASE IN WATER LEVEL %AT CONSTANT FLOW RATES< OR AN INCREASE IN FLOW RATE %AT CONSTANT STATIC HEAD<. EFFECTS ON ENERGY DISSIPATION WERE EXAMINED IN TWO MEASURING FLUMES AND TWO MODEL SIDE CHANNEL SPILLWAYS. IT WAS FOUND THAT FOR SPECIFIC FLOW SYSTEMS THE FLUMES AND SPILLWAYS COULD BE RECALIBRATED FOR WATER-POLYMER FLOW BUT THAT IF A HYDRAULIC JUMP FORMED PART OF THE MEASURING SYSTEM THE JUMP WAS DISSIPATED AS FLOW INCREASED. %A< C991Q)
Descriptors: POLYMERS; ADDITIVES - DRAG REDUCING; OPEN CHANNELS; FLOW RATE; DRAG REDUCTION; HYDRAULIC JUMP; FLUMES; SPILLWAYS; MODEL TESTS; EXPERIMENTAL STUDIES; INJECTING POLYMER SOLUTIONS; TRAPEZOIDAL AND RECTANGULAR CHANNELS; INFLUENCE ON WATER LEVELS AND FLOW RATES; EFFECTS ON ENERGY DISSIPATION MEASURING FLUMES; SIDE CHANNEL SPILLWAYS; HYDRAULIC MODEL; DRAG REDUCING ADDITIVES
Section Heading Codes: C9

010859 CH (Civil Engineering Hydraulics Abstracts)
SHEAR FRONTS AND AN EXPERIMENTAL STRATIFIED SHEAR FLOW.
MCEWAN, A.; BAINES, P.G.
CSIRO, AUSTRALIA.
J. FLUID MECH., VOL. 63, PART 2, PP. 257-72. %APRIL 3, 1974<.,
Languages: English
THE THEORETICAL AND EXPERIMENTAL EVALUATION OF A LABORATORY DEVICE FOR CREATING A CONTROLLED SHEAR FLOW IN A CONTINUOUSLY STRATIFIED LIQUID IS DESCRIBED. THE SHEAR IS CREATED BY THE MOVEMENT OF THE END BARRIERS OF A RECTANGULAR CHANNEL. IF THESE BARRIERS ARE IMPULSIVELY SET INTO UNIFORM SHEAR MOTION, THIS MOTION PROPAGATES AWAY IN THE FORM OF A FRONT OF WIDTH O%H/N<%NT</SUP 1/3/< TRAVELLING WITH UNIFORM SPEED NH/N, WHERE N IS THE %CONSTANT< BUOYANCY FREQUENCY, T IS TIME, N IS THE VERTICAL MODAL NUMBER AND H IS THE CHANNEL DEPTH. THE SHEAR PRODUCED HAS ROUGHLY TWICE THE DURATION OF THAT ATTAINABLE USING A TILTING TUBE OF SIMILAR DIMENSIONS. SHEAR ENHANCEMENT IS POSSIBLE BY INTRODUCING A PROPERLY DESIGNED FLOW CONTRACTION. IF N%Z< IS VARIABLE, THE SHEAR PROFILE OBTAINED IS THAT APPROPRIATE TO THE LOWEST INTERNAL WAVE MODE OF INFINITE LENGTH. %A< C989P)
Descriptors: SHEAR FLOW; STRATIFIED FLOW; OPEN CHANNELS; FLUMES; SALINITY; VELOCITY PROFILES; EXPERIMENTAL STUDIES; LABORATORY DEVICE FOR CREATING CONTROLLED SHEAR FLOW; CONTINUOUSLY STRATIFIED LIQUID; MOVEMENT OF END BARRIER OF RECTANGULAR CHANNEL; PERSPEX SIDED TANK; PROPAGATION OF SHEAR FRONTS
Section Heading Codes: C9

010712 CH (Civil Engineering Hydraulics Abstracts)
HIGH POLYMER DRAG REDUCTION IN OPEN CHANNEL FLOW.
PETERSON, J.P. ; ZIELINSKI, P.B.; CASTRO, W.E.
HERCULES INC., U.S.A.-CLEMSON UNIV., U.S.A.
PROC. SYMP. ON DRAG REDUCTION IN POLYMER SOLUTIONS %ST. LOUIS<. %MAY, 1972<. AICLE SYMP. SERIES, VOL. 69, NO. 130, PP. 82-6. %1973<.,
Languages: English
TURBULENT DRAG REDUCTION RESULTING FROM THE ADDITION OF HIGH POLYMER ADDITIVES TO WATER WAS STUDIED IN A SMOOTH RECTANGULAR LABORATORY FLUME. BOTH SUBCRITICAL AND SUPERCRITICAL FLOWS WERE USED. CHARACTERISTICS OF DRAG REDUCTION IN OPEN CHANNEL FLOW ARE COMPARED TO PIPE FLOW. IT IS SHOWN THAT THE ONSET SHEAR STRESS FOR SEPARAN AP30 SOLUTIONS IS READILY OBTAINED FOR SUPERCRITICAL FLOW BUT IS NOT EADILY ATTAINED FOR SUBCRITICAL FLOW. THE CHANNEL FLOW RESULTS ARE INTERPRETED IN TERMS OF A VARIABLE VON KARMAN CONSTANT AND THE SIGNIFICANCE OF THIS APPROACH IS DISCUSSED. %A< C8311)
Descriptors: OPEN CHANNELS; CLOSED CONDUITS; DRAG REDUCTION; ADDITIVES - DRAG REDUCING; FLUMES; SUPERCRITICAL FLOW; EXPERIMENTAL STUDIES; TURBULENT DRAG REDUCTION; HIGH POLYMER ADDITIVES; SMOOTH RECTANGULAR LABORATORY FLUME; SUBCRITICAL AND SUPERCRITICAL FLOWS; CHARACTERISTICS OF DRAG REDUCTION IN OPEN CHANNEL FLOW COMPARED TO PIPE FLOW; INTERPRETATION IN TERMS OF VARIABLE VON KARMAN CONSTANT
Section Heading Codes: C9

010537 CH (Civil Engineering Hydraulics Abstracts)
EXPERIMENTAL INVESTIGATION OF HYDRAULIC TRANSIENTS IN RIVER-RESERVOIR SYSTEMS, PHASE III.
LARSON, E.C.; DE JONG, R.L.A.; MILLER, W.A. (JONG, R.L.A. DE);
TENNESSEE UNIV., U.S.A.
TENNESSEE WATER RESOURCES RES. CENTRE, REPORT 22, 45 PP. IND. 13 FIGS. %OCTOBER, 1971<. %PB-213-466<.,
Languages: English
A ONE-DIMENSIONAL SURGE WAS STUDIED IN A LABORATORY FLUME 1 FOOT WIDE AND 65 FEET LONG. THE WAVE WAS GENERATED BY RELEASING WATER FROM A HEAD TANK THROUGH A MECHANICALLY-OPERATED SLUICE GATE. THE TIMING OF THE SLUICE GATE OPERATION, ALONG WITH THE GATE CALIBRATION, ALLOWED A DESCRIPTION OF THE INITIAL WAVE TO BE FORMULATED. THE WAVE TRAVEL ALONG THE FLUME WAS TRACED IN TERMS OF THE MAXIMUM STAGE AND THE WAVE FRONT VELOCITY %RECORDED BY FIVE SWITCHES ALONG THE CHANNEL<. WAVES WERE DISCHARGED INTO DRY AND WET CHANNELS, USING TWO DIFFERENT BOTTOM SLOPES AND TWO TYPES OF BOTTOM ROUGHNESS ELEMENTS %WIRE MESH AND CORRUGATED PLATE< IN ADDITION TO THE NATURALLY SMOOTH PLEXIGLAS CHANNEL. THE PROBLEM OF MATHEMATICALLY MODELING SURGE MOTION, INCLUDING THE EXTREME SURGE DUE TO DAM RUPTURE, IS DISCUSSED. SOME OF THE RESULTS FROM MATHEMATICAL MODELS ARE COMPARED WITH EXPERIMENTAL VALUES OBTAINED IN THIS LABORATORY STUDY. THE EXPERIMENTAL RESULTS INDICATE THAT CHANNEL ROUGHNESS AND BOTTOM SLOPE HAVE A SIGNIFICANT EFFECT UPON THE VELOCITY OF THE ADVANCING WAVE FRONT AND UPON THE MAXIMUM SURGE HEIGHT. %A< C6400)
Descriptors: DAMS AND BARRAGES; RIVERS; RESERVOIRS; OPEN CHANNELS; FLUMES; SURGES; TURBULENCE; ROUGHNESS; VELOCITY MEASUREMENT; FLOOD PROTECTION; EXPERIMENTAL STUDIES; MATHEMATICAL MODELS; DAM BREAK PROBLEM; SURGE WAVES; HEAD TANK WATER RELEASED THROUGH SLUICE GATE; SLUICE GATE OPERATION TIME ; CALIBRATION; DRY CHANNELS; WET CHANNELS; BOTTOM SLOPE; BOTTOM ROUGHNESS; SMOOTH PLEXIGLAS CHANNEL; ROUGHNESS EFFECTS ON MAXIMUM SURGE HEIGHT; BORES; CURRENT STATE OF THE ART
Section Heading Codes: C8

010536 CH (Civil Engineering Hydraulics Abstracts)
EROSION RESISTANCE OF LOOSE MATERIALS ON WATER CHANNEL BEDS: PART III - LOAD CAPACITY OF RUBBLE REINFORCEMENT.
MULLER, G.; REIFERT, J.
WASSERWIRT - WASSERTECH., VOL. 23, NO. 8, PP. 279-83. %AUGUST, 1973<.,
Languages: GERMAN
RESULTS ARE GIVEN OF EXPERIMENTS CARRIED OUT IN THE GERMAN DEMOCRATIC REPUBLIC ON THE EROSION OF LOOSE RUBBLE BEDS WITH 12.5-25 MM, 35-80 MM AND 80-120 MM RUBBLE SIZES AND OF RUBBLE BEDS CONSOLIDATED WITH AN ASPHALT MASTIC. THE TEST CHANNEL WAS 2 M WIDE WITH A 14 M LONG CONCRETE TEST SECTION WITH A 1:40 SLOPE. BED WIDTH WAS KEPT CONSTANT AT 0.40 M BUT THE SIDE SLOPE WAS VARIED %1:3 AND 1:2<. A 5 M LONG RECESS WAS INCORPORATED 5 M FROM THE INLET END TO ACCOMMODATE THE RUBBLE, WHICH WAS SPRAYED WITH THREE DIFFERENT COLOURS OF DYE TO DENOTE THE LEFT AND RIGHT BANKS AND THE BED SO THAT THE ORIGIN OF DISPLACED STONES COULD BE IDENTIFIED. THE RESULTS OF THE INVESTIGATIONS SHOWED GOOD AGREEMENT WITH PREVIOUS THEORETICAL AND EXPERIMENTAL WORK. %P.A.< %FOR PARTS I AND II SEE CEHA ENTRIES: 4.637;, 4.638< C639L)
Descriptors: BEDS; OPEN CHANNELS; BEDS - ARMOURED; FLUMES; TRACERS - DYES; EROSION; EXPERIMENTAL STUDIES; EROSION OF LOOSE RUBBLE BEDS AND OF RUBBLE BEDS CONSOLIDATED WITH AN ASPHALT MASTIC; LOAD CAPACITY OF RUBBLE REINFORCEMENT
Section Heading Codes: C8

010371 CH (Civil Engineering Hydraulics Abstracts)
WAVES INDUCED BY NON-PERMANENT PADDLE MOVEMENTS.
MORAES, C.C.; RAMOS, F.S.; DE CARVALHO, M.M. (CARVALHO, M.M. DE).
NAT. CIVIL ENGNG. LAB., PORTUGAL.
PROC. 13TH COASTAL ENGNG. CONF. %VANCOUVER, CANADA<, VOL. 1, PP. 707-22. %JULY 10-14, 1972<..
Languages: English
IN A FLUME EQUIPPED WITH AN IRREGULAR WAVE MAKER THE MOTION OF THE PADDLE AND THE RESULTING WAVES MAY BE THOUGHT OF RESPECTIVELY AS INPUT AND OUTPUT OF A SYSTEM WHICH, IF LINEAR, IS FOR SOME PURPOSES DESCRIBED BY THE SO-CALLED GAIN FUNCTION. A THEORETICAL AND EXPERIMENTAL STUDY OF THIS FUNCTION IS CARRIED OUT MAINLY FOR CASE OF PADDLE MOVEMENTS THAT PRODUCE TRANSIENT SURFACE MOTION. %A< C459T)
Descriptors: WAVES; OPEN CHANNELS; FLUMES; WAVE GENERATORS; WAVE GENERATION; ANALYSIS - MATHEMATICAL; EXPERIMENTAL STUDIES; RANDOM WAVES; NON-PERMANENT PADDLE MOVEMENTS; IRREGULAR WAVE-MAKER; LINEAR SYSTEM; GAIN FUNCTION; TRANSIENT SURFACE MOTION; KENNARDS SOLUTION
Section Heading Codes: C9

010181 CH (Civil Engineering Hydraulics Abstracts)
INCIPIENT MOTION AND SEDIMENT TRANSPORT.
YANG, C.T.
ILLINOIS UNIV., U.S.A.
J. HYDRAUL. DIV. ASCE, VOL. 99, NO. HY10, PP. 1679-1704, PAPER 10067. %OCTOBER, 1973<..
Languages: English
A REVIEW OF EXISTING LITERATURE REVEALS SOME DISADVANTAGES OF USING SHIELDS DIAGRAM AS THE CRITERION FOR INCIPIENT MOTION OF SEDIMENT PARTICLES ON AN ALLUVIAL BED. A NEW CRITERION BASED ON AVERAGE FLOW VELOCITY, FALL VELOCITY, AND SHEAR VELOCITY REYNOLDS NUMBER IS PROPOSED HEREIN WITH THE SUPPORTING DATA COLLECTED BY DIFFERENT INVESTIGATORS. THIS NEW CRITERION IS USED TO CALCULATE THE DIMENSIONLESS CRITICAL UNIT STREAM POWER IN A DIMENSIONLESS UNIT STREAM POWER EQUATION FOR SEDIMENT TRANSPORT. THE DIMENSIONLESS UNIT STREAM POWER IS THE RATIO OF THE TIME RATE OF POTENTIAL ENERGY EXPENDITURE PER UNIT WEIGHT OF WATER AND THE TERMINAL FALL VELOCITY OF THE SEDIMENT. MORE THAN 1,000 SETS OF DATA FROM BOTH LABORATORY FLUMES AND NATURAL STREAMS PUBLISHED BY DIFFERENT AUTHORS ARE USED TO SUPPORT THIS DIMENSIONLESS EQUATION FOR SEDIMENT TRANSPORT. %A< C260V)
Descriptors: OPEN CHANNELS; RIVERS; SEDIMENT TRANSPORT; SAND; SEDIMENT CONCENTRATION; ANALYSIS - MATHEMATICAL; EXPERIMENTAL STUDIES; FLUMES; NON-COHESIVE SAND; INCIPIENT MOTION; DISADVANTAGES OF USING SHIELDS DIAGRAM AS THE CRITERION FOR INCIPIENT MOTION OF SEDIMENT PARTICLES; ALLUVIAL BED; NEW CRITERION BASED ON AVERAGE FLOW VELOCITY, FALL VELOCITY AND SHEAR VELOCITY REYNOLDS NUMBER; CALCULATION OF UNIT STREAM POWER
Section Heading Codes: C8

010080 CH (Civil Engineering Hydraulics Abstracts)
OPERATION AND MAINTENANCE OF IRRIGATION AND DRAINAGE SYSTEMS; SECTION III - OPERATION.
TAYLOR, R.L.
J. IRRIG. DRAIN. DIV. PROC. ASCE, VOL. 99, IR3, PP. 237-338, PAPER 10014. %SEPTEMBER, 1973<..
Languages: English
FOR THE PURPOSE OF THIS MANUAL, THE SUBJECT OF OPERATION IS TREATED BY A DISCUSSION OF THE FACTORS ESSENTIAL TO GOOD WATER MANAGEMENT ON AN IRRIGATION AND DRAINAGE SYSTEM. THE STAFF NECESSARY TO ACCOMPLISH THE WORK AND ITS RESPONSIBILITY; OPERATING PRACTICES AND PROCEDURES FOR THE HANDLING, MOVEMENT, DISPOSAL OR REUSE OF WATER; AND THE VALUE OF GOOD RECORDS AND COMMUNICATIONS IN THE OPERATIONS. THE IRRIGATION SYSTEM REFERRED TO IN THIS MANUAL IS THAT GENERALLY REFERRING TO MOVEMENT OF WATER FROM ITS SOURCE TO THE USER, AND IS THAT SYSTEM PREVALENT IN ARID AND SEMI-ARID AREAS, AS WELL AS IN HUMID AREAS. THE USE OF THE TERM DRAINAGE SYSTEM REFERS TO SYSTEMS IN WHICH REMOVAL OF EXCESS SURFACE WATER SEASONALLY IS NORMALLY A NECESSITY. %A< C61P)
Descriptors: IRRIGATION; WATER SUPPLY; WATERLOGGING; SEEPAGE; EROSION; DRAINAGE; RESERVOIRS; WATER QUALITY; CONSERVATION; MEASUREMENT TECHNIQUES; AGRICULTURE; LEGAL ASPECTS; WEIRS; VENTURI FLUMES; CANALS; OPEN CHANNELS; CLOSED CONDUITS; U.S.A.; IRRIGATION AND DRAINAGE SYSTEMS; OPERATION; MAINTENANCE; WATER REUSE; MAINTENANCE MANPOWER REQUIRE; MULTIPLE USE PROJECTS; ESTABLISHMENT OF PRIORITIES; WATER MEASUREMENT; SELECTION OF MEASURING DEVICES; WEIRS; SUBMERGED ORIFICES; PROPELLER METERS; DILUTION METHOD; WATER USE RECORDS; PLANNING AND COORDINATING WATER USE; TYPES OF IRRIGATION SYSTEM; AUTOMATION AND REMOTE CONTROL
Section Heading Codes: C21

010062 CH (Civil Engineering Hydraulics Abstracts)
BENEFIT OF HYDRAULIC MODELS TOLD.
SIMMONS, H.B.
U.S. ARMY ENGR. WATERWAYS EXP. STN.
WORLD DREDGING AND MAR. CONSTR., VOL. 9, NO. 10, PP. 19-20. %AUGUST, 1973<..
Languages: English
C130E)
Descriptors: ESTUARIES/INLETS%COAST<; CURRENTS; TIDAL FLOW; SALINITY; POLLUTION; SEDIMENTATION; SCOUR; ECONOMICS; FLUMES; OPEN CHANNELS; MODEL TESTS; EXPERIMENTAL STUDIES; THREE DIMENSIONAL VARIABLE FLOW; MODEL VERIFICATION; EXAMPLES CITED; COST BENEFIT ASSESSMENT; HYDRAULIC MODEL TESTS
Section Heading Codes: C17

010039 CH (Civil Engineering Hydraulics Abstracts)
CHUTE SPILLWAYS WITH COLLECTING FLUME AT RESERVOIR DAMS.
SZAKATSITS, G.
VIZ. KOZL. 3. PP. 342-50. %1973<.,
Languages: HUNGARIAN.
C104M)
Descriptors: FLUMES; DAMS AND BARRAGES; SPILLWAYS; RESERVOIRS; OPEN CHANNELS; ANALYSIS-MATHEMATICAL; EXPERIMENTAL STUDIES; ENERGY DISSIPATION; COLLECTING FLUME FLOW; PRISMATIC CANALS; COLLECTING FLUME DIMENSIONS; WEIR DESIGN; TROPEZOIDAL FLUMES
Section Heading Codes: C11

010027 CH (Civil Engineering Hydraulics Abstracts)
LABORATORY STUDIES ON TRANSVERSE MIXING IN RIVERS.
HOLLEY, E.R. ; ABRAHAM, G.
ILLINOIS UNIV. U.S.A.-DELFT HYDRAUL. LAB., THE NETHERLANDS.
J. HYDRAUL. RES. VOL. 11, NO. 3, PP. 219-53. %1973<.,
Languages: English
THIS PAPER DESCRIBES SOME LABORATORY STUDIES WHICH WERE MADE WITH NON-BUOYANT TRACERS TO INVESTIGATE THE MIXING UNDER SIMULATED STREAM CONDITIONS AND THE POSSIBLE SIGNIFICANCE OF MECHANISMS WHICH ARE IN ADDITION TO BEDSHEAR TURBULENCE AND WHICH CONTRIBUTE TO THE TRANSVERSE MIXING. EXPERIMENTS WERE CONDUCTED FOR %I< A STRAIGHT RECTANGULAR FLUME WITH SIMULATED GROINS, AND %II< AN UNDISTORTED, FIXED BED RIVER MODEL WITH GROINS. IT IS ANTICIPATED THAT PROTOTYPE EXPERIMENTS. SOME OF WHICH CORRESPOND TO ITEM II, WILL BE REPORTED AT A LATER DATE. %A< C89H)
Descriptors: MIXING; RIVERS; OPEN CHANNELS; FLUMES; GROINS; BEDS; SHEAR FLOW; TURBULENCE; DIFFUSION; TRACERS-DYES; MODEL TESTS; ANALYSIS-MATHEMATICAL; HOLLAND; TRANSVERSE MIXING; STRAIGHT RECTANGULAR FLUME; SIMULATED GROINS; UNDISTORTED FIXED RIVER BED MODEL WITH GROINS; DEPTH AND WIDTH VARIATIONS; SIDE ROUGHNESS; BENDS; HELICAL MOTION; NON BUOYANT TRACER; TRANSVERSE DISPERSION COEFFICIENT; RHODAMINE-B SOLUTION; FLUOROMETER; IJSSEL RIVER
Section Heading Codes: C10