COPY

FORM 2: Application for flood control permit
(type or print)



Mail to:
Water Rights Division
Joe Foss Building
523 E Capitol
Pierre SD 57501-3181
605 773-3352

No. FC-27 Hydrologic Unit 10160006
Basin James River
Newspaper The Daily Plainsman PO Box 1278 Huron 57350-1278
605 352-6401 (office use only)

APPLICATION FOR A FLOOD CONTROL PERMIT WITHIN THE STATE OF SOUTH DAKOTA

1. Name of Applicant CITY OF HURON

Address PO BOX 1369
(Street, RR or Box)

HURON (City) SD (State) 57350 (Zip Code) Phone No. (605) 352-6791

2. Name of watercourse STONY RUN CREEK SW1/4 E1/2

3. Location of project (legal description) ~~A PORTION OF~~ SECTION 2 AND SECTION 11, ALL IN TOWNSHIP 110 N, RANGE 62 W OF THE 5TH P.M., BEADLE COUNTY, SOUTH DAKOTA

4. County or counties where project is located BEADLE

5. Give a brief description of the proposed project including the type of project (Dam, Dikes, Channel Modifications, etc.) and purpose for the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed.)

The proposed project intends to modify the existing channel. The modifications include constructing a channel with a constant geometric shape, installing new culverts under 9th Street and constructing a detention pond. A summary of the project and results of the HEC-1 and HEC-2 analysis are enclosed with the HEC-1 and HEC-2 analysis.

Attachment: Attach map (see instruction)

STATE OF SOUTH DAKOTA)
County of BEADLE) SS

I, MARY PEARSON, MAYOR the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed Mary A Pearson

Subscribed and sworn to before me this 5th day of February 1999



Carol A Tschetter
Notary Public

CITY OF HURON

BEADLE COUNTY

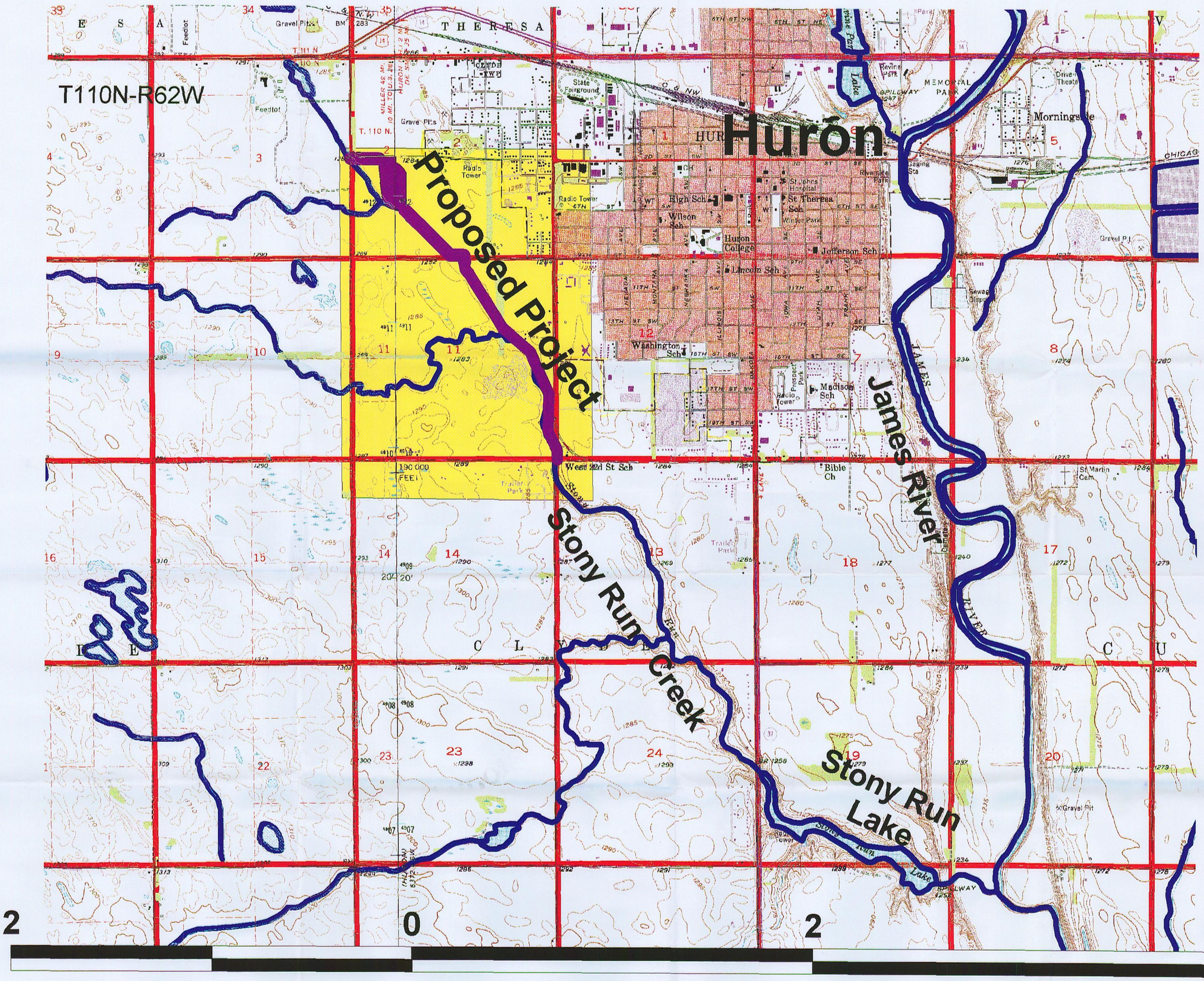
SOUTH DAKOTA

T. 110 N. T. 111 N.

R. 62 W. R. 61 W.

SCALE 0 500 1000

Application No. FC-27



N
W E
S

south Dakota GIS

South Dakota

South Dakota Department of Environment and Natural Resources
Protecting South Dakota's Tomorrow ... Today

M. Rath
April 26, 1999

SOUTH DAKOTA
FLOOD CONTROL PERMIT NO. FC-27

Date of first receipt of application February 9, 1999.
Date of return to applicant for corrections, amendments or changes February 10, 1999.
Date of receipt of corrected application April 7, 1999.

The Water Management Board approved Flood Control Permit No. FC-27 on May 5, 1999 for the City of Huron, PO Box 1369, Huron SD 57350 authorizing the construction of the flood control system subject to the following limitations, conditions and qualifications:

1. Flood Control Permit No. FC-27 authorizes modification of the existing channel of Stony Run Creek to facilitate the movement of water. The modifications are to include reshaping of the channel, improving roadway crossings and the construction of a detention pond. The project will be located on the west side of the city along Stony Run Creek in portions of W ½ Section 2, E ½ Section 3, Section 11 and the W ½ SW ¼ Section 12; all in T110N-R62W.

2. The project will reduce the damage from flooding, especially in the upper area of the project.

3. The project may not increase the likelihood or severity of flood damages in areas other than the project area nor may it endanger human life or property, except for the potential impacts on Stony Run Lake Dam.

4. The date from which applicant may claim right is February 9, 1999.

QUALIFICATION

Flood Control Permit No. FC-27 is subject to the City of Huron entering into a joint agreement with South Dakota School and Public Lands prior to construction of flood control works to address potential impacts to Stony Run Lake Dam.

WATER MANAGEMENT BOARD

By: Garland Erbele

JUN 13 2000
date

Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

Exhibits Introduced into Evidence

in the Matter of the Flood Control Permit No. FC-27, City of Huron

Exhibit No.	Description
DENR-1	DENR file on Flood Control Permit Application No. FC-27, City of Huron
DENR-2	Map of Project Area

STATE OF SOUTH DAKOTA) IN CIRCUIT COURT
: SS
COUNTY OF BEADLE) THIRD JUDICIAL COURT

(99-218)

IN THE MATTER OF THE APPLICATION)
FOR FLOOD CONTROL PERMIT NO. FC-27) CHRONOLOGICAL
CITY OF HURON) INDEX

Entry	Date	Document	Pages
1.	September 30, 1998	Public Notice of the US Army Corps of Engineers	1-15
2.	October 15, 1998	Letter to Ralph Borkowski, City of Huron from John Hatch	16
3.	October 19, 1998	Letter to Steven E Naylor, US Army Corps of Engineers from Tim Olson	17-20
4.	October 28, 1998	Letter to Steven E Naylor, US Army Corps of Engineers from Pete Gober	21-22
5.	November 6, 1998	Letter to Steven E Naylor, US Army Corp of Engineers from Tim Olson	23-24
6.	February 9, 1999	Flood Permit Application Stony Run Creek Improvements (bound copy, attached separately)	25
7.	February 9, 1999	Flood Permit Application (copy of form 2)	26
8.	February 10, 1999	Letter to Mary A Pearson, Mayor from Karen Schlaak	27
9.	February 12, 1999	Letter to Mike Wever, Huron Engineer from Nick E Hoffman (enclosures inserted in application)	28
10.	February 26, 1999	Letter to Mark Rath from Nick E Hoffman including HEC-1 and HEC-2 analysis (bound copy, attached separately)	29

Entry	Date	Document	Pages
11.	March 17, 1999	Report on Flood Control Permit Application No. FC-27	30-32
12.	March 17, 1999	Recommendation of Chief Engineer for Flood Control Application No. FC-27, City of Huron	33
13.	March 22, 1999	Letter to Mike Wever, Engineer from Harlan Quenzer (w/ enclosure)	34-38
14.	March 22, 1999	Letter to Curt Johnson, Commissioner of School and Public Lands from Mark Rath	39
15.	April 2, 1999	Letter to City of Huron regarding publishing the Notice of Hearing	40
16.	April 2, 1999	Letter to The Plainsman regarding publishing the Notice of Hearing (w/ copy of the notice)	41-42
17.	April 6, 1999	Letter to Rollie Sanderson from Eric Gronlund	43
18.	April 7, 1999	Receipt for payment of application fee	44
19.	April 22,1999	Proof of Publication of Notice of Hearing from the Plainsman	45
20.	April 20, 1999	Petition to Intervene from Rollie Sanderson	46
21.	May 5, 1999	Sanderson map used during May 5, 1999 hearing	47
22.	May 11, 1999	Notice of Preparation of Findings of Fact, Conclusions of Law and Final Decision (w/certificate of service)	48-52
23.	June 10, 1999	Memorandum from John P Guhin on proposed Findings of Fact, Conclusions of Law and Final Decision	53
24.	June 10, 1999	Proposed Findings in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (with/certificate of service)	54-59
25.	June 25, 1999	DENR Response to Findings of Fact, Conclusions of Law and Final Decision in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (w/certificate of service)	60-63

Entry	Date	Document	Pages
26.	June 29, 1999	Letter from Dedrich R Koch submitting Petitioner's Objection to Proposed Findings	64
27.	June 29, 1999	Petitioner's Objection to Findings of Fact, Conclusions of Law and Final Decision	65-66
28.	June 29, 1999	Petitioner's Objection and Proposed Findings of Fact, Conclusions of Law and Final Decision (w/certificate of service)	67-70
29.	July 6, 1999	Joint Powers Agreement between City of Huron and South Dakota Office of School and Public Lands	71-73
30.	July 7, 1999	Board Attorney's Response to Petitioner's Objection and Proposed Findings of Fact, Conclusions of Law and Final Decision	74-76
31.	July 12, 1999	Findings of Fact, Conclusions of Law and Final Decision in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (signed)	77-80
32.	July 19, 1999	Notice from John Hatch transmitting adopted Findings of Fact, Conclusions of Law and Final Decision (w/certificate of service)	81-83
33.	August 19, 1999	Letter from Dedrich R Koch transmitting Notice of Appeal (w/certificate of service)	84-85

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	: SS	
COUNTY OF BEADLE	)	THIRD JUDICIAL COURT
		(99-218)
IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27 CITY OF HURON	)))	ALPHABETICAL INDEX

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PUBLIC NOTICE

US Army Corps of Engineers

Omaha District



APPLICANT: CITY OF HURON
APPLICATION NO: 199830157
WATERWAY: STONY RUN CREEK

ISSUE DATE: SEPTEMBER 28, 1998
EXPIRATION DATE: OCTOBER 19, 1998

Regulatory Office, 28563 Powerhouse Rd, Room 120, Pierre, SD 57501

21-DAY NOTICE

JOINT NOTICE OF PERMIT PENDING

US ARMY CORPS OF ENGINEERS
AND
SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

The application of the City of Huron, PO Box 1369, Huron, South Dakota 57350, for approval of plans and issuance of a permit under authority of the Secretary of the Army is being considered by the District Engineer, US Army Engineer District, Omaha, Nebraska.

The applicant requests authorization to realign, clean out and widen approximately 10,500 feet of Stony Run Creek with associated modification of drainage structures, excavation within wetlands, installation of erosion control and construction of wetland mitigation. The project is located within the city limits of Huron in Section 2 and the east 1/2 of Section 11, Township 110 North, Range 62 West, Beadle County, South Dakota.

The proposed project will consist of regrading and realignment of an existing natural channel of Stony Run Creek from 3rd street to 22nd street. The proposed channel will be constructed with varying bottom widths ranging from 75 feet wide at the north end to 200 feet wide at the south end, with 4:1 sideslopes and an average of two feet deep. The channel invert will be blended into the existing channel at both ends, with installation of riprap on the sideslopes at the downstream transition to the existing channel. A new channel of similar configuration with a 50 feet wide bottom width is to extend approximately 2,600 feet north into the West Industrial Park area. Modifications to the existing drainage structures at existing road crossings with the channel will be required. The proposed construction intercepts various isolated wetlands. In most cases, at the intersection of these wetlands with the proposed channel, an isolation berm approximately 0.5 feet high with a five feet wide top will be constructed. In addition, the applicant is proposing to incorporate construction of a detention pond approximately 24 acres in size and 1.5 feet deeper than the channel. The pond would be constructed as an integral part of the proposed channel, would serve as mitigation for wetland impacts and is to be located immediately south of 3rd street.

The purpose of the project is to provide additional and improved storm water drainage for current and planned developments for the City of Huron.

The South Dakota Department of Environment and Natural Resources, Division of Environmental Regulation, 523 East Capitol Avenue, Pierre, South Dakota 57501-3181, will review the proposed project for state certification in accordance with the provisions of Section 401 of the Clean Water Act. The certification, if issued, will express the State's opinion that the operations undertaken by the applicant will not result in a violation of applicable water quality standards. The South Dakota Department of Environment and Natural Resources hereby incorporates this public notice as its own public notice and procedures by reference (ARSD 74:03:02).

Omaha District will comply with the National Historic Preservation Act of 1966 and 36 CFR 800. We have checked the National Register of Historic Places and "its current supplements", and no property listed in the Register or proposed for listing is located in the permit area. This is the extent of our knowledge about historic properties in the permit area at this time. However, we will evaluate input by the State Historic Preservation Officer and the public in response to this public notice and we may conduct, or require, a reconnaissance survey of the permit area or check for unknown historic properties, if warranted.

In compliance with the Endangered Species Act, our preliminary review indicates that the proposed activity will not affect species designated as threatened or endangered pursuant to the Endangered Species Act or their critical habitat.

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the activity will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production, and, in general the needs and welfare of the people. In addition, the evaluation of the impacts of the project on public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act (40 CFR Part 230).

2

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reason for holding a public hearing. The request must be submitted to the US Army Corps of Engineers, South Dakota Regulatory Office, 28563 Powerhouse Road, Room 120, Pierre, South Dakota 57501.

Any interested party (particularly officials of any town, city, county, state, Federal agency, or local association whose interests may be affected by the proposed work) is invited to submit to this office, written facts, arguments, or objections on or before October 19, 1998. Any agency or individual having an objection to the proposed work should specifically identify it as an objection with clear and specific reasons. Comments, both favorable and unfavorable, will be accepted, made a part of the record and will receive full consideration in subsequent actions on this permit application. All replies to the public notice should be addressed to the address listed in the previous paragraph. Mr. James Oehlerking, telephone number (605) 224-8531, may be contacted for additional information.

Comments received after the close of the business day on the expiration date of this public notice will not be considered.

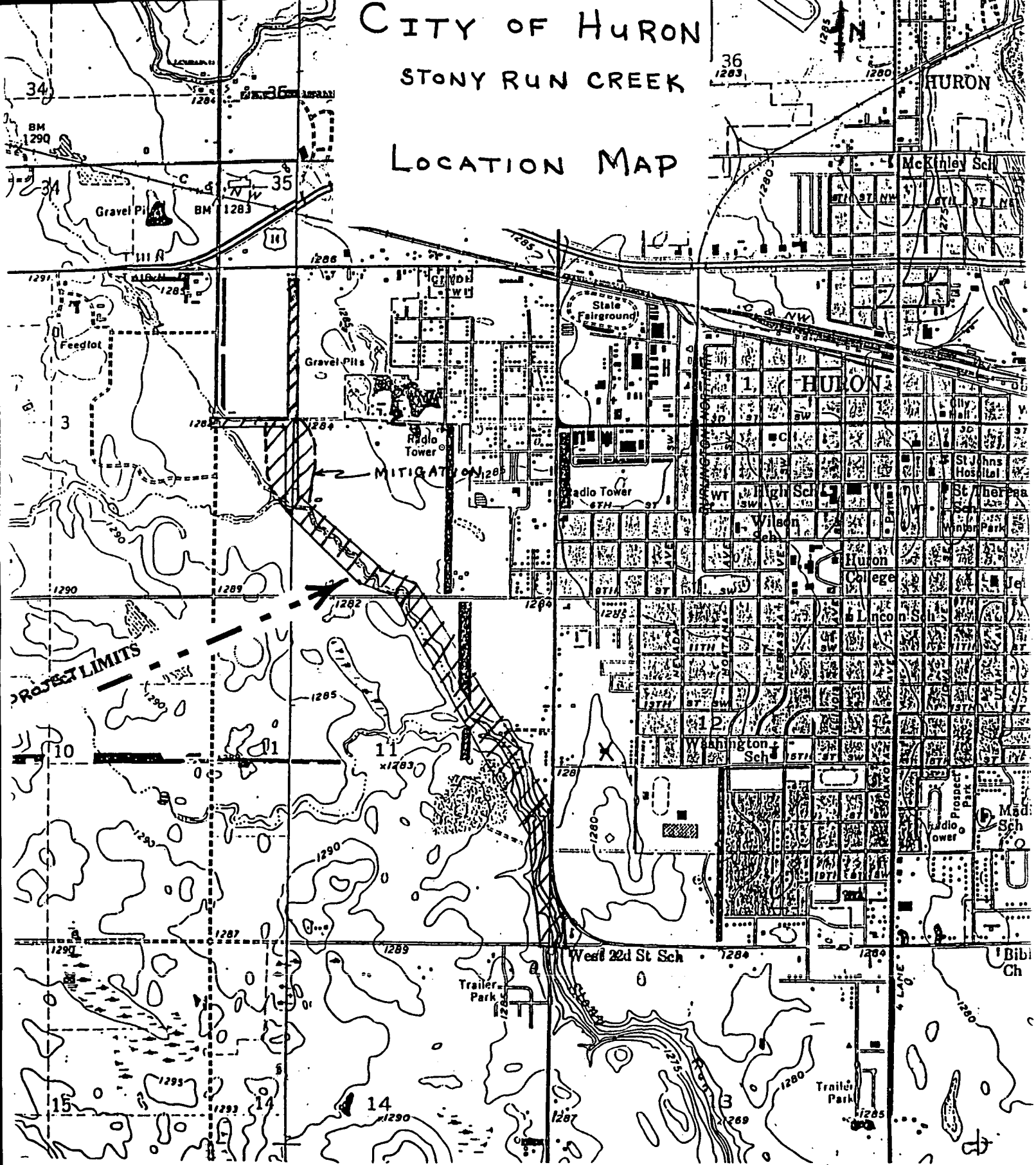
This project, if authorized, will be under the provisions of Section 404 of the Clean Water Act.

Drawings 1 through 12 of 12 showing the location and extent of the work are attached to this notice.

CITY OF HURON

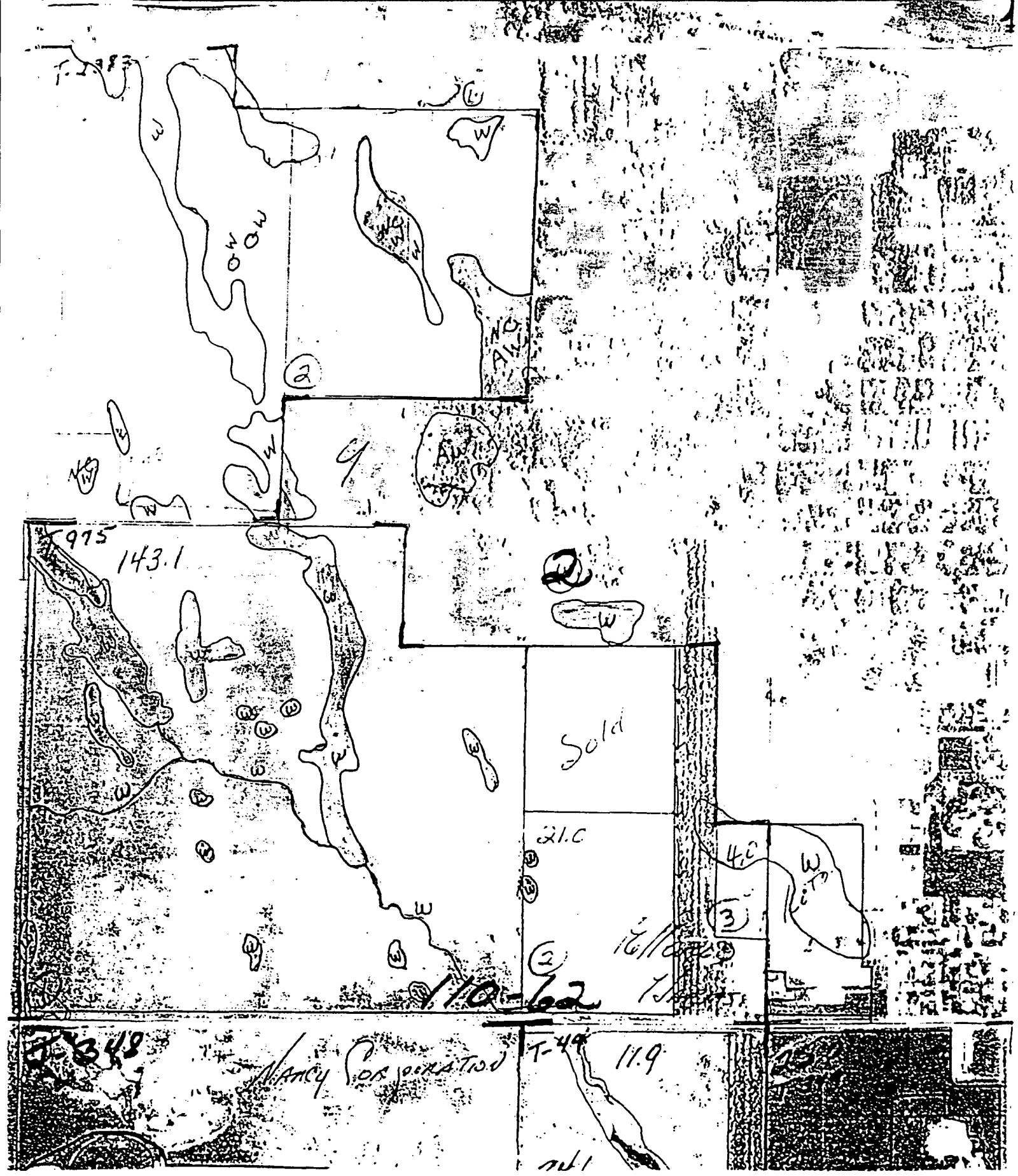
STONY RUN CREEK

LOCATION MAP



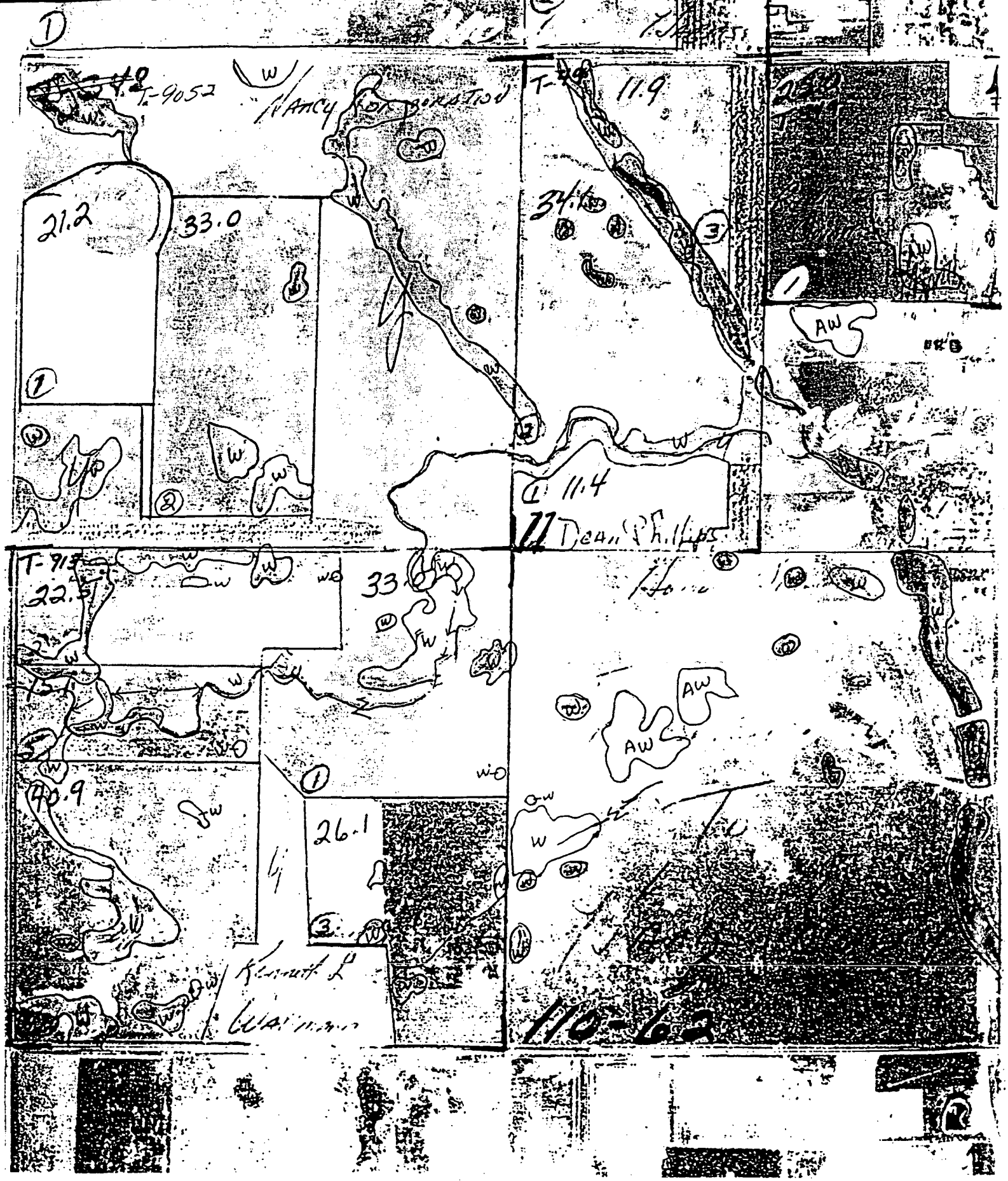
PURPOSE: STORM WATER CHANNEL
DATUM MSL
ADJACENT PROPERTY OWNERS:
1 CITY OF HURON
2 GREATER HURON DEVELOPMENT CORP.

IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE **STATE** SD
APPLICATION BY CITY OF HURON
SHEET 1 **OF** 12 **DATE** 9-28-98



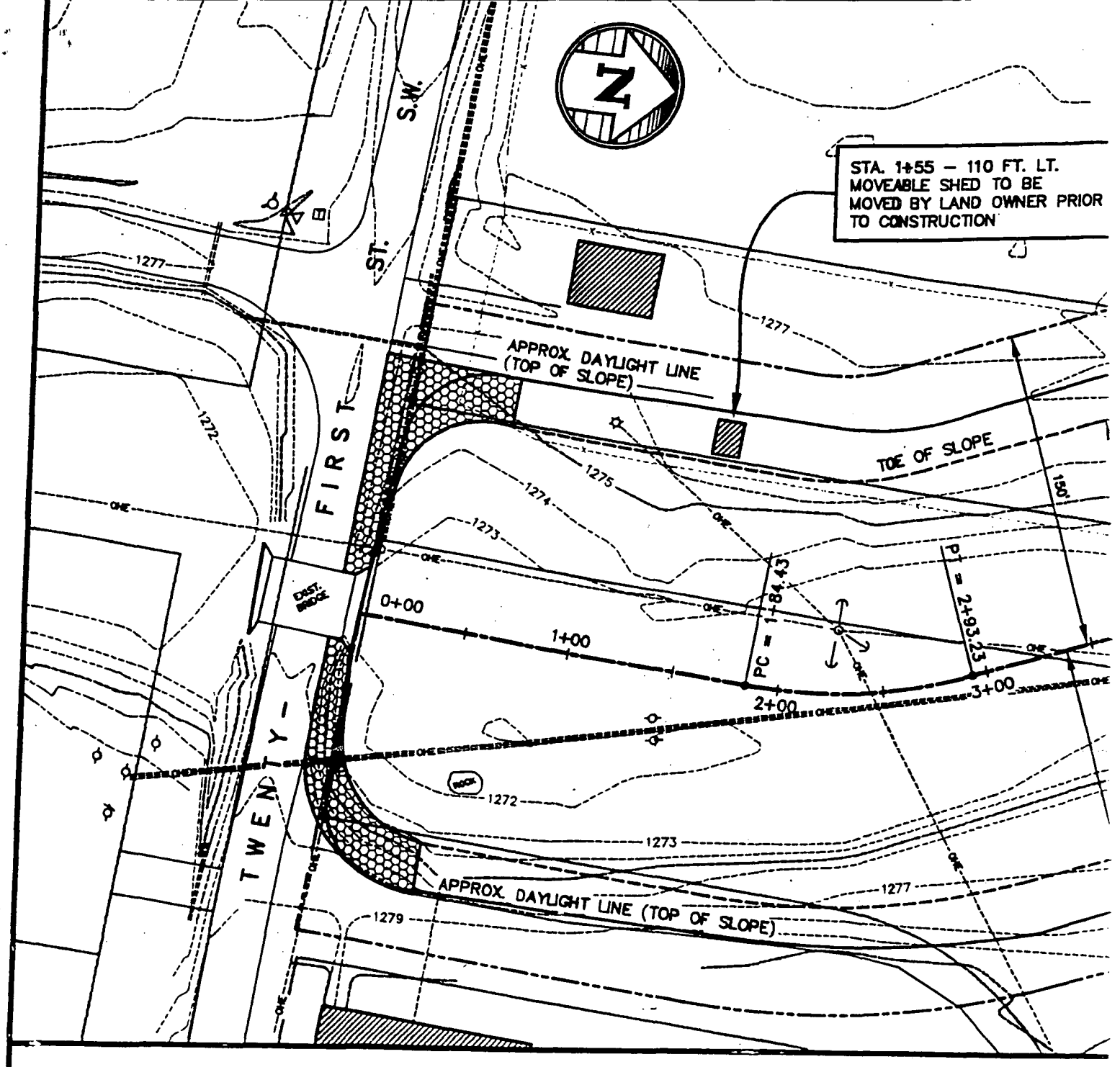
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IN SIONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE **STATE** SD
APPLICATION BY CITY OF HURON
SHEET 2 **OF** 12 **DATE** 9-28-98



PURPOSE: STORM WATER CHANNEL
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IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE **STATE** SD
APPLICATION BY CITY OF HURON
SHEET 3 **OF** 12 **DATE** 9-28-98



THE PROPOSED DITCH IS TO DAYLIGHT AT STATION 0+00 AT HEADWALL OF EXISTING BRIDGE.

STA. 0+00 TO STA. 0+50 CONTRACTOR IS TO EXCAVATE, SHAPE AND GRADE SIDE SLOPES

STA. 0+00 TO STA. 0+50 CONTRACTOR IS TO PLACE 8" THICK X 680 SQUARE YARDS RIP RAP ON SIDE SLOPES.

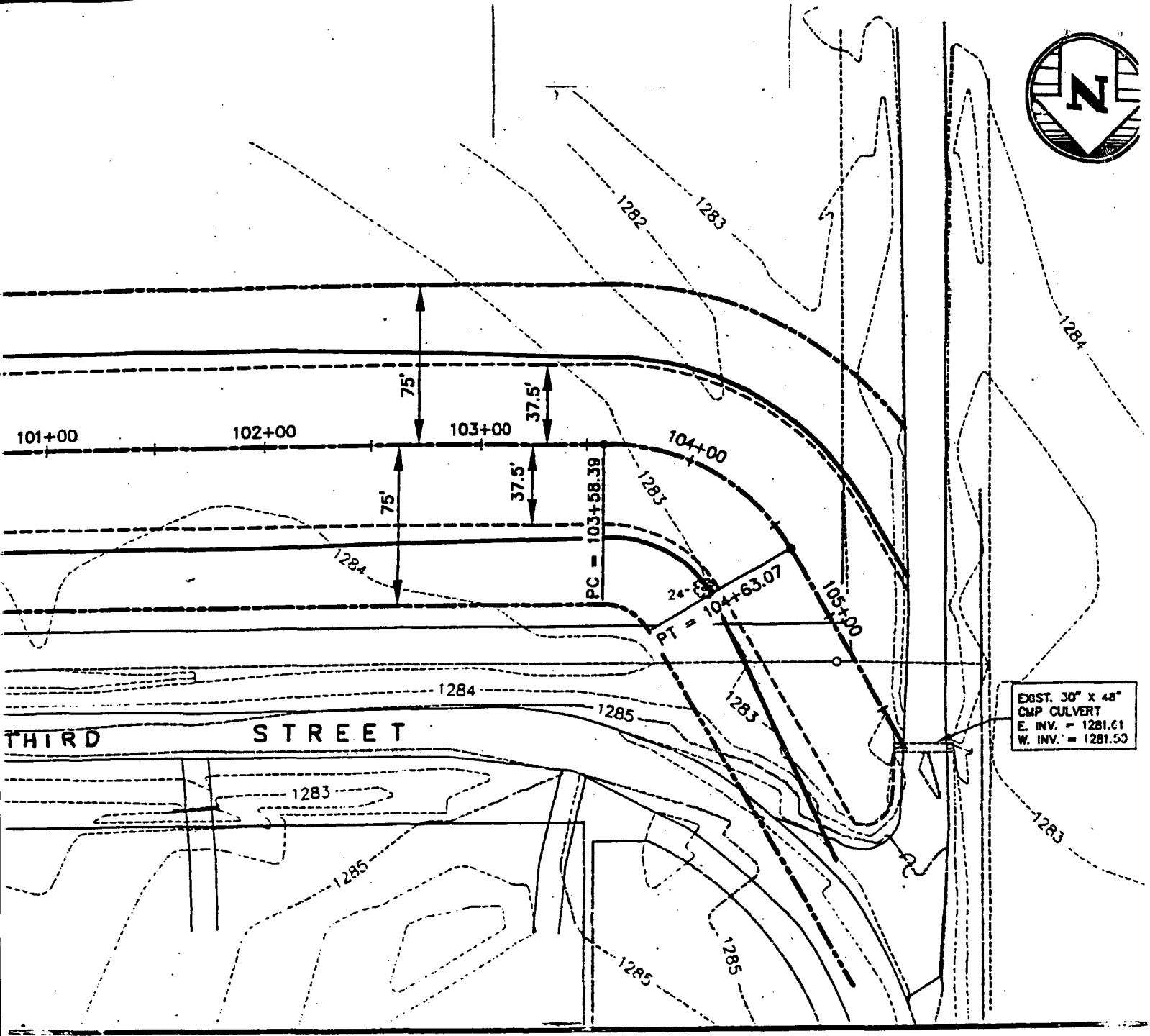
POWER POLES LOCATED AT STA. 1+50 – 30' RIGHT SHALL REMAIN IN PLACE.

PLAN VIEW

Begin Project

PURPOSE: STORM WATER CHANNEL
DATUM MSL
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IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE **STATE** SD
APPLICATION BY CITY OF HURON
SHEET 4 **OF** 12 **DATE** 9-28-98

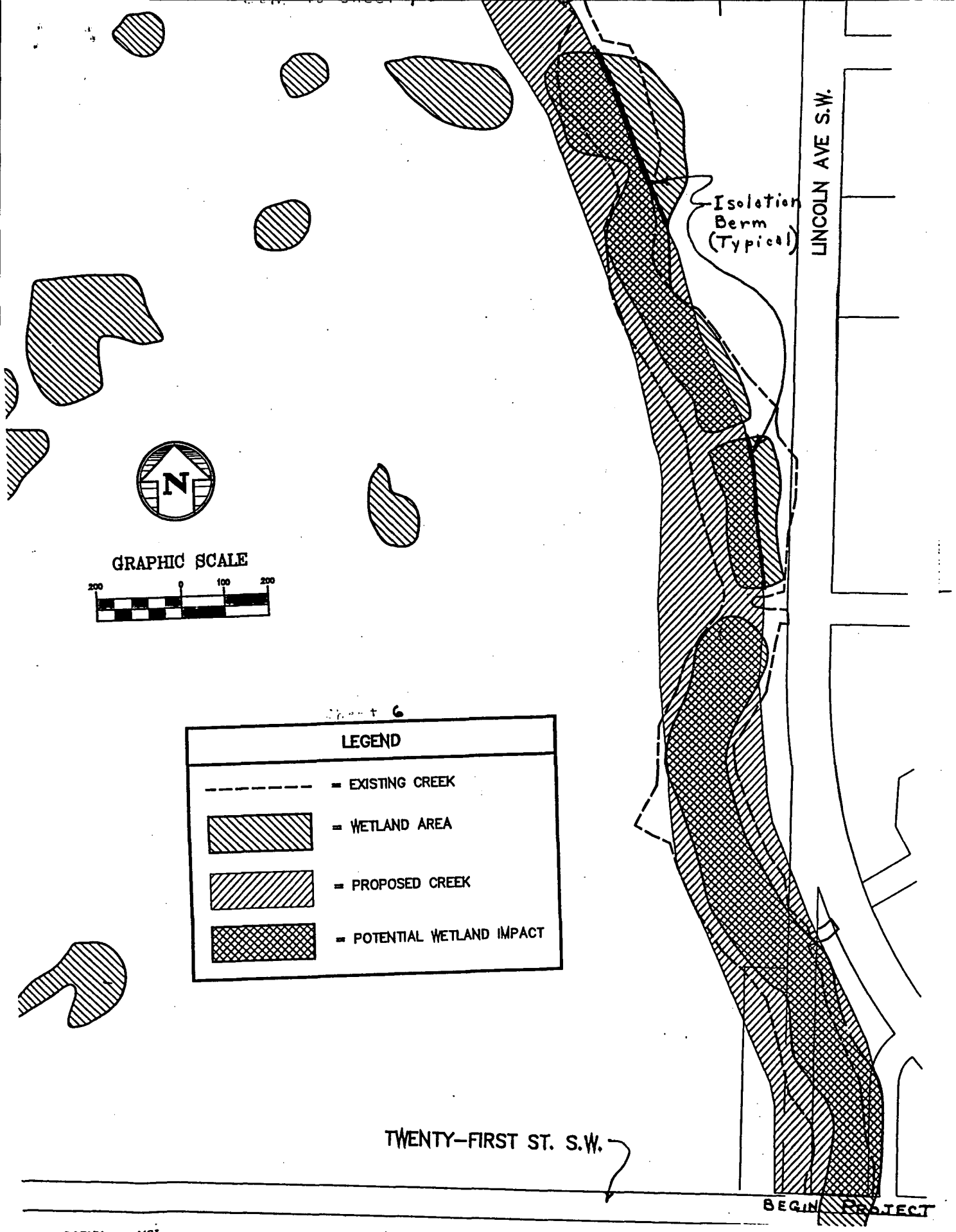


PLAN VIEW

End of Project

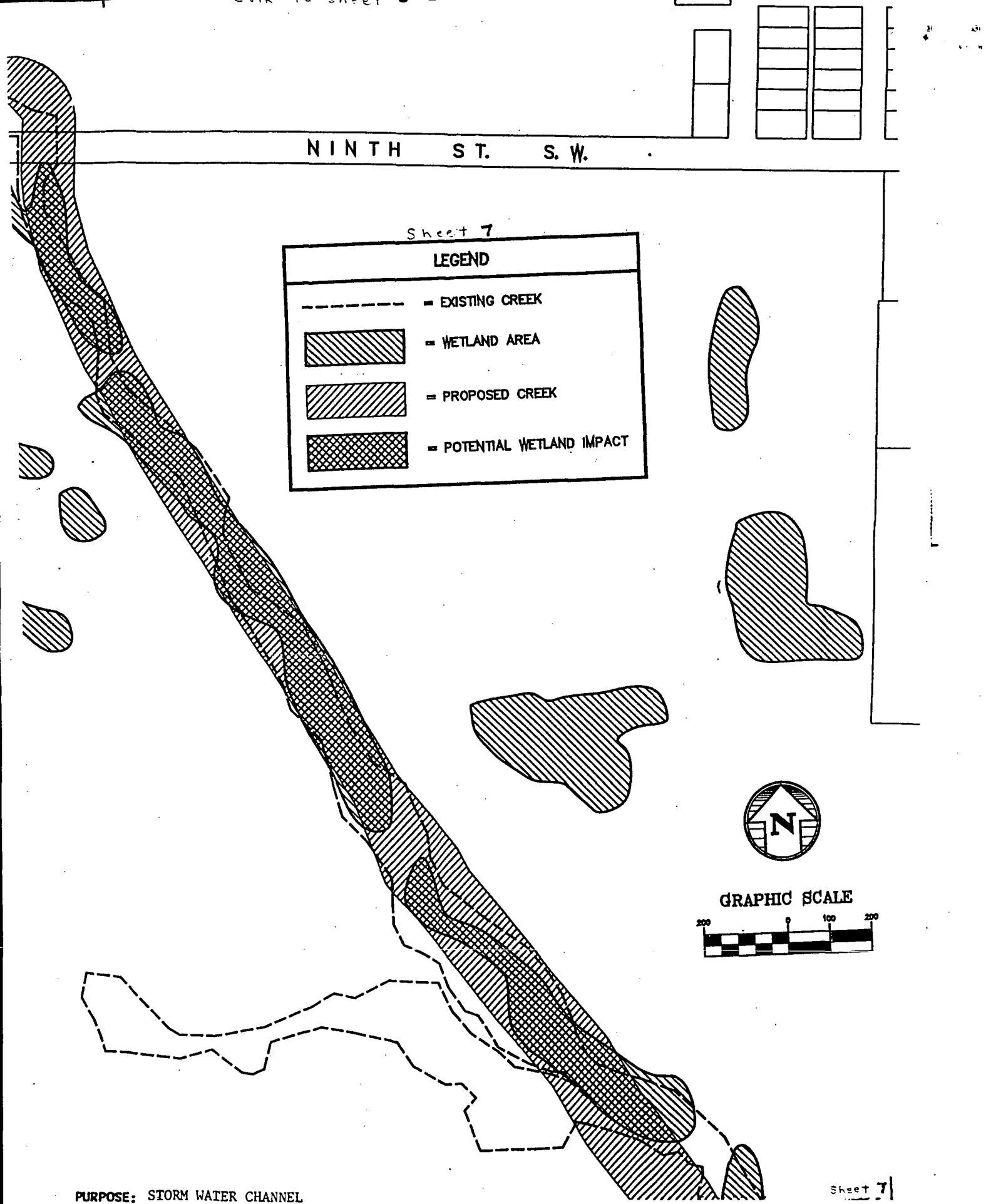
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IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
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SHEET 5 **OF** 12 **DATE** 9-28-98



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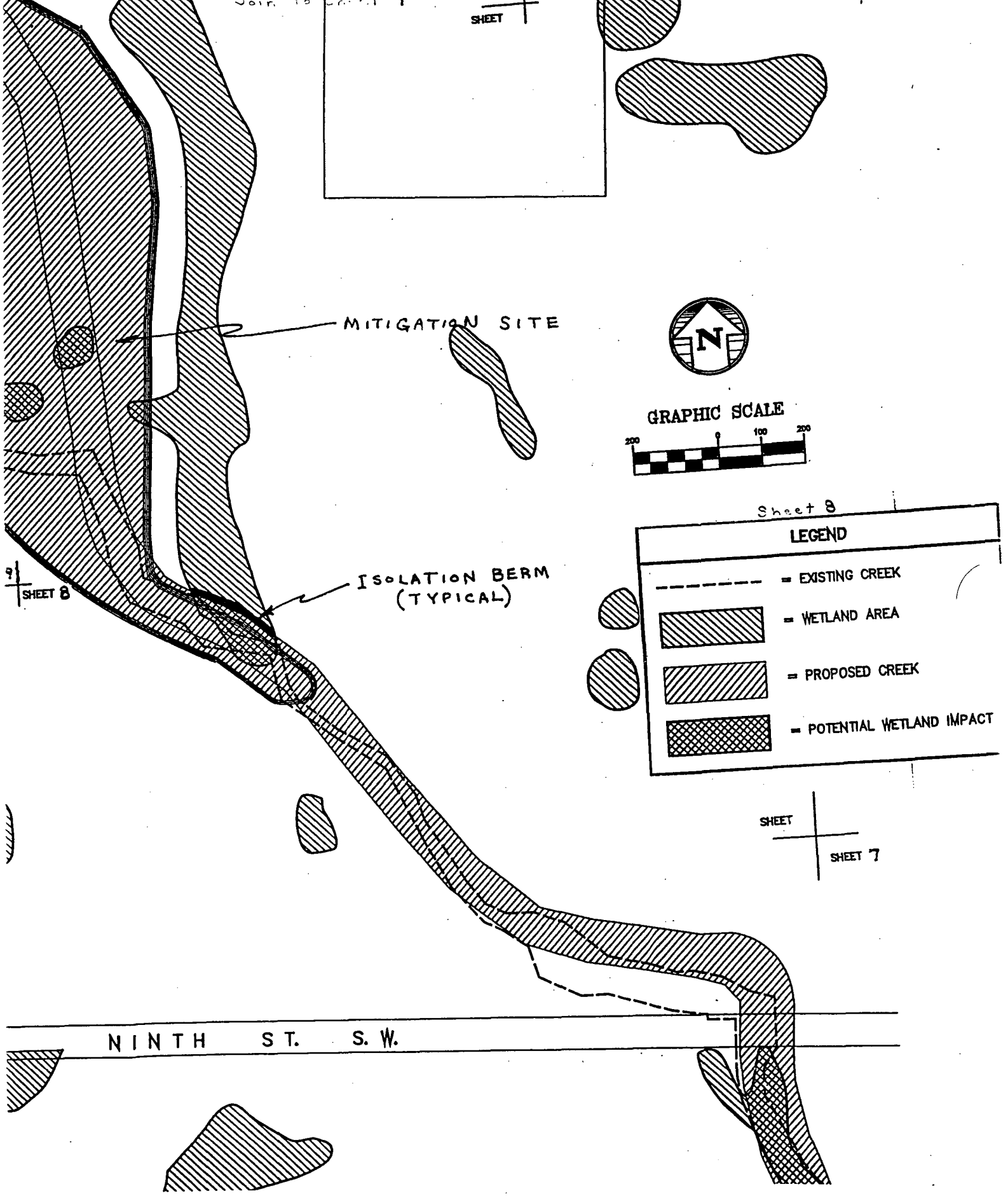
IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE STATE SD
APPLICATION BY CITY OF HURON
SHEET 6 OF 12 DATE 9-28-95



Sheet 7

PURPOSE: STORM WATER CHANNEL
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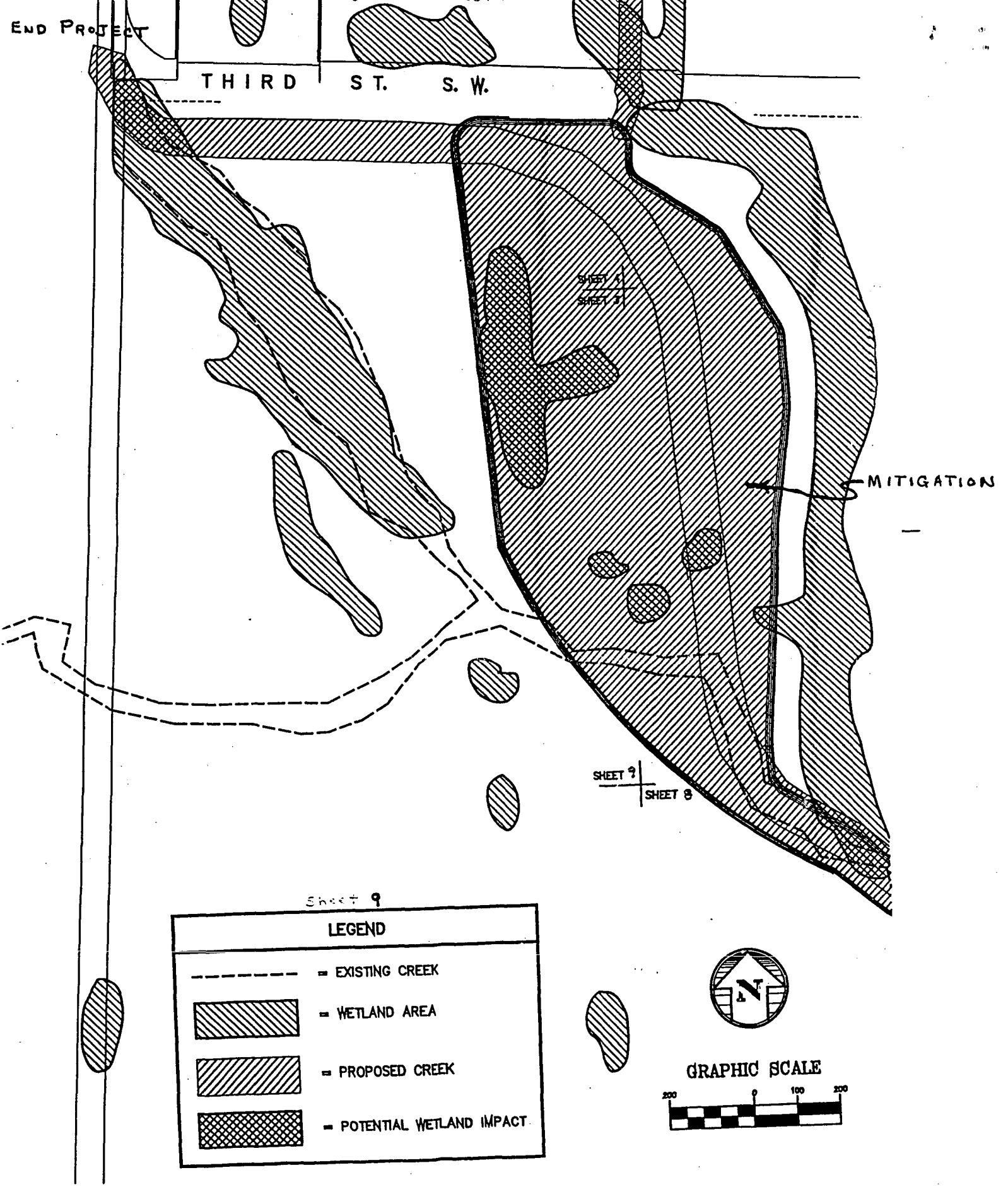
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PURPOSE: STORM WATER CHANNEL
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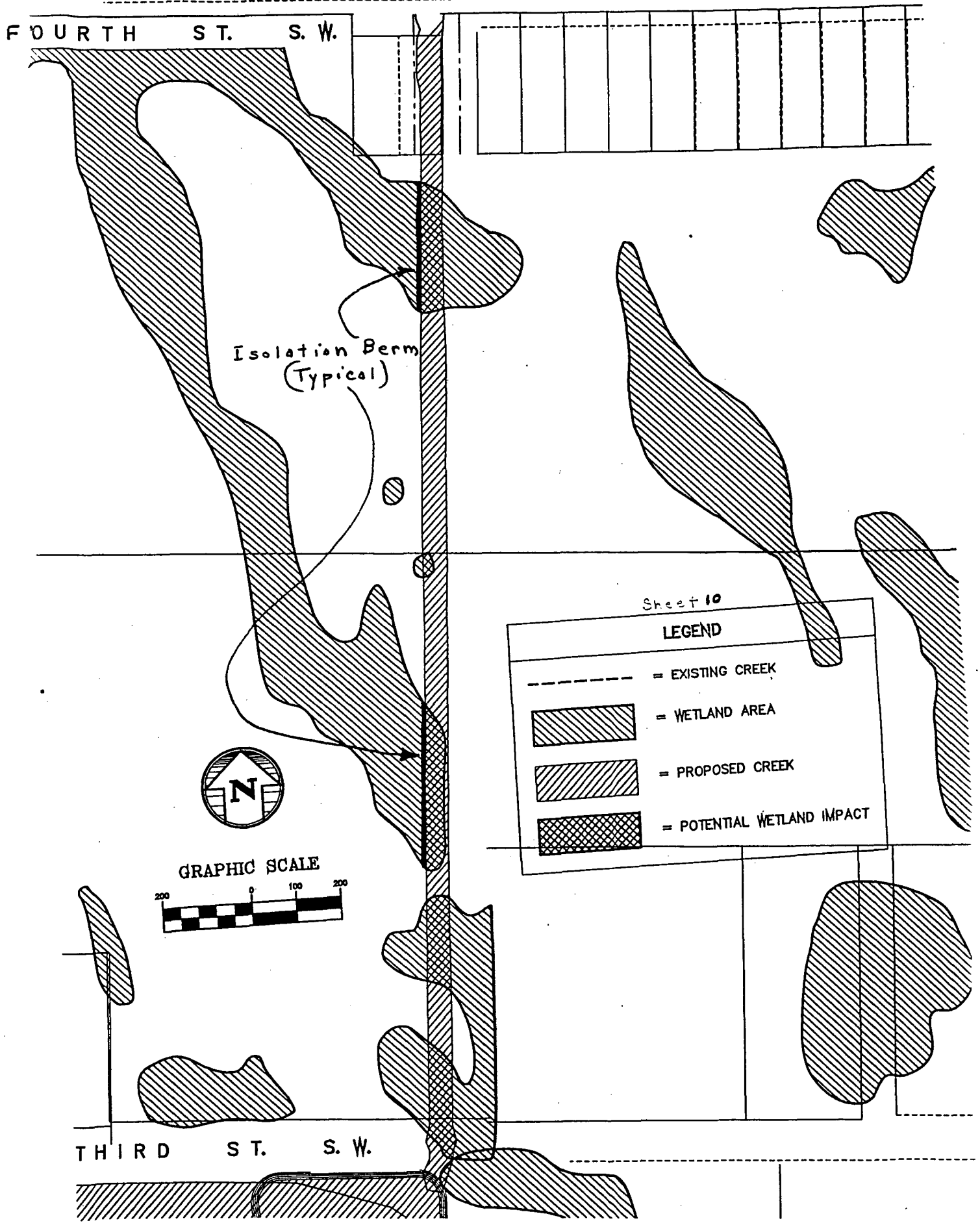
IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE **STATE** SD
APPLICATION BY CITY OF HURON
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PURPOSE: STORM WATER CHANNEL
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IN STONY RUN CREEK
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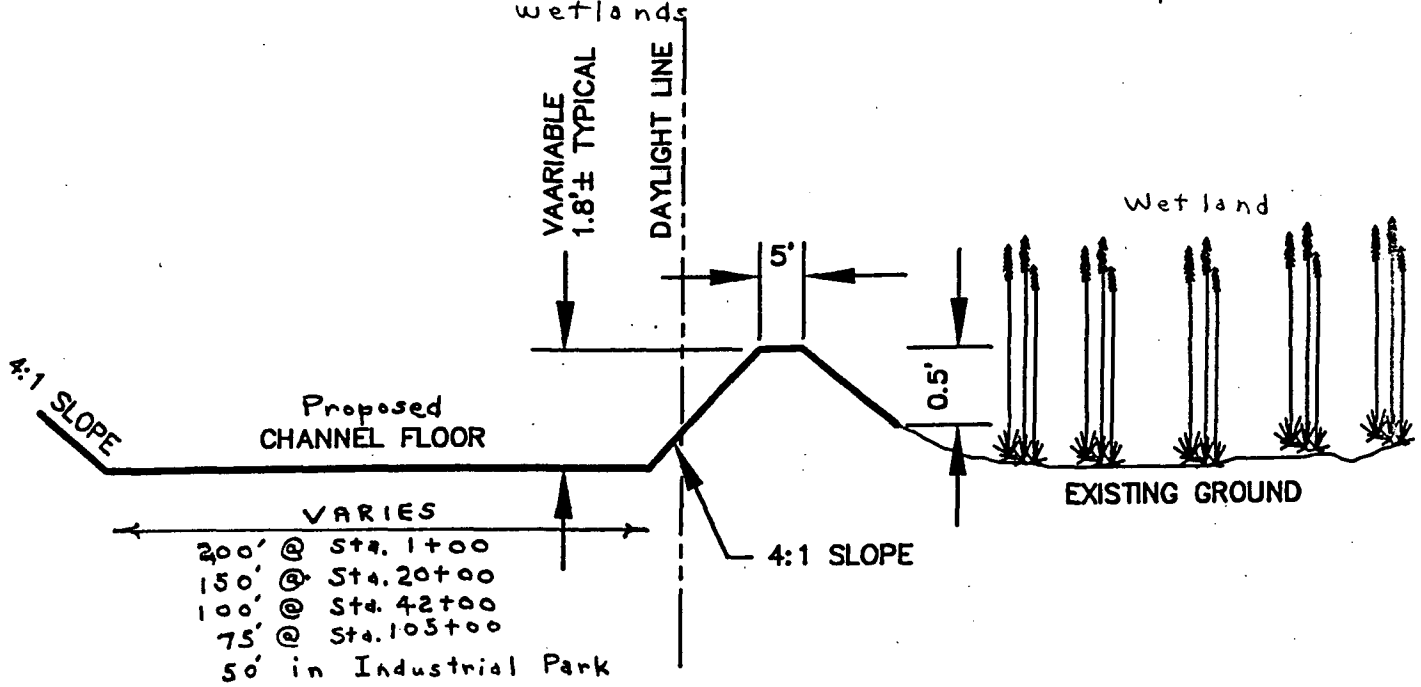
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APPLICATION BY CITY OF HURON
SHEET 10 OF 12 DATE 9-28-98

STONY RUN

Isolation Berm

@ location of intersection of channel with wetlands



PROPOSED 5' WIDE BERM

(No Scale)

TYPICAL CROSS SECTION

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IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE **STATE** SD
APPLICATION BY CITY OF HURON
SHEET 11 **OF** 12 **DATE** 9-28-98

TABLE 1

SW STORM DRAINAGE IMPROVEMENTS
HURON, SOUTH DAKOTA

WETLAND DETERMINATION

Wetland #	Location	From Sta.	to Sta.	Wetlands Impacted	Wetlands Non-impacted	Total
1	Stony Run Creek Improv.	0+00	13+60	4.45	0.00	4.45
2	Stony Run Creek Improv.	14+30	17+40	0.59	0.37	0.96
3	Stony Run Creek Improv.	17+70	27+20	2.36	1.05	3.41
4	Stony Run Creek Improv.	28+30	29+50	0.05	0.37	0.42
5	Stony Run Creek Improv.	31+15	40+05	1.69	0.27	1.96
6	Stony Run Creek Improv.	41+05	53+60	3.00	0.10	3.10
7	Stony Run Creek Improv.	54+00	58+85	0.81	0.20	1.01
8	Detention Pond/Wetland	NA	NA	0.46	6.02	6.48
9	Detention Pond/Wetland	NA	NA	0.36	0.00	0.36
10	Detention Pond/Wetland	NA	NA	0.16	0.00	0.16
11	Detention Pond/Wetland	NA	NA	0.09	0.00	0.09
12	Detention Pond/Wetland	NA	NA	0.16	0.00	0.16
13	Detention Pond/Wetland	NA	NA	1.82	0.00	1.82
14	Detention Pond/Wetland	NA	NA	0.00	5.56	5.56
15	Industial Park Ditch	0+75	6+50	1.60	0.67	2.27
16	Industial Park Ditch	7+10	10+90	0.39	NA	NA
17	Industial Park Ditch	13+80	14+30	0.00	0.04	0.04
18	Industial Park Ditch	15+40	16+00	0.04	0.00	0.04
19	Industial Park Ditch	19+80	22+80	1.05	NA	NA

TOTAL WETLANDS IMPACTED = 19.08

PURPOSE: STORM WATER CHANNEL
DATUM MSL
ADJACENT PROPERTY OWNERS:
1 CITY OF HURON
2 GREATER HURON DEVELOPMENT CORP.

IN STONY RUN CREEK
AT SECTIONS 2 & 11, T110N, R62W
COUNTY OF BEADLE STATE SD
APPLICATION BY CITY OF HURON
SHEET 12 OF 12 DATE 9-28-98

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

October 15, 1998

Ralph Borkowski, City Administrator
City of Huron
PO Box 1369
Huron SD 57350

Dear Mr. Borkowski:

I am writing in response to a public notice issued by the U.S. Army Corps of Engineers on September 28, 1998 concerning the Stony Run Creek project in Huron. This project seeks to realign, clean out, and widen a portion of the creek running through the city limits.

After reviewing the information in the public notice, I believe the city needs to apply for a flood control permit pursuant to South Dakota Codified Law (SDCL) 46-5-47. This statute requires approval of a flood control permit for construction of any works on a watercourse for purposes of preventing or alleviating damages due to flooding. The conditions under which a permit can be issued are specified in SDCL 46-2A-11:

> SDCL 46-2A-11 -- A permit for flood control works may be issued only if the project will reduce the damage from flooding or erosion in the area proposed to be benefited, the project will not increase the likelihood or the severity of flood damages in areas other than the project area or the area proposed to be benefited, the project will not endanger human life or property and the project will not impair existing water rights, except to the extent that such rights are extinguished or compensated through agreement or exercise of the power of eminent domain.

To assure compliance with the requirements of this statute, a hydrologic analysis will need to accompany your flood control permit application. Enclosed are the application forms and an instruction sheet for applying for a flood control permit.

Please contact Ron Duvall, staff engineer, at 605 773-3352 if you have any questions concerning this letter or how to complete the enclosed application.

Very truly yours

John Hatch

John Hatch, Chief Engineer
Water Rights Program

enclosures

c: Steve Gubbrud, Mayor
Steve Naylor, US Army Corps of Engineers

DEPARTMENT OF GAME, FISH AND PARKS
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

October 19, 1998

Mr. Steven E. Naylor
U.S. Army Corps of Engineers
South Dakota Regulatory Office
28563 Powerhouse Road, Room 120
Pierre, SD 57501

RE: City of Huron, Stony Run Creek Channelization, Individual 404 Permit Application # 199830157, Beadle County.

Dear Mr. Naylor:

The South Dakota Department of Game, Fish and Parks (GF&P), Division of Wildlife has reviewed the public notice for the above referenced project. A permit, if issued, would authorize the regrading, realignment, cleanout, widening, etc. of 10, 500 feet of Stony Run Creek adjacent to the west side of the City of Huron. We request that your office consider and address the following comments/questions prior to further consideration of the permit application and authorization of stream and wetland excavation and filling activities associated with this project. Unless significant project changes are made to lessen the cumulative adverse effects to the area's aquatic environment that will result from this project, we request that the Corps deny this permit application. In its current form we do not believe that the project meets the overall intent of the 404 regulations, and most notably the 404(b) (1) guidelines regarding avoidance, minimization and mitigation of adverse effects to aquatic resources through a careful alternatives evaluation.

Our primary concerns regarding this project are related to adverse effects to fish and wildlife habitat that will result from the channelization of the creek and associated linear wetland areas. The notice indicates that 19.08 acres of wetland area will be impacted, but the drawings do not seem to delineate impacted creek channel areas (which typically exhibit wetland characteristics) as potentially affected aquatic sites with the double cross hatched pattern. Are these creek channel areas included in the 19 acre figure? It appears to us from the drawings that the impacted areas are only those delineated as wetland polygons by the NRCS - is this the case? Also, the notice indicates that isolated wetlands intercepted by the channelized reach will be maintained with a 0.5 foot isolation berm. It appears that this isolation berm is not proposed for all such isolated wetlands (e.g. on sheets 7 through 10). Why are some areas not treated with the isolation berm? What criteria were used to decide that this isolation berm be 0.5 feet high.

Office of Secretary: 605/773-3387 Wildlife Division: 605/773-3381 Parks and Recreation Division: 605/773-3391 FAX: 605/773-6245
TDD: 605/773-3485

Given that several of the wetlands along the project are delineated on the NWI mapping as seasonal and semipermanent, it is doubtful that a 0.5 feet high berm is sufficient to maintain existing hydrology. In other words it seems likely that during portions of many years, these wetlands are deeper than 0.5 feet deep and that the current proposal will still act to drain these areas.

Has any consideration been given to route the new channel away from the feedlot located in the SE1/4 of section 11. Isolation of this feedlot facility, which is adjacent to the present creek must be considered in the project plan. Although not located adjacent to the project site, there is another feedlot in the NE 1/4 of section 3 that drains to Stony Run Creek. Wetland areas along the creek channel aid in passive treatment of feedlot runoff before it enters Stony Run Lake and the James River (warmwater marginal and warmwater semipermanent fisheries respectively in SD Water Quality Standards). Excessive nutrient loading in Stony Run Lake (a public WPA dam with a GF&P held water right) already hampers GF&P fisheries management efforts in the lake. Elimination of these functioning wetland areas will decrease the natural potential for these areas to passively absorb nutrient loads from feedlot sources and further affect our interests in Stony Run Lake. Nevertheless, we do recognize the potential water quality benefits of the proposed stormwater/mitigation basin, but are concerned about how long it will take for this area to develop wetland characteristics and functions that mimic natural conditions.

If already not completed, we urge the Corps to carefully consider any adverse effects this project might have on the Topeka Shiner and other fish inhabiting the watershed. Although not yet formally listed under the federal Endangered Species Act, the Topeka Shiner was proposed for listing (as endangered) by the USFWS in October of 1997. A final listing may be made as soon as next month. Recent occurrences of Topeka Shiners have been noted in nearby James River tributaries (Pearl and Shue creeks). In addition to this issue, we request the Corps and applicant to consider lost aquatic habitat values associated with the natural creek channel and alternatives to channelizing this entire reach of creek. Can a larger stormwater channel be located outside of the existing creek/wetland area? It is probably that the proposed wide and shallow channel will silt in, require periodic maintenance and exhibit very limited fish habitat value.

In regard to the proposed stormwater detention pond/wetland mitigation area briefly described in the notice we offer the following. At this point we feel that we can only offer preliminary comments due to the limited nature of the information provided in the notice. We suggest that the project proponent and Corps provide additional information and documentation regarding the mitigation sites so we can offer more substantive comment. What are the typical depths and side slopes of the proposed basin? Is there a wetland plant revegetation plan in place to implement upon final grading work? Does replacement of several essentially linear wetland areas (flowing at times) with one large basin that may function more like a large isolated basin or pond constitute in-kind mitigation. Given the uncertainties of wetland creation and appropriate replacement of lost functions and values associated with altering the creek and associated linear wetlands, we request the Corps to require the applicant to explore further mitigation options, which might include additional created, enhanced or restored wetland areas, including linear systems. It is our recommendation that the appropriateness of this plan be the subject of further discussion between the resource agencies, the Corps and the applicant. Additionally, the project

proponent should demonstrate that there is sufficient hydrology and appropriate soils available to assure that wetland conditions develop at the mitigation site(s). Appropriate easements or other assurances that the mitigation area will be maintained as wetland for the life of the project must be incorporated into the mitigation plan (a perpetual easement may be most appropriate since restoration of impacted sites is unlikely).

Thank you for the opportunity to comment. If you have any questions, please call me at 773-6208.

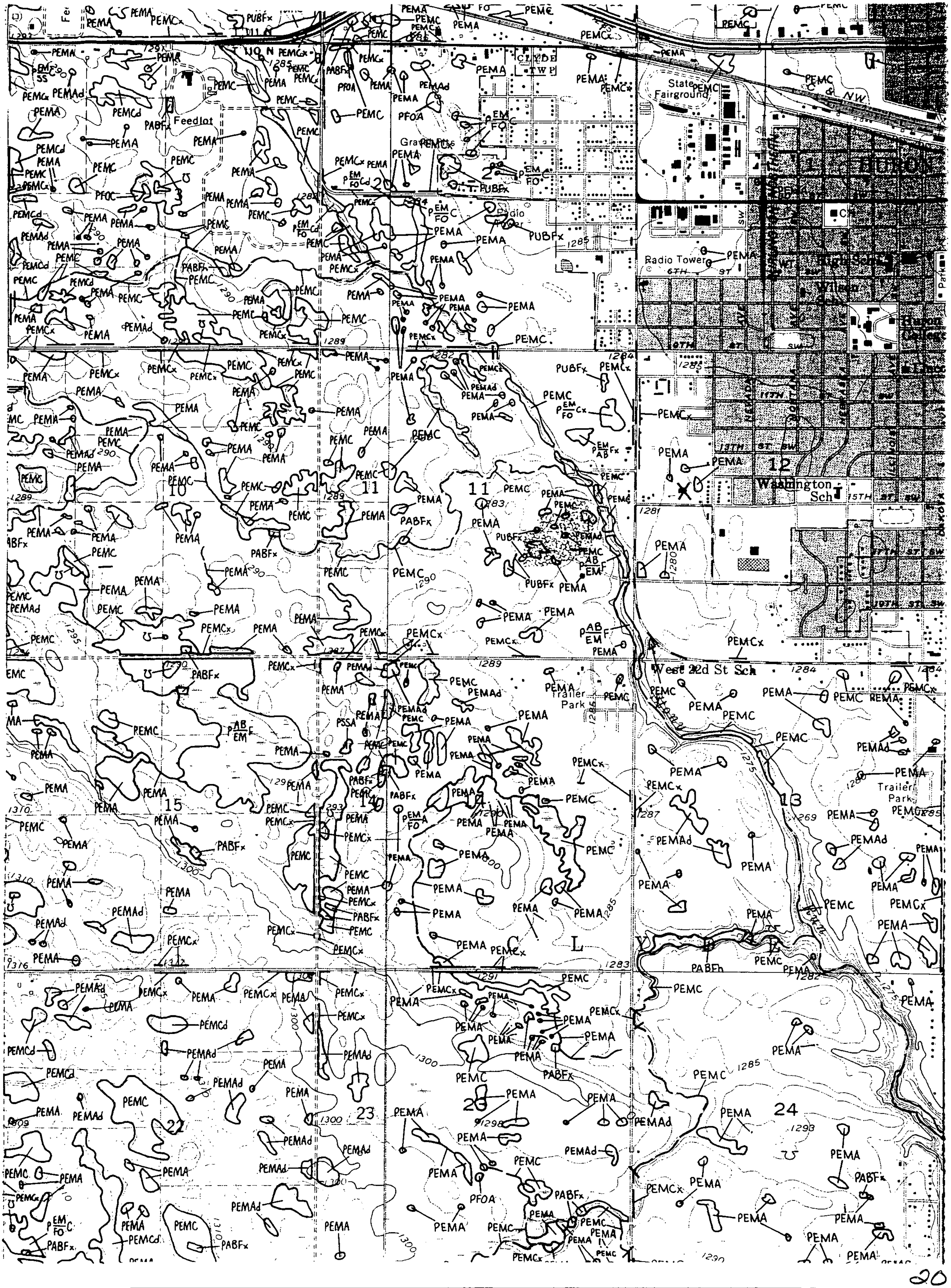
Sincerely,

T Olson

Tim Olson
Water Permits Coordinator

cc: Dave Allardyce, USFWS, Pierre
John Miller, SDDENR, Pierre
Al Knapp, SDGF&P, Sioux Falls
Roger Strom, SDGF&P, Huron
Bob Mairley, USEPA, Denver




CLYDE TWP
T 110 N
State Fairground
Feedlot
Gravel Pits
Radio Tower
HURON
C & NW
High Sch
Huron College
Washington Sch
West 22d St Sch
Trailer Park
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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

October 28, 1998

Mr. Steven E. Naylor
Corps of Engineers, Omaha District
South Dakota Regulatory Office
28563 Powerhouse Road, Room 120
Pierre, South Dakota 57501

Re: Pending Permit No. 199630399, Greater Huron Development Corporation - Proposed Industrial Park Development

Dear Mr. Naylor:

This is in response to your 21-Day Notice dated October 15, 1998, regarding the subject permit application. The applicant proposes to fill 15.33 acres of temporary and seasonal wetlands and 1.7 acres of an abandoned gravel pit on the west side of Huron, South Dakota, and within the Stony Run Creek drainage in order to develop an industrial park. The applicant is proposing to receive mitigation credit for avoiding the filling of approximately 4.5 acres of the gravel pit wetland and to replace or compensate for only 13.2 acres of the temporary and seasonal wetlands that would be lost.

The Fish and Wildlife Service believes that, in order to completely assess the total potential of the adverse impacts to fish and wildlife resources and water quality issues relative to this project, a closely related project (the City of Huron's proposed project on Stony Run Creek - No. 199830157 - to realign, clean out, and widen approximately 10,500 feet of Stony Run Creek), must also be considered. The two projects are closely related and have the potential to seriously impact water quality in Stony Run Creek as a result of anticipated significant increases in storm water runoff as the City of Huron continues to expand along this drainageway. Further, if wetlands or wetland losses along this drainage are not adequately protected and/or mitigated, the integrity of an old Works Progress Administration dam (in southwest Huron) downstream of these projects could be jeopardized.

The mitigation plan, as proposed, is inadequate both from the standpoint of acreage to be replaced and the wetland "type" proposed. Avoidance of wetland impacts is only one aspect of the sequence of events in the mitigation process. It will not replace wetlands that will be lost. Mitigation wetlands for this project should be designed to hold or pond water on a temporary and/or seasonal basis within the project area. If they are designed to be incorporated as part of the storm water drainage plan, they will not effectively hold water on the land, and it is unlikely that the biological or hydrological functions will be adequately replaced.

Therefore, the Fish and Wildlife Service recommends that this project be held in abeyance until such time as the applicant is able to provide a mitigation plan which is acceptable to both State and Federal resource agencies.

Thank you for the opportunity to review and comment on this project. We will be available to work with your agency and the applicant to devise an acceptable mitigation plan. Please keep the Fish and Wildlife Service informed of your decision.

Sincerely,

Pete Gober
Field Supervisor
South Dakota Field Office

cc: FWS/Huron WMD; Huron, SD
(Attention: Mark Heisinger)
SDDGFP; Pierre, SD
(Attention: Tim Olson)
SDDENR; Pierre, SD
(Attention: John Miller)
EPA; Denver, CO
(Attention: Bob Mairley)



DEPARTMENT OF GAME, FISH AND PARKS
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

GREAT FACES. GREAT PLACES.

November 4, 1998



Mr. Steven E. Naylor
U.S. Army Corps of Engineers
South Dakota Regulatory Office
28563 Powerhouse Road, Room 120
Pierre, SD 57501

RE: Greater Huron Development Corporation, Stony Run Creek Watershed, Individual 404 Permit Application # 199630399, Beadle County.

Dear Mr. Naylor:

The South Dakota Department of Game, Fish and Parks (GF&P), Division of Wildlife has reviewed the public notice for the above referenced project. A permit, if issued, would authorize site grading and fill within wetlands to facilitate development of an industrial park. Approximately 15.33 acres of temporary and seasonal wetlands will be adversely affected by the project and 1.7 acres of artificial wetland (old gravel pit) will also be filled. The applicant currently proposes to mitigate wetland losses by avoiding and creating a total of 17.68 acres of wetland area. We request that your office consider and address the following comments prior to further consideration of the permit application and authorization of project as proposed.

Due to the close proximity of this project to the City of Huron's proposed project to channelize Stony Run Creek, as well as the related nature of the two projects, we urge the Corps to carefully consider the cumulative adverse effects to aquatic resources these two projects will cause. As the water right holder for Stony Run Lake located below these two projects, we are very concerned about adverse effects to water quality and increased runoff rates and volumes due to development within the watershed. We are also concerned about potential harm to the dam spillway structure that may eventually result from increased runoff. These effects must be considered before either of these projects is authorized. More information regarding projected runoff volumes and changes in runoff rates, etc. should be presented by the project proponents so informed decisions regarding these matters can be made.

Based on our review of the project summary provided in the public notice, it appears that the proposed mitigation plan is inadequate to replace functions and values provided by wetland areas to be lost as a result of the current construction plan. Without more information to justify use of

avoidance of 7.76 acres of existing wetland as mitigation, we can not agree with this part of the proposed mitigation plan. Furthermore, it appears that all such areas are directly tied to the "drainage lots" and therefore may be adversely affected by drainage - although without additional information, it isn't possible to determine if this will indeed occur. We also are concerned that the "drainage lots" will not adequately replace lost wetland functions and values of impacted areas (e.g. flood flow retention, water quality improvements, wildlife habitat). We strongly suggest that the Corps encourage the applicant to explore other mitigation options to ensure that unavoidable project impacts and lost functions and values are adequately compensated.

Thank you for the opportunity to comment. If you have any questions, please call me at 773-6208.

Sincerely,

Tim Olson

Tim Olson
Water Permits Coordinator

cc: Dave Allardyce, USFWS, Pierre
✓John Miller, SDDENR, Pierre
Al Knapp, SDGF&P, Sioux Falls
Roger Strom, SDGF&P, Huron
Bob Mairley, USEPA, Denver

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

February 10, 1999

Mary A Pearson, Mayor
City of Huron
PO Box 1369
Huron SD 57350

Dear Mayor Pearson:

Thank you for submitting the *Application for a Flood Control Permit within the State of South Dakota.* In order to complete the application the following is required.

Mark Rath, Water Rights staff engineer has reviewed the proposed flood control permit application for Stony Run Creek. Mr. Rath has concerns that the application does not address the effects of the project downstream from project boundaries. The Water Management Board cannot issue a flood control permit unless it is demonstrated that the project will not increase the likelihood or severity of flood damages in other areas unless easements have been obtained. This will probably require an amendment by your engineer about how the channel downstream will handle the increased flows from the project. If the downstream channel is not able to handle the increased flow, then written easements from the downstream landowners will be needed. Mr. Rath has spoken with Nicholas Hoffman, your consultanting engineer, about this concern.

The application filing fee for this flood control permit application is $150.00 and the licensing fee is $50.00 for a total of $200.00.

If you have any questions, please contact Mark Rath or me.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
605 773-3352

c: Nicholas Hoffman,
Schmucker, Paul, Nohr & Associates

February 9, 1999

BOX 398 • MITCHELL, S. DAK. 57301 • PHONE (605) 996-7761 • FAX (605) 996-0015

Mike Wever, Engineer
City of Huron
PO Box 1369
Huron SD 57350



RE: Southwest Drainage
Huron, South Dakota
SPN #9083

SCHMUCKER, PAUL, NOHR & ASSOCIATES
ENGINEERS
SURVEYORS

Dear Mike:

Enclosed are three (3) copies of the Revised Table 2 to the Flood Permit Application for Stony Run Creek Improvements for Huron, South Dakota. EDA #05-01-03055. An error was discovered in the numbering of the cross-sections for the existing condition. The error has been corrected.

The enclosed revised Table 2 reflects the water surface elevations for the corresponding section number. Please forward copies as appropriate.

If you have any questions, please do not hesitate to contact me.

Sincerely,

SCHMUCKER, PAUL, NOHR & ASSOCIATES

Nick E. Hoffman, E.I.T.

NEH:tkl

Enclosures

COPY

REPORT ON FLOOD CONTROL PERMIT APPLICATION NO. FC-27
CITY OF HURON
MARCH 17, 1999

Application No. FC-27, City of Huron, proposes to modify the existing channel of Stony Run Creek to facilitate the movement of water from the project area. The proposed project area is located in the SW1/4 of Section 2 and the E1/2 of Section 11 T110N-R62W. The modifications are to include reshaping of the channel, improving the crossings and the construction of a detention pond. The proposed project is located on the west side of the City of Huron in Beadle County (Figure 1).

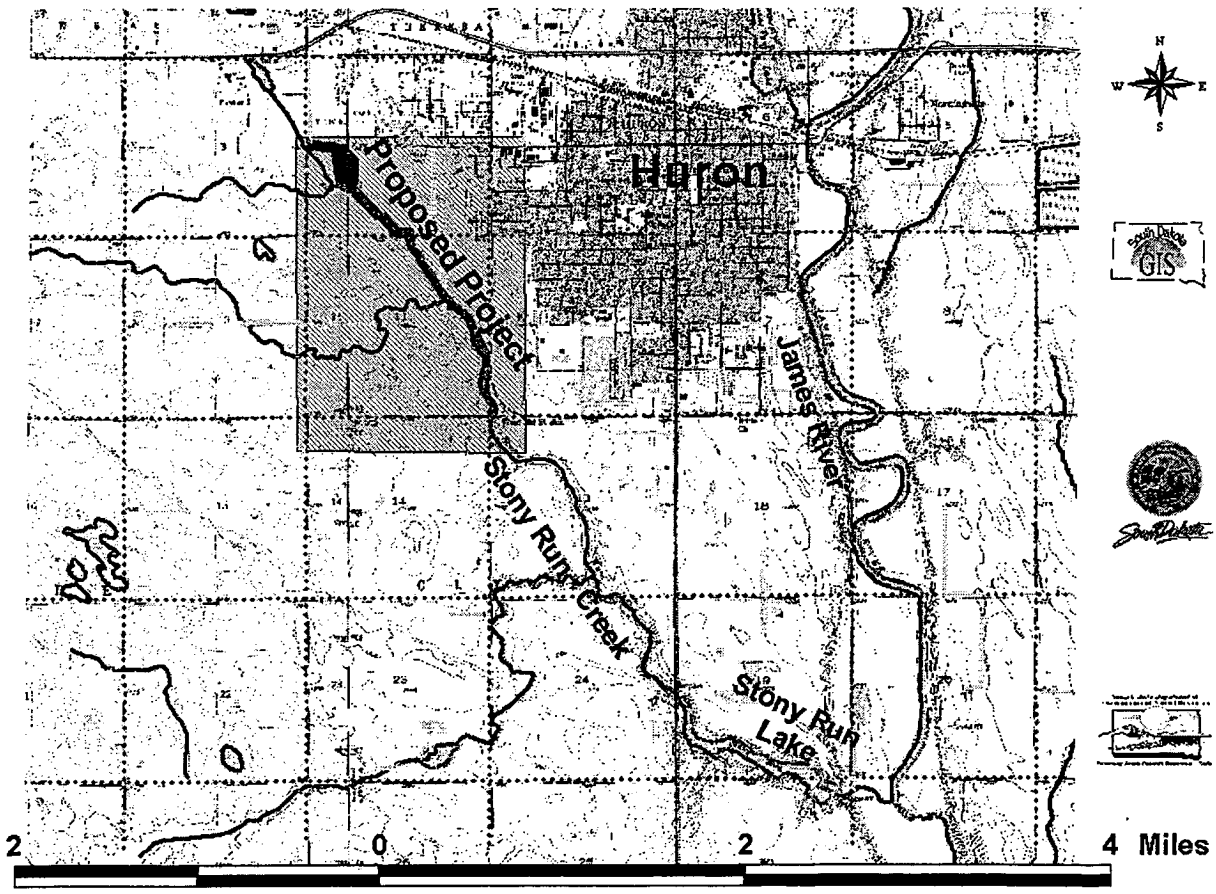


Figure 1. Proposed project area map for Application No. FC-27.

Review of the Proposed Project

There are statutory requirements that need to be met before a flood control permit can be issued. South Dakota Codified Law (SDCL) 46-2A-11 requires that a flood control permit can only be issued if it can be shown that the project will reduce the damage due to flooding or erosion in the area proposed to be benefited, will not increase the likelihood or severity of flood damages in other areas unless easements have been obtained, and the project cannot endanger human life or property. The applicant is proposing to modify the Stony Run Creek channel to expedite the movement of water away from the western portion of the City of Huron. The area has been subject to water problems following spring melt and precipitation events. This project is intended to allow development, both commercial and residential, to occur in this portion of the City.

The applicant provided an engineering analysis utilizing the hydrologic computer models, HEC-1 and HEC-2. The engineering analysis compared existing pre-project conditions to proposed post-project conditions, (Table 1). The proposed project will increase the peak flow coming off the project. Downstream, the existing channel and any structures will be required to handle any additional flow the project will create. Based upon the engineering analysis, the proposed project will increase the volume of water the downstream channel will need to carry. Due to the fact that the downstream channel has a steeper channel slope, the model runs shows even with increased volumes there is only a minimal increase in the water surface elevation because the velocity of the water in the downstream channel is greater than that in the project area.

	5 Year Event Existing		5 Year Event Proposed		25 Year Event Existing		25 Year Event Proposed	
Cross-Section Location	Flow Cfs	Elevation Fmsl	Flow Cfs	Elevation fmsl	Flow cfs	Elevation Fmsl	Flow Cfs	Elevation fmsl
Upstr. 9th Street	107	1281.73	142	1280.71	170	1282.66	229	1281.78
16th Street	234	1277.40	276	1274.72	373	1277.76	439	1275.38
Upstr. 21st Street	279	1273.60	338	1273.55	448	1273.87	537	1274.10
500' dwnstr 21st St	294	1273.29	358	1272.97	472	1274.12	568	1273.89
Sec line 13 & 24	782	1259.16	847	1259.31	1297	1260.43	1395	1260.63
Hwy 37 bridge	815	1258.24	880	1258.34	1354	1259.37	1452	1259.54
Spillway at dam	848	1254.28	914	1255.80	1412	1254.54	1511	1256.46

Table 1. HEC-1 & HEC-2 comparisons between existing and proposed flows and surface elevations for 5 year and 25 year events at several cross-sections. (Schmucker, Paul, Nohr & Associates)

Based upon this information it appears that the greatest downstream effects will occur at the Stony Run Lake Dam. The model runs indicate that with the project modifications water levels at the dam will increase by up approximately 1.9 feet. This would increase the frequency that the primary and secondary spillways would need to function. The applicant needs to address potential downstream flooding problems and come to some sort of an agreement with South Dakota School and Public Lands concerning possible effects to Stony Run Dam.

Conclusions

1. This application is to modify the existing channel of Stony Run Creek by reshaping of the channel, improving the crossings and the construction of a detention pond to facilitate the movement of water from the project area.

2. SDCL) 46-2A-11 requires that a flood control permit can only be issued if it can be shown that the project will reduce the damage due to flooding or erosion in the area proposed to be benefited, will not increase the likelihood or severity of flood damages in other areas unless easements have been obtained, and the project cannot endanger human life or property.

3. An engineering analysis using hydrologic models indicate that the proposed project will increase the volume of water the downstream channel will need to carry with only a minimal increase in the water surface elevation.

4. The engineering analysis indicates the greatest downstream effects will occur at the Stony Run Lake Dam by increasing water levels at the dam by up to approximately 1.9 feet. This would increase the frequency that the primary and secondary spillways would need to function.

5. The applicant would need to work out an agreement with South Dakota School and Public Lands concerning possible effects to Stony Run Dam prior to a permit being issued.

Mark D. Rath
Natural Resources Engineer III

Approved by:

Delvin D. Brosz, P.E.
Natural Resources Engineer IV

RECOMMENDATION OF CHIEF ENGINEER FOR FLOOD CONTROL APPLICATION NO. FC-27, City of Huron

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Flood Control Application No. FC-27, City of Huron, c/o Mayor Mary Pearson, P. O. Box 1369, Huron SD 57350.

The Chief Engineer is recommending DEFERRAL of Application No. FC-27 to allow additional time to review the application in respect to SDCL 46-2A-11.

See report on application for additional information.

JOHN HATCH, Chief Engineer
March 17, 1999

March 16, 1999

BOX 398 • MITCHELL, S. DAK. 57301 • PHONE (605) 996-7761 • FAX (605) 996-0015

Mike Wever
City Engineer
City of Huron
P.O. Box 1369
Huron, SD 57350-1369



RE: Southwest Drainage
Huron, SD
SPN #9083

SCHMUCKER, PAUL, NOHR & ASSOCIATES
ENGINEERS
SURVEYORS

Dear Mr. Wever:

Enclosed is the information requested as per our conversation on February 12, 1999 for the 404 permit for Stony Run Creek. The information presented in the following, references the attached Table 1 and Table 2. The information in these tables reflect the water surface elevations as computed by HEC-2 and the HEC-1 generated flows respectively.

Spillway at Stony Run Lake Dam

5 year proposed water surface elevation =	1255.80
5 year existing water surface elevation =	1254.28
Difference =	1.52
100 year proposed water surface elevation =	1256.98
100 year existing water surface elevation =	1256.07
Difference =	0.91
Crest of main spillway average elevation =	1250.60
Top of wing wall adjacent to main spillway =	1258.84
Crest of auxiliary spillway average elevation =	1254.60
Top of wing wall adjacent to main spillway =	1258.84
5 year proposed water surface elevation =	1255.80
Free-board =	3.04
Top of wing wall adjacent to main spillway =	1258.84
100 year proposed water surface elevation =	1256.98
Free-board =	1.86

Upstream face of S.D. Highway 37 bridge

5 year proposed water surface elevation =	1258.34
5 year existing water surface elevation =	1258.24
Difference =	0.10
100 year proposed water surface elevation =	1260.45
100 year existing water surface elevation =	1260.29
Difference =	0.16
Bridge deck average elevation =	1278.00
Bridge Low chord average elevation =	1274.09
Bridge Low chord average elevation =	1274.09
5 year proposed water surface elevation =	1258.34
Free-board =	15.75
Bridge Low chord average elevation =	1274.09
100 year proposed water surface elevation =	1260.45
Free-board =	13.64

Section line between sections 13 and 24

5 year proposed water surface elevation =	1259.31
5 year existing water surface elevation =	1259.16
Difference =	0.15
100 year proposed water surface elevation =	1261.62
100 year existing water surface elevation =	1261.42
Difference =	0.20

500 feet downstream of 21st Street Bridge

5 year proposed water surface elevation =	1272.97
5 year existing water surface elevation =	1273.29
Difference =	-0.32
100 year proposed water surface elevation =	1274.59
100 year existing water surface elevation =	1274.80
Difference =	-0.21

Upstream face of 21st Street Bridge

5 year proposed water surface elevation =	1273.55
5 year existing water surface elevation =	1273.36
Difference =	0.19
100 year proposed water surface elevation =	1274.57
100 year existing water surface elevation =	1274.30
Difference =	0.27
Bridge deck average elevation =	1276.11
Bridge Low chord average elevation =	1275.63
Bridge Low chord average elevation =	1275.63
5 year proposed water surface elevation =	1273.55
Free-board =	2.08
Bridge Low chord average elevation =	1275.63
100 year proposed water surface elevation =	1274.57
Free-board =	1.06

Special Section at 27+50 (16th Street Culverts)

5 year proposed water surface elevation =	1274.72
5 year existing water surface elevation =	1277.40
Difference =	-2.68
100 year proposed water surface elevation =	1276.03
100 year existing water surface elevation =	1278.05
Difference =	-2.02

Upstream face of 9th Street Culverts

5 year proposed water surface elevation =	1280.71
5 year existing water surface elevation =	1281.73
Difference =	-1.02
100 year proposed water surface elevation =	1282.76
100 year existing water surface elevation =	1283.03
Difference =	-0.27

Conclusion

The water surface elevation at the main spillway of the dam on Stony Run Lake will increase by 1.52 feet for the 5 year and 0.91 feet for the 100 year run-off events. There would be a free-board of 1.86 feet between the top of the wing wall adjacent to the main spillway and the proposed 100 year water surface elevation. It is therefore concluded that the main spillway on Stony Run Lake has sufficient hydraulic capacity to carry the additional flow expected for the 100 year event from the proposed project improvements. The proposed improvements to Stony Run will therefore have no significant adverse impact on the Stony Run Creek dam.

At the South Dakota Highway 37 bridges there will be an increase of 0.1 and 0.2 feet for the 5 and 100 year run-off event water surface elevation, respectively. At the section line between sections 13 and 24 the 5 and 100 year event water surface elevations will be raised by 0.15 and 0.2 feet, respectively. At the end of the proposed channel improvement, 500 feet downstream of the 21st Street bridge, the water surface elevation will be lowered by 0.32 and 0.21 feet for the 5 and 100 year events. At the 21st Street bridge the 5 year and the 100 year event water surface elevation will be raised by 0.19 feet and 0.27 feet. From the 21st Street bridge north to the 9th Street intersection with Stony Run Creek, the existing culverts cause an increase in the water surface elevation. By eliminating these culverts the water surface elevation will be lowered. An example of this is at proposed station 27+50, near 16th Street. The 5 and 100 year run-off water surface elevations will be lowered by 2.68 and 2.02 feet. The 5 and 100 year event water surface elevations will be lowered by 1.02 and 0.27 feet at the 9th Street culverts.

At the present time, there are no businesses or homes along Stony Run Lake or Stony Run Creek south of the 21st Street bridge. The only current use along the creek or lake is livestock watering. The changes in water surface elevation are measured in terms of inches and are therefore considered to be minor. On the basis of this information summarized in the above paragraph, it has been concluded that there will be no adverse impact on the downstream landowners and uses to Stony Run Creek or reservoir created by Stony Run Lake Dam.

Sincerely,

Harlan J. Quenzer, P.E.

Harlan J. Quenzer, PE

HJQ:TKL
Enclosure

Table 1, Existing and Proposed water surface elevations generated by HEC-2

Description of Cross-section	Existing 5 year CWSEL	Existing 10 year CWSEL	Existing 25 year CWSEL	Existing 50 year CWSEL	Existing 100 year CWSEL
US face of Spillway	1254.28	1254.44	1254.54	1255.51	1256.07
US face of SD Highway 37 Bridge	1258.24	1258.75	1259.37	1259.79	1260.29
XC at section line between sections 13 & 24	1259.16	1259.75	1260.43	1260.90	1261.42
500 feet DS of 21st Street Bridge End of study	1273.29	1273.67	1274.12	1274.44	1274.80
US face of 21st Street Bridge	1273.60	1273.59	1273.87	1274.06	1274.30
66 feet DS of 16th Street Culverts	1277.40	1277.56	1277.76	1277.89	1278.05
US face of 9th Street Culvert	1281.73	1282.35	1282.66	1282.85	1283.03

Description of Cross-section	Proposed 5 year CWSEL	Proposed 10 year CWSEL	Proposed 25 year CWSEL	Proposed 50 year CWSEL	Proposed 100 year CWSEL
US face of Spillway	1255.80	1256.11	1256.46	1256.70	1256.98
US face of SD Highway 37 Bridge	1258.34	1258.90	1259.54	1259.97	1260.45
XC at section line between sections 13 & 24	1259.31	1259.93	1260.63	1261.10	1261.62
500 feet DS of 21st Street Bridge End of study	1272.97	1273.40	1273.89	1274.22	1274.59
US face of 21st Street Bridge	1273.55	1273.80	1274.10	1274.32	1274.57
Special Section near 16th Street, STATION 27+50	1274.72	1275.00	1275.38	1275.67	1276.03
US face of 9th Street Culvert	1280.71	1281.19	1281.78	1282.21	1282.76

CWSEL is the Constructed Water Surface ELevation generated by HEC-2

Table 2, Existing and Proposed Flows generated by HEC-1

Description of Cross-section	5 year Existing (cfs)	10 year Existing (cfs)	25 year Existing (cfs)	50 year Existing (cfs)	100 year Existing (cfs)
US face of Spillway	848	1090	1412	1661	1967
US face of SD Highway 37 Bridge	815	1046	1354	1592	1884
XC at section line between sections 13 & 24	782	1003	1297	1525	1805
500 feet DS of 21st Street Bridge End of study	294	370	472	550	646
US face of 21st Street Bridge	279	352	448	522	612
66 feet DS of 16th Street Culverts	234	294	373	433	507
US face of 9th Street Culvert	107	134	170	197	230

Description of Cross-section	5 year Proposed (cfs)	10 year Proposed (cfs)	25 year Proposed (cfs)	50 year Proposed (cfs)	100 year Proposed (cfs)
US face of Spillway	914	1171	1511	1773	2095
US face of SD Highway 37 Bridge	880	1126	1452	1703	2012
XC at section line between sections 13 & 24	847	1083	1395	1636	1932
500 feet DS of 21st Street Bridge End of study	358	450	568	658	768
US face of 21st Street Bridge	338	425	537	621	724
Special Section near 16th Street, STATION 27+50	276	348	439	507	591
US face of 9th Street Culvert	142	181	229	264	308

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

March 22, 1999

Curt Johnson, Commissioner
School and Public Lands
500 East Capitol Avenue
Pierre, SD 57501

Dear Mr. Johnson :

I am writing to inform you that the City of Huron has filed an application for a flood control permit for a project on Stony Run Creek. The proposed project is to be located on the west side of Huron will include channel shaping and channel relocation. Stony Run Dam, a School and Public Land's structure, is located about two miles downstream from the project area. The project is projected to increase the flow in the creek which will cause a greater amount of water to be detained by the dam and then flow out the spillway.

I am enclosing copies of the City of Huron's application along with supporting information for your review. After having reviewed this information, if you have any questions or concerns, please contact me at phone 773-3352.

Sincerely,

Mark D. Rath
Natural Resources Engineer
Water Rights Program

enclosures

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

April 2, 1999

NOTE: TO BE SURE OF PUBLICATION ON THE CORRECT DATES, CONTACT THE NEWSPAPER RIGHT AWAY.

City of Huron
c/o Mary Pearson
PO Box 1369
Huron SD 57350

Dear Mayor Pearson:

Flood Control Application No. FC-27 has been examined and found to comply with the South Dakota Water Laws and applicable rules. A Notice of Hearing has been sent to the Publisher of the Plainsman printed at Huron SD (Phone #352-6401). For your information, a copy of the notice is enclosed. The recommendation of the Chief Engineer and report on the application will be sent at a later date. Please review this notice prior to publication and notify this office, if you have any corrections or questions.

BE SURE TO CONTACT THE ABOVE NEWSPAPER IMMEDIATELY TO AUTHORIZE PUBLICATION OF THE NOTICE OF HEARING AND TO ARRANGE FOR PAYMENT. Early contact with the paper can eliminate delays. The publisher has been instructed to publish the notice once each week for two consecutive weeks with the last publication to occur at least twenty days before the board meeting. We must receive Proof of Publication before the notice of hearing can be considered by the Water Management Board.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

c: Mike Wever, City Engineer

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

April 2, 1999

The Plainsman
PO Box 1278
Huron SD 57350-1278

Dear Sir:

Enclosed is a Notice of Hearing on Flood Control Application No. FC-27 to be published twice. Please publish the first notice on April 8, 1999 with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is the City of Huron, c/o Mayor Mary Pearson, PO Box 1369, Huron SD 57350.

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at 605 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

----------CUT HERE----------

TO: Water Rights Program
Joe Foss Building
523 E Capitol
Pierre SD 57501-3181

Date _____

We are in receipt of your letter of April 2, 1999 enclosing Notice of Hearing on Flood Control Application No. FC-27 which was first published in our issue of_____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

_____ _____
Name Newspaper

Instruction to Newspaper - Publish first Notice on April 8, 1999, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF HEARING on Flood Control Application No. FC-27

Notice is given that the City of Huron, c/o Mayor Mary Pearson, P.O. Box 1369, Huron SD 57350 as filed a flood control permit application to modify the existing channel of Stony Run Creek to facilitate the movement of water. The modifications are to include reshaping of the channel, improving roadway crossings and the construction of a detention pond. The proposed project is located on the west side of the city along Stony Run Creek in portions of W ½ Section 2, E ½ Section 3, Section 11 and the W ½ SW ¼ Section 12; all in T110N, R62W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends DEFERRAL of Application No FC-27 to allow additional time to review the application. The Chief Engineer may revise the recommendation prior to the hearing before the Water Management Board.

Any person interested in opposing or supporting the application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendations. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by April 26, 1999. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Water Management Board will consider this application at 10:30 AM, May 5, 1999, in the Conference Room, Floyd Matthew Center, 523 E. Capitol Ave., Pierre, SD. The agenda time is an estimate and may be delayed due to prior agenda items. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by April 26, 1999.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by April 26, 1999, at the above Water Rights Program address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application are made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31, 46-5-47, 46-5-48; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Nettie Myers, Secretary, Department of Environment and Natural Resources.

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

April 6, 1999

Rollie Sanderson
490 21st Street SW
Huron SD 57350

Dear Mr. Sanderson:

Please find enclosed a copy of the notice hearing for Flood Control Permit Application No. FC-27 filed by the City of Huron. This notice is scheduled to be published April 8 and 15, 1999, in The Plainsman.

This information is being sent to you based on interest you have expressed regarding this project. If you are interested in participating in the May 5th hearing, either in support of opposition of the application, a petition must be filed by April 26, 1999.

Please contact Mark Rath or myself at (605) 773-3352 if you have any questions.

Sincerely,

Eric Gronlund
Water Rights Program
(605) 773-3352

enclosure

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

№ 416088

Pierre, April 7, 19 99

RECEIVED OF City of Huron, P.O. Box 1369, Huron, SD 57350
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use _____	150	00
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____	50	00
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		
_____		
_____		
(Any Other Work Provided by Law) **Total**	200	00

By _____ Chief Engineer

John Hatch

44

Form 8



PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
County of Beadle)

I, Cheri Bjorke

certify that the attached printed Notice was taken

from the Plainsman

printed and published in Huron

County of Beadle and

state of South Dakota. The notice was published

in the newspaper on the following two dates:

April 8, 1999

April 15, 1999

Cost of Printing $120.00

Cheri Bjorke
(Signature)

Legal Advertising Coordinator
(Title)

April 15, 1999
(Date Signed)

F.P. 4-8-99 L.P. 4-15-99

NOTICE OF HEARING ON FLOOD CONTROL APPLICATION NO. FC-27

Notice is given that the City of Huron, c/o Mayor Mary Pearson, PO Box 1369, Huron, SD 57350 has filed a flood control permit application to modify the existing channel of Stony Run Creek to facilitate the movement of water. The modifications are to include reshaping of the channel, improving roadway crossings and the construction of a detention pond. The proposed project is located on the west side of the city along Stony Run Creek in portions of W ½ Section 2, E ½ Section 3, Section 11 and the W ½ SW ¼ Section 12; all in T110N, R62W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends DEFERRAL of Application No FC-27 to allow additional time to review the application. The Chief Engineer may revise the recommendation prior to the Hearing before the Water Management Board.

Any person interested in opposing or supporting the application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendations. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre SD 57501 (605-773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by April 26, 1999. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Water Management Board will consider this application at 10:30 am, May 5, 1999, in the Conference Room, Floyd Matthew Center, 523 E. Capitol Ave., Pierre, SD. The agenda time is an estimate and may be delayed due to prior agenda items. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by April 26, 1999.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by April 26, 1999, at the above Water Rights Program address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application are made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31, 46-5-47, 46-5-48; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

Nettie Myers, Secretary
Department of Environment and Natural Resources
No. 142 (adv.)

2x12" x $5 = $120.00



Water Rights Program
Foss Building, 523 E. Capitol
Pierre, South Dakota 57501

Dear Sir;

Thank you for the opportunity to express my concerns about the Stony Run Creek Project in Huron.

Where this project ends is where Stony Run begins to run through my land - approximately 137 acres. This land is mostly surrounded by the Huron City limits. One can see that this is some of the most developable land near the City. This project has been given birth without one time asking if I may have any interest or suggestions regarding its impact on my land. I first read about it in the local newspaper.

At this time I want to register my wholehearted opposition to this application. I cannot, with any sense of future needs and opportunities, accept what is proposed as anything but detrimental to my interests and to the interest of future development of the City. To suggest, by default, making an open storm sewer out of my land is without conscience or foresight. The fact no effort was made to discuss the concept with me before initiating this venture, indicates how little thought was put forth, and/or how little concern there is for anyone impacted.

This is a bad plan and a classic example of how an enthusiastic, but inexperienced development man can beguile and beg public officers to waste tax money in order to cover his mistakes.

This land is ill suited for its planned use and is not unique. There are ample sites available for industrial development and at lower costs.

Additionally drainage, from this intended acreage, into the river will serve to aggravate flooding during wet years.

There is no good that can be attributed to this plan.

Respectfully,

Rollie Sanderson

Rollie Sanderson
490 21 Street SW
Huron, South Dakota 57350
April 14, 1999

cc: Mayor Mary Pearson, Huron SD 57350

CITY OF HURON

BEADLE COUNTY

SOUTH DAKOTA

T. 110 N.

T. 111 N.

R. 62 W.

R. 61 W.

SCALE 0 500 1000

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

May 11, 1999

NOTICE

TO: Mary A. Pearson, Mayor
City of Huron
PO Box 1369
Huron SD 57350
and Parties of Record (see attached list)

FROM: John Hatch, Chief Engineer
Water Rights Program
(605) 773-3352

SUBJECT: Preparation of Findings of Fact, Conclusions of Law and Final Decision

The Water Management Board directed John Guhin, the Board's attorney, to prepare proposed Findings of Fact, Conclusions of Law and a Final Decision to approve the City of Huron's Flood Control Permit Application No. FC-27. The Board will consider the proposed Findings, Conclusions and Final Decision at 8:45 AM on July 7, 1999, in the Conference Room, Floyd Matthew Training Center, 523 E. Capitol Ave., Pierre, SD 57501.

The Board requested that a copy of the proposed Findings, Conclusions and Final Decision be mailed to each Board member and Parties of Record (parties list enclosed) by June 17, 1999. Written objections or comments in support of the proposed Findings, Conclusions and Final Decision, or alternative Findings, Conclusions and Final Decision are to be mailed to each Board member, the Board attorney (mailing list enclosed) and all Parties of Record by June 28, 1999.

Oral arguments by parties filing written comments in opposition or support of the proposed Findings, Conclusions and Final Decision, or alternative Findings, Conclusions and Final Decision may be made on July 7, 1999. The public hearing was completed May 5, 1999. No additional testimony will be received on July 7, 1999.

c: John Guhin, Deputy Attorney General
Diane Best, Assistant Attorney General
Mike Wever, City Engineer
Curt Johnson, Commission of School and Public Lands
Howard Paul, SPN, Box 398, Mitchell SD 57301

Enclosure

NOTE: Modification to the existing Stony Run Creek channel as part of this improvement project can not begin until the Board adopts its Final Decision, the required period for appeal of the Board's decision to the circuit court has past and the flood control permit is formally issued. Additionally, a proposed qualification to the flood control permit requires that the City enter into a joint agreement with SD School and Public Lands to address potential impacts to Stony Run Dam prior to construction. I encourage the City begin discussions with School and Public Lands so that a mutually acceptable agreement is in place by the time the permit is issued.

PARTIES OF RECORD

FLOOD CONTROL PERMIT APPLICATION NO. FC-27, City of Huron

APPLICANT

Mary Pearson, Mayor
City of Huron
P.O. Box 1369
Huron, SD 57350

PETITIONERS

Rollie Sanderson
490 21 Street SW
Huron SD 57350

WATER MANAGEMENT BOARD MEMBERS

Francis E. Brink, Chairman
1214 South Wells Street
Aberdeen, SD 57401-7351

Rodney Freeman, Jr.
P.O. Box 176
Huron, SD 57350-0176

Marian Gunderson
811 West 3rd
Yankton, SD 57078-3702

Leo Holzbauer
RR 1, Box 170
Wagner, SD 57380-9681

Bernita Loucks
219 42nd Street
Rapid City, SD 57702-0240

Joel Rickenbach
Box 97
Oelrichs, SD 57763-0097

Dwayne A. Rollag
320 Lincoln Lane South
Brookings, SD 57006-2741

BOARD ATTORNEY

John Guhin, Deputy Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

WATER RIGHTS PROGRAM

Department of Environment and
Natural Resources

John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

STAFF ATTORNEY

Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

CERTIFICATION

I hereby certify that on May 11, 1999, I have personally deposited with the United States mail at Pierre, South Dakota, first class postage, prepaid envelopes containing a Notice dated May 11, 1999, along with a copy of the Parties of Record List, and a copy of the address list of Water Management Board Members, regarding Preparation of Findings of Fact, Conclusions of Law and Final Decision, addressed as stated below, and on the attached Parties of Record List:

Mike Wever, City Engineer, City of Huron, P.O. Box 1369, Huron, SD 57350.

Copies of the above described Notice and attachments was sent Inter-office to:

John Guhin, Deputy Attorney General, Capitol Building.

Diane Best, Assistant Attorney General, Capitol Building.

Curt Johnson, Commission of School and Public Lands, Capitol Building.

Cheryl F. Frost
Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 12th day of May, 1999

Karen Schlaak
Notary Public

KAREN SCHLAAK
SEAL NOTARY PUBLIC SOUTH DAKOTA SEAL

KAREN SCHLAAK, Notary Public
My Commission Expires
April 1, 2001

STATE OF SOUTH DAKOTA

OFFICE OF ATTORNEY GENERAL
500 EAST CAPITOL AVENUE
Pierre, South Dakota 57501-5070
Phone (605) 773-3215
FAX (605) 773-4106

MARK BARNETT
ATTORNEY GENERAL

LAWRENCE LONG
CHIEF DEPUTY ATTORNEY GENERAL

JUN 1999
WATER RIGHTS
PROGRAM
Pierre, SD

June 9, 1999

MEMORANDUM

TO: Members of the Water Management Board and Interested Parties

FROM: John P. Guhin, Deputy Attorney General

RE: Findings of Fact, Conclusions of Law, and Final Decision in In the Matter of the Application for Flood Control Permit No. FC-27, City of Huron

I am herewith enclosing proposed Findings of Fact, Conclusions of Law, and Final Decision in the above-entitled case. Please refer to the Chief Engineer's Notice of May 11, 1999, for further information.

JPG:nan
Enclosure

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	))))	FINDINGS OF FACT, CONCLUSIONS OF LAW, AND FINAL DECISION

FINDINGS OF FACT

1. This is an application by the City of Huron for a Flood Control Permit. Pursuant to the application, the City proposes to modify the existing channel of Stony Run Creek to facilitate the movement of water from the project area. The modifications include the reshaping of the channel, improving the crossings, and construction of a detention pond. The channel will, in some places, be excavated. The proposed project is on the west side of the City of Huron in Beadle County.

2. Hydrologic computer models were developed to demonstrate the effect on the channel elevation from the proposed project. These models demonstrate significant decreases in flood levels from a 25-year event in areas at the top or beginning of the project. The upper Ninth Street flood elevation will decrease .88 feet and decrease 2.38 feet at the Sixteenth Street location during the 24-year event. These decreases in flood elevation will substantially reduce the likelihood of damage due to flooding or erosion in the areas identified.

3. Two cross sections were taken in the area of Twenty-First Street. The first shows an increase of .23 feet during a 25-year event, while the immediate downstream location shows a decrease of .23 feet. The flood elevation from a 25-year event section line between Sections 13 and 24 show a potential increase

of .20 feet and a potential increase of the Highway 37 bridge of .17 feet. Testimony indicates that these three minor increases, together with the single decrease, will not be significant in terms of flooding.

4. The major negative impact of the project will be found at the spillway at the Stony Run Lake Dam, which will be subjected to a potential increase in level in a 25-year flood event of 1.92 feet. The Board finds that there is a possibility that the dam may be damaged by the additional flood waters.

5. South Dakota School and Public Lands is owner of the dam. School and Public Lands has indicated a willingness to cooperate with the City of Huron in the project, however, and to consider entering into an agreement with the City.

6. There is no evidence that the project will endanger human life or property either within or without the project area, except for the Stony Run Lake Dam structure.

7. Petitioner Rollie Sanderson objected to the project on the grounds that it, in his view, constituted an economic boondoggle. The economics of the project are not, however, cognizable by the Board, but rather are a local matter.

8. Petitioner Sanderson also objected to the project on the grounds that it would bring more debris down the creek and that that debris might eventually reach his land. Testimony indicated, however, that any additional debris would be generated by a proposed soccer field which might be built along the channel. Whether additional debris might be generated is not, in any event, relevant to whether a permit should be granted under

SDCL 46-2A-11. Moreover, the Board credits the testimony that the City of Huron will take reasonable steps to deal with the debris problem on request of Mr. Sanderson.

CONCLUSIONS OF LAW

1. The Board has jurisdiction over this matter.

2. The proposed permit will reduce the damage from flooding, especially in the upper area of the project.

3. The proposed project will not increase the likelihood or severity of flood damages in areas other than the project area nor will it endanger human life or property, except for the potential impacts on Stony Run Lake Dam.

4. Because of the potential impacts on Stony Run Lake Dam, the Board concludes that the project may not proceed unless an appropriate agreement is in place between School and Public Lands and the City of Huron and has so conditioned the permit.

5. The Board concludes that it is not relevant to whether a permit may be granted under SDCL 46-2A-11 that a proposed project will carry debris or an increased amount of debris, unless that debris somehow contributes to flooding or erosion, not the case here. The Board has nonetheless concluded that the likelihood of increased debris by virtue of this project is minimal, if the attention of the City is brought to bear on such problems as they might develop. The Board thus concludes that the allegations regarding debris do not provide a basis for action in this case.

FINAL DECISION

Application No. FC-27 is granted subject to the following qualification:

Flood Control Permit No. FC-27 is subject to the City of Huron entering into a joint agreement with South Dakota School and Public Lands prior to construction of flood control works to address potential impacts to Stony Run Lake Dam.
Dated this _____ day of _____, 1999.

BY THE BOARD:

_____

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of proposed Findings of Fact, Conclusions of Law, and Final Decision in In the Matter of the Application for Flood Control Permit No. FC-27, City of Huron, was served by United States mail, first class, postage prepaid upon:

Francis E. Brink
1214 S. Wells St.
Aberdeen, SD 57401

Rodney Freeman, Jr.
P.O. Box 176
Huron, SD 57350-0176

Marian Gunderson
811 W. 3rd
Yankton, SD 57078

Bernita Loucks
219 42nd St.
Rapid City, SD 57702

Dwayne A. Rollag
320 Lincoln Lane S.
Brookings, SD 57006

Joel Rickenbach
Box 97
Oelrichs, SD 57763-0097

Leo Holzbauer
RR 1, Box 170
Wagner, SD 57380

Mary Pearson, Mayor
City of Huron
P.O. Box 1369
Huron, SD 57350-1369

Rollie Sanderson
490 21st Street S.W.
Huron, SD 57350

by Interoffice mail upon:

John Hatch, Chief Engineer
Department of Environment and
Natural Resources
Foss Building
523 E. Capitol Avenue
Pierre, SD 57501-3182

and by hand delivery upon:

Diane Best
Assistant Attorney General
Capitol Building
500 E. Capitol Avenue
Pierre, SD 57501-5070

on this 9th day of June, 1999.

John P. Guhin
Deputy Attorney General

pld607.jpg(nan)

STATE OF SOUTH DAKOTA

OFFICE OF ATTORNEY GENERAL
500 EAST CAPITOL AVENUE
Pierre, South Dakota 57501-5070
Phone (605) 773-3215
FAX (605) 773-4106

MARK BARNETT
ATTORNEY GENERAL

LAWRENCE LONG
CHIEF DEPUTY ATTORNEY GENERAL

June 25, 1999

MEMORANDUM

TO: Members of the Water Management Board and Interested Parties

FROM: Diane Best, Assistant Attorney General DB

RE: DENR's Response to Findings of Fact, Conclusions of Law, and Final Decision in In the Matter of Application for Flood Control Permit No. FC-27, City of Huron

I am herewith enclosing the Department of Environment and Natural Resources' Response to Findings of Fact, Conclusions of Law, and Final Decision in the above-entitled case.

DB:sk
Encs.

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	DENR'S RESPONSE TO FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION

The Department of Environment and Natural Resources, Water Rights Program, Water Rights Program (DENR) has received and reviewed the proposed Findings of Fact, Conclusions of Law, and Final Decision in the above referenced matter. Although the DENR does not take issue with the substance of any of the Board's decisions, the DENR offers the following proposed changes:

1. In Finding of Fact 2 (3rd sentence) it appears that there is a typographical error. The reference to a 24-year event should instead, be a "25-year event."

2. Finding of Fact 3 should be clarified to read as follows:

> Two cross sections were taken in the area of 21st Street and used, along with the hydrologic modeling, to determine the likely effects of the proposal in that area. At the first cross section, the proposal would result in an increase of .22 ft. during a 25-year event. The immediate downstream location would show a decrease of .23 ft. Similarly, modeling was based upon elevations at the section line between sections 13 and 24. There, the proposed project would result in a potential increase of .20 ft. in flood elevation as a result of a 25-year event. The completed project would result in a potential increase in elevation of .17 ft. during a 25-year event if measured at the Highway 37 Bridge. Testimony indicates that these three minor increases, together with a single decrease, will not be significant in terms of flooding.

3. The DENR also proposes a minor change to Conclusion of Law 5 (first sentence). There, the words "which is" should be

inserted after the word "erosion" and before the phrase "not the case here."

Dated this 25th day of June 1999.

Diane Best
Assistant Attorney General,
Counsel for DENR
500 East Capitol Avenue
Pierre, South Dakota 57501-5070

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STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF APPLICATION)
FOR FLOOD CONTROL PERMIT) CERTIFICATE OF SERVICE
NO. FC-27, CITY OF HURON)

The undersigned hereby certifies that a true and correct copy of DENR's Response to Findings of Fact, Conclusions of Law and Final Decision was served by United States mail, certified, postage prepaid, upon the following:

Francis E. Brink, Chairman
1214 S. Wells St.
Aberdeen, SD 57401-7351

Rodney Freeman, Jr.
P.O. Box 176
Huron, SD 57350-0176

Marian Gunderson
811 W. 3rd
Yankton, SD 57078-3702

Leo Holzbauer
RR 1, Box 170
Wagner, SD 57380-9681

Rollie Sanderson
490 21st St. S.W.
Huron, SD 57350

Bernita Loucks
219 42nd St.
Rapid City, SD 57702-0240

Joel Rickenbach
P.O. box 97
Oelrichs, SD 57763-0097

Dwayne A. Rollag
320 Lincoln Lane S.
Brookings, SD 57006-2741

Mary Pearson, Mayor
City of Huron
P.O. Box 1369
Huron, SD 57350

By hand delivery
John P. Guhin
Deputy Attorney General
Office of Attorney General
500 E. Capitol Ave.
Pierre, SD 57501-5070

By interoffice mail
John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3181

on this 25th day of June 1999.

Diane Best

Diane Best
Assistant Attorney General
500 East Capitol Avenue
Pierre, SD 57501-5070
Telephone: (605) 773-3215

s-pld23.db

Law Offices of

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

103 West Third Street
P.O. Box 129
Miller, South Dakota 57362
(605) 853-2456
FAX (605) 853-2457

Bradley G. Zell
Dedrich R. Koch
****
Tyann J. Danburg, Paralegal

Herbert A. Heidepriem
(1948-1993)
****
Ruben R. Widmayer
(Of Counsel)

JUN 1999
WATER RIGHTS
PROGRAM
Pierre, SD

June 28, 1999

RE: In the Matter of the Application for Flood Control Permit No. FC-27, City of Huron

TO: Members of the Water Management Board and Interested Parties

Please find enclosed a true and correct copy of the PETITIONER'S OBJECTION TO FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION and PETITIONER'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION. This is intended as service upon you.

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Dedrich R. Koch
HEIDEPRIEM, WIDMAYER,
ZELL & KOCH

DRK/drk
cc: Rollie Sanderson
Enc.

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	)))	PETITIONER'S OBJECTION TO FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION

* *

COMES NOW, Dedrich R. Koch, the attorney for the Petitioner, Rollie Sanderson, and hereby Objects to Board's FINDINGS OF FACT, CONCLUSIONS OF LAW, AND FINAL DECISION and offers the following PETITIONER'S OBJECTION TO FINDINGS OF FACT, CONCLUSIONS OF LAW, AND FINAL DECISION.

1. As to FINDINGS OF FACT 2.("FOF 2."), the hydrologic computer models indicate that flood elevations will be decreased upstream, however, this is accomplished by increasing the burden on downstream properties by increasing the volume and flow of the water.

2. As to FOF 3., the hydrologic computer models clearly show the proposed project will significantly increase the volume and speed of the water flow at the point of discharge and into the natural watercourse, Stony Run Creek. The City of Huron has failed to produce any evidence to address or rebute potential erosion caused by the increased velocity of the water at the point of discharge. An increase in flow and volume poses significant health risks to residents and increased risks of property damage through erosion and accumulation of debris and other waste on the downstream property. The City, however, has no plan in place to deal with these matters.

3. As to FOF 4., the City of Huron is required by SDCL 46-2A-11 to show that the proposed project will not cause damage to the downstream property. The City has relied on a computer calculation of surface water levels while disregarding concerns over erosion and increased debris and waste. The City has ignored the risks of potential property damage from causes other than water levels which may negatively affect the use and enjoyment of downstream property other than Stony Run Lake Dam.

4. As to FOF 6., in addition to the negative impact on the Stony Run Lake Dam, the increased flows over the spillways will significantly increase the likelihood of flooding and erosion beyond the dam.

5. As to FOF 7., the economic aspect of the project is relevant to the issuance of a permit when the result of the project is to lower the economic value of the downstream property thereby causing irreparable harm to the property owners.

6. As to FOF 8., increased debris and waste will be generated from the accumulation of waters and its contents from a greatly expanded area in addition to sources along the channel. The debris and waste will impede the natural flow, absorption and evaporation of the waters discharged into the watercourse and cause damage to the property on which it settles. The City has not come forth with any plan to address this matter.

7. As to CONCLUSIONS OF LAW 2. ("COL 2."), the City has not met its burden of showing that flooding upstream will be reduced without increasing flooding and damage to the downstream property.

8. As to COL 3., the City has failed the show that the downstream property will not be damaged if the project is completed, in fact it has ignored considerable evidence to the contrary.

9. As to COL 5., the likelihood of downstream property damage from increased debris and erosion is significant and is relevant to whether a permit may be granted under SDCL 46-2A-11. The City has ignored this problem and has not taken appropriate steps to correct it.

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

By: _____

Dedrich R. Koch
Attorney for Petitioner
103 West Third Street
P.O. Box 129
Miller, South Dakota 57362
(605) 853-2456

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	))))	PETITIONER'S OBJECTION AND PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION

* *

COMES NOW, Dedrich R. Koch, the attorney for the Petitioner, Rollie Sanderson, and hereby offers the following PETITIONER'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND FINAL DECISION.

FINDINGS OF FACT

1. Pursuant to SDCL 46-2A-11, this is an application of the City of Huron for a Flood Control Permit. The City has proposed to modify the existing channel of Stony Run Creek to facilitate the movement of water from the project area. The modifications include the reshaping of the channel, improving the crossings, and construction of a detention pond. The channel will, in some places, the excavated. The proposed project is on the west side of the City of Huron in Beadle County.

2. Hydrologic computer models were developed to demonstrate the effect on the channel elevation from the proposed project. These models, while demonstrating significant decreases in flood levels at the northern or upper regions of the project, indicate that increased flooding will occur at the southern or discharge end of the project.

3. The proposed project will significantly increase the volume and speed of the water flow in the area of 21st Street resulting in unusual and unnatural quantities of water to be discharged into the natural watercourse, Stony Run Creek. This will result in significant health risks and property damage through increased erosion and accumulation of debris and other waste on the downstream property. The increased erosion and debris will negatively impact property values and may render the property unusable for its intended

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purposes.

4. The City of Hearing has had made no proposal to deal with the issue of increased debris nor has the City entered into any agreement with the downstream property owners to compensate them for potential property damage resulting from this project.

5. The project will have a major negative impact on the Stony Run Lake Dam which will be subjected to significant water level increases. The additional flood waters resulting from the project have the potential to cause significant damage to the dam.

6. South Dakota School and Public Lands is the owner of Stony Run Lake Dam. Although School and Public Lands may be willing to negotiate with the City of Huron, at this time no agreement has been reached.

CONCLUSIONS OF LAW

1. The Board has jurisdiction over this matter.

2. The proposed project will reduced damage from flooding in the upper area of the project, however, it will significantly increase likelihood of flood damage to the downstream property.

3. The proposed project presents a potential hazard to human life by depositing significant amounts of debris and other waste on the downstream property, resulting in serious sanitation concerns. The likelihood of downstream property damage from increased debris and erosion is significant and is relevant to whether a permit may be granted under SDCL 46-2A-11.

4. Because of a potential impact to the downstream property and the Stony Run Lake Dam, the Board concludes that the project should not proceed in its current form.

FINAL DECISION

Application No. FC-27 is hereby denied.

Dated this_____ day_____ of, 1999.

BY THE BOARD:

_____

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 28th day of June, 1999 he mailed a true and correct copy of the forgoing PETITIONER'S OBJECTION TO FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION and PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION by first-class mail, postage prepaid to:

Francis E. Brink
1214 South Wells Street
Aberdeen, SD 57401-7351

Marian Gunderson
811 West 3rd
Yankton, SD 57078-3702

Joel Rickenbach
Box 97
Oelrichs, SD 57763-0097

Dwayne A. Rollag
320 Lincoln Lane South
Brookings, SD 57006-2741

John Guhin, Deputy Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Rodney Freeman, Jr.
P.O. Box 176
Huron, SD 57350-0176

Leo Holzbauer
RR 1, Box 170
Wagner, SD 57380-9681

Bernita Loucks
219 42nd Street
Rapid City, SD 57702-0240

Mary Pearson, Mayor
City of Huron
P.O. Box 1369
Huron, SD 57350

Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

Dedrich R. Koch
Attorney for Petitioner

JUL 1999
WATER RIGHTS
PROGRAM
Pierre, SD

JOINT POWERS AGREEMENT

BETWEEN

CITY OF HURON AND

SOUTH DAKOTA OFFICE

OF SCHOOL AND PUBLIC LANDS

This Joint Powers Agreement is entered into this 21 day of June, 1999, pursuant to SDCL § 1-24-2 between the South Dakota Office of School and Public Lands (hereinafter SPL), and the City of Huron (hereinafter City),

WITNESSETH:

WHEREAS, the SPL has the power and duty under SDCL 5-1-7 to maintain Stoney Run Dam located at SW¼ of SE¼ and SE¼ of SE¼ of Section 19, T110N, R61W, 5th pm, in Beadle County, South Dakota and,

WHEREAS, the SPL has the power to enter into joint powers agreements pursuant to SDCL ch. 1-24, and

WHEREAS, the City has the power and duty under SDCL ch. 9-36 to engage in stream channel improvements within or without its corporate limits, and is currently engaging in a stream channel improvement project to improve the channel of Stoney Run Creek which lies in and near the City, and

WHEREAS, the City has the power to enter into joint power agreements to facilitate stream channel improvements pursuant to SDCL 9-12-4, 9-36-15, and SDCL ch. 1-24, and

WHEREAS, the City's stream channel improvement of Stoney Run Creek will affect Stoney Run Dam, and

WHEREAS, the SPL and the City believe it is an efficient use of State and City resources to enter into this undertaking for the repair and maintenance of Stoney Run Dam,

NOW, THEREFORE, it is mutually agreed as follows:

I. SPL Responsibilities.

In consideration of City's observance and performance of the agreements, terms and conditions set forth herein, the SPL agrees as follows:

A. SPL, the agency with responsibility to maintain Stoney Run Dam, will exercise primary authority over any dam maintenance and improvement projects regarding the dam.

B. SPL recognizes that City's stream channel improvements of Stoney Run Creek will result in increased frequency and duration of flood events and may affect Stoney Run Dam and spillway. SPL agrees that it

will not oppose the stream channel improvement project, as proposed. This agreement provides for compensation as contemplated by SDCL 46-2A-11 (pertaining to flood control works).

C. SPL agrees to inform City of issues pertaining to the maintenance of Stoney Run Dam and to cooperate, to the extent practical, with the City in issues pertaining to access to Stoney Run Dam. water quality. and dam maintenance.

II. City Responsibilities.

In consideration of SPL observance and performance of the agreements, terms and conditions set forth herein, the City agrees as follows:

A. City has (as part of its presently pending stream channel improvement for Stoney Run Creek) conducted an engineering study designed to determine the extent of repair necessary to bring Stoney Run Dam into state dam safety standards.

B. City has studied the extent to which City's stream channel improvements will affect Stoney Run Dam and agrees to pay SPL $10,000 in order to reimburse SPL for such repairs as are reasonably related to city's stream channel improvements. This payment will be made to SPL on or before _____.

C. City agrees to inform SPL and engage in good faith efforts to support SPL in resolving issues pertaining to access and water quality on Stoney Run Creek.

III. Contract alteration.

No alteration of the terms of this Agreement shall be valid unless made in writing and signed by the duly authorized representative of both parties. No oral understanding or Agreement not incorporated herein may be binding on any of the parties hereto. Terms expressly stated within this Agreement constitute the entire agreement between the SPL agencies and the City.

IV. Duration of agreement.

This Agreement shall be in effect from July 1, 1999, and will continue in force and effect until July 1. 2003.

V. Termination.

This Agreement may be terminated by mutual agreement of the parties.

VI. Venue and jurisdiction.

This Agreement shall be governed and construed in the accordance with the laws of the state of South Dakota. Venue for any action shall be in Hughes County, South Dakota.

VII. Joint Powers.

The parties declare that no separate entity as contemplated in SDCL § 1-24-4 is being created to implement this Agreement, and that the cooperative undertaking herein described shall be administered by the SPL and the City and their authorized designees as contemplated in SDCL § 1-24-5. No real or personal property will be acquired, held, or disposed of under this Agreement; ownership of Stoney Run Dam and associated easements will remain with SPL.

VIII. Successor.

This Agreement and the covenants herein contain shall inure to the benefit of and be obligatory upon the legal representatives, agents, employees, successor and interests, and assigns of the respective parties hereto.

IX. Authorized representatives.

Contacts between the parties regarding this joint powers agreement, including agreement amendments, renewals, and dispute resolution are to be made with the authorized representative for each of the parties. The authorized representatives are as follows:

Curt Johnson
Commissioner of
School and Public Lands
500 East Capitol Avenue
Pierre, SD 57501-5070
Telephone (605) 773-3303

Mary A. Pearson, Mayor
City of Huron
P.O. Box 1369
Huron, SD 57350

by signatures affixed below:

Curt Johnson
Commissioner of
School and Public Lands

Mary A. Pearson, Mayor
City of Huron

Attest:

Nancy Peck
Oil & Gas Agent

Roger Voigt, Finance Office
City of Huron

Presented to Board at July 7th hearing

STATE OF SOUTH DAKOTA

OFFICE OF ATTORNEY GENERAL
500 EAST CAPITOL AVENUE
Pierre, South Dakota 57501-5070
Phone (605) 773-3215
FAX (605) 773-4106

MARK BARNETT
ATTORNEY GENERAL

LAWRENCE LONG
CHIEF DEPUTY ATTORNEY GENERAL

June 30, 1999

MEMORANDUM

TO: Members of Water Management Board

FROM: John P. Guhin, Deputy Attorney General
Counsel for Water Management Board

RE: **In the Matter of the Application for Flood Control Permit No. FC-27, City of Huron; Submissions of Petitioner.**

The Petitioner in the above-entitled case has submitted two sets of documents. The first objects to the proposed Findings of Fact submitted by me to you. The second document constitutes the Petitioner's own proposed Findings of Fact. I recommend the following disposition of those documents.

BOARD ATTORNEY'S SUGGESTIONS WITH REGARD TO PETITIONER'S OBJECTIONS TO PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION.

1. Petitioner's objection No. 1 with regarding of Finding of Fact No. 2.

   Reject. Proposed Findings 2-4 satisfactorily address these matters.

2. Petitioner's objection No. 2 to Finding of Fact No. 3.

   Reject for the reasons set forth in the paragraph above. Reject on the further grounds that the increase in flow volume has not been shown to propose a significant health risk to residents downstream, an increased risk of property damage through erosion or an accumulation of debris or other waste on downstream property.

3. Petitioner's objection No. 3 to Finding of Fact No.4.

   Reject. The proposed Findings comprehensively analyze risks of potential property damage.

4. Petitioner's objection No. 4 to Finding of Fact No. 6.

Reject. The Board finds no significant increase in the likelihood of flooding and erosion beyond the dam in the sense that it will endanger human life or property.

5. Petitioner's objection No. 5 to Finding of Fact No. 7.

Reject. The Board finds insufficient evidence to find that the project will, in fact, lower the economic value of the downstream property. The Board adheres to its view that the contention that the project is not economically sound for the city is irrelevant.

6. Petitioner's objection No. 6 to Finding of Fact No. 8.

Reject. Finding of Fact No. 8 sufficiently addresses this point.

7. Petitioner's objection No. 7 to Conclusion of Law No. 2.

Reject. The city has met its burden.

8. Petitioner's objection No. 8 to Conclusion of Law No. 3.

Reject. The proposed decision adequately addresses impacts to downstream property and has not ignored evidence, let alone "considerable evidence," to the contrary.

9. Petitioner's objection No. 9 to Conclusion of Law No. 5.

Reject. The Board adheres to its view that the likelihood of increased debris is minimal, assuming the attention of the city is brought to bear on such problems as they might develop. The objection is thus simply speculative. Likewise, the allegations as to erosion are speculative at best.

BOARD ATTORNEYS RESPONSE TO PETITIONER'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL DECISION.

1. Petitioner's Finding No. 1.

Reject. See Board Attorney's Finding No. 1.

2. Petitioner's Finding No. 2.

Reject. Board Attorney's Findings 2-4 adequately address these matters.

3. Petitioner's Finding No. 3.

Reject. Board Attorney's Findings 3, 4, and 8 adequately address these contentions.

4. Petitioner's Finding No. 4.

Reject. Board Attorney's Finding No. 8 crediting testimony that the City of Huron will take reasonable steps to deal with the debris problem on the request of Mr. Sanderson adequately addresses this point. Moreover, except as provided in the Final Decision, there is no need for agreements regarding potential property damage resulting from the project because no such damage will occur.

5. Petitioner's Finding No. 5.

Reject. Board Attorney's Finding No. 5, Conclusion of Law No. 4, and the Final Decision adequately address this point.

6. Petitioner's Finding No. 6.

Reject. This Finding can be rejected for the same reason as set forth immediately above. The project cannot commence without an agreement.

7. Petitioner's Conclusion of Law No. 1.

Reject. See Board Attorney's proposed Conclusion of Law No. 1.

8. Petitioner's Conclusion of Law No. 2.

Reject. This matter is adequately addressed by Board Attorney's proposed Conclusions 2, 3, and 4.

9. Petitioner's Conclusion of Law No. 3.

Reject. This Conclusion of Law is without basis given Board Attorney's proposed Finding No. 8 and Board Attorney's proposed Conclusion of Law No. 5.

10. Petitioner's Conclusion No. 4.

Reject. Board Attorney's proposed Conclusions of Law Nos. 4 and 5 adequately deal with these concerns.

JPG:js

j-memo.jpg City of Huron

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	))))	FINDINGS OF FACT, CONCLUSIONS OF LAW, AND FINAL DECISION

FINDINGS OF FACT

1. This is an application by the City of Huron for a Flood Control Permit. Pursuant to the application, the City proposes to modify the existing channel of Stony Run Creek to facilitate the movement of water from the project area. The modifications include the reshaping of the channel, improving the crossings, and construction of a detention pond. The channel will, in some places, be excavated. The proposed project is on the west side of the City of Huron in Beadle County.

2. Hydrologic computer models were developed to demonstrate the effect on the channel elevation from the proposed project. These models demonstrate significant decreases in flood levels from a 25-year event in areas at the top or beginning of the project. The upper Ninth Street flood elevation will decrease .88 feet and decrease 2.38 feet at the Sixteenth Street location during the 25-year event. These decreases in flood elevation will substantially reduce the likelihood of damage due to flooding or erosion in the areas identified.

3. Two cross sections were taken in the area of 21st Street and used, along with the hydrologic modeling, to determine the likely effects of the proposal in that area. At the first cross section, the proposal would result in an increase of .22 ft. during a 25-year event. The immediate downstream

location would show a decrease of .23 ft. Similarly, modeling was based upon elevations at the section line between sections 13 and 24. There, the proposed project would result in a potential increase of .20 ft. in flood elevation as a result of a 25-year event. The completed project would result in a potential increase in elevation of .17 ft. during a 25-year event if measured at the Highway 37 Bridge. Testimony indicates that these three minor increases, together with a single decrease, will not be significant in terms of flooding.

4. The major negative impact of the project will be found at the spillway at the Stony Run Lake Dam, which will be subjected to a potential increase in level in a 25-year flood event of 1.92 feet. The Board finds that there is a possibility that the dam may be damaged by the additional flood waters.

5. South Dakota School and Public Lands is owner of the dam. School and Public Lands has indicated a willingness to cooperate with the City of Huron in the project, however, and to consider entering into an agreement with the City.

6. There is no evidence that the project will endanger human life or property either within or without the project area, except for the Stony Run Lake Dam structure.

7. Petitioner Rollie Sanderson objected to the project on the grounds that it, in his view, constituted an economic boondoggle. The economics of the project are not, however, cognizable by the Board, but rather are a local matter.

8. Petitioner Sanderson also objected to the project on the grounds that it would bring more debris down the creek and

that that debris might eventually reach his land. Testimony indicated, however, that any additional debris would be generated by a proposed soccer field which might be built along the channel. Whether additional debris might be generated is not, in any event, relevant to whether a permit should be granted under SDCL 46-2A-11. Moreover, the Board credits the testimony that the City of Huron will take reasonable steps to deal with the debris problem on request of Mr. Sanderson.

CONCLUSIONS OF LAW

1. The Board has jurisdiction over this matter.

2. The proposed permit will reduce the damage from flooding, especially in the upper area of the project.

3. The proposed project will not increase the likelihood or severity of flood damages in areas other than the project area nor will it endanger human life or property, except for the potential impacts on Stony Run Lake Dam.

4. Because of the potential impacts on Stony Run Lake Dam, the Board concludes that the project may not proceed unless an appropriate agreement is in place between School and Public Lands and the City of Huron and has so conditioned the permit.

5. The Board concludes that it is not relevant to whether a permit may be granted under SDCL 46-2A-11 that a proposed project will carry debris or an increased amount of debris, unless that debris somehow contributes to flooding or erosion, which is not the case here. The Board has nonetheless concluded that the likelihood of increased debris by virtue of this project is minimal, if the attention of the City is brought to bear on

such problems as they might develop. The Board thus concludes that the allegations regarding debris do not provide a basis for action in this case.

FINAL DECISION

Application No. FC-27 is granted subject to the following qualification:

> Flood Control Permit No. FC-27 is subject to the City of Huron entering into a joint agreement with South Dakota School and Public Lands prior to construction of flood control works to address potential impacts to Stony Run Lake Dam.

Dated this 12th day of July, 1999.

BY THE BOARD:

Francis E Brunner

pld607.jpg(nan)

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

July 19, 1999

NOTICE

TO: Mary A. Pearson, Mayor
City of Huron
PO Box 1369
Huron SD 57350
and Parties of Record (see attached list)

FROM: for John Hatch, Chief Engineer
Water Rights Program
(605) 773-3352

SUBJECT: Adoption of Findings of Fact, Conclusions of Law and Final Decision

This is to notify you that the Final Decision, including Findings of Fact and Conclusions of Law, were adopted July 7, 1999, by the Water Management Board for Flood Control Permit Application No. FC-27, City of Huron. A copy of the signed Findings of Fact, Conclusions of Law and Final Decision is enclosed.

South Dakota statutes provide that decisions of the Board may be appealed to the Courts. Notice of appeal of the Board's decision must be filed within thirty days of this notice and be in accordance with procedures established in SDCL 1-26-31.

c: John Guhin, Deputy Attorney General
Diane Best, Assistant Attorney General

Enclosure

PARTIES OF RECORD

FLOOD CONTROL PERMIT APPLICATION NO. FC-27, City of Huron

APPLICANT

Mary Pearson, Mayor
City of Huron
P.O. Box 1369
Huron, SD 57350

PETITIONERS

Rollie Sanderson
490 21 Street SW
Huron SD 57350

represented by:

Dedrich R. Koch
Heidepriem, Widmayer, Zell & Koch
P.O. Box 129
Miller, SD 57362

CERTIFICATION

I hereby certify that on July 19, 1999, I have personally deposited with the United States mail at Pierre, South Dakota, first class postage, prepaid envelopes containing a Notice dated July 19, 1999, along with a copy of the Parties of Record List, and a copy of the Findings of Fact, Conclusions of Law, and Final Decision, regarding Adoption of Findings of Fact, Conclusions of Law and Final Decision for Flood Control Permit Application No. FC-27, addressed as stated below, and on the attached Parties of Record list:

Mary A. Pearson, Mayor, City of Huron, P.O. Box 1369, Huron, SD 57350.

A copy of the above described Notice and attachments was sent Inter-office to:

John Guhin, Deputy Attorney General, Capitol Building.

Diane Best, Assistant Attorney General, Capitol Building.

Cheryl F. Frost
Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 20th day of July, 1999

Karen Schlaak
Notary Public

KAREN SCHLAAK
SEAL NOTARY PUBLIC SOUTH DAKOTA SEAL
KAREN SCHLAAK, Notary Public
My Commission Expires
April 1, 2001

Law Offices of

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

103 West Third Street
P.O. Box 129
Miller, South Dakota 57362



Bradley G. Zell
Dedrich R. Koch
****
Tyann Danburg, Paralegal

605/853-2456
FAX 605/853-2457

Herbert A. Heidepriem
(1948-1993)

Ruben R. Widmayer
(Of Counsel)

August 17, 1999

Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

Mary Pearson
Mayor City of Huron
PO Box 1369
Huron, SD 57350

John Guhin, Deputy Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

RE: Notice of Appeal

Dear Folks:

Please find enclosed the Notice of Appeal in the Matter of the Application for Flood Control Permit No. Fc, City of Huron for Rollie Sanderson.

This is intended as service upon you by mail.

Sincerely,

Dedrich R. Koch
Of HEIDEPRIEM, WIDMAYER, ZELL & KOCH

DRH/eaz

Enclosure

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
		CIV. 99-
IN THE MATTER OF THE	)	
APPLICATION FOR FLOOD CONTROL	)	NOTICE OF APPEAL
PERMIT NO. FC-27, CITY OF HURON	)	

* *

TO: Diane Best, Assistant Attorney General; John Guhin, Deputy Attorney General; Mary Pearson, Mayor City of Huron and John Hatch, Chief Engineer Water Rights Program.

Please take notice, that the Petitioner, Rollie Sanderson, appeals to the Third Judicial Circuit Court of South Dakota from the Final Decision entered in this action on the 12th day of July, 1999.

Dated this 17th day of August, 1999.

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

By: _____

Dedrich R. Koch
Attorney for Petitioner
103 West Third Street
P.O. Box 129
Miller, South Dakota 57362
(605) 853-2456

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 17th day of August, 1999. he mailed a true and correct copy of the forgoing NOTICE OF APPEAL by first-class mail, postage prepaid to:

Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

Mary Pearson
Mayor City of Huron
P.O. Box 1369
Huron, SD 57350

John Guhin, Deputy Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

_____

Dedrich R. Koch
Attorney for Petitioner

Law Offices of

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

103 West Third Street
P.O. Box 129
Miller, South Dakota 57362
(605) 853-2456
FAX (605) 853-2457

Bradley G. Zell
Dedrich R. Koch
****
Tyann J. Danburg, Paralegal

Herbert A. Heidepriem
(1948-1993)
****
Ruben R. Widmayer
(Of Counsel)

AUG 1999
WATER RIGHTS
PROGRAM
Pierre, SD

August 24, 1999

JOHN HATCH, CHIEF ENGINEER
WATER RIGHTS PROGRAM
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SD 57501-3181

RE: IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON

Dear John,

Please find enclosed copies of the ORDER FOR TRANSCRIPTS and STATEMENT OF ISSUES in the above referenced matter. This is intended as service upon you.

Sincerely,

Dedrich R. Koch
OF HEIDEPRIEM, WIDMAYER, ZELL & KOCH

DRK/tjd

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
		CIV. 99-218
IN THE MATTER OF THE	)	
APPLICATION FOR FLOOD CONTROL	)	STATEMENT OF ISSUES
PERMIT NO. FC-27, CITY OF HURON	)	

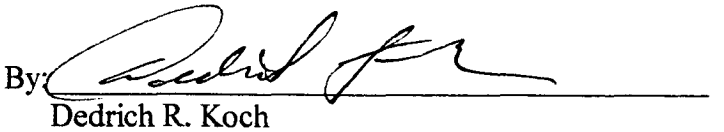
* *

The City of Huron has applied for Flood Control Permit for purposes of modifying the existing channel of Stony Run Creek to facilitate water drainage from large area on the Northwest side of Huron. The proposed drainage channel will cause waters from this area to be deposited over and onto property owned by Rollie Sanderson the Petitioner in the above-stated matter. The issues before this Court are as follows:

1. Whether the City has met its burden under SDCL 46-2A-11 to show the project will not increase the likelihood or severity of flood damage to Petitioner's property;
2. Whether the City has met its burden under SDCL 46-2A-11 to show the project will not endanger human life or property;
3. Whether the City has a duty to compensate Petitioner for damage to his property.

Dated this 24th day of August, 1999.

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

By: 

Dedrich R. Koch
Attorneys for Plaintiff/Defendant
103 West Third Street
P.O. Box 129
Miller, South Dakota 57362
(605) 853-2456

CERTIFICATE OF SERVICE

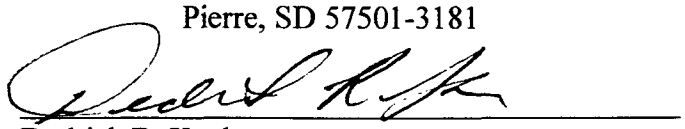
The undersigned hereby certifies that on the 24th day of August, 1999. he mailed a true and correct copy of the forgoing STATEMENT OF ISSUES by first-class mail, postage prepaid to:

Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

Mary Pearson
Mayor City of Huron
P.O. Box 1369
Huron, SD 57350

John Guhin, Deputy Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181



Dedrich R. Koch
Attorney for Petitioner

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT CIV. 99-218
IN THE MATTER OF THE	)	
APPLICATION FOR FLOOD CONTROL	)	ORDER FOR TRANSCRIPT
PERMIT NO. FC-27, CITY OF HURON	)	

* *

TO: COURT REPORTER Cheri McComsey Wittler

Pursuant to SDCL 1-26-32.2, Dedrich R. Koch, attorney for the Appellee, hereby orders a transcript of proceedings in the above-entitled action as indicated below:

DATE OF PROCEEDING	TYPE OF PROCEEDING	NAME OF REPORTER
July 7, 1999	Hearing before Water Management Board	Cheri McComsey Wittler

As the ordering party I hereby certify that notice of appeal was filed with the trial clerk on August 18, 1999 and that this order is timely made within ten days of said filing date.

I also certify that pursuant to SDCL 1-26-32.2, an original of this order has been transmitted to each Court Reporter who took the requested proceedings; that a copy has been filed with the clerk of the circuit court; and that service has been made upon all parties to the action as reflected in the attached certificate of service.

Dated this 24th day of August, 1999.

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

By: [signature]

Dedrich R. Koch
Attorney for Plaintiff/Defendant
P.O. Box 129
Miller, South Dakota 57362
(605) 853-2456

COURT REPORTER'S ENDORSEMENT

I, Cheri McComsey Wittler, hereby acknowledge receipt of this order for transcript on ____________, 1999. My anticipated date of completion is ____________________, 1999.

____
Court Reporter

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 24th day of August, 1999. he mailed a true and correct copy of the forgoing ORDER FOR TRANSCRIPT by first-class mail, postage prepaid to:

Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

Mary Pearson
Mayor City of Huron
P.O. Box 1369
Huron, SD 57350

John Guhin, Deputy Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Dedrich R. Koch
Attorney for Petitioner

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
		CIV. 99-218
IN THE MATTER OF THE	)	
APPLICATION FOR FLOOD CONTROL	)	ORDER FOR TRANSCRIPT
PERMIT NO. FC-27, CITY OF HURON	)	

* *

TO: COURT REPORTER Lynne M. Ormesher

Pursuant to SDCL 1-26-32.2, Dedrich R. Koch, attorney for the Appellee, hereby orders a transcript of proceedings in the above-entitled action as indicated below:

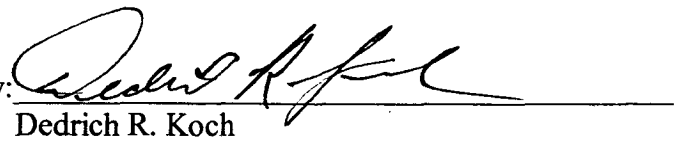
DATE OF PROCEEDING	TYPE OF PROCEEDING	NAME OF REPORTER
May 5, 1999	Hearing before Water Management Board	Lynne M. Ormesher

As the ordering party I hereby certify that notice of appeal was filed with the trial clerk on August 18, 1999 and that this order is timely made within ten days of said filing date.

I also certify that pursuant to SDCL 1-26-32.2, an original of this order has been transmitted to each Court Reporter who took the requested proceedings; that a copy has been filed with the clerk of the circuit court; and that service has been made upon all parties to the action as reflected in the attached certificate of service.

Dated this 24th day of August, 1999.

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

By: 

Dedrich R. Koch
Attorney for Plaintiff/Defendant
P.O. Box 129
Miller, South Dakota 57362
(605) 853-2456

COURT REPORTER'S ENDORSEMENT

I, Lynne M. Ormesher, hereby acknowledge receipt of this order for transcript on _____, 1999. My anticipated date of completion is_____, 1999.

_____
Court Reporter

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 24th day of August, 1999. he mailed a true and correct copy of the forgoing ORDER FOR TRANSCRIPT by first-class mail, postage prepaid to:

Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

Mary Pearson
Mayor City of Huron
P.O. Box 1369
Huron, SD 57350

John Guhin, Deputy Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

John Hatch, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Dedrich R. Koch
Attorney for Petitioner

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	: ss.	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
	)	(99 - 218)
IN THE MATTER OF FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	)	CERTIFICATION AND TRANSMITTAL OF RECORD

I, Eric S. Gronlund, Natural Resource Engineer, Water Rights Program, Department of Environment and Natural Resources, certify as follows:

1. As a Natural Resource Engineer employed by the Water Rights Program, Department of Environment and Natural Resources, I am responsible for maintaining the formal agency file on all applications which are subject to the jurisdiction of the South Dakota Water Management Board.

2. Consistent with my responsibilities in the Water Rights Program, I have kept the agency record in the matter of Flood Control Permit No. FC-27, City of Huron. The record is herewith transmitted to the above-captioned reviewing court pursuant to SDCL 1-26-33.

3. In addition, I have prepared a chronological and alphabetical index of the agency record and a list of exhibits which are herewith transmitted to the above-captions reviewing court pursuant to SDCL 1-26-33. A copy of the indexes is also being sent to the parties of record on this date.

Dated this 8th day of September, 1999.

Eric S Gronlund

Eric S. Gronlund, Natural Resource Engineer
Water Rights Program
Dept. of Environment & Natural Resources

Subscribed and sworn to before me this
8th day of September, 1999

Karen Schlaak
Notary Public

My commission expires:
KAREN SCHLAAK, Notary Public
My Commission Expires

SEAL

KAREN SCHLAAK
SEAL NOTARY PUBLIC SOUTH DAKOTA SEAL

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

September 8, 1999

Marilyn Packard
Beadle Co. Clerk of Courts
P.O. Box 1358
Huron, SD 57350

Re: Transmittal of Record in the Matter of Flood Control Permit No. FC-27, City of Huron (99-218).

Dear Clerk:

Consistent with SDCL 1-26-33, I am transmitting the agency record for the above entitled matters to the Third Judicial Circuit Court in Beadle County. The following is enclosed:

1. agency record (with exhibits)
2. certification and transmittal of record
3. chronological index
4. alphabetical index
5. list of exhibits

Sincerely,

Eric Gronlund

Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

September 8, 1999

NOTICE

TO: Mary Pearson, Mayor
City of Huron
P.O. Box 1369
Huron, SD 57350

Dedrich R. Koch
P.O. Box 129
Miller, SD 57362

FROM: John Hatch, Chief Engineer
Water Rights Program
(605) 773-3352

SUBJECT: In the matter of Flood Control Permit No. FC-27, City of Huron.

Consistent with SDCL 1-26-33, the agency record for the above entitled matters is being transmitted to the Third Judicial Circuit Court in Beadle County. As of the date of this mailing, the court reporter has not filed the transcripts of the hearing with this agency. A chronological and alphabetical index of the agency record and a list of exhibits is also being transmitted to the court. A copy of each index is enclosed.

enclosures

c: John Guhin, Deputy Attorney General
Diane Best, Assistant Attorney General
Doug Fosheim, City Attorney, 289 Dakota Ave. South #5, Huron, SD 57350

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	: SS	
COUNTY OF BEADLE	)	THIRD JUDICIAL COURT
		(99-218)
IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27 CITY OF HURON	)))	CHRONOLOGICAL INDEX

Entry	Date	Document	Pages
1.	September 30, 1998	Public Notice of the US Army Corps of Engineers	1-15
2.	October 15, 1998	Letter to Ralph Borkowski, City of Huron from John Hatch	16
3.	October 19, 1998	Letter to Steven E Naylor, US Army Corps of Engineers from Tim Olson	17-20
4.	October 28, 1998	Letter to Steven E Naylor, US Army Corps of Engineers from Pete Gober	21-22
5.	November 6, 1998	Letter to Steven E Naylor, US Army Corp of Engineers from Tim Olson	23-24
6.	February 9, 1999	Flood Permit Application Stony Run Creek Improvements (bound copy, attached separately)	25
7.	February 9, 1999	Flood Permit Application (copy of form 2)	26
8.	February 10, 1999	Letter to Mary A Pearson, Mayor from Karen Schlaak	27
9.	February 12, 1999	Letter to Mike Wever, Huron Engineer from Nick E Hoffman (enclosures inserted in application)	28
10.	February 26, 1999	Letter to Mark Rath from Nick E Hoffman including HEC-1 and HEC-2 analysis (bound copy, attached separately)	29

Entry	Date	Document	Pages
11.	March 17, 1999	Report on Flood Control Permit Application No. FC-27	30-32
12.	March 17, 1999	Recommendation of Chief Engineer for Flood Control Application No. FC-27, City of Huron	33
13.	March 22, 1999	Letter to Mike Wever, Engineer from Harlan Quenzer (w/ enclosure)	34-38
14.	March 22, 1999	Letter to Curt Johnson, Commissioner of School and Public Lands from Mark Rath	39
15.	April 2, 1999	Letter to City of Huron regarding publishing the Notice of Hearing	40
16.	April 2, 1999	Letter to The Plainsman regarding publishing the Notice of Hearing (w/ copy of the notice)	41-42
17.	April 6, 1999	Letter to Rollie Sanderson from Eric Gronlund	43
18.	April 7, 1999	Receipt for payment of application fee	44
19.	April 22,1999	Proof of Publication of Notice of Hearing from the Plainsman	45
20.	April 20, 1999	Petition to Intervene from Rollie Sanderson	46
21.	May 5, 1999	Sanderson map used during May 5, 1999 hearing	47
22.	May 11, 1999	Notice of Preparation of Findings of Fact, Conclusions of Law and Final Decision (w/certificate of service)	48-52
23.	June 10, 1999	Memorandum from John P Guhin on proposed Findings of Fact, Conclusions of Law and Final Decision	53
24.	June 10, 1999	Proposed Findings in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (with/certificate of service)	54-59
25.	June 25, 1999	DENR Response to Findings of Fact, Conclusions of Law and Final Decision in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (w/certificate of service)	60-63

Entry	Date	Document	Pages
26.	June 29, 1999	Letter from Dedrich R Koch submitting Petitioner's Objection to Proposed Findings	64
27.	June 29, 1999	Petitioner's Objection to Findings of Fact, Conclusions of Law and Final Decision	65-66
28.	June 29, 1999	Petitioner's Objection and Proposed Findings of Fact, Conclusions of Law and Final Decision (w/certificate of service)	67-70
29.	July 6, 1999	Joint Powers Agreement between City of Huron and South Dakota Office of School and Public Lands	71-73
30.	July 7, 1999	Board Attorney's Response to Petitioner's Objection and Proposed Findings of Fact, Conclusions of Law and Final Decision	74-76
31.	July 12, 1999	Findings of Fact, Conclusions of Law and Final Decision in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (signed)	77-80
32.	July 19, 1999	Notice from John Hatch transmitting adopted Findings of Fact, Conclusions of Law and Final Decision (w/certificate of service)	81-83
33.	August 19, 1999	Letter from Dedrich R Koch transmitting Notice of Appeal (w/certificate of service)	84-85

STATE OF SOUTH DAKOTA)
: SS
COUNTY OF BEADLE)

IN CIRCUIT COURT

THIRD JUDICIAL COURT

(99-218)

IN THE MATTER OF THE APPLICATION)
FOR FLOOD CONTROL PERMIT NO. FC-27)
CITY OF HURON)

ALPHABETICAL
INDEX

Entry	Date	Document	Pages
1.	July 7, 1999	Board Attorney's Response to Petitioner's Objection and Proposed Findings of Fact, Conclusions of Law and Final Decision	74-76
2.	June 25, 1999	DENR Response to Findings of Fact, Conclusions of Law and Final Decision in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (w/certificate of service)	60-63
3.	July 12, 1999	Findings of Fact, Conclusions of Law and Final Decision in the Matter of the Application for Flood Control Permit No. FC-27, City of Huron (signed)	77-80
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32.	March 17, 1999	Report on Flood Control Permit Application No. FC-27	30-32
33.	May 5, 1999	Sanderson map used during May 5, 1999 hearing	47

Exhibits Introduced into Evidence

in the Matter of the Flood Control Permit No. FC-27, City of Huron

Exhibit No.	Description
DENR-1	DENR file on Flood Control Permit Application No. FC-27, City of Huron
DENR-2	Map of Project Area

CERTIFICATION

I hereby certify that on September 8, 1999, I have personally deposited with the United States mail at Pierre, South Dakota, first class postage, prepaid envelopes containing a Notice dated September 8, 1999, along with the chronological and alphabetical index of the agency record and a list of exhibits, regarding Flood Control Permit No. FC-27, City of Huron, addressed as stated below:

Mary Pearson, Mayor, City of Huron, P.O. Box 1369, Huron, SD 57350.

Dedrich R. Koch, P.O. Box 129, Miller, SD 57362.

Doug Fosheim, City Attorney, 289 Dakota Ave. South #5, Huron, SD 57350.

A copy of the above described Notice and attachments was sent Inter-office to:

John Guhin, Deputy Attorney General, Capitol Building.

Diane Best, Assistant Attorney General, Capitol Building.

Cheryl F. Frost
Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 9th day of September, 1999

Karen Schlaak
Notary Public

KAREN SCHLAAK
SEAL NOTARY PUBLIC SOUTH DAKOTA SEAL

KAREN SCHLAAK, Notary Public
My Commission Expires
April 1, 2001

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

October 5, 1999

Marilyn Packard
Beadle Co. Clerk of Courts
P.O. Box 1358
Huron SD 57350

Re: Transcript in the matter of Flood Control Permit No. FC-27, City of Huron (99-218)

Dear Clerk:

Enclosed is the original transcript of the May 5, 1999, proceedings before the Water Management Board in the matter of Flood Control Permit No. FC-27, City of Huron. This matter is on appeal with the Third Judicial Circuit and assigned case number 99-218. The agency record was transmitted to you on September 8th.

Sincerely,

Eric Gronlund

Eric Gronlund
Water Rights Program
(605) 773-3352

enclosure

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

October 12, 1999

Marilyn Packard
Beadle Co. Clerk of Courts
P.O. Box 1358
Huron SD 57350

Re: Transcript of July 7, 1999, hearing in the matter of Flood Control Permit No. FC-27, City of Huron (99-218)

Dear Clerk:

Enclosed is the original transcript of the July 7, 1999, proceedings before the Water Management Board on adopting findings of fact, conclusions of law and the final decision in the matter of Flood Control Permit No. FC-27, City of Huron. This matter is on appeal with the Third Judicial Circuit and assigned case number 99-218.

Sincerely,

Eric Gronlund

Eric Gronlund
Water Rights Program
(605) 773-3352

enclosure



Law Offices of

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

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RE: Matter of the Application for Flood Control Permit No. FC-27, City of Huron

Dear Folks:

Please find enclosed the Brief of Appellant. This is intended as service upon you by mail.

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Dedrich R. Koch
OF HEIDEPRIEM, WIDMAYER, ZELL & KOCH

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enclosure

CERTIFICATE OF SERVICE

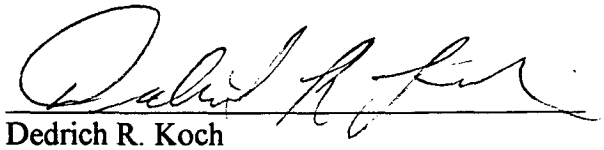
The undersigned hereby certifies that on the 4th day of November, 1999, he mailed a true and correct copy of the forgoing BRIEF OF APPELLANT by first-class mail, postage prepaid to:

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Attorney for Petitioner

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
		CIV. 99-218
IN THE MATTER OF THE	)	
APPLICATION FOR FLOOD CONTROL	)	BRIEF OF APPELLANT
PERMIT NO. FC-27, CITY OF HURON	)	

****

INTRODUCTORY STATEMENT

Petitioner/Appellant, Rollie Sanderson, will be referred to as "Sanderson". Applicant/Appellee, City of Huron, will be referred to as "City". The Department of Environment and Natural Resources will be referred to as "DENR". The Water Management Board will be referred to as "Board". Citations to the Agency Record will be referred to as "AR".

JURISDICTIONAL STATEMENT

Pursuant to SDCL 1-26-31, Petitioner, Sanderson, appeals from the Findings of Fact, Conclusions of Law and Final Decision of the Water Management Board granting the City of Huron's Application for Flood Control Permit No. FC-27 which was entered on July 12, 1999, and transferred to the Beadle County Clerk of Courts on September 8, 1999. (AR pg. 77-80). Said Decision found that the flood control project proposed by the City will reduce flooding in the area to be benefitted, will not increase the likelihood or severity of flood damages to Sanderson's property and will not endanger human life or property. Notice of Appeal was filed on August 18, 1999. (AR pg. 84-85).

ISSUES PRESENTED

I. WHETHER THE CITY HAS MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THE PROJECT WILL NOT INCREASE THE LIKELIHOOD OR SEVERITY OF FLOOD DAMAGE TO PETITIONER'S PROPERTY;

II. WHETHER THE CITY HAS MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THE PROJECT WILL NOT ENDANGER HUMAN LIFE OR PROPERTY;

III. WHETHER THE CITY HAS A DUTY TO COMPENSATE PETITIONER FOR DAMAGE TO HIS PROPERTY.

The Board found that the flood control project proposed by the City will not increase the likelihood or severity of flood damages to Sanderson's property and will not endanger human life or property. Although presented with a request from Sanderson to address the compensation issue, the Board did not do so.

STATEMENT OF CASE AND FACTS

In November of 1997, the Greater Huron Development Corp. published an article which outlined a proposed drainage project by the City of Huron. This project proposes to divert surface water from hundreds of acres of land, located in West Huron, into Stony Run Creek.

Sanderson addressed the Huron City Commissioners at the December 22, 1997 meeting to express his concerns about the proposed project and the impact it would have on his property. At this same meeting, the City approved the sale of bonds to finance the proposed project.

On July 20, 1998 the City passed Resolution of Necessity No. 13-98 for Water and Sewer Improvements. Sanderson personally appeared once again to oppose this resolution. The U.S. Army Corp. of Engineers and the South Dakota Department of Environments and Natural Resources issued a Joint Notice of Permit Pending on September 28, 1998, and pursuant to the

provisions of the notice, Sanderson submitted written objections to the proposed project. (AR pg. 1-15)

On March 17, 1999, the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources, submitted his Report on Flood Control Permit Application No. FC-27 and Recommendation of Chief Engineer for Flood Control Application No. F. C.-27, City of Huron. (AR pg. 30-32). Sanderson was given Notice of Hearing on Flood Control Application No. Fc-27 on April 6, 1999, and Submitted a Petition to Intervene on April 20, 1999.

A Hearing to Consider Flood Control Permit Application No. FC-27, City of Huron, was held on May 5, 1999, before the Water Management Board. At the conclusion of evidence, the Board directed its attorney to prepare the Findings of Fact, Conclusions of Law and Final Decision, approving the City of Huron's Flood Control Permit Application No. FC-27.

Proposed Findings of Fact, Conclusions of Law, and Final Decision were served upon the interested parties on June 9, 1999. (AR 54-59). The Department of Environment and Natural Resources submitted a response to the proposed findings conclusions and final decision on June 25, 1999 and Sanderson served his Objection to Findings of Fact Conclusions of Law and Final Decision and his Proposed Findings of Fact Conclusions of Law and Final Decision to the Water Management Board and interested parties on June 28, 1999. (AR 60-63, 65-70).

On July 7, 1999, a hearing was held before the Water Management Board to consider Findings of Fact, Conclusions of Law

and Final Decision in Flood Control Permit Application No. Fc-27, City of Huron. At this hearing, the Board accepted the proposed Findings of Fact, Conclusions of Law and Final Decision as amended to include the recommendations by the DENR and including the Joint Powers Agreement Between City of Huron and South Dakota Office of School and Public Lands. (AR 71-73).

A Notice of Appeal was served on interested parties on August 17, 1999, and filed with the Beadle County Clerk of Courts Office on August 18, 1999. (AR 84-85).

Sanderson is a businessman and property owner residing in Huron, South Dakota. Sanderson owns approximately 137 acres of highly developable land located southwest of Huron. His land begins where the proposed drainage project ends.

The proposed project gathers surface water from hundreds of acres of property which includes a sale barn, feedlots, gas stations, an industrial site, portions of the State Fairgrounds and several residential areas, diverting runoff into Stony Run Creek.

Numerous modifications will be made to Stoney Run Creek to reshape it in order to handle the increased volume and flows of water diverted into it. The project terminates at 21st Street, whereupon the diverted water is discharged onto Sanderson property.

The Trial Court's standard of review of the Board's Findings of Fact is under a clearly erroneous standard. Shopko v. C & R Transf. Co., 1998 SD 8, ¶6, 575 NW2d 255 (citations omitted). Conclusions of law, on the other hand, are reviewed under a de

novo standard, giving no deference to the Board's Conclusions of Law. Id. In this case, the issues concern the Board's interpretation of state statutes and are reviewed under the de novo standard.

ARGUMENT

I. THE CITY HAS NOT MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THE PROJECT WILL NOT INCREASE THE LIKELIHOOD OR SEVERITY OF FLOOD DAMAGE TO PETITIONER'S PROPERTY;

Prior to the issuance of a flood control permit, SDCL 46-2A-11 places a heavy burden on the applicant to show that "the project will reduce the damage from flooding or erosion in the area proposed to be benefitted, [and] the project will not increase the likelihood or the severity of flood damages in areas other than the project area..."

By diverting higher volumes of water at much greater velocities onto Sanderson's property, the City attempts to reduce flood elevations upstream. Hydrologic computer models prepared for the City indicate the proposed project will reduce the effects of flooding in the project area, however, the models also clearly show the proposed project will significantly increase the volume and speed of the water flow at the point of discharge (Sanderson's property) and into the natural watercourse, Stony Run Creek. (AR pg. 30-32). This will result in significant increases in both the frequency and duration of fluctuations in water surface elevation levels and stream velocities on Sanderson's property. (AR pg. 71-73, part I. paragraph B.)

The hydrologic computer models indicate that the average increase in water velocity across Sanderson's property will be as

high as 97 cubic feet per second. (AR pg. 30-32). This translates into an increase of 2,610,000 gallons per hour. The potential for increased erosion resulting from these dramatic fluctuations of unusual and unnatural quantities of water discharged into the natural watercourse, Stony Run Creek, are obvious. The erosion risk is compounded by an abrupt s-shaped bend in Stoney Run Creek at approximately the mid-point of Sanderson's property through which literally millions of gallons of increased flow must pass. (AR pg. 47) The hydrologic computer model fails to even consider this bend in any of its measurements or calculations. The DENR was not aware of any evidence presented by the City to address the potential for erosion, and by its own admission, does not know whether or not erosion will occur. (July Transcript pg 25).

SDCL 46-2A-11 demands that the City, address the erosion issue prior to the issuance of a permit to show that damage will not increase to downstream property. However, the City's response to Sanderson's concerns about the effect of the project on his property has been to shift the burden to Sanderson to prove damage will occur.(May Transcript pg 37) Because no evidence was ever presented to address the erosion issue, the Board's adoption of the Findings of Fact, Conclusions of Law and Final Decision was clearly erroneous and in contradiction of South Dakota law.

II. THE CITY HAS NOT MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THE PROJECT WILL NOT ENDANGER HUMAN LIFE OR PROPERTY.

Pursuant to SDCL 46-2A-11, the City must show that the project will not endanger human life or property. An increase in flow and volume poses significant health risks to residents and increased risks of property damage through erosion and accumulation of debris and other waste on the downstream property. The City, however, has no plan in place to deal with these issues.

From the beginning, Sanderson's primary concern has been the issue of water quality and increased debris that will be discharged into Stoney Run Creek where it enters his property. (AR pg. 46) Runoff from hundreds of acres which includes stockyards, feedlots, industrial sites, gas stations, a busy highway, residential property and a portion of the State Fairgrounds will be diverted and accumulated for discharge over highly developable land owned by Sanderson.

Concerns about the quality of the water flowing into Stoney Run Creek are not new. There have been problems with runoff containing biohazards and debris for over twenty years. (May Transcript pg 10). Further, the water quality in the stream will not improve is a result of the project but is likely to worsen. (May Transcript pg 4). By the DENR's own admission, water quality issues were not considered as relevant to the issuance of a permit. (May Transcript. pg 7). This completely ignores the requirements set forth in SDCL 46-2A-11. The increased risk of sickness or disease to area residents as a result of unknown biohazards and the accumulation of garbage and biowastes along Stoney Run Creek are concerns which must be addressed prior to

issuing a permit. It was clearly erroneous and contrary to South Dakota law for the Board to disregard these hazards and grant the permit to the City.

III. THE CITY HAS A DUTY TO COMPENSATE SANDERSON FOR DAMAGE TO HIS PROPERTY.

By increasing the volume of and speed of the flows from the project area, increased wastes and debris will be carried further downstream and dumped onto Sanderson's property. Under SDCL 46-2A-11, the City must negotiate with Sanderson to compensate him for damages likely to occur as a result of the proposed project. The City has made no attempt to do so.

Sanderson's property is located in an area that is highly developable for either commercial or residential purposes. Frequent fluctuations in water levels and stream velocities combined with the numerous detriments set forth above, greatly reduce the desirability of Sanderson's property for development purposes. In essence, the City is attempting to clean up its back yard by simply throwing its trash over the neighbor's fence.

The City argues that the potential damages to Sanderson's property are speculative and are incapable of being determined. This argument falls on its face, however, in light of the Joint Powers Agreement between the City and the owner of Stoney Run Dam, the South Dakota Office of School and Public Lands. (AR pg.71-73). The potential damage to Stoney Run Dam is no less speculative and difficult to project than is the damage to Sanderson's property.

In adopting the Findings of Fact, Conclusions of Law and Final Decision, the Board failed to properly consider the

evidence as required by SDCL 1-26-23. The Board disregarded the requirements set forth in SDCL 46-2A-11 and considered the issue of compensation to be between the City and Sanderson. (July Transcript pg. 19) The Board, in effect, leaves it up to the City to decide whether or not it has fulfilled its burden under the statute. The Board further opined that its consideration of Findings of Fact, Conclusions of Law and Final Decision is a mere legal formality best left to its attorney. (July Transcript pg. 19-20). This is clearly erroneous.

CONCLUSION

Appellant, Rollie Sanderson, prays that the Final Decision of the Water Management Board granting Application No. FC-27, City of Huron, be remanded and an Order entered denying said Application.

Respectfully submitted this 4th day of November, 1999.

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

By: _____

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December 2, 1999

Marilyn Packard
Beadle County Clerk of Courts
P.O. Box 1358
Huron, SD 57350-1358

Re: In the Matter of the Application for Flood Control Permit No. FC-27, City of Huron, Beadle County Civ. No. 99-218

Dear Clerk Packard:

Enclosed for filing is the original of Brief of Appellee Department of Environment and Natural Resources and Certificate of Service in the above-entitled matter. If you have any questions or comments, please contact me.

Sincerely,

Diane Best

Diane Best
Assistant Attorney General

DB:sk
Enc.
cc/enc. Dedrich Koch
Douglas Fosheim
Curt Johnson, School & Public Lands
John Hatch, Water Rights

s-co.clerkltr

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	) SS.	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	)	Civ. No. 99-218
	)	BRIEF OF APPELLEE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

PRELIMINARY STATEMENT

In this brief Appellant Rollie Sanderson, will be referred to as "Sanderson." The Appellees will be referred to as "DENR" and "City of Huron." The administrative agency from which this appeal is taken, the South Dakota Water Management Board, will be referred to as "Board."

Documents in the certified record will be referred to as "AR," followed by the appropriate page number.

There are two transcripts. The transcript of the evidentiary hearing held on May 5, 1999, will be referred to as "TR," followed by the appropriate page number. Also, the Board held a hearing to consider findings of fact and conclusions of law on July 7, 1999. The transcript of this hearing will be referred as "July 7 TR."

JURISDICTIONAL STATEMENT

The DENR accepts Sanderson's assertion that jurisdiction is properly before this Court. Notice of the Board's final decision was issued on July 19, 1999. The appeal was filed on August 18, 1999, pursuant to SDCL 1-26-31.

ISSUES PRESENTED

WHETHER THE CITY OF HURON MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THAT ITS PROJECT WILL NOT INCREASE THE LIKELIHOOD OR SEVERITY OF FLOOD DAMAGE TO PETITIONER'S PROPERTY.

The Board held that the City met its burden.

WHETHER THE CITY OF HURON MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THAT THE PROJECT WILL NOT ENDANGER HUMAN LIFE OR PROPERTY.

The Board held that the City met its burden.

WHETHER THE BOARD SHOULD HAVE RULED ON SANDERSON'S REQUEST FOR MONETARY DAMAGES.

The Board does not have jurisdiction to rule on this question.

STATEMENT OF THE CASE AND FACTS

In February 1999, the City of Huron filed an application with the DENR for a Flood Control Permit. AR 25. The City proposes to modify the existing channel of Stony Run Creek, a creek on the west side of Huron. The City of Huron proposed to reshape the existing creek channel, improve crossings in the existing creek channel and construct a detention pond. AR 25.

The City of Huron's application was filed pursuant to SDCL 46-2A-11. This application was reviewed by the DENR and a Report was prepared explaining the DENR's review. AR 30-32. In examining the filed application, the DENR found that the only adverse impact would be to a downstream dam owned by the State itself. TR 4. Therefore,, the Chief Engineer of the DENR issued a recommendation for deferral until impacts at this dam were addressed. AR 33.

In the meantime the matter was advertised for public hearing. AR 42. Notice was also provided to Sanderson. AR 43. Sanderson intervened on April 20, 1999. AR 46. Hearing was held on May 5, 1999. TR 46.

At hearing, the City of Huron presented its engineering analysis regarding the effect of the proposed stream improvements. TR 15-25. Sanderson testified in opposition to the application. At hearing, the Chief Engineer changed his recommendation to "Approval." TR 42. The Board approved the project and directed its attorney to prepare Findings of Fact, Conclusions of Law, and a Final Decision approving the permit. TR 43.

The proposed Findings of Fact, Conclusions of Law, and Final Decision were served on all parties on June 9, 1999. AR 53. Consistent with Board rule, the parties filed responses to these proposed Findings of Fact and Conclusions of Law. AR 60-76.

At its regular Board meeting on July 7, 1999, the Board considered the proposed Findings of Fact and Conclusions of Law drafted by its attorney as well as the responses filed by the parties. July 7, 1999 TR.

Notice of the Board's Final Decision was issued on July 19, 1999. AR 81. Sanderson filed his Notice of Appeal on August 18, 1999. AR 85.

Additional facts pertaining to each issue will be set forth in the arguments.

STANDARD OF REVIEW

This Court's standard for review of an administrative agency decision is codified at SDCL 1-26-36. Under this statute, the Appellants have the burden of showing that their substantial rights were prejudiced, and that one of the six violations listed in SDCL 1-26-36 has occurred. Gratzfeld v. Bomgaars Supply, 391

N.W.2d 200 (S.D. 1986); Ashland v. South Dakota Department of Labor Unemployment Ins. Div., 321 N.W.2d 103, 105 (S.D. 1982).

In analyzing whether Appellants have met their burden under SDCL 1-26-36, the initial inquiry is whether the matter is a question of law or one of fact. Questions of law are fully reviewable. Island v. Department of Corrections, 1996 S.D. 28, 545 N.W.2d 201 (1996). Mixed questions of fact and law that "require the application of a legal standard" are fully reviewable. Abild v. Gateway 2000, 1996 S.D. 50, 547 N.W.2d 556 (1996). If, however, the issue involves a question of fact or is "essentially factual" it is reviewed under the "clearly erroneous" standard. Rios v. South Dakota Department of Social Servs., 420 N.W.2d 757 (S.D. 1988). Questions that are "essentially factual" are those that involve the exercise of judgment about the values underlying legal principles. Id.

If the issue is factual or essentially factual subject to the "clearly erroneous" standard, the agency's determinations must be reviewed in light of the entire evidence in the record. Petersen v. Hinky Dinky, 515 N.W.2d 226, 231 (S.D. 1994). Under Petersen, the Board's findings are not to be overturned unless this Court is "left with a definite and firm conviction that a mistake has been made." Finally, "the question is not whether there is substantial evidence contrary to the [agency's] finding, but whether there is substantial evidence to support the finding of the [agency]." Schuck v. John Morrell and Company, 529 N.W.2d 894 (S.D. 1995).

Sanderson argues that all three issues in his appeal involve questions of law and are fully reviewable. The DENR submits, however, that the first issue in Sanderson's brief is a factual determination for which the "clearly erroneous" standard applies. In this issue, Sanderson discusses the applicable facts and asks the Court to review the evidence and determine whether enough facts were presented to support the decision. There are no legal arguments with respect to that issue. Sanderson simply seeks to substitute the judgment of this Court for the factual determination of the Board. Accordingly, the first issue is a question of fact and the standard is the "clearly erroneous standard."

Sanderson's other issues raise legal questions. There is no dispute that those issues are questions of law and are, therefore, fully reviewable by this Court.

ARGUMENTS

I

THE CITY OF HURON MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THAT THE PROJECT WILL NOT INCREASE THE LIKELIHOOD OR SEVERITY OF FLOOD DAMAGE TO DOWNSTREAM PROPERTY.

It is undisputed that the appropriate statute for issuance of a flood control permit is SDCL 46-2A-11:

> A permit for flood control works may be issued only if the project will reduce the damage from flooding or erosion in the area proposed to be benefited, the project <u>will not increase the likelihood or the severity of flood damages in areas other than the project area or the area proposed to be benefited</u>, the project will not endanger human life or property and the project will not impair existing water rights, except to the extent that such rights are extinguished or compensated through agreement or exercise of the power of eminent domain.

(Emphasis added.) In this issue Sanderson asserts that the City of Huron didn't meet its burden of demonstrating that its proposed project will not increase the likelihood or severity of flood damage to Sanderson's property. As with most administrative hearings, the applicant's burden in presenting evidence before the Board is "preponderance of the evidence." Kent v. Lyon, 1996 S.D. 131, 555 N.W.2d 106.

In reviewing this matter, a question of fact exists as to whether City of Huron presented adequate evidence to meet this standard. Since this is a question of fact, the Court must determine whether the Board was clearly erroneous. The DENR submits that the Board's determination was not clearly erroneous.

At the Board's hearing, two engineers testified. The first engineer was DENR engineer Mark Rath who reviewed the flood control application. The second engineer was Howard Paul who presented the results of engineering studies developed by the City of Huron's consultant, Schmucker, Paul, Nohr, and Associates. Sanderson presented no expert testimony or exhibits on this issue.

As explained during testimony by these engineers, the Flood Control Permit application includes hydrologic and hydraulic studies of Stony Run Creek. These studies use computer-modeling programs developed by the Army Corps of Engineers. These programs project the expected results from the proposed project. AR 25, page 6.

First, the hydrologic analysis (HEC-1) model uses known data to calculate the rate of water flowing through the present stream

for two, five, ten, twenty-five, fifty, and one hundred year rainfall events. AR 25, pages 5, 6. This allows for a comparison with anticipated effects of the proposed changes. The rate was calculated at the locations where the stream intersects with 3rd, 9th, 15th, and 21st Streets. AR 25, pages 5, 6. Rates are listed in cubic feet per second. Then the HEC-1 was also used to calculate the rate of stream flows as if the proposed project was already in place.

In addition to calculating the rate of stream flows, the consultant also examined the elevations at various points along the stream. This is the HEC-2 analysis. Cross sections of the stream channel were developed for the points used. Known information on rainfall, velocity, and channel roughness was used to calculate the surface elevation of the water at selected locations during the two, five, ten, twenty-five, fifty, and one hundred-year rainfall events. AR 25, page 7. This analysis was performed for both the existing stream and as if the project was already in place. AR 25, page 7.

When reviewing the information in the application, DENR requested additional stream flow data. AR 27. In response, the consultant submitted data that had already been prepared for the City's application for a federal Corps of Engineer's permit for the same project. AR 34-38. This information shows additional results of the HEC-1 and HEC-2 modeling at four downstream locations.

Sanderson is in this downstream area. He owns the NW1/4 of Section 13, T.110N, R.62 W. Beadle County. Upstream from

Sanderson the City of Huron analyzed two points in the area of 21st Street. At 21st Street the proposal would result in an increase of .22 feet during a 25-year rainfall event (2.64 inches). At a point 500 feet downstream from 21st Street, the project would result in a decrease of .23 feet (2.76 inches).

Downstream from Sanderson, the City of Huron analyzed a point at the section line between Sections 13 and 24. There, the project would result in a potential increase of .20 feet (2.4 inches) in elevation under a 25-year event. Further downstream at the Highway 37 bridge the project would result in a potential increase of .17 feet (2.04 inches).

This is in contrast to the situation further downstream at Stoney Run dam. There, the modeling indicated that water would be detained behind the dam at higher levels more often and cause the spillway to be used more frequently. TR 4, 5. The twenty-five year event could cause a rise of up to 1.9 feet difference at the spillway. TR 5. As explained elsewhere in this brief, the effects on Stoney Run dam were addressed through an agreement with School and Public Lands.

With respect to the Sanderson area, any increases are minor. Moreover, the standard here is not whether there would be any increase in water elevation, no matter how minor. The standard is whether the project would increase the likelihood or severity of flood damages. Further, this data shows that water is leaving the Sanderson area as fast as it comes in.

This is not a situation where water would overtop the stream banks or cause ponding on Sanderson's property. The Board asked

that question. In response Sanderson testified that the water will follow the same channel. TR 36. He also testified that "the significant part in my concerns I've expressed earlier is not water flow, but what is in the water."[1] TR 31. The only water flow concerns he raised at hearing related to the likelihood of additional flows several miles downstream at the James River, not at his own property.

Later Sanderson expressed his concern about erosion within the stream channel. At a post-hearing proceeding, he argued that erosion should have been considered when determining that the project would not increase the likelihood of severity of flood damages. This concern arose after the evidentiary hearings and was expressed during final deliberations on Findings of Fact and Conclusions of Law.

The DENR engineer had already testified that the project would not increase the likelihood or severity of flood damages downstream in the reach of the stream where Sanderson is located. TR 6, 7 (Rath testimony). Also, the consultant's study, which includes this conclusion, was introduced into evidence without any objection. TR 40. Sanderson did not cross-examine these witnesses or object to their conclusions. He did not provide rebuttal testimony.

He claimed error only during post-trial proceedings. Sanderson failed to preserve this issue. State v. Spiry, 1996 S.D. 14, ¶ 14, 15, 543 N.W.2d 260, 263. In Spiry the Court held

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[1] The pollution issue is addressed in issue II of this brief. TR 34.

that the Department of Transportation's attorney failed to object to underlying methodology of an expert appraiser when the testimony was offered. He objected at a post-trial motion hearing but the Supreme Court said the late objection was inadequate to preserve the issue for appeal.

Waiver also applies. Gilkyson v. Wheelchair Express, 1998 S.D. 45, ¶ 12, 579 N.W.2d 1 (failure to make timely objections and waiting until post-trial proceedings waives claims of error). Sanderson let the experts testify as to their conclusions without objection. He cannot now raise issues regarding underlying facts or analysis used in support of those conclusions.[2]

II

THE CITY OF HURON HAS MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THAT THE PROPOSED PROJECT WILL NOT ENDANGER HUMAN LIFE OR PROPERTY.

At hearing, Sanderson appeared and presented testimony regarding his view that poor quality water from stockyards, feedlots, and other sites would be transferred downstream to his property as a result of this proposal. Also, he asserted that this project would result in an increase in debris flowing onto his property. TR 33.

In evaluating this issue, the Board recognized that the subject matter of this appeal is a flood control permit. A flood control permit is designed to handle the rights of parties with respect to changing the timing or quantity of water flowing

[2] Sanderson appeared pro se at hearing. He raised this issue after he hired legal counsel. Parties who appear pro se are not entitled to a break when they do this. Farmer's Cooperative Elevator Co. of Revillo v. Johnson, 90 S.D. 36, 237 N.W.2d 671 (1976).

through channels as a result of controlling flood situations. This is one of a number of different permits and legal issues involved in developing this project. Authority is also required from the Army Corps of Engineers under the Clean Water Act § 404 Permit Process. Some of the § 404 documents are included in the file in this case. AR 1-15. Also, a joint city/county planning commission will need to grant approval. TR 22-23. Further, landowners in the construction area will need to grant easements. TR 20.

Pollution issues are also handled through a completely different set of statutes. The pollution laws are set forth in SDCL ch. 34A-2 and rules promulgated thereunder. Citizens are entitled to file complaints with the DENR to initiate pollution investigations. SDCL 34A-2-111. Any legal proceedings resulting from pollution complaints would, of course, name the particular person or entity causing the pollution. This case does not involve the proper parties to handle the existing pollution matter. No stockyard, feedlot, industrial site, or gas station is a party to this water flow dispute. This case is obviously not the place for resolution of a dispute regarding ongoing pollution issues.

Sanderson is aware of these remedies for the existing pollution. At hearing he testified that "when the time comes and hopefully if the time comes, yes, I'd have to object to the agricultural pollution we have now. I'm not ready to do it without prospects of being ready to improve this land." TR 35.

In other words, he's waiting to pursue a pollution case in the future.

Finally, the focus on this project is to improve the existing stream channel so the existing water flows move more efficiently. If there are any increases in total water volume, they would be from residential areas not stockyards, feedlots or industrial sites. TR 24. It is expected that these flows would be very minor. Any increase in water downstream is not expected to aggravate existing pollution. Also, this project includes a detention dam in the area near the sale barn. Flows from this area will enter the detention dam and "settle sediment." TR 17. Cattails will also use up some of the waste in runoff from the feedlot and stockyards. TR 17. While these processes aren't designed to cure an existing pollution problem, they are not expected to worsen it. TR 24.

Sanderson is also concerned about increased debris resulting from the project proposal. The debris argument stems from the City of Huron's proposal to create a recreational complex, including soccer fields. The soccer fields will be near the stream. Sanderson's view is that these soccer fields will cause people to dispose of debris such as paper and plastic cups. The increased debris would not be caused by the stream channel improvement, it would be caused by the soccer fields. The soccer fields are not part of this dispute. Moreover, a flood control permit is not the place for littering issues. Littering cases can be handled through either municipal ordinance. TR 37. Also,

state statutes (SDCL ch. 34A-6) provide remedies for illegal disposal of solid waste.

III

THE BOARD ACTED PROPERLY WITH RESPECT TO SANDERSON'S REQUEST FOR DAMAGES.

Sanderson claims that the City of Huron has a responsibility to compensate him for damages. The Board did not reach this issue.

The flood control permit statute is clear. The Board's authority is limited to a determination of whether a proposal meets the standards of SDCL 46-2A-11. Under SDCL 46-2A-11, the permit cannot be issued if it (a) will increase the likelihood or severity of flood damages in areas other than the project area, or (b) if it will endanger human life or property, or (c) if it will impair existing water rights.

If one of these three situations exists, The Board must deny the request, unless the last clause of SDCL 46-2A-11 comes into play:

> A permit for flood control works may be issued only if the project will reduce the damage from flooding or erosion in the area proposed to be benefited, the project will not increase the likelihood or the severity of flood damages in areas other than the project area or the area proposed to be benefited, the project will not endanger human life or property and the project will not impair existing water rights, except to the extent that such rights are extinguished or compensated through agreement or exercise of the power of eminent domain.

Sanderson seeks a Board order requiring compensation under this clause. As addressed above, the Board properly found that the project will not increase the likelihood or severity of flood damages on Sanderson's property and that the project would not

endanger Sanderson's property. Further, Sanderson has not claimed that the project would impair existing water rights. Accordingly, there is not an effect on property which would require compensation.

In the event, however, that there had been an effect on the property involved, the Board would have been obliged to either deny the permit or else grant the permit if the issue had been resolved through eminent domain or a compensation agreement. Any negotiated settlement or judgment on eminent domain would occur outside the auspices of the Board. The Board itself does not have eminent domain authority. Eminent domain proceedings are initiated in circuit court. SDCL 21-35-1. Also, the Board cannot order the parties to negotiate a settlement or dictate the terms of a settlement. If, however, a settlement occurred, the agreement would need to contain a clause demonstrating that it is intended to waive or satisfy the rights of the effected property owner. The Board itself does not have authority to adjudicate the extent of compensation.

Yet Sanderson claims that another party received compensation, so he should also have been compensated. As described above, the Chief Engineer had recommended "deferral" until impacts on the downstream state-owned dam were addressed. At the hearing, the City of Huron and the Office of School and Public Lands disclosed that they had negotiated an agreement subject to approval by the full city commission. TR 27. The Office of School and Public Lands agreed not to contest the permit, provided that it received a payment from the City of

Huron for dam repairs. TR 12, 13; AR 71-73. The payment from the City of Huron is a sum reached between those two parties. According to the agreement, the Office of School and Public Lands agreed not to contest the flood control application. AR 71-73. The Water Board accepted this voluntary arrangement. The Board is not, however, authorized to require compensation. If the City of Huron and the Office of School and Public Lands hadn't entered into this arrangement voluntarily, the Board would have been forced to deny the permit.

Instead of entering into a settlement agreement, Sanderson and City of Huron adjudicated their dispute before the Board.

The Water Board correctly held that the standard for granting the permit had been met and the compensation issue did not need to be addressed with respect to Sanderson.

Finally, Sanderson raises another facet of this issue at the end of his brief. Sanderson is concerned about an observation made during consideration of Findings of Fact, Conclusions of Law, and Final Decision. The statement was made by Board member Rollag during the dialogue about Sanderson's claim for compensation:

> I kind of look at this thing as we've had a hearing and decisions were made and basically this is kind of a legal formality we go through at the end of everyone of these, when we talk about findings of fact and conclusions of law and final decisions, and that we really need to follow our attorneys advice.

July 7 TR. Although Sanderson asserts that the Rollag statement was improper he doesn't say why.

Mr. Rollag's statement demonstrates that the Board had already conducted a hearing and issued its verbal decision, and

that findings of fact and conclusions of law are a formality undertaken at the end of administrative proceedings. It also appears that Mr. Rollag is of the opinion that the Board should follow its attorney's advice about whether the compensation question could be considered by the Board, particularly since it was raised during deliberations on the Findings of Fact and Conclusions of Law.[3]

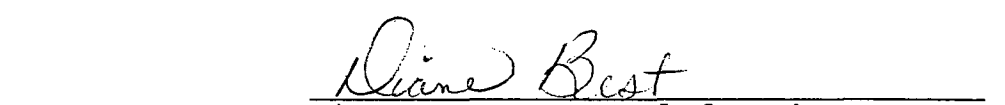
There is not any error. Moreover, expressions of opinion by a Board member are really extraneous to the Findings of Fact and Conclusions of Law and are not binding on the decision-maker or anyone else. See Bradeen v. Bradeen, 430 N.W.2d 87, 89 (S.D. 1988); Moser v. Moser, 422 N.W.2d 594, 596 (S.D. 1988); Connelly v. Sherwood, 268 N.W.2d 140 (S.D. 1978).

In sum, the Board's refusal to require a compensation agreement was appropriate.

CONCLUSION

Based on the foregoing arguments and authorities the DENR asks that the Board's decision be affirmed.

Respectfully submitted,



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Natural Resources
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Pierre, South Dakota 57501-5070
Telephone: (605) 773-3215

s-ccbl.db

[3] In fact, Sanderson's late objection on the compensation issue should also be rejected because it was not properly preserved for appellate review. See discussion in Issue II.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that true and correct copies of Brief of Appellee In the Matter of the Application for Flood Control Permit No. FC-27, City of Huron, were served by United States mail, first class, postage prepaid upon

Dedrich R. Koch
Attorney at Law
103 West Third Street
Post Office Box 129
Miller, South Dakota 57362

Douglas G. Fosheim
Attorney at Law
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Huron, South Dakota 57350

on this 2nd day of December, 1999.

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December 8, 1999

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P O Box 129
Miller, SD 57362

Re: Flood Control Permit
City of Huron vs. Rollie Sanderson

Dear Folks:

Enclosed to each of you is a BRIEF OF THE CITY OF HURON. This is intended as service by mail.

Sincerely yours,

Douglas G. Fosheim

DGF:amf

Encl.

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)ss.	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
IN THE MATTER OF THE APPLICATION FOR FLOOD APPELLEE CONTROL PERMIT NO. FC-27, CITY OF HURON	)	CIV #99-218
	)	**CERTIFICATE OF SERVICE**

This is to certify that on the 8th day of December, 1999, I mailed a true and correct copy of the BRIEF OF CITY OF HURON by first class United States mail, postage prepaid, to:

Ms. Diane Best
Assistant Attorney General
Office of Attorney General
Natural Resource Section
State Capitol Building
Pierre, SD 57501

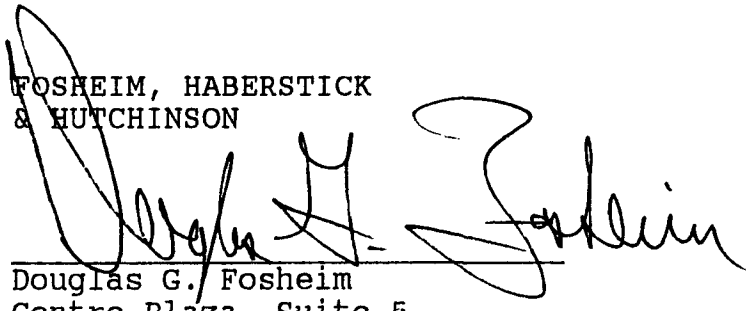
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Dated at Huron, South Dakota, this 8th day of December, 1999.

FOSHEIM, HABERSTICK
& HUTCHINSON



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STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)SS.	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
		CIV. # 99-218
IN THE MATTER OF THE APPLICATION FOR FLOOD APPELLEE CONTROL PERMIT NO. FC-27,CITY OF HURON.	))))	BRIEF OF CITY OF HURON

INTRODUCTORY STATEMENT

Throughout this brief Petitioner/Appellant, Rollie Sanderson, will be referred to as "Sanderson." Applicant/Appellee, City of Huron, will be referred to as "City of Huron." Appellee, Department of Environment and Natural Resources will be referred to "DENR." The Water Management Board will be referred to as "Board."

Citations to the certified Agency Record will be referred to as "AR," and followed by the appropriate page number. The transcript of the evidentiary hearing held on May 5, 1999 will be referred to as "TR," followed by the appropriate page number. The transcript of the hearing addressing the findings of fact and conclusions of law held on July 7, 1999 will be referred to as "July 7 TR."

JURISDICTIONAL STATEMENT

Jurisdiction of this matter is governed by SDCL 1-26-31. Notice of the Board's final decision was issued on July 19, 1999. The appeal was filed on August 18, 1999,

pursuant to statute. The City of Huron agrees with Sanderson that jurisdiction is properly before this Court.

ISSUES PRESENTED

I. WHETHER THE CITY OF HURON HAS MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THAT ITS PROJECT WILL NOT INCREASE THE LIKELIHOOD OR SEVERITY OF FLOOD DAMAGE TO PETITIONER'S PROPERTY.

The Board concluded the City of Huron met its burden.

II. WHETHER THE CITY OF HURON HAS MET ITS BURDEN UNDER 46-2A-11 TO SHOW THE PROJECT WILL NOT ENDANGER HUMAN LIFE OR PROPERTY.

The Board concluded the City of Huron met its burden.

III. WHETHER THE CITY HAS A DUTY TO COMPENSATE PETITIONER FOR DAMAGE TO HIS PROPERTY.

The Board does not have jurisdiction to rule on this question.

STATEMENT OF THE CASE AND FACTS

Pursuant to SDCL 46-2A-11, the City of Huron filed an application with the DENR for a Flood Control Permit in February 1999. AR 25. Pursuant to the application, the City of Huron proposes to modify the existing channel of Stony Run Creek, located on the west side of the city, to facilitate the movement of water from the project area. The proposed changes include reshaping the existing channel, improving the crossings, and construction of a detention pond. AR 25.

The application was reviewed by the DENR and their Chief Engineer submitted his report and recommendation of deferral on March 17, 1999. AR 30-32. The recommendation of deferral was based on the conclusion there would be an increase of water flow through the spillway that would impact Stony Run Lake Dam, owned by the State. TR 4. Deferral was recommended until the impact on this dam could be better addressed. AR 33.

This matter was advertised for public hearing. AR 42. Sanderson was given Notice of Hearing on Flood Control Application No. FC-27 on April 6, 1999. AR 43. Sanderson intervened on April 20, 1999. AR 46. A hearing before the Water Management Board on Flood Control Permit Application No. FC-27 was held on May 5, 1999.

At hearing on May 5, 1999, the City of Huron presented evidence and testimony from Howard Paul, professional engineer with Schmucker, Paul, Nohr & Associates, concerning the effects of the proposed project. TR 15-25. Sanderson offered testimony in opposition to the application. TR 30-37. At hearing, DENR's Chief Engineer changed his recommendation to approval, subject to a joint agreement between necessary parties concerning Stony Run Lake Dam. TR 42. The Board approved the project and

directed its attorney to prepare Findings and Final Decision approving the permit. TR43.

Proposed Findings of Fact, Conclusions of Law, and Final Decision were served upon all parties on June 9, 1999. AR 53. DENR and Sanderson filed responses to the Proposed Findings of Fact, Conclusions of Law and Final Decision. AR 60-70.

At hearing on July 7, 1999, the Board considered the Findings of Fact, Conclusions of Law and Final Decision. The Board accepted the proposed Findings of Fact, Conclusions of Law and Final Decision as amended to include the recommendations by the DENR and the Joint Powers Agreement between the City of Huron and South Dakota Office of School and Public Lands. AR 71-71.

Notice of the Board's Final Decision was issued on July 19, 1999. AR 81. Notice of Appeal was served on all parties on August 17, 1999 and filed on August 18, 1999. AR 84-85.

Additional facts pertaining to each issue will be set forth below under the appropriate arguments.

STANDARD OF REVIEW

The standard of review for administrative appeals is governed by SDCL 1-26-36. When the issue is a question of fact, the actions of the agency are judged by the clearly

erroneous standard. Application of Northwestern Bell Tel. Co., 382 NW2d 413 (SD 1986). The question becomes "is there substantial evidence to support the agency finding." In re SDDS, Inc., 472 NW2d 502 (S.D. 1991). The Court shall give great weight to findings made and inferences drawn by an agency on questions of fact. Id. "The test is whether after reviewing all the evidence we are left with a definite and firm conviction that a mistake has been made." Truck Ins. Exch. v. Kubal, 561 NW2d 674, 676 (SD 1997).

"When the issue presented is a question of law, however, the decisions of the administrative agency . . . are fully reviewable" under the de novo standard. In re SDDS, Inc., 472 NW2d 502 (SD 1991). Conclusions of law are given no deference and are freely reviewable. Truck Ins. Exch. v. Kubal, 561 NW2d at 676. Mixed questions of fact and law that "require the application of a legal standard" are fully reviewable. In re SDDS, Inc., 472 NW2d 502 (SD 1991).

Sanderson argues that each of the issues presented address questions of law and are reviewable under the de novo standard. The City of Huron asserts that the first issue presents a question of fact to be reviewed under the clearly erroneous standard. Sanderson sets forth no legal argument for the Court to review de novo. Sanderson merely

asks this Court to review the facts and evidence of the case and substitute its judgment for the factual determination of the Board. The question under this issue is whether there is substantial evidence to support the agency finding. This issue plainly raises a question of fact reviewable under the clearly erroneous standard.

City of Huron agrees with Sanderson's assertion that the remaining issues raise questions of law and are, therefore, fully reviewable under the de novo standard.

ARGUMENT

I. THE CITY OF HURON MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THAT THE PROJECT WILL NOT INCREASE THE LIKELIHOOD OR SEVERITY OF FLOOD DAMAGE TO DOWNSTREAM PROPERTY.

SDCL 46-2A-11 sets forth the requirements for issuance of a flood control permit:

> A permit for flood control works may be issued only if the project will reduce the damage from flooding or erosion in the area proposed to be benefited, the project will not increase the likelihood or the severity of flood damages in areas other than the project area or the area proposed to be benefited, the project will not endanger human life or property and the project will not impair existing water rights, except to the extent that such rights are extinguished or compensated through agreement or exercise of the power of eminent domain.

(Emphasis added). Sanderson argues that the City of Huron failed to meet its burden under this statute. Particularly,

the City of Huron failed to show the project would not increase the likelihood or severity of flood damage to his property. Generally, the burden of proof for administrative hearings is preponderance of the evidence. Kent v. Lyon, 555 NW2d 106 (SD 1996).

This issue raises a question of fact: Did the City of Huron present sufficient evidence to meet the burden set forth in SDCL 46-2A-11? In viewing the evidence presented, the Court must determine whether the Board was clearly erroneous in its decision. The City of Huron firmly submits the decision of the Board was not clearly erroneous.

"The test is whether after reviewing all the evidence [the Court is] left with a definite and firm conviction that a mistake has been made." Truck Ins. Exch. v. Kubal, 561 NW2d at 676. A closer look at the evidence presented at hearing is needed to make this determination.

At hearing, the City of Huron presented evidence from Mark Rath, natural resources engineer with the Division of Water Rights, and Howard Paul, professional engineer with Schmucker, Paul, Nohr & Associates. TR 3,15.

These engineers explained the hydrologic computer models that compared the preproject conditions to proposed postproject conditions. The models analyzed water flow and

surface elevations of the water for two, five, ten, twenty-five, fifty, and one hundred year rainfall events. AR 25 pages 5-7. In addition, the rate of flow and elevations were calculated at various locations along the stream. AR 5-7. Further information was provided, at the request of the DENR, that showed additional results of the hydrologic models at four additional downstream locations. AR 27, 34-38.

Sanderson's property is located in this downstream area in Section 13. Sanderson's property is located outside of the proposed project area. As explained by the engineers, any impact on property in Section 13 would be negligible. TR 16. The only area with significant impact is Stony Run Lake Dam. The twenty-five year event shows a potential rise of up to 1.9 feet at the spillway. TR 4,5. Concern over this area led to the initial recommendation of the DENR for deferral. TR 5. Those concerns were addressed by Curt Johnson, Commissioner of School and Public Lands which has jurisdiction of the dam, and a subsequent agreement was entered into between the City of Huron and School and Public Lands. TR 9-13. Excluding Stony Run Lake Dam, testimony and evidence demonstrated that all other areas in the proposed project area would have minimal impact.

The question before us is whether the project would increase the likelihood or severity of flood damages to Sanderson's property. This question was specifically addressed by the Board. Evidence presented by the City of Huron clearly shows this would not be the case. Further, Sanderson presented no evidence to the contrary.

While Sanderson asks this Court find that the City of Huron did not meets its burden on this issue, Sanderson, in direct testimony to the Board, stated his primary concerns were over the quality of the water. TR 31. He did not submit concerns over the flow of the water to his property or concerns of increased flood damage to his property. Further, he did not object to the introduction into evidence of the engineer's report concluding that the project would not increase the likelihood or severity of flood damages downstream where Sanderson's property is located. TR 40. Sanderson directly stated, "[i]f they could assure me that clean water is dumped into that stream, at that point I have no objection. My objections disappear." TR 33.

Sanderson is claiming error only after the hearing has concluded, without having preserved the issue for appeal. The Supreme Court has held that objections made post-hearing are inadequate to preserve the issue for appeal.

State v. Spiry, 543 NW2d 260, 263 (SD 1996). The Court further stated that failure to make timely objections and waiting until post-trial proceeding waives claims of error and precludes appellate review. Id. at 263 (quoting In re A.I., 289 NW2d 247, 249 (SD 1980). Sanderson failed to make a timely objection and preserve this issue for appeal. Although Sanderson appeared without legal counsel at the hearing, he is not relieved of his responsibility to make such timely objections in order to preserve said issues. Farmer's cooperative Elevator Co. of Revillo v. Johnson, 237 NW2d 671 (SD 1976). He should not now be allowed to raise such issues challenging underlying facts or analysis used to support the decision of the Board.

II.

THE CITY OF HURON HAS MET ITS BURDEN UNDER SDCL 46-2A-11 TO SHOW THAT THE PROPOSED PROJECT WILL NOT ENDANGER HUMAN LIFE OR PROPERTY.

Sanderson's primary concern rests with the quality of the water that will be flowing through the channel and the increase in the amount of debris that will be collected. TR 33. There was no evidence presented showing the project would endanger human life or property. On the contrary, Paul, engineer with Schmucker, Paul, Nohr & Associates, testified that changes to the water quality, at worst, would be slight. He further testified there could be some

change to the better. TR 18, 24. There was no evidence suggesting that current water quality endangers human life or property. Realistically, it is a far stretch to believe a potential slight change in water quality will have such a significant effect as to endanger human life or property.

With respect to this issue, it is important to note that any increase in water volume will be from residential runoff. TR 24. There will not be an increase in runoff from the feedlots, stockyards or industrial sites in the area. As expressed by Paul, "[t]he quality of the water, in our opinion, is not going to see any significant change." TR 24.

In addition, Sanderson submits concerns about additional debris consisting of plastic cups and other related trash that will result from the proposed development of soccer fields along the channel. TR 36. Any additional trash that may result from the proposed soccer fields has no relation to the issue before this Court or the Board. Littering issues are properly dealt with through municipal ordinances. TR 37. Further, potential debris from the proposed soccer fields will pose the same problems whether we are talking of the existing channel or modified channel. Therefore, this argument has no merit with regard to approval of a flood control permit.

The issue before the Board was approval of a flood control permit. There are certainly a number of secondary issues that must be addressed with respect to the proposed project. Those issues include compliance with the provisions of the Clean Water Act, obtaining easements from existing landowners, obtaining approval from the joint city/county planning commission, and many others. Pollution issues, if any should arise, are governed by SDCL Chapter 34A-2 and should be handled according to the rules set out thereunder. In reviewing Sanderson's testimony, it is apparent he is aware of the existing remedies concerning pollution. TR 35.

III.

THE CITY OF HURON HAS NEITHER THE DUTY NOR THE AUTHORITY TO COMPENSATE SANDERSON FOR DAMAGE TO HIS PROPERTY.

Sanderson claims that the City of Huron has a responsibility pursuant to SDCL 46-2A-11 to compensate him for damages to his property. The Board did not address this issue.

The Board does not have the authority under SDCL 46-2a-11 to order compensation. The Board's authority is limited to making a determination of whether the City of Huron has met its burden under the statute. The application for a flood control permit cannot be approved

unless the City of Huron can satisfy the requirements of said statute. The Board correctly determined that the City of Huron met those requirements and approved the permit. TR 42,43.

SDCL 46-2A-11 states in part, "[a] permit for flood control works may be issued only if . . . the project will not impair existing water rights, except to the extent that such rights are extinguished or compensated through agreement or exercise of the power of eminent domain." There has been no claim that the proposed project would impair Sanderson's existing water rights in order to justify compensation therefore. Further, any agreement or determination of eminent domain would be handled outside hearing of the Board. Circuit Court has jurisdiction of matters of eminent domain pursuant to SDCL 21-35-1.

Any agreement is a matter between the parties, Sanderson and the City of Huron. The Board would not be a party to any such agreement. In addition, the Board has neither authority under the statute to direct an agreement to be entered into nor authority to order compensation.

The City of Huron and the Office of School and Public Lands did exercise the option to enter into an agreement concerning this project, subject to approval by the city commission. TR 27; July 7 TR 16, 17. Evidence presented

clearly showed there would be an impact on Stony Run Lake Dam. A compensation agreement was entered into directly addressing repairs to the dam. TR 12, 13; AR 71-73. The dam presented identifiable problems. Sanderson seeks to have the Board order compensation for damage to his property that cannot be determined. Any damage is speculative on his part. And again, the Board has no authority under the statute to order said compensation. As such, the correct decision was made to refuse ordering any such compensation to Sanderson.

CONCLUSION

Based on the foregoing arguments and authorities, the City of Huron respectfully asks this Court to affirm the Decision of the Water Management Board granting Flood Control Permit Application No. FC-27, City of Huron.

Respectfully submitted this 18th day of December, 1999.

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DEC 1999
WATER RIGHTS
PROGRAM
Pierre, SD

December 20, 1999

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RE: In the Matter of the Application for Flood Control Permit No. FC-27, City of Huron

Please find enclosed a true and correct copy of APPELLANT'S REPLY TO APPELLEES' BRIEFS. This is intended as service upon you.

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Dedrich R. Koch
HEIDEPRIEM, WIDMAYER,
ZELL & KOCH

DRK/drk
cc: Rollie Sanderson
Enc.

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT CIV. 99-218
IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO. FC-27, CITY OF HURON	)))	APPELLANT'S REPLY TO APPELLEES' BRIEFS

* *

Appellant Rollie Sanderson submits the following Reply to Appellees' Briefs.

Appellees contend that computer modeling shows water elevation increases on Sanderson's property to be minimal, and therefore, they have met their burden under SDCL 46-2A-11. From the outset, Appellees and the Water Management Board have continued to narrowly define "flood damage" in terms of water elevation alone. In doing so, they ignore damages resulting from waste and debris, water velocity, water quality and decreased property values. Although Sanderson is concerned about increased water elevations, he has expressed his greatest concerns over water quality, waste and debris that will be deposited on his property and the detrimental effect of the project on the market value of his property. These concerns have not been addressed by Appellees. Merely saying that they will fix it if it happens, does not satisfy their burden under SDCL 46-2A-11 and the Board was clearly erroneous in issuing a permit.

SDCL 46-2A-11 requires that, before a permit may be granted, any damages likely to occur as a result of the project be addressed by taking corrective measures either to eliminate the damages or to compensate the downstream property owner for the damages. By increasing the volume and speed of the water flow over Sanderson's property significant increases in both the frequency and duration of fluctuations in water surface elevation levels and stream velocities will occur, greatly increasing the risk of erosion. (AR pg. 71-73, part I. paragraph B.). Appellees claim that Sanderson failed to raise the issue of Erosion and is therefore precluded from raising the issue on appeal. This improperly shifts the burden to Sanderson. SDCL 46-2A-11 specifically lists erosion as a potential cause of damage to be addressed prior to the issuance of a permit.

Appellees presented no evidence to address the erosion issue and the Board failed to consider the issue prior to issuing the permit. The Board's failure to address erosion prior to the issuance of the permit is clearly erroneous and a misapplication of South Dakota Law.

Pursuant to SDCL 46-2A-11, the City must show that the project will not endanger human life or property. The accumulation of debris and other waste combined with biohazards which are pushed further downstream to Sanderson's property carry an increased risk of sickness or disease to area residents. The City, however, has no plan in place to deal with this issue. Instead, Appellees allege that water quality and pollution concerns have no relevance to the issuance of a flood control permit. Once again, Appellees completely ignore the requirements set forth in SDCL 46-2A-11. If the logic of the Appellees were followed, the only way human life or property could be endangered is if swept away by raging flood waters. It was clearly erroneous and in clear contradiction of South Dakota law for the Board to disregard these hazards and grant the permit to Appellees.

Under SDCL 46-2A-11, prior to the issuance of the flood control permit, if damages do occur as a result of the proposed project, Sanderson must be compensated. Although Appellees argue that the Board has no authority to force the City to negotiate with Sanderson, The Board has both the authority and the duty to deny the permit until an appropriate compensation plan is in place.

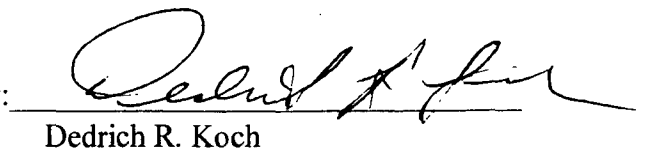
In adopting the Findings of Fact, Conclusions of Law and Final Decision, the Board failed to properly consider the evidence as required by SDCL 1-26-23. The Board disregarded the requirements set forth in SDCL 46-2A-11 and improperly shifted the burden of proof to Sanderson.

CONCLUSION

Appellant, Rollie Sanderson, prays that the Final Decision of the Water Management Board granting Application No. FC-27, City of Huron, be remanded and an Order entered denying said Application.

Respectfully submitted this 20th day of December, 1999.

HEIDEPRIEM, WIDMAYER, ZELL & KOCH

By: 

Dedrich R. Koch
Attorneys for Appellant
103 West Third Street
P.O. Box 129
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(605) 853-2456

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 20th day of December, 1999 he mailed a true and correct copy of the forgoing APPELLANT'S REPLY TO APPELLEES' BRIEFS by first-class mail, postage prepaid to:

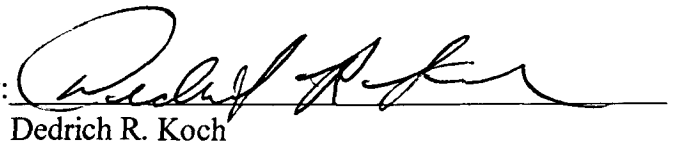
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Attorney General
202285
MAR 31 2000

March 30, 2000

Ms. Diane Best
Assistant Attorney General
Office of Attorney General
500 East Capitol Avenue
Pierre, SD 57501-5070

Re: In The Matter Of The Application For Flood Control Permit No.FC-27, City of Huron vs. Rollie Sanderson

Dear Diane:

Enclosed please find a true and correct copy of "Notice of Entry of Judgment". This is intended as service by mail.

Sincerely yours,

Douglas G. Fosheim

DGF:amf

Encls.

STATE OF SOUTH DAKOTA)
)ss.
COUNTY OF BEADLE)

IN CIRCUIT COURT

THIRD JUDICIAL CIRCUIT

#99-128

IN THE MATTER OF THE APPLICATION)
FOR FLOOD CONTROL PERMIT NO.FC-27,)
CITY OF HURON)

NOTICE OF ENTRY OF JUDGMENT

TO: Mr. Dedrich Koch,
Attorney for Appellant, Rollie Sanderson and
Ms. Diane Best,
Attorney for the Water Management Board

YOU WILL PLEASE TAKE NOTICE that a Judgment herein was entered by the Circuit Court, The Honorable Eugene L. Martin, presiding of the 29th day of March, 2000, and said Judgment was filed on the same date in the office of the Beadle County Clerk of Courts, located in Huron, South Dakota, Beadle County, South Dakota, and;

YOU WILL FURTHER TAKE NOTICE that a true and correct copy of said Judgment is attached hereto and incorporated by this Notice and is set out fully herein.

Dated this 30th day of March, 2000.

Douglas G. Fosheim
Attorney for Respondent,
City of Huron
289 Dakota Avenue So., #5
Huron, SD 57350
(605)352-0702

ORIGINAL

BEFORE THE WATER MANAGEMENT BOARD

STATE OF SOUTH DAKOTA

In Re:	
Consideration of Findings of Fact and Conclusions of Law for Flood Control Permit No. FC-27, City of Huron,	HEARING

PROCEEDINGS: July 7, 1999
Mathews Training Center
Foss Building
Pierre, South Dakota

BOARD MEMBERS PRESENT: Francis Brink, Chairman
Marian Gunderson
Duane Rollag
Joel Rickenbach
Leo Holzbauer

APPEARANCES:

Representing the Water Management Board: MR. JEFFREY P. HALLEM
Asst. Attorney General
500 East Capitol
Pierre, South Dakota

Representing the State Division of Water Rights: MS. DIANE BEST
Asst. Attorney General
500 East Capitol
Pierre, South Dakota

Representing City of Huron: MR. DOUGLAS G. FOSHEIM
Attorney at Law
289 Dakota Avenue S., #5
Huron, South Dakota

Representing Petitioner: MR. DEDRICH KOCH
Attorney at Law
P.O. Box 129
Miller, South Dakota

Wednesday, July 7, 1999

CHAIRMAN BRINK: I believe we'll return now to the 8:45 item, flood control permit application for the City of Huron now that the reporter is here.

We have the findings from our attorney prepared for our hearing, we had staff response, and we also had response from the parties. Did Mr. Guhin leave you with any words of wisdom as far as addressing the Division's comments?

MR. HALLEM: Yes, he did. It would be Mr. Guhin's recommendation that the board accept all three proposed changes in the department's response to the proposed findings of fact and conclusions of law and final decision. Those are contained in the pleading by Diane Best dated June 25, 1999.

CHAIRMAN BRINK: Is there a motion then to accept the Division's comments as recommended by Mr. Guhin.

MR. ROLLAG: So moved.

CHAIRMAN BRINK: We have a motion; is there a second.

MR. HOLZBAUER: Second.

CHAIRMAN BRINK: We have a motion as to findings of fact to include Division's comments. All those in favor of the motion signify by saying aye. Opposed the same. Hearing none, motion carried.

Then we had Petitioner's objections to findings of fact, conclusions of law and final decision as submitted by Heidepriem, Widmayer, Zell and Koch of Miller.

MR. HALLEM: Mr. Guhin in this situation prepared a memorandum to the members of the Water Management Board regarding submissions of the petitioner, which I'm going to be handing out to the board at this time. Copies of this document were provided to the parties and then also -- I gave the secretary the original before this portion of the meeting started.

CHAIRMAN BRINK: Is there someone here representing the petitioners?

MR. KOCH: I am.

CHAIRMAN BRINK: Would you like to have a copy of this?

MR. KOCH: I have one.

CHAIRMAN BRINK: I haven't compared the two, but apparently Mr. Guhin is recommending rejection of all of the points raised.

MR. HALLEM: Mr. Guhin's responses were that either the objections raised by petitioner were satisfactorily addressed by the proposed findings of fact and conclusions of law or recommended they be rejected. And so there's none of these proposals by petitioner regarding the objections that Mr. Guhin recommended acceptance.

CHAIRMAN BRINK: Reject entirely or point by point?

MR. HALLEM: They are all point by point, and the matters in Mr. Guhin's memorandum are that they are either satisfactorily covered in the proposed findings of fact or that they should be rejected.

CHAIRMAN BRINK: For the reasons stated, okay.

MR. HALLEM: Correct.

MS. GUNDERSON: Do we then in a motion have to read these rejections or can we adopt this --

MR. HALLEM: The board can adopt this if they agree with what's there on review and that would be made part of the record as the Board's position on the findings.

MS. GUNDERSON: Well, I was not here for the hearing, so I prefer not to be the person who would act on that.

CHAIRMAN BRINK: Do we allow any additional comment from the parties regarding discussion of Mr. Guhin's motion?

MS. GUNDERSON: I wouldn't think so. We have everybody here.

CHAIRMAN BRINK: We're really not taking any new evidence or anything of that nature.

MS. BEST: The DENR has no objection if parties want to make oral argument on the matter. We would resist

any attempt to reopen the hearing.

MR. HALLEM: It would be strictly argument and no taking of evidence. If there are statements that counsel for petitioner wants to make contesting this, they would have that opportunity, but it wouldn't be under oath. It would be strictly argument.

CHAIRMAN BRINK: No additional evidence presented.

MR. HALLEM: Correct.

CHAIRMAN BRINK: And I think that's fair. If petitioner wishes to address the response by our attorney to your objections submitted by correspondence to us.

MR. KOCH: I haven't had much of an opportunity to go clear through them. I just received them before we sat down here.

CHAIRMAN BRINK: They came across the table this morning.

MR. KOCH: I think I could --

CHAIRMAN BRINK: If you wish to have that on the record, you'll have to come up and -- are you an attorney?

MR. KOCH: Yes, I am.

CHAIRMAN BRINK: Give your name then for our reporter.

MR. KOCH: My name is Dedrich Koch. I'm

representing Raleigh Sanderson, the petitioner. I'm from Heidepriem, Widmayer, Zell and Koch Law Office out of Miller, South Dakota, and I believe I would like to address these points. It may take me some time. I'm going to have to go back and forth a little bit to refresh my memory with each individual one, but I do have a few notes jotted down on the initial one.

As to the response number one in the findings of fact two through four, there's no discussion whatsoever concerning erosion and the potential damage to property resulting therefrom. As the Board is well aware SDCL 46-2A-11 requires the city to carry the burden of showing that there will be no damage to the downstream property.

The city has primarily put forth findings of fact and conclusions of law which show that there may not be an increase in flood levels; however, the computer-generated model clearly shows that increased volumes of water at a higher velocity will be travelling down the stream and these issues are not addressed in any of the findings of fact or conclusions of law that have been proposed.

As to number two, on the response to my objections the burden is not on Mr. Sanderson or any of the objections to show that this won't happen. It's on the city to show that the damage will not occur. It's not the other way around. And all through the findings of fact and

conclusions of law the city's attempted to shift the burden to the petitioner and to the other downstream property owners. That's not the requirement of the law.

As to number three, once again there's absolutely no mention of erosion. We're draining literally hundreds of acres of water into a single stream and dumping it on to my client's property, and it's done at a greatly increased volume and speed.

CHAIRMAN BRINK: Are you referring to your point number three, which is --

MR. KOCH: I'm referring to Mr. Guhin's response number three.

CHAIRMAN BRINK: Okay, which is really in reference to finding of fact number four.

MR. KOCH: Right. That's where it gets a little muddy, I'm sorry. The findings of fact that are proposed adequately addresses the issue of increased flood levels but it does not address in any terms or any point the issue of increased flow. The computer model that was generated on behalf of the city clearly shows that during a 25-year period there will be an increase over my client's property, from the beginning to the end, of approximately 97 cubic feet per second.

Now I don't wish to insult the intelligence of anybody in this room, but 97 cubic feet per second means

nothing to me, so I converted it and that comes out to 725 gallons of water per second, 43,500 gallons per minute, 2,610,000 gallons per hour. Now this is the equivalent of every person in Pierre and Ft. Pierre flushing their toilet once a minute and diverting it into a single, narrow stream running across my client's property. And clearly the impact of such an increase in flow will have some effects on erosion and property damage. It's not been addressed. It hasn't even been discussed.

Now turning to response number four, which reverts to finding of fact six, proposed finding of fact six, once again it's shifting the burden. It says there's no evidence that it will endanger human life or property. There's no evidence presented by the city that it won't.

Increased flows of water, all of the materials and debris that's carried along with this from these hundreds of acres of land, which include the state fairgrounds, or part of the state fairgrounds, an industrial site, a gas station, stockyards, feedlots, numerous residential areas, and none of that has been addressed. It's simply said, well, if a problem arises, we'll fix it. That's not the burden.

The burden is to show the problem will not arise, or adequately compensate the downstream landowners in advance, not at some point in the future if they are wrong.

I might remind the Court -- or the Board that the computer models from the National Weather Service said this was going to be a drier than normal year. So computer models aren't always accurate.

As to number five, which refers to finding of fact number seven, the economic impact is relevant to issuance of a permit. 46-2A-11 requires compensation to the landowner if the property is going to be damaged. This is where the economic impact comes into it. It says endangerment of human life or property. I would say to this board that seriously reducing the economic value of a person's land is endangering that property.

CHAIRMAN BRINK: From my recollection of that presentation was that it was a waste of money on the city's part. It did not reference to land values. It was a poke at the city, so to speak, of their waste of funds on the project. Any of you others recall it that same way? And I think even in Mr. Guhin's comments somewhere, something about a boondoggle. I thought it was a poke at the city for wasting taxpayers funds on the project.

MR. KOCH: Well, you have the advantage, Mr. Chairman, of being at the meeting where this had taken place. I have only the findings of fact in front of me, and where it states the economics of the project are not cognizable by the board, but a local matter, property damage

downstream is the --

MR. HALLEM: Have you reviewed the record on hearing?

MR. KOCH: I have reviewed all the record that was provided to me.

MR. HALLEM: So your finding and conclusions proposed were based on your review of the record?

MR. KOCH: To the extent that it was provided to me, yes. As to finding of fact number eight, addressed as number six, the response, as I stated before there's hundreds of acres of land draining into this ditch from all different sources, and the debris that's to be carried along with that is considerably more than a soccer field.

We're talking about feedlots, stockyards, industrial sites, gas stations, highways, and all the residential areas along there that drain into this project, the debris is considerably more than a few people throwing paper cups in the drainage canal, and that's relevant because the debris carried downstream does endanger the property downstream and poses a potential threat to human life in sanitation issues and those sorts of things, which as far as the record that I have seen was never addressed, and I believe is required to be addressed by the city.

As to conclusion of law number two, there has been -- the conclusion of law is fine as far as it goes,

but it doesn't complete the entire burden by the city. It talks about reducing the damage in the upper area, but it says nothing about the potential damage to the downstream property. So it's wholly inadequate in that regard, and I don't believe the city has met its burden.

Now I'm kind of going on one step at a time here as I review them. As to conclusion of law number three, the proposed project by the computer model does increase the flood level across my client's property, at least at the two points that were measured, by approximately two to three inches, and that's basically the beginning and the end of my client's property. It doesn't say anything about what may take place in the middle.

So I think the evidence is somewhat inadequate in that regard. It certainly does not address any of my client's concerns about the biohazards that may be coming down that channel. The debris that may be coming down that channel, and what its effect may be on that property as far as values, erosion and sanitation. There's been no proposal in place to compensate him. There's been no addressing of that issue, other than to say if it happens we'll fix it.

I would make the same argument to conclusion of law number five, although it may be speculative, because we don't know just what the damage may be to my client's property, neither does the city, and it's their burden.

It's not my client's. I believe that by addressing the objections I have adequately addressed the other findings of fact and conclusions of law that were responded to.

In addition to all of this we have Stony Run Lake Dam that, as I understand, has a canal provision in here that must be considered before the permit can be granted, and I would argue that no permit could be granted until the provision is in place. An agreement that's site unseen is not a good agreement. And for the board to accept the fact out of hand that there will be a satisfactory agreement before they have seen it, certainly would not be prudent in my opinion.

I guess if the board were to have any questions of me, I would certainly try to respond to them.

CHAIRMAN BRINK: Is it your client's concern mostly with debris; is that what I'm hearing.

MR. KOCH: The debris, the erosion, increased volume of water that goes across his land. If this property were to be developed, as he hopes at some point, in to residential or commercial property, primarily residential property, a stream flowing through at a high rate of speed, carrying all sorts of biohazards, unknown biohazards, unknown sediments, debris and other wastes can pose serious health risks to the people in that area, and seriously reduce the economic value of his property. And in fact, if

the erosion is severe enough it will seriously reduce the value of his property, and those are his concerns.

MS. GUNDERSON: Where is your client's land?

MR. KOCH: My client's land begins where this project discharges right at approximately 21st Street and continues over to I believe the section line of 13 and 24. I don't have the map in front of me, but I believe that's what it is. He owns a section or significant chunk of the section.

MS. GUNDERSON: West of Huron?

MR. KOCH: Actually it's on the southwest edge of Huron. If you're familiar with the area near the fairgrounds, that's where the project will dump to a single bridge on to his property, no containment after that point, and that's his concern.

MS. LOUCKS: Would it be possible to have, for instance, an appraisal of the land as it exists now and one again after the project is completed to see what difference it has, and perhaps the city can work it out.

MR. KOCH: I don't believe an appraisal beforehand and after the project is the burden that's required for the issuance of a permit. The burden is to show that it will not damage the property. It's not to show that we'll take care of it if it happens.

MS. LOUCKS: I understand what you're saying.

MR. KOCH: Or to purchase the property for the proposed damage. The damage can't really be determined until the 25-year event happens or some other catastrophic event, or as a result of several years of this stream running through his property. An appraisal immediately before and immediately after would not give an accurate view, in my opinion, of what the detriment to this property would be.

MS. LOUCKS: But by the same token, I think the response of something like that is not in the Board's hands. It would have to be in the city's hands once the project is done.

MR. KOCH: The responsibility for compensating the landowner is the city's burden. The board's duty is to deny the permit until that's in place.

CHAIRMAN BRINK: Well, I seem to recall testimony which showed the flood surface profile vary very little across your client's property, as far as an increase in depth. When you're talking about volume, volume is rate of flow over a period of time. To compute volume, when you speak of volume, volume is almost a static sense. But flow rates probably do increase, velocities probably do increase, and I think we were given information that the water surface profile would be higher than it is now, but at a very insignificant amount. I think we're talking tenths of a

foot, 17 hundredths.

I have trouble trying to quantify damages from debris. It's speculative. How would you ask this Board to have the city quantify damages from debris? I think that's maybe something that would have to come later, once the damages are there, if there are any, and I think Mr. Guhin has indicated that in his findings, that in finding eight that the debris is really not a matter for granting the permit.

MR. KOCH: I would respectfully --

CHAIRMAN BRINK: That the city testified that they were going to take reasonable steps to deal with the debris problem. I am with you, I don't know what the amount of debris will be or how we can ask anyone to pay damages on speculation until it occurs.

MS. GUNDERSON: Well, I have to ask along with that --

MR. KOCH: The burden is to show that the damages will not occur prior to the application -- prior to issuance of the permit. That's what the law says and that's where the city hasn't even gone as far as to run any studies to show the potential for erosion, for damages.

MR. KOCH: Erosion or damages?

CHAIRMAN BRINK: Erosion, you're probably correct. I don't know if soil types and potential for

erosion bearing additional stream velocity, I don't know if that testimony ever came up. I don't recall anything in that regard, and to say --

MR. KOCH: And to say that the soccer field is the primary source of debris when you're draining several hundred acres of land, in excess of several hundred acres of land, through all different variance from stockyards to gas stations to fairgrounds, that simply -- that defies common sense.

MS. GUNDERSON: In number four because of potential impact on Stony Run Lake Dam, the project may not proceed unless appropriate agreement is in place; is that agreement in place between School and Public Lands?

MR. FOSHEIM: Yes, it is, ma'am. Counsel for staff has a copy, Your Honor.

MS. BEST: Yes, it's been filed.

MS. GUNDERSON: It's been filed, okay.

MR. KOCH: I would suggest to the Board if a proposal can be made with School and Public Lands on potential damage to Stony Run Lake Dam, that certainly it is feasible for them to do the same with my client.

CHAIRMAN BRINK: What was that again?

MR. KOCH: If an agreement can be reached with the School and Public Lands as to addressing the damages that are likely to occur to Stony Run Lake Dam, then

certainly the city ought to be able to estimate and reach an agreement with my client as to damages that would occur on his property.

CHAIRMAN BRINK: Anyone have a copy of that agreement?

MS. BEST: Is it consistent -- do the parties have any objection if we include that agreement within the dialogue here today?

MR. FOSHEIM: No objection. In fact, we can make it part of the record here if counsel will stipulate to that.

MS. BEST: Do you have any objection?

MR. KOCH: I haven't seen it.

CHAIRMAN BRINK: Are we getting out on a limb here, counsel, adding new testimony?

MR. HALLEM: We're approaching the edge of the branch.

CHAIRMAN BRINK: I'm trying to address his question if we should have an agreement, beings if there's something in that agreement that could be plagiarized or --

MR. HALLEM: This was just a supplemental file, wasn't it?

(Off the record discussion.)

MR. HALLEM: On the record, I'm asking counsel for the department whether the joint powers agreement

between the City of Huron and the South Dakota Office of School and Public Lands is part of the record of this matter.

MS. BEST: It is already part of the record in this matter due to the fact that the Board issued or made an oral determination at the close of the last proceeding and that oral determination included this provision requiring the City of Huron and School and Public Lands to get together and enter into a joint powers agreement if they could reach an agreement.

They did reach an agreement and consistent with that oral recommendation School and Public Lands filed that agreement with the chief engineer, and it was filed in the division file in this matter. So it's a filing in compliance with a permit condition.

MR. HALLEM: So it's part of the record as a supplement to the hearing at the Board's request?

MS. BEST: That's my interpretation of what's happened.

MR. HALLEM: In that case it's part of the record and the Board can consider it without any additional admission.

CHAIRMAN BRINK: Okay. The only reason I asked to see the agreement, to see if there was any type of language in here that might guide us in deciding whether

there needs to be an agreement between this landowner and the city regarding the debris, and if the Board does not feel that there is any need of that type of agreement, we'll drop it right here.

(Off the record discussion.)

CHAIRMAN BRINK: I'm not sure the Board wishes to follow my track here, so before I make any more noise about joint agreement, does the Board feel that there's any merit to it? If not, we'll go back to the responses that we've had to the petitioner's proposal.

Marian, I heard you thinking outloud a little bit ago that maybe you didn't think that -- you thought perhaps the burden would be on the landowner to show that he had been damaged, more so than on the city trying to estimate how they are going to damage it; is that the way you were --

MS. GUNDERSON: It seems to me like it's an issue between the landowner and the city that we don't need to get into. The Court system is always available for anybody that's unhappy.

CHAIRMAN BRINK: The city is not immune from suits, I suppose, if they can show damage.

MR. KOCH: They certainly are not.

MR. ROLLAG: I kind of look at this thing as we've had a hearing and decisions were made and basically

this is kind of a legal formality we go through at the end of every one of these, when we talk about findings of fact and conclusions of law and final decisions, and that we really need to follow our attorney's advice.

MR. KOCH: If I could respond to that.

MR. HALLEM: Counsel, I think it would be proper, given that this is somewhat of an unusual procedure that the Board has done, if you continue to address your points and then we would allow the other parties to comment and then you would have the last say if there are some additional questions, because the Board individually are a little concerned on how to proceed and that way they have the input of all the parties.

So if you could go through your other points and approach it that way and we'll give you opportunity to have the last stance on any issues that were raised.

MR. KOCH: I believe I have completed my points at this time, subject to rebuttal.

MR. HALLEM: I think that would be the proper procedure and if the department or the City of Huron has any comments based upon what we had today to enlighten the Board, that would be next procedure.

CHAIRMAN BRINK: I think that's right. We'll take the City of Huron's response to the petitioner's filings and recommended findings.

MR. FOSHEIM: Mr. Chairman, my name is Doug Fosheim, city attorney for the City of Huron, and I was not present at the fact-finding hearing. Mr. Howard Paul made our presentation at that time and he's here today to respond to some of the engineering concerns that were raised by counsel, and so at this time we would defer to Mr. Paul.

MS. BEST: DENR objects to reopening this hearing for additional evidence.

MR. FOSHEIM: Your Honor, we do not want to open the hearing. That's not our intent. There were some engineering questions that were raised by counsel, and if the Board or staff wants responses, that's Mr. Paul's presence, that's what he's here for.

CHAIRMAN BRINK: I think it's important that we are addressing his comments.

MR. HALLEM: He could not be sworn in because if he is sworn in then it's additional evidence. So this would be a matter of argument on it and --

MR. FOSHEIM: There is no further argument requested at this point. Mr. Paul is just going to respond to the engineering arguments that counsel made and to that extent there would be some argument.

MR. HALLEM: Is the testimony going to have anything new that wasn't presented at the hearing?

MR. PAUL: No relative to the question of

erosion, if you want questions answered on the comments made relative to the dam, there may be. Now I can stay away from that if you prefer because that's new evidence.

MR. FOSHEIM: It's not our intent to introduce new evidence here today, and whatever extent staff has a concern about that, that's not our intent. Counsel raised some issues about flow of debris and that kind of thing and Mr. Paul is just here to answer any questions that were prompted by argument only.

CHAIRMAN BRINK: The thrust of this gentleman's comments were that the city did not address the issue of erosion and damages across their property. I believe that seems to be the highlights here and Mr. Paul, if you recall during the hearing that those issues were addressed, or does your report address them that's already in evidence.

MR. PAUL: I believe our report did address them; however, there were issues raised by Mr. Koch relative to increased velocity. I would like to explain to this board a little bit on response to that, as to how velocity increases. I think, Mr. Chairman, you made one comment relative to that point.

MR. HALLEM: Ms. Best.

MS. BEST: If it's new facts I would suggest -- I mean I guess I have no objection if there's very, very

limited new factual evidence presented, limited strictly to the purpose of rebutting factual assertions made during counsel's presentation. The reason we're objecting, of course, is because the majority -- I mean the evidence is in in this case, but if there's something additional for this purpose --

MR. HALLEM: My problem is I was not at the hearing on it, so I'm not in a position to know what is new evidence or not. So in order to preserve your record we're not in position to grant your general objection. That would be my recommendation to the Board, but that wouldn't prevent you from raising specific objections if there's new evidence being submitted.

MR. FOSHEIM: Mr. Paul, at this point we don't intend to open the door for new evidence, and so we would just rest at this point and the evidence is before the Board and I think the Board has a firm grasp of what the evidence was. You heard it, and so we're going to go ahead and rest at this point, because it's not our intent to have a new hearing today.

CHAIRMAN BRINK: Does the division have any comments on the petitioner's proposals?

MS. BEST: Yes, we do have short comments if the City of Huron is done.

MR. FOSHEIM: No objection, and we're through.

Thank you.

MS. BEST: First of all let me start --

CHAIRMAN BRINK: Thank you, Mr. Paul. I guess we got you out of here.

MS. BEST: First of all, let me state that the specific statutory requirement involved here is SDCL 46-2A-11 and that does require the applicant to meet the burden of proof required by that statute. Evidence was presented and the DENR took a position on this. The DENR's position was that the application should be approved and that it met -- that the testimony offered and the report offered by the City of Huron did, in fact, meet the burden of proof required under that statute.

In the DENR's looking at the issue, as testified to at the previous hearing by Mark Rath, there are a couple things that DENR specifically looked at and talked to the Board about, and one was is this a stream channel improvement that's going to add more water to the channel, and the answer is no.

In other words, it's not going to draw additional water in the channel. The idea here is to expedite the flow of water in the channel, and so there's no question that when you hasten the flow of water there will be points in the stream channel where you will have more water at different points, but you will not have more total

water going into the channel.

I'm certainly not saying it in as articulate fashion as what the engineering staff did for the City of Huron or what our expert did, but in layman's terms the whole point is that you're not adding additional quantity of water into this. You have an existing stream channel. Studies were performed the existing stream channel will take the water. It's basically that simple. The evidence was presented regarding that matter.

With respect to this issue of erosion, I will tell you that there really wasn't -- if there was any evidence at all with respect -- or any testimony with respect to erosion at all there was very little, and that simply was because what we're talking about is hastening the water flows down an existing channel, in a channel that will take it. I don't know what erosion would be involved.

The petitioner obviously has a problem with the erosion factor. The petitioner did not cross-examine either City of Huron regarding this matter and did not cross-examine the State's witness. He didn't present testimony himself. There's some kind of an issue that the City of Huron's burden goes further than establishing the criteria in 46-2A-11, and that must somehow disprove the negative, if somebody has a problem to somehow cure all assertions beyond making this burden of proof, and I don't

think that's required by the statute.

The mere fact that someone asserted there's an erosion issue, doesn't mean there's an erosion issue, and particularly when it's asserted in a finding of fact stage, and the evidence was fairly straight forward at hearing, and the DENR believes that it would be consistent with 46-2A-11 to grant the permit.

One additional point came up. Obviously John Guhin is not here. He's proposed a memorandum for the Board to look at. He was at the previous hearing. He made some recommendations to the board as to what he believes the appropriate legal standards are, and has asked the Board to consider those comments.

Certainly the Board is not bound if -- I mean John Guhin hasn't heard the argument being made by the various parties today and, you know, I want to clarify that DENR isn't taking the position that the Board is somehow bound or the Board has to defer to counsel from the previous hearing on this matter. Certainly the issue is available for the Board to take action on and there's a choice of things that the Board can do, but the DENR's position is that this permit, that all the evidence that need be presented was presented and that the permit should be granted. Thank you.

MR. ROLLAG: Mr. Chairman, I would like to make

a motion.

CHAIRMAN BRINK: Okay, is this regarding adoption?

MR. ROLLAG: Well, this is regarding Mr. Guhin's recommendation regarding petitioner's objections.

CHAIRMAN BRINK: Entertain your motion.

MR. ROLLAG: I move that Mr. John Guhin, our attorney's letter of memorandum to us June 30th regarding the objections submitted by petitioners involving the findings of fact and conclusions of law and final decision be adopted.

MS. LOUCKS: Second.

MR. HALLEM: I have one clarification that needs to be expand to to include the proposals.

CHAIRMAN BRINK: He probably meant that, but does that also include the response to the petitioner's proposed findings?

MR. ROLLAG: No. This is just the letter memorandum of -- basically he proposes rejection of the petitioner's.

CHAIRMAN BRINK: You're going to handle that on a separate motion?

MR. ROLLAG: Yes.

CHAIRMAN BRINK: The motion is to accept

Mr. Guhin's letter on recommendation of rejection of petitioner's proposed findings of fact.

MR. ROLLAG: Right.

CHAIRMAN BRINK: Is that correct?

MR. ROLLAG: Correct.

CHAIRMAN BRINK: Any discussion or comments on the motion? If not, all those in favor of the motion signify by saying aye. Opposed the same. Chair votes aye. So motion carries.

MR. ROLLAG: I would like to make a motion for acceptance of the findings of fact, conclusions of law and final decision as amended by the division.

CHAIRMAN BRINK: We accepted that.

MR. ROLLAG: This is a motion to accept findings of fact and conclusions of law subject to the amendments that we have already approved.

MS. LOUCKS: Second.

CHAIRMAN BRINK: We have a motion and second. All those in favor of the motion signify by saying aye. Opposed the same.

MR. HALLEM: One last thing then that the Board needs to address and that is on page two of three of Mr. Guhin's letter, he responded to petitioner's proposed findings of fact and conclusions of law and final decision. That's one thing that the Board has not addressed and

that's a separate document. Petitioner submitted two documents; one were objections to Mr. Guhin's proposed and the second was their own proposed findings of fact and conclusions of law. So the Board still needs to take action on that.

MR. ROLLAG: I move that the petitioner's own findings of fact and conclusions of law and final decision be rejected.

MS. LOUCKS: Second.

CHAIRMAN BRINK: For reasons stated in our attorney's letter?

MR. ROLLAG: Correct.

CHAIRMAN BRINK: I think we need some background for that. We have a motion and second. I need to comment a little bit on petitioner's finding number six. Mr. Guhin says the project can't commence without an agreement. I believe that an agreement is in place now on the dam, so the petitioner's proposed finding number six, although School and Public Lands may be willing to negotiate with the city, at this time no agreement has been reached. There has been one now with joint powers agreement. Whether that item needs to be amended or not, probably not, okay.

Anyway, we have a motion and second then for rejection. All those in favor of the motion signify by saying aye. Opposed the same. Do we need new findings?

This is it, right.

MR. HALLEM: What I will do is amend the findings of fact, conclusions of law and final decision to incorporate the three proposed changes of DENR, as approved by the Board, and I will provide that to Mr. Hatch.

CHAIRMAN BRINK: We do have problems but these are legal decisions.

MR. FOSHEIM: Thank you members of the committee and Mr. Chairman.

MR. KOCH: Thank you.

MR. FOSHEIM: Mr. Chairman, is the Board going to take action to issue the permit then today?

MR. HALLEM: I think what the procedure is, I prepare the final findings of fact and conclusions of law, and I'll do that at the end of the meeting, provide that to Mr. Hatch and then events will transpire. So no specific action will be taken on the permit today.

MR. FOSHEIM: Thank you.

MS. BEST: I believe it circulated and John Hatch issues final notice within the next couple months sometime, and then the permit is issued. Generally we wait the 30 days after the findings to issue the permit.

MR. FOSHEIM: And we'll be notified?

MS. BEST: Oh, yes.

MR. FOSHEIM: Thank you.

(Whereupon, the proceedings were adjourned.)

#-#-#-#-#

STATE OF SOUTH DAKOTA)
) CERTIFICATE
COUNTY OF HUGHES)

I, Lynne M. Ormesher, Registered Professional Reporter, hereby certify that the foregoing pages 1 through 30, inclusive, are a true and correct transcript of my stenotype notes.

Dated at Pierre, South Dakota, this 5th day of October, 1999.

Lynne M. Ormesher, RPR

STATE OF SOUTH DAKOTA

WATER MANAGEMENT BOARD

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FLOOD CONTROL PERMIT APPLICATION NO. FC-27

= =

Transcript of Proceedings
May 5, 1999

= =

BEFORE THE WATER MANAGEMENT BOARD,
FRANCIS BRINK, CHAIRMAN
RODNEY FREEMAN
LEO HOLZBAUER
BERNITA LOUCKS
JOEL RICKENBACH
DWAYNE ROLLAG

A P P E A R A N C E S

DIANE BEST and JOHN GUHIN,
SOUTH DAKOTA ATTORNEY GENERAL'S OFFICE,
Assistant Attorney General
and Deputy Attorney General
500 East Capitol Avenue,
Pierre, South Dakota 57501,
appearing on behalf of the State.

ALSO PRESENT: Brenda Binegar

Reported By Cheri McComsey Wittler, RPR

TRANSCRIPT OF PROCEEDINGS, held in the above-entitled matter, at the Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol Avenue, Pierre, South Dakota, on the 5th day of May 1999, commencing at 10:30 a.m.

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(DENR Exhibits 1 and 2 are marked for identification)

CHAIRMAN BRINK: We are at the 10:30 agenda item, Flood Control Permit Application No. FC-27 for the City of Huron.

MR. RATH: Good morning. My name is Mark Rath. I'm a natural resources engineer with the Division of Water Rights. Brenda, would you please hand out the report on this.

Flood Control Permit Application FC-27 is for channel modifications just west of the Town of Huron. I'll start off by saying at this point the chief engineer is recommending deferral for this permit. The Applicants are here to discuss the permit, and we have one party in opposition, Mr. Sanderson. There is a letter at the end of the report. He is in opposition to this Application.

I'll give a brief background of what the Application is for and why we're recommending deferral at this point. The proposed project is located in the southwest quarter of Section 2 and the east half of Section 11. As you can see, the yellow area on the map that's labeled Application No. FC-27, the purple line is the location of the proposed channel modifications, which would include some channel relocation, construction of a

detention pond and then channel shaping and grading. And then there will also be some modifications to some crossings there.

South Dakota Codified Law SDCL 46-2A-11, and I'll read, requires a flight control permit can only be issued if it can be shown the project will reduce damage or erosion in the area proposed to be benefited and will not increase the likelihood or severity of flood damages in other areas unless easements have been obtained and the project cannot endanger human life or property.

The Applicant has provided an engineering analysis using hydrologic models HEC 1 and HEC 2 comparing the preproject conditions to proposed postproject conditions. And what they indicated was that they'll expedite the movement of water through this area and pass it down through there (Indicating).

The model shows that there will be some minimal increase in the water levels in the channel down to about where it gets into Stony Run Lake. And at that point because of the fact that Stony Run Lake Dam is on the end with the spillway, the model showed there would be an increase of flow through the spillway.

Water levels detained behind the dam will be increased due to this project. And it would be the mold runs -- the information provided indicated it would be up to about 1.9 feet for a 25-year event. Again, because of the requirement of not, you know, passing the likelihood or severity of flood damage to other areas, we are recommending deferral unless some sort of agreement can be made. Again, the Applicant is here, and Mr. Sanderson who is in opposition is here also.

Does the Board have any questions?

CHAIRMAN BRINK: Why are you recommending deferral? Maybe I missed something here.

MR. RATH: Well, we don't have any agreement in place to take care of the passing of damages due to the flood control to the Application. The Flood Control Permit can't be issued if it's going to pass flood damages downstream. And until we have some sort of an agreement in place, you know, the permit can't be issued.

MS. BEST: Mark, could you clarify for the Board what the area of potential impact would be that would increase the likelihood of

flooding or damages downstream? Who's impacted?

MR. RATH: Okay. The model runs indicate that water levels in the area just south of the proposed project down to Stony Run Lake will increase approximately one-tenth to two-tenths of a foot in the channel due to the events. The topography is steeper through here so you would have a greater velocity of flow.

CHAIRMAN BRINK: Is that all Section 13?

MR. RATH: 13 and 24. Where the model run indicates that there would be a problem or greater, you know, depth of water would be down in Stony Run Lake located down in the lower portion of Section 19.

MR. FREEMAN: So the agreement needs to be worked out with School & Public Lands.

MR. RATH: Mr. Sanderson, who I believe owns this project here, has concerns about the project also.

MR. FREEMAN: Do the models show --

MR. RATH: It shows minor increases in the water levels at that point.

MR. FREEMAN: Does it go over the bank?

MR. RATH: I don't believe so. The consulting engineer for the City of Huron is here, and he could probably answer these questions better than I can.

CHAIRMAN BRINK: Where is the old packing plant, just for point reference to the project?

MR. RATH: I'm not positive, but I believe it's over here (Indicating).

CHAIRMAN BRINK: Maybe we'll get it from the Huron people here. Okay. Do any of the parties here want to ask questions of Mark before we take testimony from the individuals?

UNIDENTIFIED SPEAKER: I would have a question. I do notice everything that has been spoken to dealt with water flows, and my primary concern is going to be of pollution of the waters that flow.

Is that a part of you people's concern or not?

MR. RATH: The Department of Environment and Natural Resources does address water quality issues. Specifically this permit is not geared toward the water quality end of things.

UNIDENTIFIED SPEAKER: Might that be

a separate occasion to question the project?

MR. RATH: If it is needed, I do have some people downstairs in our Surface Water Quality Section who will be available to answer questions if the Board has them or if the party wishes.

UNIDENTIFIED SPEAKER: Okay. Thank you.

CHAIRMAN BRINK: Does the City of Huron have any questions for Mark? My name is Jim Borszich. I'm the City Commissioner in charge of Public Works for the City of Huron. And I'd like to address your question about the meat packing plant, and Schmucker, Paul, Nohr will obviously get into the findings of the report itself.

I'm assuming the plant you're talking about --

CHAIRMAN BRINK: If you're getting into testimony, we'll have to swear you in. At this point I want to know if you have any questions for Mark, and we'll get your stuff on the record. Now if you want to --

MS. BEST: The DENR does have one additional witness. We ask Curt Johnson to come forward and testify in this matter at this time.

CURT JOHNSON,

called as a witness, being first duly sworn in the above cause, testified under oath as follows:

CHAIRMAN BRINK: Now tell the girls who you are, and we'll go on.

MR. JOHNSON: I'm Curt Johnson, Commissioner of School & Public Lands. The reason I'm here to testify is at the end of this project is the Stony Run Dam which is under the jurisdiction of the Office of School & Public Lands.

The way that we look at this project, you know, whenever someone wants to do work above stream and help clean up that area, we want to support those because we believe it's in our best interest to try to fix this dam that's down below and look at this as kind of a total project area.

And we've been in conversations with the City of Huron on numerous occasions, and although we don't have anything in writing, we certainly believe we have every reason to be able to work with them as far as this project is concerned.

And one of our concerns is always do we have enough funding to fix this particular structure. We're working with Game Fish & Parks on all the WPA

dams, and that's something we're certainly going to try to address. We're hopeful this can be a partnership between the City of Huron, School & Public Lands and maybe the James River Water Districts and Conservation District as well.

I see in this deferral the contributions the City is doing to improve the channel work along those lines, and then hopefully a second phase of this I would hope would be with the DENR aggressively addressing the water quality issues that have been there for a long time.

Water quality issues for that particular dam and water shed have been -- at least 20 years now there's been water quality problems there. This may be an opportunity to address those problems when you fix the channel work. And then my hope is that since I'm on the Conservation Commission as well, the Conservation District could do things like silt retention structures and perhaps filter strips and those kind of things to make sure the water quality does improve and stays that way.

Stony Run Dam which is an integral part of this project needs to be repaired. It's less than a quarter mile from the James River. You know, we can't let that deteriorate and put that silt load

into the James River. I think we will aggressively be looking for ways of securing funding to fix that dam, and it's my hope that we can do that right along with the rest of the project. And we'll be working with the City and the County and whoever else has an interest in there to do that.

You know, a third stage would be I hope then maybe if we can clean up the water quality, this could then again become a recreational area and perhaps could be stocked again for fishing in Stony Run Lake. I want to go on record as being in support of cleaning up this waterway, the channel work, and we certainly are ready to work with the City. If we need some kind of agreement to be drafted, we're willing to do that.

CHAIRMAN BRINK: What's the classification of that dam?

MR. JOHNSON: I think it's a Class 3. It's a low hazard dam. But right now -- of course, all of these dams are deteriorated, but if we let it go, it will get in such a state it will cost a tremendous amount of money to fix it up. We can fix it up with less expense now than four or five years down the road. Every year is quite critical. You've dealt with those quite a

lot.

CHAIRMAN BRINK: Does the Board have any additional questions?

(No audible response)

CHAIRMAN BRINK: Thank you.

MS. BEST: Curt, if you will, I do have one additional point that I think you've already testified to regarding this, and I want to make sure to clarify this. The legal standard for issuing a Flood Control Permit that this Board has to look at is whether the project would endanger human life or property.

Is your testimony then that, yes, the dam needs the repair but this project would not -- or would not endanger the property, the dam downstream, if a cooperative effort is engaged in among the parties? Is that a fair statement of your testimony?

MR. JOHNSON: I'm not big in engineering, and I'm addressing this from a nonengineering standpoint. In my experience, these WPA dams a little more, if that happens, is not going to be detrimental. What really is detrimental to those dams is a massive flood.

You know, when they go over the spillway

4 or 5 feet, you know, that has a tendency on those old structures to really eat them out fast. And there is no one downstream in danger. So I don't think the project, in my mind, would have any further detrimental effects other than what nature already has.

MS. BEST: Thank you.

CHAIRMAN BRINK: Any other questions?

(No audible response)

CHAIRMAN BRINK: Okay. I think we'll let the City of Huron move ahead with their part in the Application. Who's going to be the spokesman?

JIM BORSZICH,

called as a witness, being first duly sworn in the above cause, testified under oath as follows:

CHAIRMAN BRINK: Would you give your name for the record.

MR. BORSZICH: My name is Jim Borszich. I'm the Public Works Commissioner for the City of Huron. Quite honestly, I didn't expect to address this group of people, but I'd be more than happy to entertain and answer any questions you might have.

With me today I have Howard Paul with Schmucker, Paul & Nohr who has done extensive research and study on this particular project at the request of the City and, in addition to that, Mike Weaver, who is our City Engineer. And, again, I apologize for the interruption before.

I'd like to address the question about the meat packing plant. And we at one time did have two of those in Huron. At this point in time we don't have any. The Huron Dress Beef property, that's been essentially nonoperating since, oh goodness, it's probably a good eight to 10 years. That property is located up in this quadrant a little further north -- excuse me. This is the intersection of Kasperson's corner and Highway 14, new and old 14. Huron Dress Beef property is probably 2 and a half miles from this particular property, and, again, it's not an operating facility.

The Dakota Pork property and, again, it's not operating either, is located over in this section of the community and has its own separate water and sewer facilities in connection with the City and all of that particular drainage, when it was operating, heads to the east to the City lagoons.

Hopefully that answers your question. At this point in time I guess I'd like to turn the hearing over to Howard and have him go through the results of the survey and the study.

HOWARD PAUL,

called as a witness, being first duly sworn in the above cause, testified under oath as follows:

MR. PAUL: My name is Howard Paul. I'm a professional engineer with Schmucker, Paul, Nohr & Associates. This project is essentially a drainage project. As you can see from the map, it starts here at Third Street, comes all the way down through and ends at 21st Street. We have a detention ditch planned here -- detention pond. Excuse me. The route will follow essentially the same route as the existing Stony Run draw.

Now there is a feedlot in this area here and a second feedlot down in here. Those exist today. The runoff from those today goes into Stony Run. We have not changed that, and the City cannot control that.

CHAIRMAN BRINK: Your feedlot, when we say here in Section 3, for --

MR. PAUL: Section 3, and we have one in Section 11 right down in 24 here adjacent to

Lincoln. This is the smaller one. This is with the sale barn here and cattle grades here all the way through this area (Indicating).

Our studies are HEC 1 HEC 2 studies who's shown, as previously pointed out, that the major increase in elevation is going to be on Stony Run Lake. Through Section 13 or at this point here at the Highway 37 bridge the increase on a 25-year flood is .17 feet, roughly 2 inches. At the south side of Section 13 on a 25-year flood here you're looking at a 0.2 or 2 and a half inch increase. The impact on their property through here is going to be negligible (Indicating).

MR. FREEMAN: Could you identify the property you're talking about by section number.

MR. PAUL: Section 13 at this point. At this point there will be no major increase in water elevation. That's the top end of Section 13. At the bottom end, 0.2 or 2 and a half inches. The channel will be excavated, straightened to pick up the flow, but the hydraulic radiant is not going to increase.

The existing channel has about a 0.1 foot per 100 feet of drop that will not change. We can't change it. There's just no way we can change

it. There is a bridge at this point, and there is a bridge at this point. And those two bridges are going to relatively control things. We are not planning on doing any channel improvements through Section 13 or through Section 24 (Indicating).

Questions? Again, I would point out those two feedlots that exist today, both of them drain into Stony Run today. The City has no control over those.

MR. ROLLAG: Will the runoff from the upper feedlot go into that retention pond?

MR. PAUL: Yes. That will be retained in the detention pond at this point. Any other questions?

CHAIRMAN BRINK: That's not really designed for any treatment process?

MR. PAUL: No.

CHAIRMAN BRINK: Other than hydraulic detention.

MR. PAUL: Right. That will settle sediment, and there may be a minor natural treatment process through the growth of cattails and so forth. We'll get some using up of the nutrients, but, no, we are not claiming any significant treatment in that pond.

MR. FREEMAN: Just so I've got it straight, the proposed project will not contribute or increase any sort of -- it will not affect the current quality of the water?

MR. PAUL: In our opinion, no, sir. This will be basically some residential runoff from this area. There is a plant industrial site in this area. That will be surface runoff only. There will be no dumping of process waste or anything else into the system (Indicating).

All of this system currently is pasture and some minor cropland areas that will drain into it, but those drain into it now. We have not changed that (Indicating).

CHAIRMAN BRINK: Those properties you just pointed to in Section 11 there and specifically the yellow land, who's the ownership of that property then?

MR. PAUL: Those people have not filed any objection.

UNIDENTIFIED SPEAKER: Part of it's owned by Bales Continental, part of it is owned by Ron Henz (phonetic), and there's other people that, quite frankly, I don't know who they are.

CHAIRMAN BRINK: And that channel

through there, there already is a channel that you're improving?

MR. PAUL: At this end it's almost -- it's there. It's hard to see. It's very shallow. It comes in through here. It increases somewhat in depth, and down here it's a very definable channel. In here it's definable but a very shallow natural type of drainage (Indicating).

MR. FREEMAN: There is no objection from anyone within the proposed project area, the yellow area?

MR. PAUL: There is no objection we are aware of, sir.

MR. FREEMAN: The only objection is Mr. Sanderson, but you're not going to touch his land.

MR. PAUL: No, sir. He owns land in this quarter (Indicating).

MR. FREEMAN: Which is 13.

MR. PAUL: 13. He owns the northwest quarter of 13.

MR. SANDERSON: Northwest quarter.

MR. PAUL: There is some commercial development here existing (Indicating).

MR. FREEMAN: That's 21st Street?

MR. PAUL: Yes. But there is going to be no effect on his ground here as far as changing the runoff at all.

MR. FREEMAN: Thank you.

CHAIRMAN BRINK: Are there easements across the yellow land --

MR. PAUL: Yes, sir. The City got easements for our survey work so all of the landowners who were directly effected by the construction of the channel itself are aware of what's going on. Do you have easements, Mike --

CHAIRMAN BRINK: This is testimony. I'll have to get him up here. If you're going to testify, come on up and --

MR. FREEMAN: You can go over and talk to him and come back.

CHAIRMAN BRINK: The question I had was whether there's a present channel through there, and is that present channel covered by existing easements, construction easements?

MR. PAUL: No, it is not. Those easements, of course, will have to be obtained, but they did give permission to study our access of the new cross-sections.

CHAIRMAN BRINK: Does the Board have

any questions for Mr. Paul?

MS. BEST: Mr. Paul, if I may, and I don't know if it necessarily relates directly to this case, but where is the City limits here? Is this all within the City, if you know?

MR. PAUL: Currently the City limits run about here (Indicating).

CHAIRMAN BRINK: Uh-huh. How do we get that in the record?

MR. PAUL: Off of this map, I guess the City limits currently come through the center of Section 2 with a couple of --

CHAIRMAN BRINK: Is that the State's exhibits or your exhibit?

MR. PAUL: The State's exhibit.

CHAIRMAN BRINK: Would you care if we have him mark City limits with a ball point?

MR. PAUL: I believe they are marked now. They're marked on the map with this line (Indicating).

CHAIRMAN BRINK: Why don't you highlight it, Howard, kind of a yellow or orange Magic Marker.

MR. PAUL: I believe these are the limits (Indicating).

CHAIRMAN BRINK: Okay.

MS. BEST: As a follow-up question, does County require any additional approval through the County zoning process or anything to complete this project?

MR. BORSZICH: Maybe I can answer that. We have right now a 3-mile area of jurisdiction jointly. It's controlled and operated by the City and the County. So there will be a request before that joint planning commission for this particular project.

MR. PAUL: Other questions?

CHAIRMAN BRINK: Mr. Sanderson, do you have any questions of Mr. Paul while he's there?

MR. SANDERSON: Yes. I might have one, just looking at this flowchart. I notice that there is a point --

CHAIRMAN BRINK: Why don't you get up here a little closer and he can hear you and they can hear you.

MR. SANDERSON: The flowchart depicts some points for drop. And, again, I'm not so concerned about water flow as I am water debris. But I do know, sir, the point -- can I use

the map for reference?

I believe you show a point for flow about 500 feet into -- and you can see this on your flowchart. And the next point you take is down here. That's quite a ways. Why wouldn't you have another --

MR. PAUL: We can calculate one in there. We did not feel it was appropriate. We'd have to get cross-sections of the stream going all the way to that point and downstream. And we do have cross-sections, yes, but we did not feel that point was necessary given the 0.2 increase here and literally no increase, actually a small decrease, in the elevation here (Indicating).

MR. SANDERSON: I guess that's the point I would make. Thank you.

MR. PAUL: Further questions?

CHAIRMAN BRINK: Any other questions for Mr. Paul?

MR. RICKENBACH: I've got a question. I think I know what the problem is here. We've got a shallow stream bed that's not handling the high water at a rate that will prevent it from causing flood problems, but to increase the flow, as I perceive that the project will do,

certainly wouldn't deteriorate the quality of the water, would it?

MR. PAUL: No, sir. The quality of the water, in our opinion, is not going to see any significant change. There may be some slight changes to the worse. There could be some to the better. But we see no significant change in water quality. Most of the area that will be drained is rural, and some of it that will be drained is urban residential.

MR. RICKENBACH: Thank you.

MR. FREEMAN: But it's the same as being drained today?

MR. PAUL: It's the same as being drained today with the exception of the small area in here. Some of this right now goes that way, and the storm sewer, we're proposing to divert that back into this ditch (Indicating).

But that, again, is all residential runoff. The slight amount will come in from Fourth Avenue here. There will be some slight amount coming in from Fourth Avenue there (Indicating).

CHAIRMAN BRINK: What's the general condition of the secondary and the primary spillway on Stony Run? Are they in good shape?

In the report they were talking about water levels increasing up to 2 feet.

MR. PAUL: That I did not personally see any spillway. I couldn't give an opinion on that.

CHAIRMAN BRINK: It wasn't part of the study then?

MR. PAUL: People who would give that opinion would be the Public Lands person.

CHAIRMAN BRINK: I wonder if Mr. Schaal -- I know he's not here -- could testify, but we'll let that one go. Any other questions for Mr. Paul?

(No audible response)

CHAIRMAN BRINK: Thank you. Does Huron have any additional information they want to give us?

MR. BORSZICH: No. I don't want to bother folks with the history on why we're doing all of this. We do have a 404 Permit that has been approved on this point, and we're trying to get on with this project and hopefully make everybody happy in the process.

MS. BEST: That raises a question. Thank you. One thing that's come up, Mr. Borszich,

is this issue with respect to the School & Public Lands and Stony Run Creek. And you heard the testimony of Mr. Johnson. Has the City made a commitment to undertake a cooperative effort with School & Public Lands with respect to that dam, and can you address what the scope of that commitment would be, if you could talk to the Board about that?

MR. BORSZICH: Let me try to address that and Mr. Reed would like to make comment as well. We're committed to this project as a whole as a significant improvement to our entire community, especially the western part of our community, and we have plans -- in addition to just the drainage issues, we have plans of hopefully putting a truck bypass in this particular area in the near future, as a matter of fact, in the next two years.

My commitment to School & Public Lands is really short and sweet. I'm only one Commissioner. This is a significant project for our entire community, and I would be very surprised if I can't get the support or Curt's office to help them in any form or fashion to eliminate any problems that might exist with the dams today.

It's way too big of a project for us, and it's too important with the community to resolve this issue that's been a thorn in our side for a number of years. To tell you the truth, we have an agreement today I can't do that, and I certainly can't commit to that today. But I'm going tell you we have worked with these folks a great deal over the past and are looking forward to doing so in the future.

Curt is a friend of ours obviously from Huron, and I would be very, very surprised to think we couldn't come up with some form of a mutual agreement that would be satisfactory to School & Public Lands and to the City as well.

This morning I did make some commitments that I can't live up to, but I told him I certainly would take that back to the rest of the Commission. If there was an effort for us to do any kind type of service to enhance or help with the damage, the concerns with the dam, I would personally carry that back to the Commission and encourage them to support it.

And, honestly, this is a multi-million dollar project for us. We are not going to let it get away from us for problems that may exist in the

structure of the dam. As I understand it, there's modest work that may need to be done there, and we're willing to work with them to try to accomplish that.

I know I haven't answered your question, but I answered the best way I can. We're committed to the process.

CHAIRMAN BRINK: Does Beadle County have a County Drainage Board, per se, not a Zoning Board?

MR. FREEMAN: County Commission operates --

CHAIRMAN BRINK: County Commission forms -- I'm not an expert in that area, but I've been through a few of them. But it gets a little sticky out there, and when you have municipal water draining on County land from one landowner to the other, the Drainage Board itself, which in this case must be the County Commission, may end up resolving your easement and issues down below.

MR. BORSZICH: Please understand we're not trying to do anything different other than to clean out what exists today and make it a better opportunity for the water to flow freely and --

CHAIRMAN BRINK: Aren't you going to be bringing new municipal water to this proposed site?

MR. BORSZICH: Yes, we will.

CHAIRMAN BRINK: Case in point.

MR. BORSZICH: Sorry.

CHAIRMAN BRINK: What will this do to your project if we follow the chief engineer's recommendations on deferral?

MR. BORSZICH: It will slow it up, obviously, a great deal. We would hope to try to get something done as far as construction bid letting and that type of thing by this spring. We have let other projects -- bids for other projects for the economic development and for the enhancement of this West Huron area, which is under way right now as far as the storm sewer water and sanitary sewers.

We hope to get successful bids, I believe, next week for development of that industrial park area. It would greatly slow up the process.

CHAIRMAN BRINK: Well, I'd go back -- I'd ask the staff, what is your timetable on deferral?

MR. HATCH: I think we ought to hear

from the rest of them.

CHAIRMAN BRINK: Oh, I see. All right.

MR. FREEMAN: I just have a question for Jim. Has the County Commission raised any objections whatsoever in any shape or form to the project?

MR. BORSZICH: None that I'm aware.

CHAIRMAN BRINK: Are there other parties that want to testify here?

MR. SANDERSON: For or against?

CHAIRMAN BRINK: Either way.

MR. SANDERSON: I'll bring this chart up since the City limits were referred to. Even the smallest piece of Scotch Tape would hold it.

CHAIRMAN BRINK: Did we get you sworn in?

MR. SANDERSON: No.

ROLLY SANDERSON,

called as a witness, being first duly sworn in the above cause, testified under oath as follows:

CHAIRMAN BRINK: For the record, if you will state your name, please.

MR. SANDERSON: Rolly Sanderson.

I'd suggest that the significant part in my concerns I've expressed earlier is not water flow, but what is in that water. You've seen the chart, and it shows how it flows down through here (Indicating).

This is the Huron shopping mall here, the church is here, homes out in here. This is agricultural land for the most part, as you see outlined in red. The Creek comes down through here, passes right through it, exits right through it in the corner, practically enters in this corner. Ideal for home development primarily. Other kinds would be considered, be it office or whatever (Indicating).

The end of their project is right here. They've got a beautiful plan. We're going to gather all of this water, and I don't know if background makes a difference or we're just going to talk statistics. The purpose is to drain 165 acres out here of bare farmland. How are we going to get it done?

It started with a boondoggle, and it's growing into a bigger boondoggle. They wanted to drain this. That's mine. I don't mind the water coming down here, but I want clean water. This storm

sewer or channel they're talking about is nothing but an open sewer. Stuff blows in there. It's gathered somewhat by the City -- you pointed out --

It becomes a collecting point of debris, paper cups, anything you can think of that is blowing in the area, collected along the stream as water and snow and everything else melts and carries it. If you'll get to the end of a storm sewer that's very active and look down there and see it, you don't want to live there. You don't want to be around it.

Now we get these events you speak of. They come down, it will be spread out all over my land before it gets to Stony Run or any place else. Then should the opportunity to develop arise, I'm the one that's going to have to pay to clean this.

I'm just one human being, an old man at that. I've lived in Huron, South Dakota most of 71 years. I know the town. I feel I know everything about Huron that needs to be known. This is developable land.

Now let me add this. Anything I've made in Huron, South Dakota I invest back into Huron, South Dakota. I don't make money and put it someplace else. So I'm concerned about protecting

the investments I have and intend to make should the opportunities arise. This is a collector for debris, and they have not addressed the matter of it being dumped here.

If they could assure me that clean water is dumped into that stream, at that point I have no objection. My objections disappear. But it's not going to be solved with rhetoric. It's not going to be solved with grand plans and promises. Their promises and writing will be the way it needs to be done, clean water in there. And fine, but what's proposed now is just a boondoggle, nothing else.

I made a few notes, if I may. I'm not a public speaker by trade. Jim, having been a short time in Huron, three packing plants we have in Huron, there was, about 12 or 15 years ago. They're all gone now.

This project hasn't been thought through. Never once -- here I am at the end of this thing. They're planning this thing -- never a thought should we talk to Anderson and see if it has any impact on him, if he cares or not, never a word to me.

Downstream, steeper channel. I'm going to comment on that. It gets awfully flat in my area.

It drops 5 feet from here to here (Indicating). That's the deal that the engineering -- the Applicant needs to address pollution, pollution or debris. I'm not talking about the kind of pollution, gases and oil. I'm talking about sticks and stones and cans and cups and everything else that gets thrown into it.

The detention pond is irrelevant. The only good it does is to the degree it's maintained. Down here is where it's collecting, open air blowing and drifting and throwing waste.

It will increase flooding. And that's where I could even probably be helpful to that problem rather than -- but this will increase the flooding. It's taking the water off here and putting it down into the James River. The strength of that dam and such, I don't know, but this will not detract from the flooding. It will add to flooding downstream in the River.

In development I can see a dam on my property there for residential and whatever other parks -- whatever else might be done. I covered some of this before, I guess. Anyway, the slower the water runs -- and it's been agreed by, I guess, the engineer that the slower it runs the more the

debris has a chance to scatter out and drop and so on and so forth.

So really this thing as it's presented right now is truly a significant economic boondoggle to the City of Huron, and the reason we have moved from number four in population and retail sales in Huron, South Dakota to number nine, maybe number 10, today is because of this kind of thing. I'd like to see it stop someplace. Questions?

CHAIRMAN BRINK: Does the Board have any questions of Mr. Sanderson?

MS. LOUCKS: I have one. The way it exists now are you getting this debris and all of this right now and it's your opinion that with their improvement it's going to be worse?

MR. SANDERSON: It will be worse, yes. There is some now. It's not as bad as it may be. We get some from the feedlots. Again, until I'm impacted significantly I don't want to create problems to the people upstream who are contributing, but when the time comes and hopefully if the time comes, yes, I'd have to object to the agricultural pollution we have now. I'm not going to do it without prospects of being ready to improve this land.

MS. LOUCKS: Okay. Thank you.

MR. RICKENBACH: Where is this water that you're anticipating would run out over your property, if this project is completed? Where is this water going now?

MR. SANDERSON: Well, it will follow the same channel. What I'm saying is it's going to bring a great deal more debris down the channel. That's the problem. And it will then be deposited on my land right at the head water.

In the event we get an inch of rain in 20 minutes, it will push it farther down, but it's going to be a long time before it gets the whole mile.

MR. FREEMAN: Mr. Sanderson, I don't understand how you're going to get more paper cups and plastic bags that blow into the stream.

MR. SANDERSON: I'll tell you, one, because, you know, there's going to be soccer alongside the channel. The guys that have paper cups, plastic cups, they throw them free. It's not the project. It's the soccer.

You asked about the paper cups, where would that debris come from. That's my answer. The paper cups --

MR. RICKENBACH: So it's actually the debris rather than the water you're concerned with?

MR. SANDERSON: Yes. If they would put pure water in that channel or head water, I'd still be thrilled to death. It's still a boondoggle economically, but as far as the waters, I don't have any objection.

CHAIRMAN BRINK: Does anyone here have any questions for Mr. Sanderson? Do you wish to question him?

MR. BORSZICH: Mr. Sanderson, we always question each other a great deal, and we have grown to appreciate each other a great deal. He's right, I may have missed a feedlot. However, I've only been in Huron 10 years so, again, based upon the limited information I have.

I really don't know where Rolly is coming from in regards to the additional debris. We're trying to enhance the quality of the water here. The City can't control the garbage issues that are out here unless they're reported to us and they become nuisance issues and we have a nuisance policy to deal with those issues and we will deal with those issues.

But this project in itself is not going to enhance or change what he's suggesting in all that great deal. If anything, we're trying to clean the area up, not trying to add more debris to it. I know that Howard Paul is a heck of a lot smarter than I am when it comes to water quality, but I can't believe for a moment if we have more water --

We will have more water obviously coming through this channel. We're putting a reservoir there that's going to attract and slow that not-so-good water from the Bales operation, and it will end up in our reservoir, which the City will end up getting the opportunity to clean it. I guess I'm really lost at the fact we're trying to do the very best to improve this portion of our community.

We'll certainly work with Mr. Sanderson anyway we can. If he has nuisance issues or complaints about flying debris, we will be happy to address those. At this point we have not received any, to my knowledge. We're trying to recognize this.

MR. SANDERSON: Presumably you recognize rhetoric when you hear it.

CHAIRMAN BRINK: Does the Division have any questions?

MS. BEST: No. We have no questions. One point, if you intend that map to be evidence in this proceeding, I would suggest --

MR. SANDERSON: It really was for information purposes. I heard you ask about City limits so I thought it might be --

MS. BEST: You don't intend to leave it with the Board for their consideration?

MR. SANDERSON: I would be happy to.

MR. GUHIN: For your information, if it's not left with the Board and if there would be an appeal by one party or the other and it's not in evidence, it would not be able to be considered. It may be to your benefit to leave it. That's your choice. We can arrange to have a photocopy made for you.

MR. SANDERSON: All right. Sure.

CHAIRMAN BRINK: Somebody needs to get that offered for an exhibit then. Mr. Sanderson, is that Exhibit 1 there?

(Sanderson Exhibit 1 is marked for identification)

MS. BEST: Sanderson 1.

CHAIRMAN BRINK: Okay. We will let the record show we've accepted Mr. Sanderson's Exhibit 1.

MS. BEST: If I may, I've neglected to ask to move admission of DENR Exhibits 1 and 2. Exhibit 1 is the DENR file in this matter, which includes the engineering report filed by Schmucker, Paul & Nohr as well as the application of public notices, letter to intervene and the like. That would be DENR 1. DENR 2 is the map that all parties have referred to throughout this proceeding of Application Flood Control 27.

CHAIRMAN BRINK: The Board will accept these exhibits then. I guess I started to ask Mr. Rath, if I could again, what -- the deferral is until the owners -- well, your reasons are to allow time to review the Application in respect to South Dakota 46-2A-11. What was 2A-11 again?

MR. FREEMAN: Wasn't deferral largely based upon getting a deal worked out with --

CHAIRMAN BRINK: Well, that was -- this is flood control works here, but it sounds to me like we need to wait until you get the easements to make the downstream improvements.

MR. RATH: Well, easements or agreements or something like that.

MR. FREEMAN: We don't need to wait for easements to approve the Application. They just can't go ahead with the flood control project until they get easements. But we can grant it.

The only objection was that we didn't have an agreement with School & Public Lands, and School & Public Lands has now put in the record they are in agreement with the project and wanted to go forward; correct?

MR. RATH: Right. And I guess we're going to take just a minute here --

MR. HATCH: Mr. Chairman, we're putting together a qualification. We would change our recommendation to approval with a qualification, but we're getting it typed right now.

CHAIRMAN BRINK: Okay. Hot off the press.

MR. FREEMAN: Should we go to lunch and --

CHAIRMAN BRINK: Why don't we do that. Mr. Freeman has a good suggestion. If people don't mind coming back after lunch and we'll have the recommendation off the press, we'll take a short recess until 1:15.

MR. FREEMAN: We've got it right now.

CHAIRMAN BRINK: Oh, okay.

MR. HATCH: We would change the recommendation to approval and the qualification would be Flood Control Permit No. FC-27 and I'll pass copies of this out.

This is subject to the City of Huron entering into a joint agreement with the South Dakota School & Public Lands prior to construction of flood control works to address potential impacts to Stony Run Lake Dam.

CHAIRMAN BRINK: Okay. The Board has heard the new engineer's recommendation and the new qualifications then.

MR. FREEMAN: Mr. Chairman, I would move approval of Flood Control Permit FC-27 subject to the qualification of the chief engineer.

MR. ROLLAG: I'll second it.

CHAIRMAN BRINK: We have a motion and second then for approval with qualifications from the chief engineer. Any other discussion? All of those in favor of the motion signify by saying aye.

("Aye")

CHAIRMAN BRINK: Opposed the same.

(No audible response)

CHAIRMAN BRINK: Motion carried. Should I call for findings?

MR. GUHIN: Probably so. Unless Mr. Sanderson would want to waive it.

CHAIRMAN BRINK: If we call for findings, the decision won't be final until the next Board meeting at which time we would have those in place. If the parties would want to waive findings today, it leaves the decision final today.

Mr. Sanderson, what's your thought?

MR. SANDERSON: Well, if I have a choice and it's being addressed to me and this decision has gone against my position, then I would have to ask that the findings be executed or whatever the procedure and proper terminology is.

CHAIRMAN BRINK: All right. Then I will ask the attorney prepare findings and final decision for the next meeting which will be in July.

MR. FREEMAN: July 7.

MR. JOHNSON: Could I ask a question?

CHAIRMAN BRINK: Certainly.

MR. JOHNSON: What all would you expect would be in the agreement between Public Lands and the City of Huron? What all issues should we address?

MR. FREEMAN: You just need to address any potential impacts.

MR. JOHNSON: On the dam structure?

MR. FREEMAN: On the dam structure, what you intend to do if there are any.

CHAIRMAN BRINK: You need to have your engineer evaluate what I'm hearing here, impact, a couple feet of additional head on the structure and the, I guess, capability of that structure to pass additional -- maybe Mr. Schall can assist you.

Tim, we've made our decision on this one already, but he's asking for some guidance.

MR. SCHALL: Well, I think what he's asking is who's going to do the repair to the spillway. I mean, the spillways, they're typical to our WPA dam, no maintenance or minimum maintenance.

When this first came out we looked at additional flow that's proposed with the modeling

and didn't think that would have much influence on the spillway itself, except that we thought it would be a good way for School & Public Lands to get their spillway repaired, which they're always working at doing. They don't have the money to do it themselves specifically so they're always trying to get in agreement with somebody for some help on the spillway repairs.

Costwise, this could be a $100,000 project. It might only be $50,000, depending on how detailed they're going to look at it at that time. But it's cracking and falling. Some sections need to be replaced. You get into these projects, a lot of times you find voids underneath the spillway or something like that.

CHAIRMAN BRINK: Is that a fair assessment, Mr. Johnson? Are you look for funding?

MR. JOHNSON: We always cast a wide net when we're looking for funding. The dams that we've fixed we see who we can get to help out. We see what we can contribute on our own.

You know, that's how we try to put them together, in a partnership basis.

CHAIRMAN BRINK: And that's what

you're going to try to work out --

MR. JOHNSON: That's what we would try to work out here.

CHAIRMAN BRINK: Is Huron looking at grants? Have you got some source of funds that you may incorporate some rehab on the structure or --

MR. BORSZICH: We don't have -- the project is being put together with grants. What I told Curt this morning if there was an opportunity for the City to do something, in kind nature we would be more than willing to look at that.

We do not have any additional funding to repair a dam that's been in need of repair for a number of years with the City. We will assist in any form or fashion with Public Lands, however I can convince any fellow Commissioners to.

The dam itself, the structure, you know, we haven't caused that at this point and, you know, what we can do to work it out I don't know. We do not have any additional funding to put into a dam. I can tell that you.

CHAIRMAN BRINK: Well, I would think as long as the structure is under the State of South Dakota's responsibility, they would be very concerned about the liability of failures or

whatever and would want to have the assurances they need to continue to operate that if silt --

MR. FREEMAN: Well, the question is whether or not this water is going to have an impact on the current structure.

CHAIRMAN BRINK: Sure it is. It's going to have some impact. And I don't know what the structure -- the spillway capacities are, but somebody needs to look at that and give the State the comfort level that it's not going to blow out and kill 230 families downstream.

MR. FREEMAN: There's nothing downstream.

MR. SANDERSON: You haven't run them all out yet?

CHAIRMAN BRINK: Well, where were we? Rod, what was the question? Who brought it up? Curt?

CHAIRMAN BRINK: It looks like you're in the driver's seat. You heard the motion contingent upon. I think you're in the driver's seat on whether this permit is issued or not. And I hope you can work something out with the City of Huron.

MR. JOHNSON: We rely a lot on

information from DENR and other agencies as well, and we'll, I guess, do what we need to do.

CHAIRMAN BRINK: Okay. At this time I think we're -- any other --

MR. SANDERSON: I would be interested in acre feet behind the dam in that lake there, how many square feet.

CHAIRMAN BRINK: I'm not sure. Is that information available?

MR. SCHALL: I could get it. Is it in the HEC study, Mark? Normal pool, which is at the spillway elevation, is 200 acre feet, and then top of dam elevation is 880 acre feet. So that's the number you don't see. I mean, that's the worst case when --

MR. SANDERSON: Sir, could you get me the feet again?

MR. SCHALL: 200 at spillway elevation.

CHAIRMAN BRINK: Okay. We will recess until, oh, boy, 1:15.

(A lunch recess is taken from 12:00 to 1:15 p.m.)

STATE OF SOUTH DAKOTA)

:SS CERTIFICATE

COUNTY OF HUGHES)

I, CHERI MCCOMSEY WITTLER, Registered Professional Reporter and Notary Public in and for the State of South Dakota:

DO HEREBY CERTIFY that as the duly-appointed shorthand reporter, I took in shorthand the proceedings had in the above-entitled matter on the 5th day of May 1999, and that the attached is a true and correct transcription of the proceedings so taken.

Dated at Pierre, South Dakota this 23rd day of September 1999.

Cheri McComsey Wittler

Cheri McComsey Wittler,
Notary Public and
Registered Professional Reporter

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

JUN 13 2000

Mary Pearson, Mayor
City of Huron
PO Box 1369
Huron SD 57350

Dear Mayor Pearson:

Enclosed is Flood Control Permit No. FC-27 as approved by the Water Management Board. If you have any questions pertaining to the permit, please contact this office.

Sincerely,

Garland Erbele

Garland Erbele, Chief Engineer
Water Rights Program
605 773-3352

enclosure

Fosheim, Haberstick & Hutchinson

ATTORNEYS AT LAW

DOUGLAS G. FOSHEIM
CARL F. HABERSTICK
REED HUTCHINSON
JON FOSHEIM- OF COUNSEL

CENTRE PLAZA, SUITE 5
289 DAKOTA AVE. S.
HURON, SOUTH DAKOTA 57350
TELEPHONE (605) 352-0702
FAX (605) 352-0756

March 30, 2000

Ms. Marilyn Packard
Beadle County Clerk of Courts
P O Box 1358
Huron, SD 57350

Re: In The Matter Of The Application For Flood Control Permit No.FC-27, City of Huron vs. Rollie Sanderson

Dear Marilyn:

This will confirm that you have corrected a typographical error in the Judgment herein by striking the word "Appellee" in the caption of the original Judgment. I have also made this correction on the certified copy which you have sent to me. Enclosed is a copy of the corrected certified copy.

Thank you.

Sincerely yours,

Douglas G. Fosheim

DGF:amf

Encls.

pc: Mr. Dedrich Koch
Ms. Diane Best

STATE OF SOUTH DAKOTA)
)ss.
COUNTY OF BEADLE)

IN CIRCUIT COURT

THIRD JUDICIAL CIRCUIT

#99-128

IN THE MATTER OF THE APPLICATION)
FOR FLOOD CONTROL PERMIT NO.FC-27,) **CERTIFICATE OF SERVICE**
CITY OF HURON)

I hereby certify that on the 30th day of March, 2000, a true and correct copy of the Notice of Entry of Judgment, in the above-entitled action, was served via first class mail, postage prepaid upon Mr. Dedrich Koch, P. O. Box 129, Miller, South Dakota, 57362; attorney for Appellant, Rollie Sanderson and Ms. Diane Best, Assistant Attorney General, 500 East Capitol Avenue, Pierre, South Dakota, 57501-5070, attorney for the Water Management Board.

Dated this 30th day of March, 2000.

Douglas G. Fosheim
Attorney for Respondent,
City of Huron
289 Dakota Avenue S., #5
Huron, SD 57350
(605)352-0702

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	)ss.	
COUNTY OF BEADLE	)	THIRD JUDICIAL CIRCUIT
		#99-128

IN THE MATTER OF THE APPLICATION FOR FLOOD CONTROL PERMIT NO.FC-27, CITY OF HURON	)))	**JUDGMENT**

The above-entitled matter having been submitted to the Court upon briefs and the record herein and it appearing that the Court has jurisdiction of this matter pursuant to SDCL 1-26-31 and it further appearing that notice of the Water Management Board's Final Decision was given on July 19, 1999 and an appeal by Appellant, Rollie Sanderson, was filed on August 18, 1999 and it further appearing that the Appellant, Rollie Sanderson, appears through his attorney, Dedrich Koch and the Respondents, the Water Management Board and The City of Huron, appearing through their counsel, Ms. Diane Best and Mr. Douglas G. Fosheim respectively and the Court having considered the entire record along with the briefs of counsel and the Court having issued its Memorandum Opinion dated March 27, 2000, and for good cause appearing, now therefore;

IT IS HEREBY ORDERED, ADJUDGED AND DECREED that the Findings of Fact and Conclusions of Law and Final Decision of the Water Management Board, dated July 12, 1999, be and hereby are affirmed, and;

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the Memorandum Decision of the Circuit Court dated the 27th day

of March, 2000, be and hereby is incorporated by this reference and is made a part hereof.

Dated this 29 day of March, 2000.

BY THE COURT

/s/ EUGENE L. MARTIN

Circuit Court Judge

ATTEST

/S/ ANN HAZUKA

Clerk/Deputy

(SEAL)

State of South Dakota } 3-29-00
County of Beadle
I hereby certify that the foregoing instrument is a true and correct copy of the original as the same appears on record in my office.

Ann Hazuka

Beadle County Clerk of Courts / Deputy

99-128

Third Judicial Circuit
[illegible]NTY, SOUTH DAKOTA
FILED 3-29-00
ANN HAZUKA
Clerk / Deputy

Chambers of
EUGENE L. MARTIN
Circuit Judge

PATRICIA J. SCHNIDER
Court Reporter

rcuit Court of South Dakota
THIRD JUDICIAL CIRCUIT
P.O. BOX 1358
HURON, SOUTH DAKOTA 57350

Chambers 605-353-7171

March 27, 2000

Dedrich Koch, Esq.
P.O. Box 129
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Diane Best, Esq.
Assistant Attorney General
500 East Capitol Avenue
Pierre, South Dakota 57501-5070

Doug Fosheim, Esq.
289 Dakota South
Huron, South Dakota 57350

Re: In Matter of Application for Flood Control Permit #FC-27

MEMORANDUM OPINION

Dear Counsel:

Pursuant to SDCL 46-2A-11, the City of Huron requested a flood control permit, in February, 1999. After some delay, a hearing on said request transpired on May 5, 1999 before the Water Management Board of South Dakota. Appearing, along with the Board, were Diane Best and John Guhin, both with the South Dakota Attorney General's Office, along with one Brenda Binegar and one Rollie Sanderson. Testimony was taken in support of said flood control permit and in opposition thereto, with all present having the opportunity to address the Board.

On July 7, 1999 another meeting transpired wherein the findings of fact, conclusions of law, and a final decision were all addressed, considered, and rendered. In addition to the Board members,

present were Jeffrey Hallem, Esq. Attorney for the Water Management Board; Diane Best, Esq., representing the State Division of Water Rights; Douglas Fosheim, Esq., representing the City of Huron; and Dedrich Koch, Esq., representing the petitioner, Rollie Sanderson. All present were allowed to address the Board with comment and argument. Then the said findings, conclusions, and final decision were rendered. Notice of the final decision was issued on July 19, 1999 and this appeal was filed on August 18, 1999.

Regarding the final decision of the Board, the permit was subject to the City of Huron entering into a joint agreement with South Dakota School and Public Lands prior to construction of the flood control works to address potential impacts to Stony Run Lake Dam. In this regard, the record shows that at the hearing of July 7, 1999 the Board did make as part of the record the Joint Powers Agreement, dated June 21, 1999 between the aforementioned City and SPL. The acceptability of this agreement is not for the Court's determination. The Board will make this determination of acceptability before issuing the Flood Control Permit.

I have reviewed the complete file, including all the transcripts, the documentation and exhibits, and the attorney's legal briefs. The standard of review for administrative appeals is governed by SDCL 1-26-36. When the issue is a question of fact, the actions of the agency are judged by the clearly erroneous standard. Shopko vs. C & R Transf. Co., 575 NW2d 255 (SD 1998). The question becomes, "is there substantial evidence to support the agency finding." In re SDDS, Inc., 472 NW2d 502 (SD 1991). The Court shall give great weight to findings made and inferences drawn by an agency on questions of fact. Id. "The test is whether after reviewing all the evidence we are left with a definite and firm conviction that a mistake has been made." Truck Ins. Exch. V. Kubal, 561 NW2d 674, 676 (SD 1997). When the issue presented is a question of law, however, the decisions of the administrative agency...are fully reviewable under the de novo standard. In re SDDS, Inc., 472 NW2d 502 (SD 1991).

After complete review annot find that the Board was clearly erroneous regarding it ndings. The testimony substantially supports the agency fi ngs. Further, the conclusions of law found are consistent w and supported by the findings of fact, and therefore adopted a approved. In short, I affirm the findings of fact and conc sions of law entered by the Water Management Board as w l as its decision.

Any alleged future damage by Mr. Sanderson is a subject of consideration and proof in another proceeding.

One of counsel for Respondents may prepare the proper Judgment.

BY THE COURT

Eugene L. Martin
Circuit Court Judge

elm

Chambers of
EUGENE L. MARTIN
Circuit Judge

PATRICIA J. SCHNIDER
Court Reporter

Circuit Court of South Dakota
THIRD JUDICIAL CIRCUIT
P.O. BOX 1358
HURON, SOUTH DAKOTA 57350

Chambers 605-353-7171

DB

Attorney General
202129
MAR 28 2000

March 27, 2000

Dedrich Koch, Esq.
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Miller, South Dakota 57362

Diane Best, Esq.
Assistant Attorney General
500 East Capitol Avenue
Pierre, South Dakota 57501-5070

Doug Fosheim, Esq.
289 Dakota South
Huron, South Dakota 57350

Re: In Matter of Application for Flood Control Permit #FC-27

MEMORANDUM OPINION

Dear Counsel:

Pursuant to SDCL 46-2A-11, the City of Huron requested a flood control permit, in February, 1999. After some delay, a hearing on said request transpired on May 5, 1999 before the Water Management Board of South Dakota. Appearing, along with the Board, were Diane Best and John Guhin, both with the South Dakota Attorney General's Office, along with one Brenda Binegar and one Rollie Sanderson. Testimony was taken in support of said flood control permit and in opposition thereto, with all present having the opportunity to address the Board.

On July 7, 1999 another meeting transpired wherein the findings of fact, conclusions of law, and a final decision were all addressed, considered, and rendered. In addition to the Board members,

present were Jeffrey Hallem, Esq. Attorney for the Water Management Board; Diane Best, Esq., representing the State Division of Water Rights; Douglas Fosheim, Esq., representing the City of Huron; and Dedrich Koch, Esq., representing the petitioner, Rollie Sanderson. All present were allowed to address the Board with comment and argument. Then the said findings, conclusions, and final decision were rendered. Notice of the final decision was issued on July 19, 1999 and this appeal was filed on August 18, 1999.

Regarding the final decision of the Board, the permit was subject to the City of Huron entering into a joint agreement with South Dakota School and Public Lands prior to construction of the flood control works to address potential impacts to Stony Run Lake Dam. In this regard, the record shows that at the hearing of July 7, 1999 the Board did make as part of the record the Joint Powers Agreement, dated June 21, 1999 between the aforementioned City and SPL. The acceptability of this agreement is not for the Court's determination. The Board will make this determination of acceptability before issuing the Flood Control Permit.

I have reviewed the complete file, including all the transcripts, the documentation and exhibits, and the attorney's legal briefs. The standard of review for administrative appeals is governed by SDCL 1-26-36. When the issue is a question of fact, the actions of the agency are judged by the clearly erroneous standard. Shopko vs. C & R Transf. Co., 575 NW2d 255 (SD 1998). The question becomes, "is there substantial evidence to support the agency finding." In re SDDS, Inc., 472 NW2d 502 (SD 1991). The Court shall give great weight to findings made and inferences drawn by an agency on questions of fact. Id. "The test is whether after reviewing all the evidence we are left with a definite and firm conviction that a mistake has been made." Truck Ins. Exch. V. Kubal, 561 NW2d 674, 676 (SD 1997). When the issue presented is a question of law, however, the decisions of the administrative agency...are fully reviewable under the de novo standard. In re SDDS, Inc., 472 NW2d 502 (SD 1991).

After complete review I cannot find that the Board was clearly erroneous regarding its findings. The testimony substantially supports the agency findings. Further, the conclusions of law found are consistent with and supported by the findings of fact, and therefore adopted and approved. In short, I affirm the findings of fact and conclusions of law entered by the Water Management Board as well as its decision.

Any alleged future damage by Mr. Sanderson is a subject of consideration and proof in another proceeding.

One of counsel for Respondents may prepare the proper Judgment.

BY THE COURT



Eugene L. Martin
Circuit Court Judge

elm

FLOOD PERMIT APPLICATION

FOR

STONY RUN CREEK IMPROVEMENTS

HURON, SOUTH DAKOTA

JANUARY 1999

HURON
Pride in Motion!
South Dakota

EDA # 05-01-03055

SPN # 98-9083

schmucker, paul, nohr & associates
ENGINEERS - PLANNERS - SURVEYORS
620 NORTH LAWLER P.O. BOX 398
MITCHELL, SOUTH DAKOTA, zip 57301
PHONE 605-996-7761 FAX 605-996-0015

SPN ASSOCIATES

FEB 1999
WATER RIGHTS
PROGRAM
Pierre, SD

FLOOD PERMIT APPLICATION

STONY RUN CREEK IMPROVEMENTS

CITY OF HURON

HURON, SOUTH DAKOTA

JANUARY 1999

SPN #9083

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of South Dakota.

By _____
Harlan J. Quenzer, R.P.E.

Registration Number 2726

Date _____

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 2726
HARLAN JOHN QUENZER
SOUTH DAKOTA

Technical writing done by:

_____
Nicholas E. Hoffman E.I.T. E-7577

SCHMUCKER, PAUL, NOHR & ASSOCIATES
CONSULTING ENGINEERS - SURVEYORS
620 NORTH LAWLER, PO BOX 398
MITCHELL, SOUTH DAKOTA 57301

FORM 2: Application for flood control permit
(type or print)

FEB 1999
WATER RIGHTS PROGRAM
Pierre, SD

Mail to:
Water Rights Division
Joe Foss Building
523 E Capitol
Pierre SD 57501-3181
605 773-3352

No. _____ Hydrologic Unit _____
Basin _____
Newspaper _____
(office use only)

APPLICATION FOR A FLOOD CONTROL PERMIT WITHIN THE STATE OF SOUTH DAKOTA

1. Name of Applicant CITY OF HURON

Address PO BOX 1369
(Street, RR or Box)

HURON (City) SD (State) 57350 (Zip Code) Phone No. (605) 352-6791

2. Name of watercourse STONY RUN CREEK

3. Location of project (legal description) A PORTION OF SECTION 2 AND SECTION 11, ALL IN TOWNSHIP 110 N, RANGE 62 W OF THE 5TH P.M., BEADLE COUNTY, SOUTH DAKOTA

4. County or counties where project is located BEADLE

5. Give a brief description of the proposed project including the type of project (Dam, Dikes, Channel Modifications, etc.) and purpose for the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed.)

The proposed project intends to modify the existing channel. The modifications include constructing a channel with a constant geometric shape, installing new culverts under 9th Street and constructing a detention pond. A summary of the project and results of the HEC-1 and HEC-2 analysis are enclosed with the HEC-1 and HEC-2 analysis.

Attachment: Attach map (see instruction)

STATE OF SOUTH DAKOTA)
County of BEADLE) SS

I, MARY PEARSON, MAYOR the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed Mary A. Pearson

Subscribed and sworn to before me this 5th day of February 19 99

CAROL A. TSCHETTER NOTARY Seal PUBLIC STATE OF SOUTH DAKOTA

Carol A Tschetter
Notary Public

Summary of Stony Run Creek Improvements

This project is described as the Stony Run Creek Improvement Project, a part of the West Side Huron Drainage Improvement Project. The projects begins 441 feet south of the 21st Street Bridge and concludes at the intersection of Stony Run Creek and 3rd Street N.W. of Huron. The projects includes the construction of a trapezoidal channel with a constant side slope of four horizontal to 1 vertical, but has a varying bottom width. The width ranges from 200 feet at the 21st Street Bridge to 75 feet at the conclusion of the project at 3rd Street. A detention basin is included as part of the project. The proposed detention basin starts at Station 73+50 and ends at Station 97+00 and has a maximum dike elevation 1282 feet.

The Stony Run Creek Improvement Project includes, but is not limited to such work as approximately 13,420 lineal feet of clearing and grubbing along the ditch route; approximately 251,700 cubic feet of ditch excavation; shaping and grading 288 lineal feet of 48 inch diameter reinforced concrete arch pipe, twelve 48 inch diameter reinforced concrete arch pipe flared end sections; 208 lineal feet of 42 inch diameter reinforced concrete arch pipe; eight 42 inch diameter reinforced concrete arch pipe flared end sections; 1,490 square yards of rip rap and filter fabric; 73 acres of seeding and fertilizing; removal and salvage of approximately 7,780 lineal feet of barbed wire fencing; furnishing and installing of 20,0200 square feet of "at grade" stream crossing and all the miscellaneous work and related appurtenances to the aforementioned work item.

Scale: 1" = 800'

SECTION 2

Detention Basin
Maximum Dike
Elevation = 1282

N 03° 14' 36" E
2659.34'

Southwest Corner of
Section 2, T 110 N, R 62 W

Stony Run Creek
Right of Way

SECTION 11

I here by certify that this map was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of South Dakota.

By Harlan Quenzer
Harlan Quenzer, R.P.E.

Registration Number: 2726

Date January 21, 1998

REGISTERED PROFESSIONAL ENGINEER
2726
HARLAN JOHN QUENZER
SOUTH DAKOTA

Southeast Corner of
Section 11, T 110 N, R 62 W

S 86° 20' 15" E
62.98'

FC-27

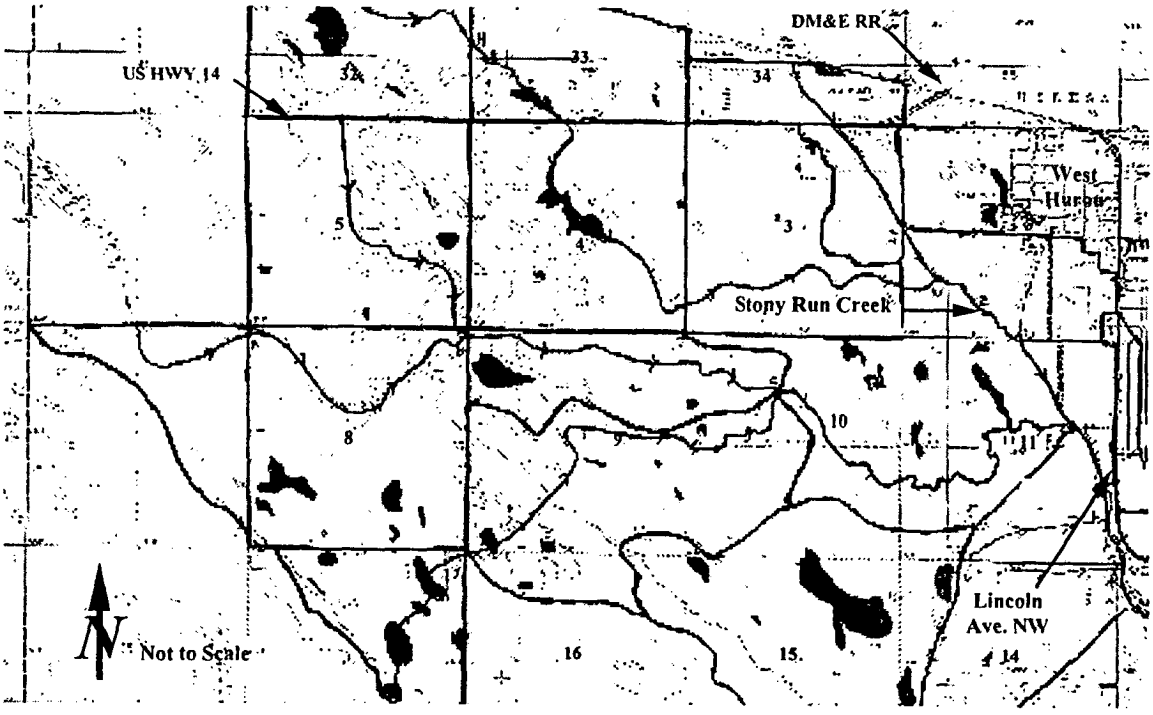
Introduction to Hydrologic and Hydraulic Analysis

As part of the application for a flood control permit within the state of South Dakota, the hydrologic and hydraulic studies of the existing and proposed Stony Run Creek are enclosed. The United States Corps of Engineers' Flood Plain Analysis Computer Program (HEC-2) was used to determine the constructed water surface elevation from the flows calculated by the United States Corps of Engineers' Watershed Modeling Computer Program (HEC-1).

Hydrologic Analysis

The United States Corps of Engineers' HEC-1 was used to model the hydrologic characteristics of Stony Run Creek. The stream flow data for the two, five, ten, twenty-five, fifty, and one hundred year rainfall events was calculated. Two different sets of characteristics were modeled. The approximate boundaries of the area of study are as follows: on the north by the Dakota Minnesota Eastern Railroad (DM&E RR), on the west by the west section line of Sections 32 and 5, on the south by the south section line of section 15, and on the east by Lincoln Avenue N.W. in Huron. Figure 1 shows the area of study.

Figure 1, Area of HEC-1 Analysis



The first set of conditions examined was the existing conditions before the proposed changes to Stony Run Creek. This set does not take into account the runoff flows from 4th Street and west Huron storm sewer.

The second set of characteristics models the proposed improvements to Stony Run Creek and the surrounding area. The proposed improvement model includes the detention pond, the proposed channel improvements, the planned expansion of the existing industrial park (which will follow the future truck bypass), and the proposed runoff flows from the proposed projects of Huron 4th Street and west Huron storm sewer.

A synthetic storm was used to approximate the two, five, ten, twenty-five, fifty, and one hundred year rainfall events. The runoff was determined within HEC-1 by using the Soil Conservation Service curve number method, and the Clark Unit Hydrograph method was to used generate the runoff hydrographs. The hydrographs were routed throughout the stream system with the Muskingum-Cunge routing method. The results of the HEC-1 analysis can be found in Table 1 and in Appendix 1. The flows were generated near or at the intersections of the listed streets and Stony Run Creek.

Table 1, HEC-1 Results

	Existing 5 Year Flows	Existing 10 Year Flows	Existing 25 Year Flows	Existing 50 Year Flows	Existing 100 Year Flows
3rd Street	19	25	32	37	44
9th Street	117	147	187	218	255
15th Street	234	294	373	433	507
21st Street	280	353	450	524	615
	Proposed 5 Year Flows	Proposed 10 Year Flows	Proposed 25 Year Flows	Proposed 50 Year Flows	Proposed 100 Year Flows
3rd Street	20	26	33	39	45
9th Street	147	183	229	266	308
15th Street	280	349	440	508	591
21st Street	343	429	536	625	728

Hydraulic Analysis

The United States Corps of Engineers' Flood Plain Analysis Computer Program (HEC-2) was used to develop the constructed water surface elevation (CWSEL) for both the existing and proposed conditions for Stony Run Creek.

The existing HEC-2 analysis modeled the existing channel as Stony Run Creek is at the present time. The area of study extends from one thousand feet upstream of the 3rd Street culvert to five hundred feet south of the 21st Street bridge. Cross-sections were developed from a topography survey done by Schmucker, Paul, Nohr, and Associates (SPN) personnel. The existing channel included the Twenty-first Street bridge and many vehicle crossings containing culverts. The existing channel conditions ranged from a bare cattle feed lot to dense cattails with shallow pools to short grass. Video tape analysis of the existing channel was done to determine the Manning's roughness coefficient for each section of the creek.

The proposed HEC-2 analysis modeled the proposed channel improvements from the intersection of Stony Run Creek and 3rd Street to five hundred feet south of the 21st Street bridge. The proposed plans of Stony Run Creek Improvements were developed by SPN for the City of Huron. The proposed conditions HEC-2 analysis also modeled the proposed detention pond south of 3rd Street and all the special sections that serve as vehicle crossings. The Manning's roughness coefficient for the proposed channel was 0.025, and the right and left overbanks were 0.030.

The constructed water surface elevations (CWSEL) for the existing and proposed Stony Run Creek conditions can be examined in Table 2 and Appendix 2.

Table 2 HEC-2 CWSEL

STONY RUN CREEK EXISTING HEC2 RESULTS

Cross-section Number	Description of Cross-section	Existing 5 Year CWSEL	Existing 10 Year CWSEL	Existing 25 Year CWSEL	Existing 50 Year CWSEL	Existing 100 Year CWSEL
1	500 Feet DS of 21st Street Bridge End of Study	1272.00	1272.00	1272.00	1272.00	1272.08
4	US face of 21st Street Bridge	1273.48	1273.62	1273.75	1273.81	1273.73
6	Misc. XC, Station 13+67	1274.09	1274.43	1274.85	1275.15	1275.50
15	66 Feet DS of 16th Street Culverts	1277.37	1277.52	1277.72	1277.85	1278.00
19	Misc. XC, Station 27+87	1277.40	1277.55	1277.76	1277.89	1278.04
31	117 Feet US of 13th Street Dam	1278.78	1278.92	1279.10	1279.23	1279.38
47	US face of 9th Street Culvert	1280.30	1280.50	1280.71	1280.89	1281.07
54	30 Feet DS of Y at 6th Street	1280.71	1280.85	1281.00	1281.10	1281.20
57	968 Feet US of Y at 6th Street	1281.83	1282.38	1282.69	1282.87	1283.06
60	DS face of 3rd Street Culverts	1282.03	1282.47	1282.77	1282.95	1283.13

STONY RUN CREEK PROPOSED HEC2 RESULTS

Cross-section Number	Description of Cross-section	Proposed 5 Year CWSEL	Proposed 10 Year CWSEL	Proposed 25 Year CWSEL	Proposed 50 Year CWSEL	Proposed 100 Year CWSEL
1	500 Feet DS of 21st Street Bridge End of Study	1271.75	1271.87	1271.97	1272.07	1272.17
5	US face of 21st Street Bridge	1273.55	1273.50	1274.10	1274.32	1274.57
8	Misc. XC, Station 12+50	1274.38	1274.77	1275.23	1275.55	1275.93
14	Special Section Near 16th Street	1274.72	1275.00	1275.38	1275.67	1276.03
17	Misc. XC, Station 27+50	1275.06	1275.26	1275.56	1275.82	1276.14
21	Special Section Near 13th Street	1276.94	1277.11	1277.31	1277.44	1277.60
28	US face of 9th Street Culvert	1280.71	1281.19	1281.78	1282.21	1282.76
33	Y at 6th Street (Detention Basin)	1280.73	1281.21	1281.79	1282.22	1282.77
36	968 Feet US of Y at 6th Street (Detention Basin)	1280.73	1281.21	1281.79	1282.22	1282.77
39	DS face of 3rd Street Culverts	1281.69	1281.74	1281.90	1282.25	1282.78

Revised Table 2 HEC-2 CWSEL

STONEY RUN CREEK EXISTING HEC2 RESULTS

Cross-section Number	Description of Cross-section	Existing 5 yr CWSEL	Existing 10 yr CWSEL	Existing 25 yr CWSEL	Existing 50 yr CWSEL	Existing 100 yr CWSEL
1	500 feet DS of 21st Street Bridge End of study	1272.00	1272.00	1272.00	1272.00	1272.08
5	US face of 21st Street Bridge	1273.36	1273.59	1273.87	1274.06	1274.30
11	Misc. XC	1277.23	1277.35	1277.51	1277.60	1277.72
18	66 feet DS of 16th Street Culverts	1277.40	1277.56	1277.76	1277.89	1278.05
23	Misc. XC	1277.44	1277.60	1277.82	1277.95	1278.12
37	100 feet US of 13th Street Dam	1279.03	1279.23	1279.43	1279.59	1279.76
55	US face of 9th Street Culvert	1281.73	1282.35	1282.66	1282.85	1283.03
63	30 feet DS of Y at 6th Street	1282.58	1282.79	1283.02	1283.18	1283.35
67	968 feet US of Y at 6th Street	1282.85	1283.00	1283.17	1283.30	1283.45
71	DS face of 3rd Street Culverts	1283.31	1283.42	1283.52	1283.59	1283.67

STONEY RUN CREEK PROPOSED HEC2 RESULTS

Cross-section Number		Proposed 5 yr CWSEL	Proposed 10 yr CWSEL	Proposed 25 yr CWSEL	Proposed 50 yr CWSEL	Proposed 100 yr CWSEL
1	500 feet DS of 21st Street Bridge End of study	1271.75	1271.87	1271.97	1272.07	1272.17
5	US face of 21st Street Bridge	1273.55	1273.80	1274.10	1274.32	1274.57
8	Misc. XC, STATION 12+50	1274.38	1274.77	1275.23	1275.55	1275.93
14	Special Section near 16th Street, STATION 27+50	1274.72	1275.00	1275.38	1275.67	1276.03
17	Misc. XC, STATION 33+00	1275.06	1275.26	1275.56	1275.82	1276.14
21	Special Section, STATION 49+00	1276.94	1277.11	1277.31	1277.44	1277.60
28	US face of 9th Street Culvert	1280.71	1281.19	1281.78	1282.21	1282.76
33	Y at 6th Street (Detention basin), STATION 84+00	1280.73	1281.21	1281.79	1282.22	1282.77
36	968 feet US of Y at 6th Street, STATION 98+00	1280.73	1281.21	1281.79	1282.22	1282.77
39	DS face of 3rd Street Culverts, STATION 109+00	1281.69	1281.74	1281.90	1282.25	1282.78

Adjusted 2/9/99

Conclusion

Upon review of the results from Table 1 it is apparent that the proposed stream flows will be higher than the existing flows, but the channel improvements will compensate for the higher flows by lowering the resistance to flow. Some factors that cause the backing up of water in the existing system are the existing vehicle crossings and the heavily vegetated channel stretches. The existing vehicle crossings are at Stations 19+50, 23+43, 28+75, 38+00, 47+61, 56+69, and 68+75. The existing vehicle crossings consist of an earth dike with multiple culverts. These culverts are in poor condition and not the correct size to transmit enough water through them to prevent backwater effects. The proposed design for Stony Run Creek calls for only one use of culverts, which is at the 9th Street intersection. The elimination of the vehicle crossings with the culverts will cause less backwater effects. The proposed design calls for vehicle crossings that are either concrete or rock lined trapezoidal cross-section with an eight to one side slope. The vehicle crossings' cross-sections transition into the proposed standard trapezoidal cross-section which have a four to one side slope. The proposed standard cross-section will have an initial Manning's roughness coefficient of 0.025, and then over time the Manning's roughness coefficient will become 0.030. This is dramatically less than for the existing heavily vegetated channel stretches that have a Manning's roughness coefficient as high as 0.1 due to dense cattails and numerous trees.

After reviewing the constructed water surface elevations (CWSEL) in Table 2, it can be seen that from eight hundred feet upstream of the 21st Street bridge until the 9th Street culverts the proposed CWSEL is lower than the existing CWSEL. An example of this is near Station ±27+75. The existing 100 year CWSEL is 1278.00 feet and the proposed 100 year CWSEL is 1276.03 feet. This is nearly a two foot difference in the 100 year flood elevations. With the addition of the detention basin south of 3rd Street the CWSEL is lower from the intersection of the tributary to Stony Run Creek near Sixth Street. The maximum dike elevation in the detention basin is 1282.00.

In conclusion, the 100 year flood elevation will be lowered by the proposed improvements to Stony Run Creek.

Appendix 1

(HEC-1 Analysis)

```
**************************************
*                                    *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*             MAY 1991               *
*          VERSION 4.0.1E            *
*     Lahey F77L-EM/32 version 5.01  *
*       Dodson & Associates, Inc.    *
*  RUN DATE 12/10/98 TIME 16:54:53   *
**************************************
```


```
**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*         609 SECOND STREET          *
*       DAVIS, CALIFORNIA 95616      *
*           (916) 551-1748           *
*                                    *
**************************************
```


```
X     X  XXXXXXX  XXXXX          X
X     X  X       X     X        XX
X     X  X       X              X
XXXXXXX  XXXX    X       XXXXX  X
X     X  X       X              X
X     X  X       X     X        X
X     X  XXXXXXX  XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   1      ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
   2      ID        NICK HOFFMAN, EIT E-7577
   3      ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
   4      ID       5 YEAR STORM EVENT WITH WETLAND INFLUENCE
          *
   5      IT      30  1DEC98    0000     300
   6      IO       5       1
          *

   7      KK     101         COMPUTE RUNOFF HYDROGRAPH
   8      PH                     0.24    0.77    1.34     2.1    2.25    2.51    2.92    3.32
   9      BA     0.4
  10      LS    0.55      87    3.39
  11      UC   18.72   15.13
          *

  12      KK    JAJB         ROUTE HYDROGRAPH
  13      RD    6700 0.00075    0.05              TRAP      10     0.3
          *

  14      KK     102         COMPUTE RUNOFF HYDROGRAPH
  15      BA       1
  16      LS    0.66      84    6.43
  17      UC   40.12    32.1
          *

  18      KK     100         COMPUTE RUNOFF HYDROGRAPH
  19      BA       1
  20      LS    0.62      85    4.57
  21      UC   29.01   23.21
          *

  22      KK      JB         COMBINE HYDROGRAPHS
  23      HC       3

  24      KK    JBJC         ROUTE HYDROGRAPH
  25      RD    8200 0.00061    0.05              TRAP      10     0.3
          *

  26      KK     104         COMPUTE RUNOFF HYDROGRAPH
  27      BA    0.51
  28      LS    0.68      83   12.83
  29      UC   35.34   28.27
          *

  30      KK     103         COMPUTE RUNOFF HYDROGRAPH
  31      BA    0.48
  32      LS    0.66      84   18.23
  33      UC   20.71   16.57
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  34      KK    JDJC        ROUTE HYDROGRAPH
  35      RD   11000 0.00164    0.06            TRAP      10      0.3
          *

  36      KK     105        COMPUTE RUNOFF HYDROGRAPH
  37      BA    1.03
  38      LS    0.51      85    3.58
  39      UC   34.13   27.31
          *

  40      KK      JC        COMBINE HYDROGRAPHS
  41      HC       4

  42      KK    JCJF        ROUTE HYDROGRAPH
  43      RD    4000 0.00325    0.07            TRAP      10      0.3
          *

  44      KK     108        COMPUTE RUNOFF HYDROGRAPH
  45      BA    0.42
  46      LS    0.75      90   14.13
  47      UC   15.69   12.55
          *

  48      KK      JF        COMBINE HYDROGRAPHS
  49      HC       2

  50      KK    JFJE        ROUTE HYDROGRAPH
  51      RD    7000 0.00071    0.06            TRAP      10      0.3
          *

  52      KK     110        COMPUTE RUNOFF HYDROGRAPH
  53      BA    0.69
  54      LS    0.75      90    8.79
  55      UC   39.49    31.6
          *

  56      KK    J4TH        FOURTH STREET RUNOFF HYDROGRAPH
  57      QI       0       0       14      14      14      14      14      14      14      14
  58      QI      14      14       14      14      14      14      14      14      14      14
  59      QI      14      14       14      14      14      14      14      14      14      14
  60      QI      14      14       14      14      14      14      14      14      14      14
  61      QI      13      12       11      10       9       8       7       6       5       4
          *

  62      KK    JWJU
  63      RD    2600   0.001    0.03            TRAP      30       4
          *

  64      KK     124        COMPUTE RUNOFF HYDROGRAPH
  65      BA    0.27
  66      LS    0.49      80    8.28
  67      UC   17.42   13.94
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  68      KK    JLJM        ROUTE HYDROGRAPH
  69      RD
  70      RC    0.06    0.06    0.06    3200  .00094
  71      RX       0      25      44      80     100     121     165     292
  72      RY  1284.8  1284.4    1284 1282.85 1282.84 1283.19  1283.1    1284
          *

  73      KK     125        COMPUTE RUNOFF HYDROGRAPH
  74      BA    0.22
  75      LS     0.6      83   11.12
  76      UC    18.5    14.8
          *

  77      KK      JM        COMBINE HYDROGRAPHS
  78      HC       2

  79      KK    JMJU        ROUTE HYDROGRAPH
  80      RD     860 0.00094    0.03            TRAP      75       4
          *

  81      KK      JU        COMBINE HYDROGRAPH
  82      HC       2
  83      KO       1
  84      RS       1    ELEV 1278.85
  85      SA   20.66   21.11   21.56   22.02   22.47
  86      SE  1277.9    1279    1280    1281    1282
  87      SS  1278.9     116    0.95     1.5
          *

  88      KK     120        COMPUTE RUNOFF HYDROGRAPH
  89      BA    0.82
  90      LS    0.49      88    9.41
  91      UC    33.2   26.56
          *

  92      KK    JHJI        ROUTE HYDROGRAPH
  93      RD    3300 0.00182    0.05            TRAP      10     0.3
          *

  94      KK     121        COMPUTE RUNOFF HYDROGRAPH
  95      BA    0.82
  96      LS    0.51      85    7.12
  97      UC   18.05   14.44
          *

  98      KK      JI        COMBINE HYDROGRAPHS
  99      HC       2

 100      KK    JIJJ        ROUTE HYDROGRAPH
 101      RD    6300 0.00095    0.05            TRAP      10     0.3
          *
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```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  102     KK     122        COMPUTE RUNOFF HYDROGRAPH
  103     BA    1.00
  104     LS    0.48      84    3.43
  105     UC   32.63   26.11
          *

  106     KK      JJ        COMBINE HYDROGRAPHS
  107     HC       2

  108     KK    JJJK        ROUTE HYDROGRAPH
  109     RD    6000  0.0005    0.06            TRAP      10      0.3
          *

  110     KK     123        COMPUTE RUNOFF HYDROGRAPH
  111     BA    0.76
  112     LS     0.7      91    1.87
  113     UC   31.11   24.89
          *

  114     KK      JK        COMBINE HYDROGRAPHS
  115     HC       2

  116     KK    JKJT        ROUTE HYDROGRAPH
  117     RD    1600   0.003    0.06            TRAP      10      0.3
          *

  118     KK      JT        COMBINE HYDROGRAPHS
  119     HC       2
  120     KO       1

  121     KK    JTJZ        ROUTE HYDROGRAPH
  122     RD     500 0.00094    0.03            TRAP     100       4

  123     KK    JZJO        ROUTE HYDROGRAPH
  124     RD    1500 0.00094    0.03            TRAP     100       4
          *

  125     KK     127        COMPUTE RUNOFF HYDROGRAPH
  126     BA    0.43
  127     LS    0.07      91    2.65
  128     UC   26.35   21.08
          *

  129     KK     126        COMPUTE RUNOFF HYDROGRAPH
  130     BA    0.53
  131     LS    0.55      90    2.92
  132     UC   11.95    6.32
          *
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  133     KK    JPJO        ROUTE HYDROGRAPH
  134     RD    2900   0.001   0.012            CIRC       4

  135     KK      JO        COMBINE HYDROGRAPHS
  136     HC       3

  137     KK    JOJE        ROUTE HYDROGRAPH
  138     RD    2700 0.00094    0.03            TRAP     150       4
          *

  139     KK      JE        COMBINE HYDROGRAPHS
  140     HC       4

  141     KK    JEJY        ROUTE HYDROGRAPH
  142     RD    1200 0.00094    0.03            TRAP     150       4
          *

  143     KK     131        COMPUTE RUNOFF HYDROGRAPH
  144     BA     0.1
  145     LS    0.65      85       0
  146     UC    1.32    1.05
          *

  147     KK      JY        COMBINE HYDROGRAPHS
  148     HC       2

  149     KK    JYJR        ROUTE HYDROGRAPH
  150     RD     400 0.00094    0.03            TRAP     200       4
          *

  151     KK     106        COMPUTE RUNOFF HYDROGRAPH
  152     BA    1.23
  153     LS    0.75      90   11.78
  154     UC   17.93   14.34
          *

  155     KK    JQJR        ROUTE HYDROGRAPH
  156     RD    4000  0.0075    0.06            TRAP      10      0.3
          *

  157     KK     107        COMPUTE RUNOFF HYDROGRAPH
  158     BA     0.3
  159     LS     0.5      95    3.81
  160     UC   15.42   12.34
          *

  161     KK      JR        COMBINE HYDROGRAPHS
  162     HC       3
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 163      KK    JRJX        ROUTE HYDROGRAPH
 164      RD     800 0.00094    0.03            TRAP     200       4
          *
 165      KK     130        COMPUTE RUNOFF HYDROGRAPH
 166      BA    0.05
 167      LS    0.65      90       0
 168      UC     1.1    0.88
          *
 169      KK      JX        COMBINE HYDROGRAPHS
 170      HC       2
 171      KK    JXJS        ROUTE HYDROGRAPH
 172      KO       1
 173      RD     400 0.00094    0.03            TRAP     200       4
          *
 174      KK     109        COMPUTE RUNOFF HYDROGRAPH
 175      BA    0.55
 176      LS     0.7      91     2.0
 177      UC   12.56   10.05
          *
 178      KK      JS        COMBINE HYDROGRAPHS
 179      HC       2
          *
 180      ZZ
```

Proposed 5yr Stoney Run 12/10/98

			(MIN)	(FT)	(CFS)	PEAK (MIN)	(IN)	CELERITY (FPS)
MAIN	0.05	1.62	3.48	400.00	337.71	2013.23	1.85	1.91

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.05	1.62	30.00		337.71	2010.00	1.85	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1259E+04 EXCESS=0.0000E+00 OUTFLOW=0.1259E+04 BASIN STORAGE=0.2121E+00 PERCENT ERROR= 0.0

HYDROGRAPH AT STATION JXJS

DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	2 DEC 1330	76	327.	4 DEC 0300	151	87.	5 DEC 1630	226	23.
1 DEC 0030	2	0.	2 DEC 1400	77	325.	4 DEC 0330	152	86.	5 DEC 1700	227	23.
1 DEC 0100	3	0.	2 DEC 1430	78	322.	4 DEC 0400	153	84.	5 DEC 1730	228	22.
1 DEC 0130	4	1.	2 DEC 1500	79	319.	4 DEC 0430	154	83.	5 DEC 1800	229	22.
1 DEC 0200	5	6.	2 DEC 1530	80	317.	4 DEC 0500	155	81.	5 DEC 1830	230	22.
1 DEC 0230	6	11.	2 DEC 1600	81	314.	4 DEC 0530	156	80.	5 DEC 1900	231	21.
1 DEC 0300	7	13.	2 DEC 1630	82	311.	4 DEC 0600	157	78.	5 DEC 1930	232	21.
1 DEC 0330	8	14.	2 DEC 1700	83	308.	4 DEC 0630	158	77.	5 DEC 2000	233	21.
1 DEC 0400	9	14.	2 DEC 1730	84	304.	4 DEC 0700	159	75.	5 DEC 2030	234	20.
1 DEC 0430	10	14.	2 DEC 1800	85	301.	4 DEC 0730	160	74.	5 DEC 2100	235	20.
1 DEC 0500	11	14.	2 DEC 1830	86	298.	4 DEC 0800	161	72.	5 DEC 2130	236	20.
1 DEC 0530	12	14.	2 DEC 1900	87	294.	4 DEC 0830	162	71.	5 DEC 2200	237	20.
1 DEC 0600	13	14.	2 DEC 1930	88	291.	4 DEC 0900	163	70.	5 DEC 2230	238	19.
1 DEC 0630	14	14.	2 DEC 2000	89	287.	4 DEC 0930	164	68.	5 DEC 2300	239	19.
1 DEC 0700	15	14.	2 DEC 2030	90	283.	4 DEC 1000	165	67.	5 DEC 2330	240	19.
1 DEC 0730	16	14.	2 DEC 2100	91	279.	4 DEC 1030	166	66.	6 DEC 0000	241	18.
1 DEC 0800	17	14.	2 DEC 2130	92	275.	4 DEC 1100	167	65.	6 DEC 0030	242	18.
1 DEC 0830	18	14.	2 DEC 2200	93	271.	4 DEC 1130	168	64.	6 DEC 0100	243	18.
1 DEC 0900	19	14.	2 DEC 2230	94	267.	4 DEC 1200	169	62.	6 DEC 0130	244	18.
1 DEC 0930	20	15.	2 DEC 2300	95	263.	4 DEC 1230	170	61.	6 DEC 0200	245	17.
1 DEC 1000	21	15.	2 DEC 2330	96	259.	4 DEC 1300	171	60.	6 DEC 0230	246	17.
1 DEC 1030	22	15.	3 DEC 0000	97	255.	4 DEC 1330	172	59.	6 DEC 0300	247	17.
1 DEC 1100	23	15.	3 DEC 0030	98	250.	4 DEC 1400	173	58.	6 DEC 0330	248	17.
1 DEC 1130	24	16.	3 DEC 0100	99	246.	4 DEC 1430	174	57.	6 DEC 0400	249	16.
1 DEC 1200	25	18.	3 DEC 0130	100	241.	4 DEC 1500	175	56.	6 DEC 0430	250	16.
1 DEC 1230	26	27.	3 DEC 0200	101	237.	4 DEC 1530	176	55.	6 DEC 0500	251	16.
1 DEC 1300	27	47.	3 DEC 0230	102	233.	4 DEC 1600	177	54.	6 DEC 0530	252	16.
1 DEC 1330	28	64.	3 DEC 0300	103	228.	4 DEC 1630	178	53.	6 DEC 0600	253	15.
1 DEC 1400	29	67.	3 DEC 0330	104	224.	4 DEC 1700	179	52.	6 DEC 0630	254	15.
1 DEC 1430	30	61.	3 DEC 0400	105	220.	4 DEC 1730	180	51.	6 DEC 0700	255	15.
1 DEC 1500	31	55.	3 DEC 0430	106	216.	4 DEC 1800	181	50.	6 DEC 0730	256	15.
1 DEC 1530	32	52.	3 DEC 0500	107	211.	4 DEC 1830	182	49.	6 DEC 0800	257	15.
1 DEC 1600	33	53.	3 DEC 0530	108	207.	4 DEC 1900	183	48.	6 DEC 0830	258	14.
1 DEC 1630	34	57.	3 DEC 0600	109	203.	4 DEC 1930	184	47.	6 DEC 0900	259	14.
1 DEC 1700	35	64.	3 DEC 0630	110	199.	4 DEC 2000	185	47.	6 DEC 0930	260	14.
1 DEC 1730	36	71.	3 DEC 0700	111	195.	4 DEC 2030	186	46.	6 DEC 1000	261	14.
1 DEC 1800	37	80.	3 DEC 0730	112	191.	4 DEC 2100	187	45.	6 DEC 1030	262	14.
1 DEC 1830	38	89.	3 DEC 0800	113	187.	4 DEC 2130	188	44.	6 DEC 1100	263	14.
1 DEC 1900	39	100.	3 DEC 0830	114	183.	4 DEC 2200	189	44.	6 DEC 1130	264	13.
1 DEC 1930	40	111.	3 DEC 0900	115	180.	4 DEC 2230	190	43.	6 DEC 1200	265	13.
1 DEC 2000	41	123.	3 DEC 0930	116	176.	4 DEC 2300	191	42.	6 DEC 1230	266	13.
1 DEC 2030	42	136.	3 DEC 1000	117	172.	4 DEC 2330	192	41.	6 DEC 1300	267	13.
1 DEC 2100	43	150.	3 DEC 1030	118	169.	5 DEC 0000	193	41.	6 DEC 1330	268	13.
1 DEC 2130	44	163.	3 DEC 1100	119	165.	5 DEC 0030	194	40.	6 DEC 1400	269	13.
1 DEC 2200	45	177.	3 DEC 1130	120	162.	5 DEC 0100	195	39.	6 DEC 1430	270	12.
1 DEC 2230	46	191.	3 DEC 1200	121	159.	5 DEC 0130	196	39.	6 DEC 1500	271	12.
1 DEC 2300	47	205.	3 DEC 1230	122	156.	5 DEC 0200	197	38.	6 DEC 1530	272	12.
1 DEC 2330	48	217.	3 DEC 1300	123	152.	5 DEC 0230	198	37.	6 DEC 1600	273	12.
2 DEC 0000	49	230.	3 DEC 1330	124	149.	5 DEC 0300	199	37.	6 DEC 1630	274	12.
2 DEC 0030	50	241.	3 DEC 1400	125	146.	5 DEC 0330	200	36.	6 DEC 1700	275	12.
2 DEC 0100	51	251.	3 DEC 1430	126	143.	5 DEC 0400	201	35.	6 DEC 1730	276	12.
2 DEC 0130	52	261.	3 DEC 1500	127	140.	5 DEC 0430	202	35.	6 DEC 1800	277	11.
2 DEC 0200	53	270.	3 DEC 1530	128	138.	5 DEC 0500	203	34.	6 DEC 1830	278	11.

2 DEC 0230	54	279.	*	3 DEC 1600	129	135.	*	5 DEC 0530	204	34.	*	6 DEC 1900	279	11.
2 DEC 0300	55	287.	*	3 DEC 1630	130	132.	*	5 DEC 0600	205	33.	*	6 DEC 1930	280	11.
2 DEC 0330	56	295.	*	3 DEC 1700	131	129.	*	5 DEC 0630	206	32.	*	6 DEC 2000	281	11.
2 DEC 0400	57	302.	*	3 DEC 1730	132	127.	*	5 DEC 0700	207	32.	*	6 DEC 2030	282	11.
2 DEC 0430	58	309.	*	3 DEC 1800	133	124.	*	5 DEC 0730	208	31.	*	6 DEC 2100	283	11.
2 DEC 0500	59	315.	*	3 DEC 1830	134	122.	*	5 DEC 0800	209	31.	*	6 DEC 2130	284	10.
2 DEC 0530	60	320.	*	3 DEC 1900	135	119.	*	5 DEC 0830	210	30.	*	6 DEC 2200	285	10.
2 DEC 0600	61	325.	*	3 DEC 1930	136	117.	*	5 DEC 0900	211	30.	*	6 DEC 2230	286	10.
2 DEC 0630	62	328.	*	3 DEC 2000	137	115.	*	5 DEC 0930	212	29.	*	6 DEC 2300	287	10.
2 DEC 0700	63	331.	*	3 DEC 2030	138	113.	*	5 DEC 1000	213	29.	*	6 DEC 2330	288	10.
2 DEC 0730	64	334.	*	3 DEC 2100	139	110.	*	5 DEC 1030	214	28.	*	7 DEC 0000	289	10.
2 DEC 0800	65	335.	*	3 DEC 2130	140	108.	*	5 DEC 1100	215	28.	*	7 DEC 0030	290	10.
2 DEC 0830	66	337.	*	3 DEC 2200	141	106.	*	5 DEC 1130	216	27.	*	7 DEC 0100	291	10.
2 DEC 0900	67	337.	*	3 DEC 2230	142	104.	*	5 DEC 1200	217	27.	*	7 DEC 0130	292	10.
2 DEC 0930	68	338.	*	3 DEC 2300	143	102.	*	5 DEC 1230	218	26.	*	7 DEC 0200	293	9.
2 DEC 1000	69	338.	*	3 DEC 2330	144	100.	*	5 DEC 1300	219	26.	*	7 DEC 0230	294	9.
2 DEC 1030	70	337.	*	4 DEC 0000	145	98.	*	5 DEC 1330	220	26.	*	7 DEC 0300	295	9.
2 DEC 1100	71	336.	*	4 DEC 0030	146	96.	*	5 DEC 1400	221	25.	*	7 DEC 0330	296	9.
2 DEC 1130	72	335.	*	4 DEC 0100	147	94.	*	5 DEC 1430	222	25.	*	7 DEC 0400	297	9.
2 DEC 1200	73	333.	*	4 DEC 0130	148	93.	*	5 DEC 1500	223	24.	*	7 DEC 0430	298	9.
2 DEC 1230	74	331.	*	4 DEC 0200	149	91.	*	5 DEC 1530	224	24.	*	7 DEC 0500	299	9.
2 DEC 1300	75	329.	*	4 DEC 0230	150	89.	*	5 DEC 1600	225	24.	*	7 DEC 0530	300	9.
			*				*				*			

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
338.	33.50	(CFS)	335.	304.	187.	102.
		(INCHES)	0.244	0.888	1.638	1.852
		(AC-FT)	166.	604.	1114.	1259.

CUMULATIVE AREA = 12.75 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	18.	29.50	17.	14.	7.	0.40		
ROUTED TO	JAJB	18.	31.00	17.	14.	7.	0.40		
HYDROGRAPH AT	102	19.	48.50	19.	18.	12.	1.00		
HYDROGRAPH AT	100	27.	39.00	27.	24.	14.	1.00		
3 COMBINED AT	JB	57.	38.00	56.	52.	33.	2.40		
ROUTED TO	JBJC	56.	39.50	56.	51.	33.	2.40		
HYDROGRAPH AT	104	12.	44.50	11.	10.	7.	0.51		
HYDROGRAPH AT	103	19.	31.50	19.	15.	8.	0.48		
ROUTED TO	JDJC	19.	33.00	19.	15.	8.	0.48		
HYDROGRAPH AT	105	25.	43.50	25.	22.	14.	1.03		
4 COMBINED AT	JC	107.	39.00	107.	98.	62.	4.42		
ROUTED TO	JCJF	107.	39.50	107.	98.	62.	4.42		
HYDROGRAPH AT	108	24.	27.00	23.	17.	7.	0.42		
2 COMBINED AT	JF	120.	36.50	119.	110.	68.	4.84		
ROUTED TO	JFJE	120.	37.50	119.	109.	68.	4.84		
HYDROGRAPH AT	110	16.	48.00	16.	14.	10.	0.69		
HYDROGRAPH AT	J4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	11.	28.50	11.	9.	4.	0.27		
ROUTED TO	JLJM	11.	30.50	11.	8.	4.	0.27		
HYDROGRAPH AT	125	9.	29.50	9.	7.	3.	0.22		
2 COMBINED AT	JM	20.	30.00	20.	16.	7.	0.49		
ROUTED TO	JMJU	20.	30.50	20.	16.	7.	0.49		
ROUTED TO	JU	19.	33.00	19.	15.	7.	0.49	1279.21	33.00
HYDROGRAPH AT	120	23.	42.50	23.	21.	13.	0.82		
ROUTED TO	JHJI	23.	43.00	23.	21.	13.	0.82		
HYDROGRAPH AT	121	37.	29.00	36.	28.	13.	0.82		
2 COMBINED AT	JI	52.	30.50	51.	45.	26.	1.64		
ROUTED TO	JIJJ	52.	31.00	51.	45.	26.	1.64		
HYDROGRAPH AT	122	25.	42.00	25.	22.	14.	1.00		
2 COMBINED AT	JJ	72.	34.50	72.	66.	40.	2.64		
ROUTED TO	JJJK	72.	36.00	72.	66.	40.	2.64		
HYDROGRAPH AT	123	22.	41.00	22.	19.	12.	0.76		
2 COMBINED AT	JK	93.	38.00	93.	85.	52.	3.40		
ROUTED TO	JKJT	93.	38.00	93.	85.	52.	3.40		

2 COMBINED AT	JT	111.	36.00	110.	100.	59.	3.89
ROUTED TO	JTJZ	111.	36.00	110.	100.	59.	3.89
ROUTED TO	JZJO	111.	36.00	110.	100.	59.	3.89
HYDROGRAPH AT	127	19.	36.00	19.	16.	9.	0.43
HYDROGRAPH AT	126	47.	23.00	44.	27.	10.	0.53
ROUTED TO	JPJO	47.	23.00	44.	27.	10.	0.53
3 COMBINED AT	JO	142.	33.00	141.	128.	77.	4.85
ROUTED TO	JOJE	142.	33.50	141.	128.	77.	4.85
4 COMBINED AT	JE	276.	36.00	274.	252.	159.	11.07
ROUTED TO	JEJY	276.	36.00	274.	252.	159.	11.07
HYDROGRAPH AT	131	32.	13.50	14.	4.	1.	0.10
2 COMBINED AT	JY	276.	36.00	274.	252.	160.	11.17
ROUTED TO	JYJR	276.	36.00	274.	252.	160.	11.17
HYDROGRAPH AT	106	60.	29.00	58.	45.	21.	1.23
ROUTED TO	JQJR	60.	29.00	58.	45.	21.	1.23
HYDROGRAPH AT	107	21.	26.50	20.	15.	6.	0.30
3 COMBINED AT	JR	338.	33.50	335.	304.	187.	12.70
ROUTED TO	JRJX	338.	33.50	335.	304.	187.	12.70
HYDROGRAPH AT	130	22.	13.50	9.	3.	1.	0.05
2 COMBINED AT	JX	338.	33.50	335.	304.	187.	12.75
ROUTED TO	JXJS	338.	33.50	335.	304.	187.	12.75
HYDROGRAPH AT	109	36.	24.00	34.	24.	9.	0.55
2 COMBINED AT	JS	358.	32.50	355.	321.	197.	13.30

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	17.58	1860.00	1.84	30.00	17.58	1860.00	1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3926E+02 EXCESS=0.0000E+00 OUTFLOW=0.3924E+02 BASIN STORAGE=0.2165E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	56.44	2370.00	1.68	30.00	56.44	2370.00	1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2158E+03 EXCESS=0.0000E+00 OUTFLOW=0.2154E+03 BASIN STORAGE=0.6581E+00 PERCENT ERROR= -0.2

JDJC	MANE	30.00	19.44	1980.00	1.86	30.00	19.44	1980.00	1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4766E+02 EXCESS=0.0000E+00 OUTFLOW=0.4765E+02 BASIN STORAGE=0.2876E-01 PERCENT ERROR= -0.1

JCJF	MANE	25.26	107.27	2349.33	1.72	30.00	107.27	2370.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4056E+03 EXCESS=0.0000E+00 OUTFLOW=0.4054E+03 BASIN STORAGE=0.3390E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	119.58	2250.00	1.74	30.00	119.58	2250.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4501E+03 EXCESS=0.0000E+00 OUTFLOW=0.4497E+03 BASIN STORAGE=0.9160E+00 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	11.30	1830.00	1.64	30.00	11.30	1830.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2367E+02 EXCESS=0.0000E+00 OUTFLOW=0.2369E+02 BASIN STORAGE=0.5912E-02 PERCENT ERROR= -0.1

JMJU	MANE	15.34	20.48	1810.70	1.69	30.00	20.47	1830.00	1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4409E+02 EXCESS=0.0000E+00 OUTFLOW=0.4409E+02 BASIN STORAGE=0.4040E-02 PERCENT ERROR= 0.0

JHJI	MANE	30.00	23.42	2580.00	2.01	30.00	23.42	2580.00	2.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8815E+02 EXCESS=0.0000E+00 OUTFLOW=0.8810E+02 BASIN STORAGE=0.9712E-01 PERCENT ERROR= -0.1

JIJJ	MANE	30.00	52.24	1860.00	1.92	30.00	52.24	1860.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1680E+03 EXCESS=0.0000E+00 OUTFLOW=0.1679E+03 BASIN STORAGE=0.2397E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	72.15	2160.00	1.85	30.00	72.15	2160.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2603E+03 EXCESS=0.0000E+00 OUTFLOW=0.2600E+03 BASIN STORAGE=0.5090E+00 PERCENT ERROR= -0.1

JKJT	MANE	9.82	93.10	2277.10	1.86	30.00	93.10	2280.00	1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3374E+03 EXCESS=0.0000E+00 OUTFLOW=0.3373E+03 BASIN STORAGE=0.9126E-01 PERCENT ERROR= 0.0

JTJZ	MANE	5.28	110.71	2161.52	1.83	30.00	110.71	2160.00	1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3803E+03 EXCESS=0.0000E+00 OUTFLOW=0.3803E+03 BASIN STORAGE=0.6358E-01 PERCENT ERROR= 0.0

JZJO	MANE	15.86	110.69	2172.13	1.83	30.00	110.68	2160.00	1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3803E+03 EXCESS=0.0000E+00 OUTFLOW=0.3802E+03 BASIN STORAGE=0.1933E+00 PERCENT ERROR= 0.0

JPJO	MANE	9.39	46.51	1380.96	2.00	30.00	46.51	1380.00	2.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5666E+02 EXCESS=0.0000E+00 OUTFLOW=0.5666E+02 BASIN STORAGE=0.7755E-03 PERCENT ERROR= 0.0

JOJE	MANE	29.62	142.34	2014.48	1.91	30.00	142.33	2010.00	1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4942E+03 EXCESS=0.0000E+00 OUTFLOW=0.4941E+03 BASIN STORAGE=0.4293E+00 PERCENT ERROR= -0.1

JEJY	MANE	10.25	275.89	2163.69	1.83	30.00	275.89	2160.00	1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1079E+04 EXCESS=0.0000E+00 OUTFLOW=0.1079E+04 BASIN STORAGE=0.5629E+00 PERCENT ERROR= 0.0

JYJR	MANE	3.76	275.88	2160.21	1.83	30.00	275.87	2160.00	1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1087E+04 EXCESS=0.0000E+00 OUTFLOW=0.1087E+04 BASIN STORAGE=0.2114E+00 PERCENT ERROR= 0.0

JQJR	MANE	20.90	60.07	1755.62	1.96	30.00	60.03	1740.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1285E+03 EXCESS=0.0000E+00 OUTFLOW=0.1285E+03 BASIN STORAGE=0.6470E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.97	337.74	2013.15	1.85	30.00	337.73	2010.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1254E+04 EXCESS=0.0000E+00 OUTFLOW=0.1254E+04 BASIN STORAGE=0.4237E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.48	337.71	2013.23	1.85	30.00	337.71	2010.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1259E+04 EXCESS=0.0000E+00 OUTFLOW=0.1259E+04 BASIN STORAGE=0.2121E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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**************************************
*                                    *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*             MAY 1991               *
*          VERSION 4.0.1E            *
*     Lahey F77L-EM/32 version 5.01  *
*       Dodson & Associates, Inc.    *
*  RUN DATE 12/10/98 TIME 17:00:56   *
**************************************
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**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET         *
*       DAVIS, CALIFORNIA 95616      *
*           (916) 551-1748           *
*                                    *
**************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1 ID   STONEY RUN EXISTING CONDITIONS SPN # 9083
    2 ID   NICK HOFFMAN, EIT E-7577
    3 ID   SCHMUCHER PAUL NOHR AND ASSOCIATES
    4 ID   10 YEAR STORM EVENT WITH WETLAND INFLUENCE
      *
    5 IT    30  1DEC98    0000     300
    6 IO     5       1
      *

    7 KK   101        COMPUTE RUNOFF HYDROGRAPH
    8 PH                  0.58    1.13    2.18    2.55    2.64    3.07    3.41    3.84
    9 BA   0.4
   10 LS   0.55      87    3.39
   11 UC  18.72   15.13
      *

   12 KK   JAJB       ROUTE HYDROGRAPH
   13 RD   6700 0.00075    0.05           TRAP      10      0.3
      *

   14 KK   102        COMPUTE RUNOFF HYDROGRAPH
   15 BA     1
   16 LS   0.66      84    6.43
   17 UC  40.12    32.1
      *

   18 KK   100        COMPUTE RUNOFF HYDROGRAPH
   19 BA     1
   20 LS   0.62      85    4.57
   21 UC  29.01   23.21
      *

   22 KK    JB        COMBINE HYDROGRAPHS
   23 HC     3

   24 KK   JBJC       ROUTE HYDROGRAPH
   25 RD   8200 0.00061    0.05           TRAP      10      0.3
      *

   26 KK   104        COMPUTE RUNOFF HYDROGRAPH
   27 BA   0.51
   28 LS   0.68      83   12.83
   29 UC  35.34   28.27
      *

   30 KK   103        COMPUTE RUNOFF HYDROGRAPH
   31 BA   0.48
   32 LS   0.66      84   18.23
   33 UC  20.71   16.57
      *
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Proposed 10yr Stoney Run 12/10/98

			(MIN)	(FT)	(CFS)	PEAK (MIN)	(IN)	CELERITY (FPS)
MAIN	0.05	1.62	3.19	400.00	425.22	1993.23	2.29	2.09

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.05	1.62	30.00		425.21	2010.00	2.29	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1554E+04 EXCESS=0.0000E+00 OUTFLOW=0.1554E+04 BASIN STORAGE=0.2286E+00 PERCENT ERROR= 0.0

HYDROGRAPH AT STATION JXJS

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1	DEC	0000	1	0.	2	DEC	1330	76	410.	4	DEC	0300	151	106.	5	DEC	1630	226	28.
1	DEC	0030	2	0.	2	DEC	1400	77	407.	4	DEC	0330	152	104.	5	DEC	1700	227	27.
1	DEC	0100	3	0.	2	DEC	1430	78	403.	4	DEC	0400	153	102.	5	DEC	1730	228	27.
1	DEC	0130	4	1.	2	DEC	1500	79	400.	4	DEC	0430	154	100.	5	DEC	1800	229	26.
1	DEC	0200	5	6.	2	DEC	1530	80	396.	4	DEC	0500	155	99.	5	DEC	1830	230	26.
1	DEC	0230	6	11.	2	DEC	1600	81	392.	4	DEC	0530	156	97.	5	DEC	1900	231	26.
1	DEC	0300	7	13.	2	DEC	1630	82	389.	4	DEC	0600	157	95.	5	DEC	1930	232	25.
1	DEC	0330	8	14.	2	DEC	1700	83	384.	4	DEC	0630	158	93.	5	DEC	2000	233	25.
1	DEC	0400	9	14.	2	DEC	1730	84	380.	4	DEC	0700	159	91.	5	DEC	2030	234	24.
1	DEC	0430	10	14.	2	DEC	1800	85	376.	4	DEC	0730	160	90.	5	DEC	2100	235	24.
1	DEC	0500	11	14.	2	DEC	1830	86	372.	4	DEC	0800	161	88.	5	DEC	2130	236	24.
1	DEC	0530	12	14.	2	DEC	1900	87	367.	4	DEC	0830	162	86.	5	DEC	2200	237	23.
1	DEC	0600	13	14.	2	DEC	1930	88	363.	4	DEC	0900	163	85.	5	DEC	2230	238	23.
1	DEC	0630	14	14.	2	DEC	2000	89	358.	4	DEC	0930	164	83.	5	DEC	2300	239	22.
1	DEC	0700	15	14.	2	DEC	2030	90	353.	4	DEC	1000	165	82.	5	DEC	2330	240	22.
1	DEC	0730	16	14.	2	DEC	2100	91	348.	4	DEC	1030	166	80.	6	DEC	0000	241	22.
1	DEC	0800	17	14.	2	DEC	2130	92	343.	4	DEC	1100	167	79.	6	DEC	0030	242	21.
1	DEC	0830	18	14.	2	DEC	2200	93	337.	4	DEC	1130	168	77.	6	DEC	0100	243	21.
1	DEC	0900	19	15.	2	DEC	2230	94	332.	4	DEC	1200	169	76.	6	DEC	0130	244	21.
1	DEC	0930	20	15.	2	DEC	2300	95	327.	4	DEC	1230	170	74.	6	DEC	0200	245	20.
1	DEC	1000	21	15.	2	DEC	2330	96	321.	4	DEC	1300	171	73.	6	DEC	0230	246	20.
1	DEC	1030	22	15.	3	DEC	0000	97	316.	4	DEC	1330	172	72.	6	DEC	0300	247	20.
1	DEC	1100	23	15.	3	DEC	0030	98	310.	4	DEC	1400	173	70.	6	DEC	0330	248	20.
1	DEC	1130	24	15.	3	DEC	0100	99	305.	4	DEC	1430	174	69.	6	DEC	0400	249	19.
1	DEC	1200	25	18.	3	DEC	0130	100	299.	4	DEC	1500	175	68.	6	DEC	0430	250	19.
1	DEC	1230	26	33.	3	DEC	0200	101	294.	4	DEC	1530	176	66.	6	DEC	0500	251	19.
1	DEC	1300	27	64.	3	DEC	0230	102	288.	4	DEC	1600	177	65.	6	DEC	0530	252	18.
1	DEC	1330	28	85.	3	DEC	0300	103	283.	4	DEC	1630	178	64.	6	DEC	0600	253	18.
1	DEC	1400	29	82.	3	DEC	0330	104	277.	4	DEC	1700	179	63.	6	DEC	0630	254	18.
1	DEC	1430	30	71.	3	DEC	0400	105	272.	4	DEC	1730	180	62.	6	DEC	0700	255	18.
1	DEC	1500	31	64.	3	DEC	0430	106	266.	4	DEC	1800	181	61.	6	DEC	0730	256	17.
1	DEC	1530	32	61.	3	DEC	0500	107	261.	4	DEC	1830	182	59.	6	DEC	0800	257	17.
1	DEC	1600	33	63.	3	DEC	0530	108	256.	4	DEC	1900	183	58.	6	DEC	0830	258	17.
1	DEC	1630	34	67.	3	DEC	0600	109	251.	4	DEC	1930	184	57.	6	DEC	0900	259	17.
1	DEC	1700	35	73.	3	DEC	0630	110	246.	4	DEC	2000	185	56.	6	DEC	0930	260	16.
1	DEC	1730	36	82.	3	DEC	0700	111	241.	4	DEC	2030	186	55.	6	DEC	1000	261	16.
1	DEC	1800	37	92.	3	DEC	0730	112	236.	4	DEC	2100	187	54.	6	DEC	1030	262	16.
1	DEC	1830	38	104.	3	DEC	0800	113	231.	4	DEC	2130	188	53.	6	DEC	1100	263	16.
1	DEC	1900	39	117.	3	DEC	0830	114	226.	4	DEC	2200	189	52.	6	DEC	1130	264	16.
1	DEC	1930	40	132.	3	DEC	0900	115	221.	4	DEC	2230	190	52.	6	DEC	1200	265	15.
1	DEC	2000	41	148.	3	DEC	0930	116	217.	4	DEC	2300	191	51.	6	DEC	1230	266	15.
1	DEC	2030	42	166.	3	DEC	1000	117	212.	4	DEC	2330	192	50.	6	DEC	1300	267	15.
1	DEC	2100	43	184.	3	DEC	1030	118	208.	5	DEC	0000	193	49.	6	DEC	1330	268	15.
1	DEC	2130	44	202.	3	DEC	1100	119	204.	5	DEC	0030	194	48.	6	DEC	1400	269	15.
1	DEC	2200	45	220.	3	DEC	1130	120	199.	5	DEC	0100	195	47.	6	DEC	1430	270	14.
1	DEC	2230	46	238.	3	DEC	1200	121	195.	5	DEC	0130	196	46.	6	DEC	1500	271	14.
1	DEC	2300	47	255.	3	DEC	1230	122	191.	5	DEC	0200	197	46.	6	DEC	1530	272	14.
1	DEC	2330	48	272.	3	DEC	1300	123	187.	5	DEC	0230	198	45.	6	DEC	1600	273	14.
2	DEC	0000	49	288.	3	DEC	1330	124	184.	5	DEC	0300	199	44.	6	DEC	1630	274	14.
2	DEC	0030	50	302.	3	DEC	1400	125	180.	5	DEC	0330	200	43.	6	DEC	1700	275	13.
2	DEC	0100	51	316.	3	DEC	1430	126	176.	5	DEC	0400	201	42.	6	DEC	1730	276	13.
2	DEC	0130	52	328.	3	DEC	1500	127	172.	5	DEC	0430	202	42.	6	DEC	1800	277	13.
2	DEC	0200	53	340.	3	DEC	1530	128	169.	5	DEC	0500	203	41.	6	DEC	1830	278	13.

2	DEC	0230	54	352.	*	3	DEC	1600	129	166.	*	5	DEC	0530	204	40.	*	6	DEC	1900	279	13.
2	DEC	0300	55	363.	*	3	DEC	1630	130	162.	*	5	DEC	0600	205	39.	*	6	DEC	1930	280	13.
2	DEC	0330	56	373.	*	3	DEC	1700	131	159.	*	5	DEC	0630	206	39.	*	6	DEC	2000	281	12.
2	DEC	0400	57	383.	*	3	DEC	1730	132	156.	*	5	DEC	0700	207	38.	*	6	DEC	2030	282	12.
2	DEC	0430	58	391.	*	3	DEC	1800	133	152.	*	5	DEC	0730	208	38.	*	6	DEC	2100	283	12.
2	DEC	0500	59	399.	*	3	DEC	1830	134	149.	*	5	DEC	0800	209	37.	*	6	DEC	2130	284	12.
2	DEC	0530	60	405.	*	3	DEC	1900	135	146.	*	5	DEC	0830	210	36.	*	6	DEC	2200	285	12.
2	DEC	0600	61	410.	*	3	DEC	1930	136	143.	*	5	DEC	0900	211	36.	*	6	DEC	2230	286	12.
2	DEC	0630	62	415.	*	3	DEC	2000	137	141.	*	5	DEC	0930	212	35.	*	6	DEC	2300	287	11.
2	DEC	0700	63	418.	*	3	DEC	2030	138	138.	*	5	DEC	1000	213	34.	*	6	DEC	2330	288	11.
2	DEC	0730	64	421.	*	3	DEC	2100	139	135.	*	5	DEC	1030	214	34.	*	7	DEC	0000	289	11.
2	DEC	0800	65	423.	*	3	DEC	2130	140	132.	*	5	DEC	1100	215	33.	*	7	DEC	0030	290	11.
2	DEC	0830	66	425.	*	3	DEC	2200	141	130.	*	5	DEC	1130	216	33.	*	7	DEC	0100	291	11.
2	DEC	0900	67	425.	*	3	DEC	2230	142	127.	*	5	DEC	1200	217	32.	*	7	DEC	0130	292	11.
2	DEC	0930	68	425.	*	3	DEC	2300	143	124.	*	5	DEC	1230	218	32.	*	7	DEC	0200	293	11.
2	DEC	1000	69	425.	*	3	DEC	2330	144	122.	*	5	DEC	1300	219	31.	*	7	DEC	0230	294	11.
2	DEC	1030	70	424.	*	4	DEC	0000	145	120.	*	5	DEC	1330	220	31.	*	7	DEC	0300	295	10.
2	DEC	1100	71	422.	*	4	DEC	0030	146	117.	*	5	DEC	1400	221	30.	*	7	DEC	0330	296	10.
2	DEC	1130	72	420.	*	4	DEC	0100	147	115.	*	5	DEC	1430	222	30.	*	7	DEC	0400	297	10.
2	DEC	1200	73	418.	*	4	DEC	0130	148	113.	*	5	DEC	1500	223	29.	*	7	DEC	0430	298	10.
2	DEC	1230	74	416.	*	4	DEC	0200	149	111.	*	5	DEC	1530	224	29.	*	7	DEC	0500	299	10.
2	DEC	1300	75	413.	*	4	DEC	0230	150	109.	*	5	DEC	1600	225	28.	*	7	DEC	0530	300	10.
					*						*						*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	149.50-HR
425.	33.50	(CFS)	422.	382.	232.	126.
		(INCHES)	0.308	1.114	2.034	2.286
		(AC-FT)	209.	757.	1383.	1554.

CUMULATIVE AREA = 12.75 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	22.	29.50	22.	17.	8.	0.40		
ROUTED TO	JAJB	22.	30.50	22.	17.	8.	0.40		
HYDROGRAPH AT	102	25.	48.50	24.	23.	16.	1.00		
HYDROGRAPH AT	100	34.	39.00	34.	30.	18.	1.00		
3 COMBINED AT	JB	71.	38.00	71.	65.	41.	2.40		
ROUTED TO	JBJC	71.	39.00	71.	65.	41.	2.40		
HYDROGRAPH AT	104	15.	44.00	14.	13.	9.	0.51		
HYDROGRAPH AT	103	24.	31.00	24.	19.	10.	0.48		
ROUTED TO	JDJC	24.	33.00	24.	19.	10.	0.48		
HYDROGRAPH AT	105	31.	43.00	31.	28.	18.	1.03		
4 COMBINED AT	JC	135.	38.50	134.	123.	77.	4.42		
ROUTED TO	JCJF	135.	39.00	134.	123.	77.	4.42		
HYDROGRAPH AT	108	29.	26.50	28.	21.	9.	0.42		
2 COMBINED AT	JF	150.	36.00	150.	138.	86.	4.84		
ROUTED TO	JFJE	150.	37.00	150.	138.	86.	4.84		
HYDROGRAPH AT	110	20.	48.00	20.	18.	12.	0.69		
HYDROGRAPH AT	J4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	14.	28.50	14.	11.	5.	0.27		
ROUTED TO	JLJM	14.	30.50	14.	11.	5.	0.27		
HYDROGRAPH AT	125	12.	29.50	11.	9.	4.	0.22		
2 COMBINED AT	JM	26.	30.00	25.	20.	9.	0.49		
ROUTED TO	JMJU	26.	30.00	25.	20.	9.	0.49		
ROUTED TO	JU	24.	32.50	24.	19.	9.	0.49	1279.26	32.50
HYDROGRAPH AT	120	29.	42.50	29.	26.	16.	0.82		
ROUTED TO	JHJI	29.	42.50	29.	26.	16.	0.82		
HYDROGRAPH AT	121	47.	29.00	45.	35.	17.	0.82		
2 COMBINED AT	JI	66.	30.00	64.	57.	33.	1.64		
ROUTED TO	JIJJ	65.	31.00	64.	57.	33.	1.64		
HYDROGRAPH AT	122	31.	42.00	31.	28.	18.	1.00		
2 COMBINED AT	JJ	90.	34.00	90.	83.	50.	2.64		
ROUTED TO	JJJK	90.	35.00	90.	83.	50.	2.64		
HYDROGRAPH AT	123	27.	40.50	27.	24.	15.	0.76		
2 COMBINED AT	JK	116.	37.50	116.	106.	65.	3.40		
ROUTED TO	JKJT	116.	37.50	116.	106.	65.	3.40		

2 COMBINED AT	JT	138.	35.00	138.	125.	74.	3.89
ROUTED TO	JTJZ	138.	35.50	138.	125.	74.	3.89
ROUTED TO	JZJO	138.	35.50	138.	125.	74.	3.89
HYDROGRAPH AT	127	23.	36.00	22.	19.	11.	0.43
HYDROGRAPH AT	126	49.	23.00	46.	30.	12.	0.53
ROUTED TO	JPJO	49.	23.00	46.	30.	12.	0.53
3 COMBINED AT	JO	181.	33.00	180.	162.	96.	4.85
ROUTED TO	JOJE	181.	33.50	180.	162.	96.	4.85
4 COMBINED AT	JE	348.	35.50	346.	318.	198.	11.07
ROUTED TO	JEJY	348.	35.50	346.	318.	198.	11.07
HYDROGRAPH AT	131	46.	13.50	19.	6.	2.	0.10
2 COMBINED AT	JY	348.	35.50	346.	318.	198.	11.17
ROUTED TO	JYJR	348.	35.50	346.	318.	198.	11.17
HYDROGRAPH AT	106	75.	29.00	73.	57.	27.	1.23
ROUTED TO	JQJR	75.	29.00	73.	57.	27.	1.23
HYDROGRAPH AT	107	25.	26.50	24.	18.	8.	0.30
3 COMBINED AT	JR	425.	33.00	422.	382.	232.	12.70
ROUTED TO	JRJX	425.	33.00	422.	382.	232.	12.70
HYDROGRAPH AT	130	29.	13.50	11.	3.	1.	0.05
2 COMBINED AT	JX	425.	33.00	422.	382.	232.	12.75
ROUTED TO	JXJS	425.	33.50	422.	382.	232.	12.75
HYDROGRAPH AT	109	46.	24.00	43.	30.	12.	0.55
2 COMBINED AT	JS	450.	32.50	446.	403.	244.	13.30

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	22.15	1830.00	2.30	30.00	22.15	1830.00	2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4912E+02 EXCESS=0.0000E+00 OUTFLOW=0.4910E+02 BASIN STORAGE=0.1996E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	71.25	2340.00	2.13	30.00	71.25	2340.00	2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2725E+03 EXCESS=0.0000E+00 OUTFLOW=0.2721E+03 BASIN STORAGE=0.7665E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	24.33	1980.00	2.31	30.00	24.33	1980.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5920E+02 EXCESS=0.0000E+00 OUTFLOW=0.5920E+02 BASIN STORAGE=0.3124E-01 PERCENT ERROR= 0.0

JCJF	MANE	23.41	134.85	2341.31	2.16	30.00	134.85	2340.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5101E+03 EXCESS=0.0000E+00 OUTFLOW=0.5099E+03 BASIN STORAGE=0.3935E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	150.30	2220.00	2.19	30.00	150.30	2220.00	2.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5654E+03 EXCESS=0.0000E+00 OUTFLOW=0.5649E+03 BASIN STORAGE=0.1063E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	14.33	1830.00	2.07	30.00	14.33	1830.00	2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2975E+02 EXCESS=0.0000E+00 OUTFLOW=0.2977E+02 BASIN STORAGE=0.5346E-02 PERCENT ERROR= -0.1

JMJU	MANE	14.09	25.96	1803.19	2.12	30.00	25.96	1800.00	2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5534E+02 EXCESS=0.0000E+00 OUTFLOW=0.5534E+02 BASIN STORAGE=0.4330E-02 PERCENT ERROR= 0.0

JHJI	MANE	30.00	28.94	2550.00	2.48	30.00	28.94	2550.00	2.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1087E+03 EXCESS=0.0000E+00 OUTFLOW=0.1086E+03 BASIN STORAGE=0.1111E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	65.41	1860.00	2.38	30.00	65.41	1860.00	2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2083E+03 EXCESS=0.0000E+00 OUTFLOW=0.2082E+03 BASIN STORAGE=0.2742E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	90.04	2100.00	2.30	30.00	90.04	2100.00	2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3242E+03 EXCESS=0.0000E+00 OUTFLOW=0.3238E+03 BASIN STORAGE=0.5853E+00 PERCENT ERROR= -0.1

JKJT	MANE	9.12	116.21	2252.13	2.32	30.00	116.21	2250.00	2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4207E+03 EXCESS=0.0000E+00 OUTFLOW=0.4206E+03 BASIN STORAGE=0.1047E+00 PERCENT ERROR= 0.0

JTJZ	MANE	4.87	138.49	2111.89	2.29	30.00	138.48	2130.00	2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4749E+03 EXCESS=0.0000E+00 OUTFLOW=0.4749E+03 BASIN STORAGE=0.7225E-01 PERCENT ERROR= 0.0

JZJO	MANE	14.60	138.48	2131.43	2.29	30.00	138.48	2130.00	2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4749E+03 EXCESS=0.0000E+00 OUTFLOW=0.4748E+03 BASIN STORAGE=0.2192E+00 PERCENT ERROR= 0.0

JPJO	MANE	9.30	48.86	1385.86	2.49	30.00	48.82	1380.00	2.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7025E+02 EXCESS=0.0000E+00 OUTFLOW=0.7024E+02 BASIN STORAGE=0.7824E-03 PERCENT ERROR= 0.0

JOJE	MANE	27.04	181.25	2000.91	2.37	30.00	181.23	2010.00	2.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6136E+03 EXCESS=0.0000E+00 OUTFLOW=0.6135E+03 BASIN STORAGE=0.4849E+00 PERCENT ERROR= -0.1

JEJY	MANE	9.39	348.30	2140.94	2.25	30.00	348.29	2130.00	2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1331E+04 EXCESS=0.0000E+00 OUTFLOW=0.1331E+04 BASIN STORAGE=0.6065E+00 PERCENT ERROR= 0.0

JYJR	MANE	3.44	348.27	2134.24	2.25	30.00	348.26	2130.00	2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1342E+04 EXCESS=0.0000E+00 OUTFLOW=0.1342E+04 BASIN STORAGE=0.2277E+00 PERCENT ERROR= 0.0

JQJR	MANE	19.38	75.42	1744.15	2.44	30.00	75.41	1740.00	2.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1600E+03 EXCESS=0.0000E+00 OUTFLOW=0.1600E+03 BASIN STORAGE=0.6271E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.38	425.29	1989.86	2.29	30.00	425.23	1980.00	2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1548E+04 EXCESS=0.0000E+00 OUTFLOW=0.1548E+04 BASIN STORAGE=0.4564E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.19	425.22	1993.23	2.29	30.00	425.21	2010.00	2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1554E+04 EXCESS=0.0000E+00 OUTFLOW=0.1554E+04 BASIN STORAGE=0.2286E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY  1991                *
*           VERSION 4.0.1E              *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  12/10/98  TIME  16:55:57   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1     ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
    2     ID        NICK HOFFMAN, EIT E-7577
    3     ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
    4     ID      25 YEAR STORM EVENT WITH WETLAND INFLUENCE
          *
    5     IT      30  1DEC98    0000     300
    6     IO       5       1
          *

    7     KK     101        COMPUTE RUNOFF HYDROGRAPH
    8     PH                    0.69    1.39     2.6    2.98    3.08    3.54       4    4.51
    9     BA     0.4
   10     LS    0.55       87    3.39
   11     UC   18.72   15.13
          *

   12     KK    JAJB        ROUTE HYDROGRAPH
   13     RD    6700 0.00075    0.05            TRAP      10      0.3
          *

   14     KK     102        COMPUTE RUNOFF HYDROGRAPH
   15     BA       1
   16     LS    0.66       84    6.43
   17     UC   40.12    32.1
          *

   18     KK     100        COMPUTE RUNOFF HYDROGRAPH
   19     BA       1
   20     LS    0.62       85    4.57
   21     UC   29.01   23.21
          *

   22     KK      JB        COMBINE HYDROGRAPHS
   23     HC       3

   24     KK    JBJC        ROUTE HYDROGRAPH
   25     RD    8200 0.00061    0.05            TRAP      10      0.3
          *

   26     KK     104        COMPUTE RUNOFF HYDROGRAPH
   27     BA    0.51
   28     LS    0.68       83   12.83
   29     UC   35.34   28.27
          *

   30     KK     103        COMPUTE RUNOFF HYDROGRAPH
   31     BA    0.48
   32     LS    0.66       84   18.23
   33     UC   20.71   16.57
          *
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Proposed 25yr Stoney Run 12/10/98

			(MIN)	(FT)	(CFS)	PEAK (MIN)	(IN)	CELERITY (FPS)
MAIN	0.05	1.62	2.92	400.00	536.64	1980.86	2.86	2.29

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.05	1.62	30.00		536.64	1980.00	2.86	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1944E+04 EXCESS=0.0000E+00 OUTFLOW=0.1944E+04 BASIN STORAGE=0.2497E+00 PERCENT ERROR= 0.0

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HYDROGRAPH AT STATION JXJS

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DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	2 DEC 1330	76	515.	4 DEC 0300	151	132.	5 DEC 1630	226	34.
1 DEC 0030	2	0.	2 DEC 1400	77	511.	4 DEC 0330	152	130.	5 DEC 1700	227	33.
1 DEC 0100	3	0.	2 DEC 1430	78	507.	4 DEC 0400	153	127.	5 DEC 1730	228	32.
1 DEC 0130	4	2.	2 DEC 1500	79	502.	4 DEC 0430	154	125.	5 DEC 1800	229	32.
1 DEC 0200	5	6.	2 DEC 1530	80	497.	4 DEC 0500	155	122.	5 DEC 1830	230	31.
1 DEC 0230	6	11.	2 DEC 1600	81	493.	4 DEC 0530	156	120.	5 DEC 1900	231	31.
1 DEC 0300	7	13.	2 DEC 1630	82	487.	4 DEC 0600	157	118.	5 DEC 1930	232	30.
1 DEC 0330	8	14.	2 DEC 1700	83	482.	4 DEC 0630	158	115.	5 DEC 2000	233	30.
1 DEC 0400	9	14.	2 DEC 1730	84	477.	4 DEC 0700	159	113.	5 DEC 2030	234	29.
1 DEC 0430	10	14.	2 DEC 1800	85	472.	4 DEC 0730	160	111.	5 DEC 2100	235	29.
1 DEC 0500	11	14.	2 DEC 1830	86	466.	4 DEC 0800	161	109.	5 DEC 2130	236	29.
1 DEC 0530	12	14.	2 DEC 1900	87	460.	4 DEC 0830	162	107.	5 DEC 2200	237	28.
1 DEC 0600	13	14.	2 DEC 1930	88	454.	4 DEC 0900	163	105.	5 DEC 2230	238	28.
1 DEC 0630	14	14.	2 DEC 2000	89	448.	4 DEC 0930	164	103.	5 DEC 2300	239	27.
1 DEC 0700	15	14.	2 DEC 2030	90	442.	4 DEC 1000	165	101.	5 DEC 2330	240	27.
1 DEC 0730	16	14.	2 DEC 2100	91	436.	4 DEC 1030	166	99.	6 DEC 0000	241	26.
1 DEC 0800	17	14.	2 DEC 2130	92	429.	4 DEC 1100	167	97.	6 DEC 0030	242	26.
1 DEC 0830	18	15.	2 DEC 2200	93	423.	4 DEC 1130	168	96.	6 DEC 0100	243	25.
1 DEC 0900	19	15.	2 DEC 2230	94	416.	4 DEC 1200	169	94.	6 DEC 0130	244	25.
1 DEC 0930	20	15.	2 DEC 2300	95	409.	4 DEC 1230	170	92.	6 DEC 0200	245	25.
1 DEC 1000	21	15.	2 DEC 2330	96	402.	4 DEC 1300	171	90.	6 DEC 0230	246	24.
1 DEC 1030	22	15.	3 DEC 0000	97	395.	4 DEC 1330	172	89.	6 DEC 0300	247	24.
1 DEC 1100	23	15.	3 DEC 0030	98	388.	4 DEC 1400	173	87.	6 DEC 0330	248	24.
1 DEC 1130	24	16.	3 DEC 0100	99	381.	4 DEC 1430	174	85.	6 DEC 0400	249	23.
1 DEC 1200	25	20.	3 DEC 0130	100	374.	4 DEC 1500	175	84.	6 DEC 0430	250	23.
1 DEC 1230	26	41.	3 DEC 0200	101	367.	4 DEC 1530	176	82.	6 DEC 0500	251	22.
1 DEC 1300	27	82.	3 DEC 0230	102	360.	4 DEC 1600	177	81.	6 DEC 0530	252	22.
1 DEC 1330	28	107.	3 DEC 0300	103	353.	4 DEC 1630	178	79.	6 DEC 0600	253	22.
1 DEC 1400	29	101.	3 DEC 0330	104	346.	4 DEC 1700	179	78.	6 DEC 0630	254	21.
1 DEC 1430	30	87.	3 DEC 0400	105	339.	4 DEC 1730	180	76.	6 DEC 0700	255	21.
1 DEC 1500	31	77.	3 DEC 0430	106	333.	4 DEC 1800	181	75.	6 DEC 0730	256	21.
1 DEC 1530	32	74.	3 DEC 0500	107	326.	4 DEC 1830	182	73.	6 DEC 0800	257	21.
1 DEC 1600	33	76.	3 DEC 0530	108	320.	4 DEC 1900	183	72.	6 DEC 0830	258	20.
1 DEC 1630	34	82.	3 DEC 0600	109	313.	4 DEC 1930	184	71.	6 DEC 0900	259	20.
1 DEC 1700	35	90.	3 DEC 0630	110	307.	4 DEC 2000	185	69.	6 DEC 0930	260	20.
1 DEC 1730	36	102.	3 DEC 0700	111	300.	4 DEC 2030	186	68.	6 DEC 1000	261	19.
1 DEC 1800	37	115.	3 DEC 0730	112	294.	4 DEC 2100	187	67.	6 DEC 1030	262	19.
1 DEC 1830	38	131.	3 DEC 0800	113	288.	4 DEC 2130	188	66.	6 DEC 1100	263	19.
1 DEC 1900	39	148.	3 DEC 0830	114	282.	4 DEC 2200	189	65.	6 DEC 1130	264	19.
1 DEC 1930	40	168.	3 DEC 0900	115	276.	4 DEC 2230	190	63.	6 DEC 1200	265	18.
1 DEC 2000	41	190.	3 DEC 0930	116	271.	4 DEC 2300	191	62.	6 DEC 1230	266	18.
1 DEC 2030	42	213.	3 DEC 1000	117	265.	4 DEC 2330	192	61.	6 DEC 1300	267	18.
1 DEC 2100	43	236.	3 DEC 1030	118	259.	5 DEC 0000	193	60.	6 DEC 1330	268	18.
1 DEC 2130	44	260.	3 DEC 1100	119	254.	5 DEC 0030	194	59.	6 DEC 1400	269	17.
1 DEC 2200	45	283.	3 DEC 1130	120	249.	5 DEC 0100	195	58.	6 DEC 1430	270	17.
1 DEC 2230	46	306.	3 DEC 1200	121	243.	5 DEC 0130	196	57.	6 DEC 1500	271	17.
1 DEC 2300	47	328.	3 DEC 1230	122	238.	5 DEC 0200	197	56.	6 DEC 1530	272	17.
1 DEC 2330	48	349.	3 DEC 1300	123	233.	5 DEC 0230	198	55.	6 DEC 1600	273	16.
2 DEC 0000	49	369.	3 DEC 1330	124	229.	5 DEC 0300	199	54.	6 DEC 1630	274	16.
2 DEC 0030	50	388.	3 DEC 1400	125	224.	5 DEC 0330	200	53.	6 DEC 1700	275	16.
2 DEC 0100	51	405.	3 DEC 1430	126	219.	5 DEC 0400	201	52.	6 DEC 1730	276	16.
2 DEC 0130	52	420.	3 DEC 1500	127	215.	5 DEC 0430	202	51.	6 DEC 1800	277	15.
2 DEC 0200	53	436.	3 DEC 1530	128	210.	5 DEC 0500	203	50.	6 DEC 1830	278	15.

2	DEC	0230	54	450.	*	3	DEC	1600	129	206.	*	5	DEC	0530	204	49.	*	6	DEC	1900	279	15.
2	DEC	0300	55	464.	*	3	DEC	1630	130	202.	*	5	DEC	0600	205	48.	*	6	DEC	1930	280	15.
2	DEC	0330	56	476.	*	3	DEC	1700	131	198.	*	5	DEC	0630	206	47.	*	6	DEC	2000	281	15.
2	DEC	0400	57	488.	*	3	DEC	1730	132	194.	*	5	DEC	0700	207	47.	*	6	DEC	2030	282	14.
2	DEC	0430	58	498.	*	3	DEC	1800	133	190.	*	5	DEC	0730	208	46.	*	6	DEC	2100	283	14.
2	DEC	0500	59	507.	*	3	DEC	1830	134	186.	*	5	DEC	0800	209	45.	*	6	DEC	2130	284	14.
2	DEC	0530	60	515.	*	3	DEC	1900	135	182.	*	5	DEC	0830	210	44.	*	6	DEC	2200	285	14.
2	DEC	0600	61	521.	*	3	DEC	1930	136	179.	*	5	DEC	0900	211	43.	*	6	DEC	2230	286	14.
2	DEC	0630	62	526.	*	3	DEC	2000	137	175.	*	5	DEC	0930	212	43.	*	6	DEC	2300	287	13.
2	DEC	0700	63	530.	*	3	DEC	2030	138	171.	*	5	DEC	1000	213	42.	*	6	DEC	2330	288	13.
2	DEC	0730	64	533.	*	3	DEC	2100	139	168.	*	5	DEC	1030	214	41.	*	7	DEC	0000	289	13.
2	DEC	0800	65	535.	*	3	DEC	2130	140	164.	*	5	DEC	1100	215	40.	*	7	DEC	0030	290	13.
2	DEC	0830	66	536.	*	3	DEC	2200	141	161.	*	5	DEC	1130	216	40.	*	7	DEC	0100	291	13.
2	DEC	0900	67	537.	*	3	DEC	2230	142	158.	*	5	DEC	1200	217	39.	*	7	DEC	0130	292	13.
2	DEC	0930	68	536.	*	3	DEC	2300	143	155.	*	5	DEC	1230	218	38.	*	7	DEC	0200	293	12.
2	DEC	1000	69	535.	*	3	DEC	2330	144	152.	*	5	DEC	1300	219	38.	*	7	DEC	0230	294	12.
2	DEC	1030	70	534.	*	4	DEC	0000	145	149.	*	5	DEC	1330	220	37.	*	7	DEC	0300	295	12.
2	DEC	1100	71	532.	*	4	DEC	0030	146	146.	*	5	DEC	1400	221	36.	*	7	DEC	0330	296	12.
2	DEC	1130	72	529.	*	4	DEC	0100	147	143.	*	5	DEC	1430	222	36.	*	7	DEC	0400	297	12.
2	DEC	1200	73	526.	*	4	DEC	0130	148	140.	*	5	DEC	1500	223	35.	*	7	DEC	0430	298	12.
2	DEC	1230	74	523.	*	4	DEC	0200	149	137.	*	5	DEC	1530	224	35.	*	7	DEC	0500	299	12.
2	DEC	1300	75	519.	*	4	DEC	0230	150	135.	*	5	DEC	1600	225	34.	*	7	DEC	0530	300	11.
					*						*						*					

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
537.	33.00	(CFS)	532.	482.	292.	157.
		(INCHES)	0.388	1.405	2.556	2.859
		(AC-FT)	264.	955.	1738.	1944.

CUMULATIVE AREA = 12.75 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	28.	29.50	27.	22.	10.	0.40		
ROUTED TO	JAJB	28.	30.50	27.	21.	10.	0.40		
HYDROGRAPH AT	102	31.	48.50	31.	29.	20.	1.00		
HYDROGRAPH AT	100	44.	38.50	44.	38.	23.	1.00		
3 COMBINED AT	JB	91.	38.00	90.	83.	53.	2.40		
ROUTED TO	JBJC	91.	39.00	90.	83.	53.	2.40		
HYDROGRAPH AT	104	19.	44.00	18.	17.	11.	0.51		
HYDROGRAPH AT	103	31.	31.00	30.	24.	12.	0.48		
ROUTED TO	JDJC	31.	32.50	30.	24.	12.	0.48		
HYDROGRAPH AT	105	40.	43.00	40.	36.	23.	1.03		
4 COMBINED AT	JC	171.	38.50	170.	157.	98.	4.42		
ROUTED TO	JCJF	171.	39.00	170.	157.	98.	4.42		
HYDROGRAPH AT	108	37.	26.50	36.	27.	12.	0.42		
2 COMBINED AT	JF	191.	36.00	190.	175.	109.	4.84		
ROUTED TO	JFJE	191.	36.50	190.	175.	109.	4.84		
HYDROGRAPH AT	110	25.	48.00	25.	23.	16.	0.69		
HYDROGRAPH AT	J4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	18.	28.50	18.	14.	6.	0.27		
ROUTED TO	JLJM	18.	30.00	18.	14.	6.	0.27		
HYDROGRAPH AT	125	15.	29.50	14.	11.	5.	0.22		
2 COMBINED AT	JM	33.	30.00	32.	25.	12.	0.49		
ROUTED TO	JMJU	33.	30.00	32.	25.	12.	0.49		
ROUTED TO	JU	31.	32.00	30.	24.	11.	0.49	1279.33	32.00
HYDROGRAPH AT	120	36.	42.00	36.	32.	20.	0.82		
ROUTED TO	JHJI	36.	42.50	36.	32.	20.	0.82		
HYDROGRAPH AT	121	59.	29.00	57.	45.	21.	0.82		
2 COMBINED AT	JI	83.	30.00	81.	71.	41.	1.64		
ROUTED TO	JIJJ	82.	31.00	81.	71.	41.	1.64		
HYDROGRAPH AT	122	40.	42.00	40.	35.	22.	1.00		
2 COMBINED AT	JJ	114.	34.00	113.	104.	63.	2.64		
ROUTED TO	JJJK	114.	35.00	113.	104.	63.	2.64		
HYDROGRAPH AT	123	35.	40.50	34.	30.	19.	0.76		
2 COMBINED AT	JK	147.	37.50	146.	134.	82.	3.40		
ROUTED TO	JKJT	147.	37.50	146.	134.	82.	3.40		

2 COMBINED AT	JT	175.	35.00	174.	158.	93.	3.89
ROUTED TO	JTJZ	175.	35.00	174.	158.	93.	3.89
ROUTED TO	JZJO	175.	35.00	174.	158.	93.	3.89
HYDROGRAPH AT	127	27.	36.00	27.	23.	13.	0.43
HYDROGRAPH AT	126	61.	23.00	57.	38.	15.	0.53
ROUTED TO	JPJO	61.	23.50	57.	38.	15.	0.53
3 COMBINED AT	JO	229.	33.00	227.	204.	120.	4.85
ROUTED TO	JOJE	229.	33.00	227.	204.	120.	4.85
4 COMBINED AT	JE	439.	35.50	436.	400.	249.	11.07
ROUTED TO	JEJY	439.	35.50	436.	400.	249.	11.07
HYDROGRAPH AT	131	60.	13.50	24.	7.	2.	0.10
2 COMBINED AT	JY	439.	35.50	436.	400.	250.	11.17
ROUTED TO	JYJR	439.	35.50	436.	400.	250.	11.17
HYDROGRAPH AT	106	95.	29.00	92.	72.	33.	1.23
ROUTED TO	JQJR	95.	29.00	92.	72.	33.	1.23
HYDROGRAPH AT	107	31.	26.50	30.	22.	10.	0.30
3 COMBINED AT	JR	537.	33.00	532.	482.	292.	12.70
ROUTED TO	JRJX	537.	33.00	532.	482.	292.	12.70
HYDROGRAPH AT	130	37.	13.50	14.	4.	1.	0.05
2 COMBINED AT	JX	537.	33.00	532.	482.	292.	12.75
ROUTED TO	JXJS	537.	33.00	532.	482.	292.	12.75
HYDROGRAPH AT	109	58.	24.00	55.	37.	15.	0.55
2 COMBINED AT	JS	568.	32.00	564.	508.	307.	13.30

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	28.05	1830.00	2.91	30.00	28.05	1830.00	2.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6216E+02 EXCESS=0.0000E+00 OUTFLOW=0.6213E+02 BASIN STORAGE=0.2011E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	90.80	2340.00	2.71	30.00	90.80	2340.00	2.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3479E+03 EXCESS=0.0000E+00 OUTFLOW=0.3474E+03 BASIN STORAGE=0.9032E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	30.63	1980.00	2.91	30.00	30.63	1980.00	2.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7453E+02 EXCESS=0.0000E+00 OUTFLOW=0.7452E+02 BASIN STORAGE=0.3176E-01 PERCENT ERROR= 0.0

JCJF	MANE	21.63	171.26	2335.57	2.75	30.00	171.25	2340.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6490E+03 EXCESS=0.0000E+00 OUTFLOW=0.6487E+03 BASIN STORAGE=0.4643E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	190.68	2190.00	2.78	30.00	190.68	2190.00	2.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7185E+03 EXCESS=0.0000E+00 OUTFLOW=0.7178E+03 BASIN STORAGE=0.1249E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	18.28	1800.00	2.63	30.00	18.28	1800.00	2.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3791E+02 EXCESS=0.0000E+00 OUTFLOW=0.3792E+02 BASIN STORAGE=0.5847E-02 PERCENT ERROR= -0.1

JMJU	MANE	12.91	33.07	1794.66	2.69	30.00	33.07	1800.00	2.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7039E+02 EXCESS=0.0000E+00 OUTFLOW=0.7039E+02 BASIN STORAGE=0.4088E-02 PERCENT ERROR= 0.0

JHJI	MANE	29.00	36.13	2552.29	3.10	30.00	36.13	2550.00	3.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1357E+03 EXCESS=0.0000E+00 OUTFLOW=0.1356E+03 BASIN STORAGE=0.1291E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	82.41	1860.00	2.99	30.00	82.41	1860.00	2.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2616E+03 EXCESS=0.0000E+00 OUTFLOW=0.2615E+03 BASIN STORAGE=0.3152E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	113.60	2100.00	2.90	30.00	113.60	2100.00	2.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4088E+03 EXCESS=0.0000E+00 OUTFLOW=0.4083E+03 BASIN STORAGE=0.6767E+00 PERCENT ERROR= 0.0

JKJT	MANE	8.44	146.59	2245.28	2.93	30.00	146.59	2250.00	2.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5308E+03 EXCESS=0.0000E+00 OUTFLOW=0.5307E+03 BASIN STORAGE=0.1212E+00 PERCENT ERROR= 0.0

JTJZ	MANE	4.46	175.10	2101.97	2.89	30.00	175.10	2100.00	2.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6001E+03 EXCESS=0.0000E+00 OUTFLOW=0.6000E+03 BASIN STORAGE=0.8300E-01 PERCENT ERROR= 0.0

JZJO	MANE	13.39	175.08	2115.42	2.89	30.00	175.06	2100.00	2.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6000E+03 EXCESS=0.0000E+00 OUTFLOW=0.5999E+03 BASIN STORAGE=0.2521E+00 PERCENT ERROR= 0.0

JPJO	MANE	8.91	60.73	1398.29	3.12	30.00	60.71	1410.00	3.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8806E+02 EXCESS=0.0000E+00 OUTFLOW=0.8806E+02 BASIN STORAGE=0.8100E-03 PERCENT ERROR= 0.0

JOJE	MANE	24.77	228.72	1981.25	2.98	30.00	228.70	1980.00	2.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7714E+03 EXCESS=0.0000E+00 OUTFLOW=0.7712E+03 BASIN STORAGE=0.5518E+00 PERCENT ERROR= 0.0

JEJY	MANE	8.60	439.10	2125.07	2.82	30.00	439.09	2130.00	2.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1664E+04 EXCESS=0.0000E+00 OUTFLOW=0.1664E+04 BASIN STORAGE=0.6628E+00 PERCENT ERROR= 0.0

JYJR	MANE	3.15	439.08	2129.56	2.82	30.00	439.08	2130.00	2.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1678E+04 EXCESS=0.0000E+00 OUTFLOW=0.1678E+04 BASIN STORAGE=0.2488E+00 PERCENT ERROR= 0.0

JQJR	MANE	17.95	95.00	1741.15	3.07	30.00	94.99	1740.00	3.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2014E+03 EXCESS=0.0000E+00 OUTFLOW=0.2014E+03 BASIN STORAGE=0.7086E-02 PERCENT ERROR= 0.0

JRJX	MANE	5.83	536.68	1983.72	2.86	30.00	536.67	1980.00	2.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1936E+04 EXCESS=0.0000E+00 OUTFLOW=0.1936E+04 BASIN STORAGE=0.4986E+00 PERCENT ERROR= 0.0

JXJS	MANE	2.92	536.64	1980.86	2.86	30.00	536.64	1980.00	2.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1944E+04 EXCESS=0.0000E+00 OUTFLOW=0.1944E+04 BASIN STORAGE=0.2497E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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**************************************
*                                    *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*             MAY 1991               *
*          VERSION 4.0.1E            *
*     Lahey F77L-EM/32 version 5.01  *
*       Dodson & Associates, Inc.    *
*  RUN DATE 12/10/98 TIME 16:51:49   *
**************************************
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**************************************
*                                    *
*   U.S. ARMY CORPS OF ENGINEERS     *
*   HYDROLOGIC ENGINEERING CENTER    *
*         609 SECOND STREET          *
*       DAVIS, CALIFORNIA 95616      *
*          (916) 551-1748            *
*                                    *
**************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   1  ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
   2  ID        NICK HOFFMAN, EIT E-7577
   3  ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
   4  ID      50 YEAR STORM EVENT WITH WETLAND INFLUENCE
      *
   5  IT      30  1DEC93    0000     300
   6  IO       5       1
      *
   7  KK     101         COMPUTE RUNOFF HYDROGRAPH
   8  PH                    0.77     1.6     2.93    3.28    3.56     4.1     4.5       5
   9  BA     0.4
  10  LS    0.55      87    3.39
  11  UC   18.72   15.13
      *
  12  KK    JAJB         ROUTE HYDROGRAPH
  13  RD    6700 0.00075    0.05             TRAP      10      0.3
      *
  14  KK     102         COMPUTE RUNOFF HYDROGRAPH
  15  BA       1
  16  LS    0.66      84    6.43
  17  UC   40.12    32.1
      *
  18  KK     100         COMPUTE RUNOFF HYDROGRAPH
  19  BA       1
  20  LS    0.62      85    4.57
  21  UC   29.01   23.21
      *
  22  KK      JB         COMBINE HYDROGRAPHS
  23  HC       3
      *
  24  KK    JBJC         ROUTE HYDROGRAPH
  25  RD    8200 0.00061    0.05             TRAP      10      0.3
      *
  26  KK     104         COMPUTE RUNOFF HYDROGRAPH
  27  BA    0.51
  28  LS    0.68      83   12.83
  29  UC   35.34   28.27
      *
  30  KK     103         COMPUTE RUNOFF HYDROGRAPH
  31  BA    0.48
  32  LS    0.66      84   18.23
  33  UC   20.71   16.57
      *
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Proposed 50yr Stoney Run 12/10/98

						PEAK		CELERITY
		(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	0.05	1.62	2.76	400.00	620.71	1953.57	3.29	2.42

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.05	1.62	30.00		620.68	1950.00	3.29	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2235E-04 EXCESS=0.0000E+00 OUTFLOW=0.2234E+04 BASIN STORAGE=0.2633E+00 PERCENT ERROR= 0.0

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HYDROGRAPH AT STATION JXJS

****

DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	*	2 DEC 1330	76	592.	*	4 DEC 0300	151	150.	*	5 DEC 1630	226	37.
1 DEC 0030	2	0.	*	2 DEC 1400	77	588.	*	4 DEC 0330	152	147.	*	5 DEC 1700	227	37.
1 DEC 0100	3	0.	*	2 DEC 1430	78	582.	*	4 DEC 0400	153	144.	*	5 DEC 1730	228	36.
1 DEC 0130	4	2.	*	2 DEC 1500	79	577.	*	4 DEC 0430	154	142.	*	5 DEC 1800	229	36.
1 DEC 0200	5	7.	*	2 DEC 1530	80	571.	*	4 DEC 0500	155	139.	*	5 DEC 1830	230	35.
1 DEC 0230	6	11.	*	2 DEC 1600	81	566.	*	4 DEC 0530	156	136.	*	5 DEC 1900	231	35.
1 DEC 0300	7	14.	*	2 DEC 1630	82	560.	*	4 DEC 0600	157	134.	*	5 DEC 1930	232	34.
1 DEC 0330	8	14.	*	2 DEC 1700	83	554.	*	4 DEC 0630	158	131.	*	5 DEC 2000	233	33.
1 DEC 0400	9	14.	*	2 DEC 1730	84	548.	*	4 DEC 0700	159	129.	*	5 DEC 2030	234	33.
1 DEC 0430	10	14.	*	2 DEC 1800	85	541.	*	4 DEC 0730	160	126.	*	5 DEC 2100	235	32.
1 DEC 0500	11	14.	*	2 DEC 1830	86	535.	*	4 DEC 0800	161	124.	*	5 DEC 2130	236	32.
1 DEC 0530	12	14.	*	2 DEC 1900	87	528.	*	4 DEC 0830	162	121.	*	5 DEC 2200	237	31.
1 DEC 0600	13	14.	*	2 DEC 1930	88	521.	*	4 DEC 0900	163	119.	*	5 DEC 2230	238	31.
1 DEC 0630	14	14.	*	2 DEC 2000	89	514.	*	4 DEC 0930	164	117.	*	5 DEC 2300	239	30.
1 DEC 0700	15	14.	*	2 DEC 2030	90	507.	*	4 DEC 1000	165	115.	*	5 DEC 2330	240	30.
1 DEC 0730	16	14.	*	2 DEC 2100	91	499.	*	4 DEC 1030	166	113.	*	6 DEC 0000	241	29.
1 DEC 0800	17	14.	*	2 DEC 2130	92	492.	*	4 DEC 1100	167	110.	*	6 DEC 0030	242	29.
1 DEC 0830	18	15.	*	2 DEC 2200	93	484.	*	4 DEC 1130	168	108.	*	6 DEC 0100	243	28.
1 DEC 0900	19	15.	*	2 DEC 2230	94	476.	*	4 DEC 1200	169	106.	*	6 DEC 0130	244	28.
1 DEC 0930	20	15.	*	2 DEC 2300	95	468.	*	4 DEC 1230	170	104.	*	6 DEC 0200	245	27.
1 DEC 1000	21	15.	*	2 DEC 2330	96	460.	*	4 DEC 1300	171	102.	*	6 DEC 0230	246	27.
1 DEC 1030	22	15.	*	3 DEC 0000	97	452.	*	4 DEC 1330	172	101.	*	6 DEC 0300	247	27.
1 DEC 1100	23	15.	*	3 DEC 0030	98	444.	*	4 DEC 1400	173	99.	*	6 DEC 0330	248	26.
1 DEC 1130	24	17.	*	3 DEC 0100	99	436.	*	4 DEC 1430	174	97.	*	6 DEC 0400	249	26.
1 DEC 1200	25	21.	*	3 DEC 0130	100	427.	*	4 DEC 1500	175	95.	*	6 DEC 0430	250	25.
1 DEC 1230	26	46.	*	3 DEC 0200	101	419.	*	4 DEC 1530	176	93.	*	6 DEC 0500	251	25.
1 DEC 1300	27	95.	*	3 DEC 0230	102	411.	*	4 DEC 1600	177	91.	*	6 DEC 0530	252	25.
1 DEC 1330	28	124.	*	3 DEC 0300	103	403.	*	4 DEC 1630	178	90.	*	6 DEC 0600	253	24.
1 DEC 1400	29	118.	*	3 DEC 0330	104	395.	*	4 DEC 1700	179	88.	*	6 DEC 0630	254	24.
1 DEC 1430	30	102.	*	3 DEC 0400	105	388.	*	4 DEC 1730	180	86.	*	6 DEC 0700	255	23.
1 DEC 1500	31	91.	*	3 DEC 0430	106	380.	*	4 DEC 1800	181	85.	*	6 DEC 0730	256	23.
1 DEC 1530	32	87.	*	3 DEC 0500	107	372.	*	4 DEC 1830	182	83.	*	6 DEC 0800	257	23.
1 DEC 1600	33	89.	*	3 DEC 0530	108	365.	*	4 DEC 1900	183	82.	*	6 DEC 0830	258	22.
1 DEC 1630	34	95.	*	3 DEC 0600	109	357.	*	4 DEC 1930	184	80.	*	6 DEC 0900	259	22.
1 DEC 1700	35	106.	*	3 DEC 0630	110	350.	*	4 DEC 2000	185	79.	*	6 DEC 0930	260	22.
1 DEC 1730	36	120.	*	3 DEC 0700	111	343.	*	4 DEC 2030	186	77.	*	6 DEC 1000	261	21.
1 DEC 1800	37	137.	*	3 DEC 0730	112	336.	*	4 DEC 2100	187	76.	*	6 DEC 1030	262	21.
1 DEC 1830	38	157.	*	3 DEC 0800	113	329.	*	4 DEC 2130	188	74.	*	6 DEC 1100	263	21.
1 DEC 1900	39	179.	*	3 DEC 0830	114	322.	*	4 DEC 2200	189	73.	*	6 DEC 1130	264	21.
1 DEC 1930	40	204.	*	3 DEC 0900	115	315.	*	4 DEC 2230	190	72.	*	6 DEC 1200	265	20.
1 DEC 2000	41	231.	*	3 DEC 0930	116	309.	*	4 DEC 2300	191	70.	*	6 DEC 1230	266	20.
1 DEC 2030	42	258.	*	3 DEC 1000	117	302.	*	4 DEC 2330	192	69.	*	6 DEC 1300	267	20.
1 DEC 2100	43	285.	*	3 DEC 1030	118	296.	*	5 DEC 0000	193	68.	*	6 DEC 1330	268	19.
1 DEC 2130	44	312.	*	3 DEC 1100	119	290.	*	5 DEC 0030	194	67.	*	6 DEC 1400	269	19.
1 DEC 2200	45	339.	*	3 DEC 1130	120	284.	*	5 DEC 0100	195	66.	*	6 DEC 1430	270	19.
1 DEC 2230	46	365.	*	3 DEC 1200	121	278.	*	5 DEC 0130	196	64.	*	6 DEC 1500	271	19.
1 DEC 2300	47	390.	*	3 DEC 1230	122	272.	*	5 DEC 0200	197	63.	*	6 DEC 1530	272	18.
1 DEC 2330	48	414.	*	3 DEC 1300	123	266.	*	5 DEC 0230	198	62.	*	6 DEC 1600	273	18.
2 DEC 0000	49	437.	*	3 DEC 1330	124	261.	*	5 DEC 0300	199	61.	*	6 DEC 1630	274	18.
2 DEC 0030	50	458.	*	3 DEC 1400	125	255.	*	5 DEC 0330	200	60.	*	6 DEC 1700	275	18.
2 DEC 0100	51	477.	*	3 DEC 1430	126	250.	*	5 DEC 0400	201	58.	*	6 DEC 1730	276	17.
2 DEC 0130	52	495.	*	3 DEC 1500	127	245.	*	5 DEC 0430	202	57.	*	6 DEC 1800	277	17.
2 DEC 0200	53	512.	*	3 DEC 1530	128	240.	*	5 DEC 0500	203	56.	*	6 DEC 1830	278	17.

2	DEC	0230	54	528.	*	3	DEC	1600	129	235.	*	5	DEC	0530	204	55.	*	6	DEC	1900	279	17.
2	DEC	0300	55	544.	*	3	DEC	1630	130	230.	*	5	DEC	0600	205	54.	*	6	DEC	1930	280	16.
2	DEC	0330	56	558.	*	3	DEC	1700	131	225.	*	5	DEC	0630	206	53.	*	6	DEC	2000	281	16.
2	DEC	0400	57	570.	*	3	DEC	1730	132	221.	*	5	DEC	0700	207	52.	*	6	DEC	2030	282	16.
2	DEC	0430	58	581.	*	3	DEC	1800	133	216.	*	5	DEC	0730	208	51.	*	6	DEC	2100	283	16.
2	DEC	0500	59	591.	*	3	DEC	1830	134	212.	*	5	DEC	0800	209	50.	*	6	DEC	2130	284	15.
2	DEC	0530	60	599.	*	3	DEC	1900	135	208.	*	5	DEC	0830	210	50.	*	6	DEC	2200	285	15.
2	DEC	0600	61	606.	*	3	DEC	1930	136	203.	*	5	DEC	0900	211	49.	*	6	DEC	2230	286	15.
2	DEC	0630	62	611.	*	3	DEC	2000	137	199.	*	5	DEC	0930	212	48.	*	6	DEC	2300	287	15.
2	DEC	0700	63	615.	*	3	DEC	2030	138	195.	*	5	DEC	1000	213	47.	*	6	DEC	2330	288	15.
2	DEC	0730	64	618.	*	3	DEC	2100	139	191.	*	5	DEC	1030	214	46.	*	7	DEC	0000	289	14.
2	DEC	0800	65	620.	*	3	DEC	2130	140	187.	*	5	DEC	1100	215	45.	*	7	DEC	0030	290	14.
2	DEC	0830	66	621.	*	3	DEC	2200	141	183.	*	5	DEC	1130	216	45.	*	7	DEC	0100	291	14.
2	DEC	0900	67	621.	*	3	DEC	2230	142	180.	*	5	DEC	1200	217	44.	*	7	DEC	0130	292	14.
2	DEC	0930	68	620.	*	3	DEC	2300	143	176.	*	5	DEC	1230	218	43.	*	7	DEC	0200	293	14.
2	DEC	1000	69	618.	*	3	DEC	2330	144	173.	*	5	DEC	1300	219	42.	*	7	DEC	0230	294	13.
2	DEC	1030	70	616.	*	4	DEC	0000	145	169.	*	5	DEC	1330	220	42.	*	7	DEC	0300	295	13.
2	DEC	1100	71	613.	*	4	DEC	0030	146	166.	*	5	DEC	1400	221	41.	*	7	DEC	0330	296	13.
2	DEC	1130	72	609.	*	4	DEC	0100	147	163.	*	5	DEC	1430	222	40.	*	7	DEC	0400	297	13.
2	DEC	1200	73	606.	*	4	DEC	0130	148	159.	*	5	DEC	1500	223	39.	*	7	DEC	0430	298	13.
2	DEC	1230	74	602.	*	4	DEC	0200	149	156.	*	5	DEC	1530	224	39.	*	7	DEC	0500	299	13.
2	DEC	1300	75	597.	*	4	DEC	0230	150	153.	*	5	DEC	1600	225	38.	*	7	DEC	0530	300	13.
					*						*						*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	149.50-HR
621.	32.50	(CFS)	616.	557.	337.	181.
		(INCHES)	0.449	1.623	2.948	3.286
		(AC-FT)	305.	1104.	2005.	2235.

CUMULATIVE AREA = 12.75 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	33.	29.50	32.	25.	12.	0.40		
ROUTED TO	JAJB	33.	30.50	32.	25.	12.	0.40		
HYDROGRAPH AT	102	37.	48.50	36.	34.	23.	1.00		
HYDROGRAPH AT	100	51.	38.50	51.	44.	26.	1.00		
3 COMBINED AT	JB	106.	37.50	105.	97.	61.	2.40		
ROUTED TO	JBJC	106.	38.50	105.	96.	61.	2.40		
HYDROGRAPH AT	104	22.	44.00	21.	19.	13.	0.51		
HYDROGRAPH AT	103	36.	31.00	35.	28.	14.	0.48		
ROUTED TO	JDJC	36.	32.50	35.	28.	14.	0.48		
HYDROGRAPH AT	105	46.	43.00	46.	41.	27.	1.03		
4 COMBINED AT	JC	199.	38.50	198.	182.	114.	4.42		
ROUTED TO	JCJF	199.	38.50	198.	182.	114.	4.42		
HYDROGRAPH AT	108	43.	26.50	42.	31.	13.	0.42		
2 COMBINED AT	JF	222.	35.50	220.	203.	127.	4.84		
ROUTED TO	JFJE	221.	36.50	220.	203.	127.	4.84		
HYDROGRAPH AT	110	29.	47.50	29.	26.	18.	0.69		
HYDROGRAPH AT	J4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	21.	28.00	21.	16.	7.	0.27		
ROUTED TO	JLJM	21.	30.00	21.	16.	7.	0.27		
HYDROGRAPH AT	125	17.	29.00	17.	13.	6.	0.22		
2 COMBINED AT	JM	39.	29.50	38.	29.	14.	0.49		
ROUTED TO	JMJU	39.	29.50	38.	29.	14.	0.49		
ROUTED TO	JU	37.	32.00	36.	28.	13.	0.49	1279.38	32.00
HYDROGRAPH AT	120	42.	42.00	41.	37.	23.	0.82		
ROUTED TO	JHJI	42.	42.50	41.	37.	23.	0.82		
HYDROGRAPH AT	121	69.	29.00	67.	52.	24.	0.82		
2 COMBINED AT	JI	96.	30.00	94.	82.	47.	1.64		
ROUTED TO	JIJJ	96.	30.50	94.	82.	47.	1.64		
HYDROGRAPH AT	122	46.	41.50	46.	41.	26.	1.00		
2 COMBINED AT	JJ	132.	33.50	131.	121.	73.	2.64		
ROUTED TO	JJJK	131.	34.50	131.	121.	73.	2.64		
HYDROGRAPH AT	123	40.	40.50	40.	35.	22.	0.76		
2 COMBINED AT	JK	169.	37.00	169.	155.	95.	3.40		
ROUTED TO	JKJT	169.	37.00	169.	155.	94.	3.40		

2 COMBINED AT	JT	203.	34.50	202.	183.	108.	3.89
ROUTED TO	JTJZ	203.	34.50	202.	183.	108.	3.89
ROUTED TO	JZJO	203.	35.00	202.	183.	108.	3.89
HYDROGRAPH AT	127	31.	36.00	31.	26.	15.	0.43
HYDROGRAPH AT	126	71.	23.00	67.	44.	17.	0.53
ROUTED TO	JPJO	71.	23.00	67.	44.	17.	0.53
3 COMBINED AT	JO	264.	32.50	262.	235.	139.	4.85
ROUTED TO	JOJE	264.	33.00	261.	235.	139.	4.85
4 COMBINED AT	JE	507.	35.00	504.	463.	288.	11.07
ROUTED TO	JEJY	507.	35.00	504.	463.	287.	11.07
HYDROGRAPH AT	131	71.	13.50	29.	8.	3.	0.10
2 COMBINED AT	JY	507.	35.00	504.	463.	288.	11.17
ROUTED TO	JYJR	507.	35.00	504.	463.	288.	11.17
HYDROGRAPH AT	106	110.	28.50	107.	83.	39.	1.23
ROUTED TO	JQJR	110.	29.00	107.	83.	39.	1.23
HYDROGRAPH AT	107	36.	26.00	34.	25.	11.	0.30
3 COMBINED AT	JR	621.	32.50	616.	557.	336.	12.70
ROUTED TO	JRJX	621.	32.50	616.	556.	336.	12.70
HYDROGRAPH AT	130	43.	13.50	17.	5.	2.	0.05
2 COMBINED AT	JX	621.	32.50	616.	557.	337.	12.75
ROUTED TO	JXJS	621.	32.50	616.	557.	337.	12.75
HYDROGRAPH AT	109	68.	24.00	64.	43.	17.	0.55
2 COMBINED AT	JS	658.	32.00	652.	588.	354.	13.30

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	32.64	1830.00	3.37	30.00	32.64	1830.00	3.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7187E+02 EXCESS=0.0000E+00 OUTFLOW=0.7184E+02 BASIN STORAGE=0.2251E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	105.57	2310.00	3.16	30.00	105.57	2310.00	3.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4043E+03 EXCESS=0.0000E+00 OUTFLOW=0.4039E+03 BASIN STORAGE=0.9880E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	35.58	1950.00	3.36	30.00	35.58	1950.00	3.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8597E+02 EXCESS=0.0000E+00 OUTFLOW=0.8596E+02 BASIN STORAGE=0.2942E-01 PERCENT ERROR= 0.0

JCJF	MANE	20.58	198.79	2325.61	3.19	30.00	198.78	2310.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7531E+03 EXCESS=0.0000E+00 OUTFLOW=0.7528E+03 BASIN STORAGE=0.5064E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	221.37	2190.00	3.22	30.00	221.37	2190.00	3.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8331E+03 EXCESS=0.0000E+00 OUTFLOW=0.8323E+03 BASIN STORAGE=0.1362E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	21.41	1800.00	3.06	30.00	21.41	1800.00	3.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4405E+02 EXCESS=0.0000E+00 OUTFLOW=0.4406E+02 BASIN STORAGE=0.5826E-02 PERCENT ERROR= 0.0

JMJU	MANE	12.20	38.69	1780.97	3.13	30.00	38.67	1770.00	3.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8169E+02 EXCESS=0.0000E+00 OUTFLOW=0.8169E+02 BASIN STORAGE=0.4297E-02 PERCENT ERROR= 0.0

JHJI	MANE	27.69	41.56	2547.05	3.56	30.00	41.56	2550.00	3.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1557E+03 EXCESS=0.0000E+00 OUTFLOW=0.1556E+03 BASIN STORAGE=0.1418E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	95.62	1830.00	3.44	30.00	95.62	1830.00	3.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3012E+03 EXCESS=0.0000E+00 OUTFLOW=0.3011E+03 BASIN STORAGE=0.3443E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	131.49	2070.00	3.35	30.00	131.49	2070.00	3.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4719E+03 EXCESS=0.0000E+00 OUTFLOW=0.4713E+03 BASIN STORAGE=0.7409E+00 PERCENT ERROR= 0.0

JKJT	MANE	8.04	169.44	2228.23	3.38	30.00	169.43	2220.00	3.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6127E+03 EXCESS=0.0000E+00 OUTFLOW=0.6127E+03 BASIN STORAGE=0.1326E+00 PERCENT ERROR= 0.0

JTJZ	MANE	4.23	202.89	2075.37	3.34	30.00	202.88	2070.00	3.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6933E+03 EXCESS=0.0000E+00 OUTFLOW=0.6933E+03 BASIN STORAGE=0.9019E-01 PERCENT ERROR= 0.0

JZJO	MANE	12.68	202.87	2079.66	3.34	30.00	202.85	2100.00	3.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6933E+03 EXCESS=0.0000E+00 OUTFLOW=0.6932E+03 BASIN STORAGE=0.2727E+00 PERCENT ERROR= 0.0

JPJO	MANE	8.62	71.36	1379.62	3.58	30.00	71.36	1380.00	3.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1013E+03 EXCESS=0.0000E+00 OUTFLOW=0.1013E+03 BASIN STORAGE=0.8111E-03 PERCENT ERROR= 0.0

JOJE	MANE	23.46	264.07	1970.34	3.43	30.00	264.00	1980.00	3.43

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8886E+03 EXCESS=0.0000E+00 OUTFLOW=0.8884E+03 BASIN STORAGE=0.5967E+00 PERCENT ERROR= 0.0

JEJY	MANE	8.15	507.19	2102.00	3.24	30.00	507.18	2100.00	3.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1913E+04 EXCESS=0.0000E+00 OUTFLOW=0.1912E+04 BASIN STORAGE=0.6994E+00 PERCENT ERROR= 0.0

JYJR	MANE	2.98	507.16	2101.69	3.24	30.00	507.16	2100.00	3.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1929E+04 EXCESS=0.0000E+00 OUTFLOW=0.1929E+04 BASIN STORAGE=0.2624E+00 PERCENT ERROR= 0.0

JQJR	MANE	17.08	110.25	1725.30	3.54	30.00	110.23	1740.00	3.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2320E+03 EXCESS=0.0000E+00 OUTFLOW=0.2320E+03 BASIN STORAGE=0.6218E-02 PERCENT ERROR= 0.0

JRJX	MANE	5.52	620.78	1953.45	3.29	30.00	620.74	1950.00	3.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2226E+04 EXCESS=0.0000E+00 OUTFLOW=0.2225E+04 BASIN STORAGE=0.5259E+00 PERCENT ERROR= 0.0

JXJS	MANE	2.76	620.71	1953.57	3.29	30.00	620.68	1950.00	3.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2235E+04 EXCESS=0.0000E+00 OUTFLOW=0.2234E+04 BASIN STORAGE=0.2633E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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**************************************
*                                    *
*  FLOOD HYDROGRAPH PACKAGE (HEC-1)  *
*            MAY 1991                *
*         VERSION 4.0.1E             *
*    Lahey F77L-EM/32 version 5.01   *
*      Dodson & Associates, Inc.     *
* RUN DATE 12/10/98 TIME 16:59:35    *
**************************************
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**************************************
*                                    *
*   U.S. ARMY CORPS OF ENGINEERS     *
*   HYDROLOGIC ENGINEERING CENTER    *
*        609 SECOND STREET           *
*      DAVIS, CALIFORNIA 95616       *
*          (916) 551-1748            *
*                                    *
**************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1     ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
    2     ID        NICK HOFFMAN, EIT E-7577
    3     ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
    4     ID     100 YEAR STORM EVENT WITH WETLAND INFLUENCE
          *
    5     IT      30  1DEC98    0000     300
    6     IO       5       1
          *

    7     KK     101         COMPUTE RUNOFF HYDROGRAPH
    8     PH                     0.85     1.8     3.25    3.65       4     4.4     5.1     5.6
    9     BA     0.4
   10     LS    0.55       87     3.39
   11     UC   18.72    15.13
          *

   12     KK    JAJB         ROUTE HYDROGRAPH
   13     RD    6700 0.00075     0.05             TRAP      10     0.3
          *

   14     KK     102         COMPUTE RUNOFF HYDROGRAPH
   15     BA       1
   16     LS    0.66       84     6.43
   17     UC   40.12     32.1
          *

   18     KK     100         COMPUTE RUNOFF HYDROGRAPH
   19     BA       1
   20     LS    0.62       85     4.57
   21     UC   29.01    23.21
          *

   22     KK      JB         COMBINE HYDROGRAPHS
   23     HC       3

   24     KK    JBJC         ROUTE HYDROGRAPH
   25     RD    8200 0.00061     0.05             TRAP      10     0.3
          *

   26     KK     104         COMPUTE RUNOFF HYDROGRAPH
   27     BA    0.51
   28     LS    0.68       83    12.83
   29     UC   35.34    28.27
          *

   30     KK     103         COMPUTE RUNOFF HYDROGRAPH
   31     BA    0.48
   32     LS    0.66       84    18.23
   33     UC   20.71    16.57
          *
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Proposed 100yr Stoney Run 12/10/98

		(MIN)	(FT)	(CFS)	PEAK (MIN)	(IN)	CELERITY (FPS)
MAIN	0.05	1.62	2.60	400.00	724.13	1950.95	3.81	2.56

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.05	1.62	30.00		724.12	1950.00	3.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2594E+04 EXCESS=0.0000E+00 OUTFLOW=0.2594E+04 BASIN STORAGE=0.2810E+00 PERCENT ERROR= 0.0

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HYDROGRAPH AT STATION JXJS

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DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	*	2 DEC 1330	76	689.	*	4 DEC 0300	151	174.	*	5 DEC 1630	226	43.
1 DEC 0030	2	0.	*	2 DEC 1400	77	683.	*	4 DEC 0330	152	170.	*	5 DEC 1700	227	42.
1 DEC 0100	3	0.	*	2 DEC 1430	78	677.	*	4 DEC 0400	153	167.	*	5 DEC 1730	228	41.
1 DEC 0130	4	2.	*	2 DEC 1500	79	671.	*	4 DEC 0430	154	164.	*	5 DEC 1800	229	41.
1 DEC 0200	5	7.	*	2 DEC 1530	80	664.	*	4 DEC 0500	155	160.	*	5 DEC 1830	230	40.
1 DEC 0230	6	12.	*	2 DEC 1600	81	658.	*	4 DEC 0530	156	157.	*	5 DEC 1900	231	39.
1 DEC 0300	7	14.	*	2 DEC 1630	82	651.	*	4 DEC 0600	157	154.	*	5 DEC 1930	232	39.
1 DEC 0330	8	14.	*	2 DEC 1700	83	644.	*	4 DEC 0630	158	151.	*	5 DEC 2000	233	38.
1 DEC 0400	9	14.	*	2 DEC 1730	84	636.	*	4 DEC 0700	159	148.	*	5 DEC 2030	234	38.
1 DEC 0430	10	14.	*	2 DEC 1800	85	629.	*	4 DEC 0730	160	146.	*	5 DEC 2100	235	37.
1 DEC 0500	11	14.	*	2 DEC 1830	86	621.	*	4 DEC 0800	161	143.	*	5 DEC 2130	236	36.
1 DEC 0530	12	14.	*	2 DEC 1900	87	613.	*	4 DEC 0830	162	140.	*	5 DEC 2200	237	36.
1 DEC 0600	13	14.	*	2 DEC 1930	88	605.	*	4 DEC 0900	163	137.	*	5 DEC 2230	238	35.
1 DEC 0630	14	14.	*	2 DEC 2000	89	597.	*	4 DEC 0930	164	135.	*	5 DEC 2300	239	34.
1 DEC 0700	15	14.	*	2 DEC 2030	90	588.	*	4 DEC 1000	165	132.	*	5 DEC 2330	240	34.
1 DEC 0730	16	14.	*	2 DEC 2100	91	579.	*	4 DEC 1030	166	130.	*	6 DEC 0000	241	33.
1 DEC 0800	17	14.	*	2 DEC 2130	92	571.	*	4 DEC 1100	167	127.	*	6 DEC 0030	242	33.
1 DEC 0830	18	15.	*	2 DEC 2200	93	562.	*	4 DEC 1130	168	125.	*	6 DEC 0100	243	32.
1 DEC 0900	19	15.	*	2 DEC 2230	94	552.	*	4 DEC 1200	169	123.	*	6 DEC 0130	244	32.
1 DEC 0930	20	15.	*	2 DEC 2300	95	543.	*	4 DEC 1230	170	120.	*	6 DEC 0200	245	31.
1 DEC 1000	21	15.	*	2 DEC 2330	96	534.	*	4 DEC 1300	171	118.	*	6 DEC 0230	246	31.
1 DEC 1030	22	15.	*	3 DEC 0000	97	524.	*	4 DEC 1330	172	116.	*	6 DEC 0300	247	30.
1 DEC 1100	23	16.	*	3 DEC 0030	98	515.	*	4 DEC 1400	173	114.	*	6 DEC 0330	248	30.
1 DEC 1130	24	18.	*	3 DEC 0100	99	505.	*	4 DEC 1430	174	111.	*	6 DEC 0400	249	29.
1 DEC 1200	25	24.	*	3 DEC 0130	100	496.	*	4 DEC 1500	175	109.	*	6 DEC 0430	250	29.
1 DEC 1230	26	54.	*	3 DEC 0200	101	486.	*	4 DEC 1530	176	107.	*	6 DEC 0500	251	28.
1 DEC 1300	27	111.	*	3 DEC 0230	102	477.	*	4 DEC 1600	177	105.	*	6 DEC 0530	252	28.
1 DEC 1330	28	144.	*	3 DEC 0300	103	468.	*	4 DEC 1630	178	103.	*	6 DEC 0600	253	28.
1 DEC 1400	29	136.	*	3 DEC 0330	104	459.	*	4 DEC 1700	179	101.	*	6 DEC 0630	254	27.
1 DEC 1430	30	117.	*	3 DEC 0400	105	449.	*	4 DEC 1730	180	99.	*	6 DEC 0700	255	27.
1 DEC 1500	31	102.	*	3 DEC 0430	106	440.	*	4 DEC 1800	181	98.	*	6 DEC 0730	256	26.
1 DEC 1530	32	97.	*	3 DEC 0500	107	431.	*	4 DEC 1830	182	96.	*	6 DEC 0800	257	26.
1 DEC 1600	33	100.	*	3 DEC 0530	108	423.	*	4 DEC 1900	183	94.	*	6 DEC 0830	258	26.
1 DEC 1630	34	110.	*	3 DEC 0600	109	414.	*	4 DEC 1930	184	92.	*	6 DEC 0900	259	25.
1 DEC 1700	35	124.	*	3 DEC 0630	110	405.	*	4 DEC 2000	185	91.	*	6 DEC 0930	260	25.
1 DEC 1730	36	142.	*	3 DEC 0700	111	397.	*	4 DEC 2030	186	89.	*	6 DEC 1000	261	24.
1 DEC 1800	37	162.	*	3 DEC 0730	112	389.	*	4 DEC 2100	187	87.	*	6 DEC 1030	262	24.
1 DEC 1830	38	187.	*	3 DEC 0800	113	381.	*	4 DEC 2130	188	86.	*	6 DEC 1100	263	24.
1 DEC 1900	39	213.	*	3 DEC 0830	114	373.	*	4 DEC 2200	189	84.	*	6 DEC 1130	264	23.
1 DEC 1930	40	242.	*	3 DEC 0900	115	365.	*	4 DEC 2230	190	83.	*	6 DEC 1200	265	23.
1 DEC 2000	41	273.	*	3 DEC 0930	116	357.	*	4 DEC 2300	191	81.	*	6 DEC 1230	266	23.
1 DEC 2030	42	304.	*	3 DEC 1000	117	350.	*	4 DEC 2330	192	80.	*	6 DEC 1300	267	22.
1 DEC 2100	43	336.	*	3 DEC 1030	118	342.	*	5 DEC 0000	193	78.	*	6 DEC 1330	268	22.
1 DEC 2130	44	368.	*	3 DEC 1100	119	335.	*	5 DEC 0030	194	77.	*	6 DEC 1400	269	22.
1 DEC 2200	45	399.	*	3 DEC 1130	120	328.	*	5 DEC 0100	195	75.	*	6 DEC 1430	270	21.
1 DEC 2230	46	430.	*	3 DEC 1200	121	321.	*	5 DEC 0130	196	74.	*	6 DEC 1500	271	21.
1 DEC 2300	47	459.	*	3 DEC 1230	122	315.	*	5 DEC 0200	197	73.	*	6 DEC 1530	272	21.
1 DEC 2330	48	487.	*	3 DEC 1300	123	308.	*	5 DEC 0230	198	71.	*	6 DEC 1600	273	20.
2 DEC 0000	49	514.	*	3 DEC 1330	124	302.	*	5 DEC 0300	199	70.	*	6 DEC 1630	274	20.
2 DEC 0030	50	538.	*	3 DEC 1400	125	295.	*	5 DEC 0330	200	68.	*	6 DEC 1700	275	20.
2 DEC 0100	51	560.	*	3 DEC 1430	126	289.	*	5 DEC 0400	201	67.	*	6 DEC 1730	276	20.
2 DEC 0130	52	581.	*	3 DEC 1500	127	283.	*	5 DEC 0430	202	66.	*	6 DEC 1800	277	19.
2 DEC 0200	53	601.	*	3 DEC 1530	128	277.	*	5 DEC 0500	203	65.	*	6 DEC 1830	278	19.

2 DEC 0230	54	620.	*	3 DEC 1600	129	272.	*	5 DEC 0530	204	64.	*	6 DEC 1900	279	19.
2 DEC 0300	55	638.	*	3 DEC 1630	130	266.	*	5 DEC 0600	205	62.	*	6 DEC 1930	280	18.
2 DEC 0330	56	654.	*	3 DEC 1700	131	261.	*	5 DEC 0630	206	61.	*	6 DEC 2000	281	18.
2 DEC 0400	57	668.	*	3 DEC 1730	132	255.	*	5 DEC 0700	207	60.	*	6 DEC 2030	282	18.
2 DEC 0430	58	681.	*	3 DEC 1800	133	250.	*	5 DEC 0730	208	59.	*	6 DEC 2100	283	17.
2 DEC 0500	59	692.	*	3 DEC 1830	134	245.	*	5 DEC 0800	209	58.	*	6 DEC 2130	284	17.
2 DEC 0530	60	701.	*	3 DEC 1900	135	240.	*	5 DEC 0830	210	57.	*	6 DEC 2200	285	17.
2 DEC 0600	61	709.	*	3 DEC 1930	136	235.	*	5 DEC 0900	211	56.	*	6 DEC 2230	286	17.
2 DEC 0630	62	715.	*	3 DEC 2000	137	230.	*	5 DEC 0930	212	55.	*	6 DEC 2300	287	16.
2 DEC 0700	63	719.	*	3 DEC 2030	138	226.	*	5 DEC 1000	213	54.	*	6 DEC 2330	288	16.
2 DEC 0730	64	722.	*	3 DEC 2100	139	221.	*	5 DEC 1030	214	53.	*	7 DEC 0000	289	16.
2 DEC 0800	65	724.	*	3 DEC 2130	140	216.	*	5 DEC 1100	215	52.	*	7 DEC 0030	290	16.
2 DEC 0830	66	724.	*	3 DEC 2200	141	212.	*	5 DEC 1130	216	51.	*	7 DEC 0100	291	16.
2 DEC 0900	67	724.	*	3 DEC 2230	142	208.	*	5 DEC 1200	217	50.	*	7 DEC 0130	292	15.
2 DEC 0930	68	722.	*	3 DEC 2300	143	204.	*	5 DEC 1230	218	49.	*	7 DEC 0200	293	15.
2 DEC 1000	69	720.	*	3 DEC 2330	144	200.	*	5 DEC 1300	219	48.	*	7 DEC 0230	294	15.
2 DEC 1030	70	717.	*	4 DEC 0000	145	196.	*	5 DEC 1330	220	48.	*	7 DEC 0300	295	15.
2 DEC 1100	71	714.	*	4 DEC 0030	146	192.	*	5 DEC 1400	221	47.	*	7 DEC 0330	296	15.
2 DEC 1130	72	710.	*	4 DEC 0100	147	188.	*	5 DEC 1430	222	46.	*	7 DEC 0400	297	14.
2 DEC 1200	73	705.	*	4 DEC 0130	148	184.	*	5 DEC 1500	223	45.	*	7 DEC 0430	298	14.
2 DEC 1230	74	700.	*	4 DEC 0200	149	181.	*	5 DEC 1530	224	44.	*	7 DEC 0500	299	14.
2 DEC 1300	75	695.	*	4 DEC 0230	150	177.	*	5 DEC 1600	225	44.	*	7 DEC 0530	300	14.
			*				*				*			

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
724.	32.50	(CFS)	718.	649.	392.	210.
		(INCHES)	0.524	1.892	3.430	3.815
		(AC-FT)	356.	1287.	2332.	2594.

CUMULATIVE AREA = 12.75 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	38.	29.50	37.	29.	14.	0.40		
ROUTED TO	JAJB	38.	30.50	37.	29.	14.	0.40		
HYDROGRAPH AT	102	43.	48.50	43.	40.	27.	1.00		
HYDROGRAPH AT	100	60.	38.50	60.	52.	31.	1.00		
3 COMBINED AT	JB	124.	37.50	123.	113.	72.	2.40		
ROUTED TO	JBJC	124.	38.50	123.	113.	72.	2.40		
HYDROGRAPH AT	104	25.	44.00	25.	23.	15.	0.51		
HYDROGRAPH AT	103	42.	31.00	41.	33.	16.	0.48		
ROUTED TO	JDJC	42.	32.50	41.	33.	16.	0.48		
HYDROGRAPH AT	105	54.	43.00	54.	48.	31.	1.03		
4 COMBINED AT	JC	233.	38.50	232.	213.	134.	4.42		
ROUTED TO	JCJF	233.	38.50	232.	213.	134.	4.42		
HYDROGRAPH AT	108	50.	26.50	48.	36.	16.	0.42		
2 COMBINED AT	JF	259.	35.50	258.	238.	149.	4.84		
ROUTED TO	JFJE	259.	36.50	258.	238.	148.	4.84		
HYDROGRAPH AT	110	33.	47.50	33.	31.	21.	0.69		
HYDROGRAPH AT	J4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	25.	28.00	24.	19.	9.	0.27		
ROUTED TO	JLJM	25.	30.00	24.	19.	9.	0.27		
HYDROGRAPH AT	125	20.	29.00	20.	15.	7.	0.22		
2 COMBINED AT	JM	45.	29.50	44.	34.	16.	0.49		
ROUTED TO	JMJU	45.	29.50	44.	34.	16.	0.49		
ROUTED TO	JU	44.	31.50	42.	33.	16.	0.49	1279.44	31.50
HYDROGRAPH AT	120	48.	42.00	48.	43.	27.	0.82		
ROUTED TO	JHJI	48.	42.50	48.	43.	27.	0.82		
HYDROGRAPH AT	121	80.	28.50	78.	60.	28.	0.82		
2 COMBINED AT	JI	112.	30.00	110.	96.	55.	1.64		
ROUTED TO	JIJJ	112.	30.50	109.	96.	55.	1.64		
HYDROGRAPH AT	122	54.	41.50	54.	48.	30.	1.00		
2 COMBINED AT	JJ	154.	33.50	153.	141.	85.	2.64		
ROUTED TO	JJJK	153.	34.50	153.	141.	85.	2.64		
HYDROGRAPH AT	123	47.	40.50	46.	41.	25.	0.76		
2 COMBINED AT	JK	198.	37.00	197.	181.	110.	3.40		
ROUTED TO	JKJT	198.	37.00	197.	181.	110.	3.40		

2 COMBINED AT	JT	237.	34.50	236.	213.	126.	3.89
ROUTED TO	JTJZ	237.	34.50	236.	213.	126.	3.89
ROUTED TO	JZJO	237.	34.50	236.	213.	126.	3.89
HYDROGRAPH AT	127	36.	36.00	35.	30.	17.	0.43
HYDROGRAPH AT	126	83.	23.00	78.	51.	20.	0.53
ROUTED TO	JPJO	83.	23.00	78.	51.	20.	0.53
3 COMBINED AT	JO	308.	32.50	305.	274.	161.	4.85
ROUTED TO	JOJE	308.	32.50	305.	274.	161.	4.85
4 COMBINED AT	JE	591.	35.00	588.	539.	335.	11.07
ROUTED TO	JEJY	591.	35.00	588.	539.	335.	11.07
HYDROGRAPH AT	131	83.	13.50	34.	10.	3.	0.10
2 COMBINED AT	JY	591.	35.00	588.	539.	335.	11.17
ROUTED TO	JYJR	591.	35.00	588.	539.	335.	11.17
HYDROGRAPH AT	106	128.	28.50	125.	96.	45.	1.23
ROUTED TO	JQJR	128.	29.00	125.	96.	45.	1.23
HYDROGRAPH AT	107	41.	26.00	39.	29.	12.	0.30
3 COMBINED AT	JR	724.	32.50	718.	649.	391.	12.70
ROUTED TO	JRJX	724.	32.50	718.	649.	391.	12.70
HYDROGRAPH AT	130	50.	13.50	19.	5.	2.	0.05
2 COMBINED AT	JX	724.	32.50	718.	649.	392.	12.75
ROUTED TO	JXJS	724.	32.50	718.	649.	392.	12.75
HYDROGRAPH AT	109	79.	24.00	75.	51.	20.	0.55
2 COMBINED AT	JS	768.	31.50	761.	685.	412.	13.30

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	38.13	1830.00	3.93	30.00	38.13	1830.00	3.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8389E+02 EXCESS=0.0000E+00 OUTFLOW=0.8386E+02 BASIN STORAGE=0.2308E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	123.82	2310.00	3.70	30.00	123.82	2310.00	3.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4745E+03 EXCESS=0.0000E+00 OUTFLOW=0.4739E+03 BASIN STORAGE=0.1100E+01 PERCENT ERROR= -0.1

JDJC	MANE	30.00	41.51	1950.00	3.91	30.00	41.51	1950.00	3.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1002E+03 EXCESS=0.0000E+00 OUTFLOW=0.1002E+03 BASIN STORAGE=0.2980E-01 PERCENT ERROR= 0.0

JCJF	MANE	19.53	232.78	2323.97	3.74	30.00	232.77	2310.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8823E+03 EXCESS=0.0000E+00 OUTFLOW=0.8820E+03 BASIN STORAGE=0.5607E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	259.01	2190.00	3.77	30.00	259.01	2190.00	3.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9751E+03 EXCESS=0.0000E+00 OUTFLOW=0.9742E+03 BASIN STORAGE=0.1512E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	25.16	1800.00	3.59	30.00	25.16	1800.00	3.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5172E+02 EXCESS=0.0000E+00 OUTFLOW=0.5173E+02 BASIN STORAGE=0.5927E-02 PERCENT ERROR= 0.0

JMJU	MANE	11.51	45.44	1784.12	3.67	30.00	45.42	1770.00	3.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9579E+02 EXCESS=0.0000E+00 OUTFLOW=0.9579E+02 BASIN STORAGE=0.4219E-02 PERCENT ERROR= 0.0

JHJI	MANE	26.36	48.17	2556.74	4.12	30.00	48.17	2550.00	4.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1805E+03 EXCESS=0.0000E+00 OUTFLOW=0.1804E+03 BASIN STORAGE=0.1552E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	111.54	1830.00	4.00	30.00	111.54	1830.00	4.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3503E+03 EXCESS=0.0000E+00 OUTFLOW=0.3501E+03 BASIN STORAGE=0.3787E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	153.50	2070.00	3.90	30.00	153.50	2070.00	3.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5501E+03 EXCESS=0.0000E+00 OUTFLOW=0.5494E+03 BASIN STORAGE=0.8193E+00 PERCENT ERROR= 0.0

JKJT	MANE	7.64	197.63	2216.53	3.94	30.00	197.63	2220.00	3.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7142E+03 EXCESS=0.0000E+00 OUTFLOW=0.7141E+03 BASIN STORAGE=0.1468E+00 PERCENT ERROR= 0.0

JTJZ	MANE	3.99	237.02	2067.53	3.90	30.00	237.01	2070.00	3.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8089E+03 EXCESS=0.0000E+00 OUTFLOW=0.8088E+03 BASIN STORAGE=0.9932E-01 PERCENT ERROR= 0.0

JZJO	MANE	11.97	237.00	2071.54	3.90	30.00	237.00	2070.00	3.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8089E-03 EXCESS=0.0000E+00 OUTFLOW=0.8088E+03 BASIN STORAGE=0.2998E+00 PERCENT ERROR= 0.0

JPJO	MANE	8.37	82.62	1381.65	4.16	30.00	82.61	1380.00	4.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1175E+03 EXCESS=0.0000E+00 OUTFLOW=0.1175E+03 BASIN STORAGE=0.7752E-03 PERCENT ERROR= 0.0

JOJE	MANE	22.14	307.79	1970.19	4.00	30.00	307.78	1950.00	4.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1034E+04 EXCESS=0.0000E+00 OUTFLOW=0.1034E+04 BASIN STORAGE=0.6532E+00 PERCENT ERROR= 0.0

JEJY	MANE	7.69	591.22	2099.12	3.76	30.00	591.21	2100.00	3.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2220E+04 EXCESS=0.0000E+00 OUTFLOW=0.2220E+04 BASIN STORAGE=0.7468E+00 PERCENT ERROR= 0.0

JYJR	MANE	2.81	591.20	2099.98	3.76	30.00	591.20	2100.00	3.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2240E+04 EXCESS=0.0000E+00 OUTFLOW=0.2240E+04 BASIN STORAGE=0.2800E+00 PERCENT ERROR= 0.0

JQJR	MANE	16.24	128.36	1737.66	4.11	30.00	128.33	1740.00	4.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2697E+03 EXCESS=0.0000E+00 OUTFLOW=0.2697E+03 BASIN STORAGE=0.7322E-02 PERCENT ERROR= 0.0

JRJX	MANE	5.20	724.18	1950.88	3.81	30.00	724.17	1950.00	3.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2584E+04 EXCESS=0.0000E+00 OUTFLOW=0.2583E+04 BASIN STORAGE=0.5612E+00 PERCENT ERROR= 0.0

JXJS	MANE	2.60	724.13	1950.95	3.81	30.00	724.12	1950.00	3.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2594E+04 EXCESS=0.0000E+00 OUTFLOW=0.2594E+04 BASIN STORAGE=0.2810E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY  1991                 *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  12/11/98  TIME  08:28:44   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1 ID   STONEY RUN EXISTING CONDITIONS SPN # 9083
    2 ID   NICK HOFFMAN, EIT E-7577
    3 ID   SCHMUCHER PAUL NOHR AND ASSOCIATES
    4 ID   5 YEAR STORM EVENT WITH WETLAND INFLUENCE
      *
    5 IT    30  1DEC98    0000     300
    6 IO     5       1
      *
    7 KK   101        COMPUTE RUNOFF HYDROGRAPH
    8 PH                  0.24    0.77    1.34     2.1    2.25    2.51    2.92    3.32
    9 BA   0.4
   10 LS   0.55      87    3.39
   11 UC  18.72   15.13
      *
   12 KK   JAJB       ROUTE HYDROGRAPH
   13 RD   6700 0.00075    0.05            TRAP      10     0.3
      *
   14 KK   102        COMPUTE RUNOFF HYDROGRAPH
   15 BA     1
   16 LS   0.66      84    6.43
   17 UC  40.12    32.1
      *
   18 KK   100        COMPUTE RUNOFF HYDROGRAPH
   19 BA     1
   20 LS   0.62      85    4.57
   21 UC  29.01   23.21
      *
   22 KK    JB        COMBINE HYDROGRAPHS
   23 HC     3
   24 KK   JBJC       ROUTE HYDROGRAPH
   25 RD   8200 0.00061    0.05            TRAP      10     0.3
      *
   26 KK   104        COMPUTE RUNOFF HYDROGRAPH
   27 BA   0.51
   28 LS   0.68      83   12.83
   29 UC  35.34   28.27
      *
   30 KK   103        COMPUTE RUNOFF HYDROGRAPH
   31 BA   0.48
   32 LS   0.66      84   18.23
   33 UC  20.71   16.57
      *
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  34      KK    JDJC        ROUTE HYDROGRAPH
  35      RD   11000 0.00164    0.06            TRAP      10     0.3
          *
  36      KK     105        COMPUTE RUNOFF HYDROGRAPH
  37      BA    1.03
  38      LS    0.51      85    3.58
  39      UC   34.13   27.31
          *
  40      KK      JC        COMBINE HYDROGRAPHS
  41      HC       4
  42      KK    JCJE        ROUTE HYDROGRAPH
  43      RD   11000 0.00118    0.07            TRAP      10     0.3
          *
  44      KK     108        COMPUTE RUNOFF HYDROGRAPH
  45      BA    0.53
  46      LS    0.65      82   13.58
  47      UC   36.18   28.94
          *
  48      KK     124        COMPUTE RUNOFF HYDROGRAPH
  49      BA    0.27
  50      LS    0.49      80    8.28
  51      UC   17.42   13.94
          *
  52      KK    JLJM        ROUTE HYDROGRAPH
  53      RD
  54      RC    0.06    0.06    0.06    3200  .00094
  55      RX       0      25      44      80     100     121     165     292
  56      RY  1284.8  1284.4    1284 1282.85 1282.84 1283.19  1283.1    1284
          *
  57      KK     125        COMPUTE RUNOFF HYDROGRAPH
  58      BA    0.22
  59      LS    0.72      80   11.12
  60      UC    18.5    14.8
          *
  61      KK      JM        COMBINE HYDROGRAPHS
  62      HC       2
  63      KK    JMJN        ROUTE HYDROGRAPH
  64      RD
  65      RC    0.06    0.06    0.06    1500 0.00133
  66      RX       0       5      23      77      80     131     155     218
  67      RY  1283.8    1283  1283.4  1281.6  1281.6  1283.1  1283.2  1283.5
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  68      KK     120        COMPUTE RUNOFF HYDROGRAPH
  69      BA    0.82
  70      LS    0.49      88     9.41
  71      UC    33.2    26.56
          *

  72      KK    JHJI        ROUTE HYDROGRAPH
  73      RD    3300 0.00182     0.05            TRAP      10      0.3
          *

  74      KK     121        COMPUTE RUNOFF HYDROGRAPH
  75      BA    0.82
  76      LS    0.51      85     7.12
  77      UC   18.05    14.44
          *

  78      KK      JI        COMBINE HYDROGRAPHS
  79      HC       2

  80      KK    JIJJ        ROUTE HYDROGRAPH
  81      RD    6300 0.00095     0.05            TRAP      10      0.3
          *

  82      KK     122        COMPUTE RUNOFF HYDROGRAPH
  83      BA    1.00
  84      LS    0.48      84     3.43
  85      UC   32.63    26.11
          *

  86      KK      JJ        COMBINE HYDROGRAPHS
  87      HC       2

  88      KK    JJJK        ROUTE HYDROGRAPH
  89      RD    6000  0.0005     0.06            TRAP      10      0.3
          *

  90      KK     123        COMPUTE RUNOFF HYDROGRAPH
  91      BA    0.76
  92      LS    0.54      85     1.87
  93      UC   31.11    24.89
          *

  94      KK      JK        COMBINE HYDROGRAPHS
  95      HC       2

  96      KK    JKJN        ROUTE HYDROGRAPH
  97      RD    1000   0.003     0.06            TRAP      10      0.3
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  98      KK      JN        COMBINE HYDROGRAPHS
  99      HC       2

 100      KK    JNJZ        ROUTE HYDROGRAPH
 101      RD
 102      RC    0.06    0.06    0.06    1000  0.0008
 103      RX       0      43      72     104   104.1     143     150     232
 104      RY    1282  1281.8  1281.6  1280.1  1280.1  1281.8  1281.8  1281.7

 105      KK    JZJO        ROUTE HYDROGRAPH
 106      RD
 107      RC    0.07    0.06    0.08    1500  0.0008
 108      RX       0      31      71      99    99.1     124     159     224
 109      RY  1281.3    1281  1280.6  1277.8  1277.8  1279.4  1279.4  1280.6
          *

 110      KK     127        COMPUTE RUNOFF HYDROGRAPH
 111      BA    0.46
 112      LS    0.66      77    2.45
 113      UC   26.47   21.18
          *

 114      KK      JO        COMBINE HYDROGRAPHS
 115      HC       2

 116      KK    JOJE        ROUTE HYDROGRAPH
 117      RD
 118      RC   0.045    0.06    0.08    2700 0.00185
 119      RX       0      20      50      88     135     156     172     250
 120      RY  1281.2    1281  1280.7  1277.7  1276.4  1277.4  1276.9    1280
          *

 121      KK      JE        COMBINE HYDROGRAPHS
 122      HC       3

 123      KK    JEJY        ROUTE HYDROGRAPH
 124      RD
 125      RC    0.13    0.12    0.16    1200 0.00083
 126      RX       0      60     221     284     309     365     377     397
 127      RY    1281    1277    1276    1274  1273.7  1274.6    1278  1281.2
          *

 128      KK     131        COMPUTE RUNOFF HYDROGRAPH
 129      BA     0.1
 130      LS    0.65      85       0
 131      UC    1.32    1.05
          *

 132      KK      JY        COMBINE HYDROGRAPHS
 133      HC       2
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  134     KK    JYJR        ROUTE HYDROGRAPH
  135     RD
  136     RC    0.04   0.035    0.04     400 0.00083
  137     RX       0      46      90     228   228.1     271     310     390
  138     RY    1281    1279    1276  1274.2  1274.2  1274.5    1277  1280.4
          *

  139     KK     106        COMPUTE RUNOFF HYDROGRAPH
  140     BA     1.3
  141     LS    0.65      84    11.2
  142     UC   17.95   14.36
          *

  143     KK    JQJR        ROUTE HYDROGRAPH
  144     RD    4000  0.0075    0.06            TRAP      10      0.3
          *

  145     KK     107        COMPUTE RUNOFF HYDROGRAPH
  146     BA     0.3
  147     LS    0.51      80    3.81
  148     UC   15.42   12.34
          *

  149     KK      JR        COMBINE HYDROGRAPHS
  150     HC       3

  151     KK    JRJX        ROUTE HYDROGRAPH
  152     RD
  153     RC     0.1     0.1     0.1     800 0.00830
  154     RX       0      55     152     302     365     382     399     430
  155     RY    1280    1279    1278  1273.7    1275    1277  1277.2    1281
          *

  156     KK     130        COMPUTE RUNOFF HYDROGRAPH
  157     BA    0.05
  158     LS    0.65      90       0
  159     UC    1.10    0.88
          *

  160     KK      JX        COMBINE HYDROGRAPHS
  161     HC       2

  162     KK    JXJS        ROUTE HYDROGRAPH
  163     KO       1
  164     RD
  165     RC     0.1     0.1     0.1     400 0.00830
  166     RX       0      55     152     302     365     382     399     430
  167     RY    1280    1279    1278  1273.7    1275    1277  1277.2    1281
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  168     KK      109        COMPUTE RUNOFF HYDROGRAPH
  169     BA    0.55
  170     LS    0.61      87     2.0
  171     UC   12.56   10.05
          *
  172     KK      JS        COMBINE HYDROGRAPHS
  173     HC       2
          *
  174     ZZ
```

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             MAY  1991                *
*          VERSION 4.0.1E              *
*     Lahey F77L-EM/32 version 5.01    *
*       Dodson & Associates, Inc.      *
*  RUN DATE  12/11/98  TIME  08:28:44  *
****************************************
```


```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*            (916) 551-1748            *
*                                      *
****************************************
```


STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
5 YEAR STORM EVENT WITH WETLAND INFLUENCE

```
  6 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                     NMIN          30  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1DEC98  STARTING DATE
                    ITIME        0000  STARTING TIME
                       NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      7DEC98  ENDING DATE
                   NDTIME        0530  ENDING TIME
                    ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.50 HOURS
                       TOTAL TIME BASE  149.50 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT

****** WARNING ******  THE FLOW RATE THAT YOU ARE ROUTING IS GREATER THAN
WHAT CAN BE CALCULATE FROM THE 8 POINT CROSS SECTION YOU ENTERED ON RC, RX,
AND RY RECORDS.  THE PROGRAM HAD TO EXTRAPOLATE BEYOND THE MAXIMUM STORAGE-
DISCHARGE VALUE CALCULATED.  INCREASE ELMAX ON THE RC RECORD OR MAKE THE CROSS
SECTION LARGER.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
 162 KK     *      JXJS  *          ROUTE HYDROGRAPH
            *            *
            **************

 163 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          1  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

 164 RD          MUSKINGUM-CUNGE CHANNEL ROUTING

 165 RC          NORMAL DEPTH CHANNEL
                       ANL       0.100  LEFT OVERBANK N-VALUE
                      ANCH       0.100  MAIN CHANNEL N-VALUE
                       ANR       0.100  RIGHT OVERBANK N-VALUE
                     RLNTH        400.  REACH LENGTH
```

SEL 0.0083 ENERGY SLOPE
ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

		--- LEFT OVERBANK ---	+	------ MAIN CHANNEL -------	+	--- RIGHT OVERBANK ---			
167 RY	ELEVATION	1280.00	1279.00	1278.00	1273.70	1275.00	1277.00	1277.20	1281.00
166 RX	DISTANCE	0.00	55.00	152.00	302.00	365.00	382.00	399.00	430.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.06	0.23	0.51	0.89	1.34	1.85	2.41	3.04	3.73
OUTFLOW	0.00	2.78	17.64	52.02	115.66	208.55	329.23	479.26	660.36	878.04
ELEVATION	1273.70	1274.08	1274.47	1274.85	1275.24	1275.62	1276.00	1276.39	1276.77	1277.16
STORAGE	4.52	5.38	6.32	7.40	8.62	9.95	11.36	12.84	14.34	15.85
OUTFLOW	1139.87	1442.05	1833.82	2290.27	2809.10	3396.79	4050.80	4787.10	5600.58	6478.99
ELEVATION	1277.54	1277.93	1278.31	1278.69	1279.08	1279.46	1279.85	1280.23	1280.61	1281.00

COMPUTED MUSKINGUM-CUNGE PARAMETERS
COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN			4.12	200.00	279.30	2167.49	1.72	1.62

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN			30.00		279.27	2160.00	1.72	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1014E+04 EXCESS=0.0000E+00 OUTFLOW=0.1013E+04 BASIN STORAGE=0.7804E-01 PERCENT ERROR= 0.0

****

HYDROGRAPH AT STATION JXJS

****

DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	*	2 DEC 1330	76	278.	*	4 DEC 0300	151	79.	*	5 DEC 1630	226	18.
1 DEC 0030	2	0.	*	2 DEC 1400	77	278.	*	4 DEC 0330	152	77.	*	5 DEC 1700	227	18.
1 DEC 0100	3	0.	*	2 DEC 1430	78	277.	*	4 DEC 0400	153	76.	*	5 DEC 1730	228	18.
1 DEC 0130	4	0.	*	2 DEC 1500	79	275.	*	4 DEC 0430	154	74.	*	5 DEC 1800	229	17.
1 DEC 0200	5	0.	*	2 DEC 1530	80	274.	*	4 DEC 0500	155	73.	*	5 DEC 1830	230	17.
1 DEC 0230	6	0.	*	2 DEC 1600	81	273.	*	4 DEC 0530	156	72.	*	5 DEC 1900	231	17.
1 DEC 0300	7	0.	*	2 DEC 1630	82	271.	*	4 DEC 0600	157	70.	*	5 DEC 1930	232	16.
1 DEC 0330	8	0.	*	2 DEC 1700	83	269.	*	4 DEC 0630	158	69.	*	5 DEC 2000	233	16.
1 DEC 0400	9	0.	*	2 DEC 1730	84	267.	*	4 DEC 0700	159	67.	*	5 DEC 2030	234	16.
1 DEC 0430	10	0.	*	2 DEC 1800	85	265.	*	4 DEC 0730	160	66.	*	5 DEC 2100	235	16.
1 DEC 0500	11	0.	*	2 DEC 1830	86	263.	*	4 DEC 0800	161	65.	*	5 DEC 2130	236	15.
1 DEC 0530	12	0.	*	2 DEC 1900	87	261.	*	4 DEC 0830	162	64.	*	5 DEC 2200	237	15.
1 DEC 0600	13	0.	*	2 DEC 1930	88	258.	*	4 DEC 0900	163	62.	*	5 DEC 2230	238	15.
1 DEC 0630	14	0.	*	2 DEC 2000	89	256.	*	4 DEC 0930	164	61.	*	5 DEC 2300	239	14.
1 DEC 0700	15	0.	*	2 DEC 2030	90	253.	*	4 DEC 1000	165	60.	*	5 DEC 2330	240	14.
1 DEC 0730	16	0.	*	2 DEC 2100	91	250.	*	4 DEC 1030	166	59.	*	6 DEC 0000	241	14.
1 DEC 0800	17	0.	*	2 DEC 2130	92	247.	*	4 DEC 1100	167	58.	*	6 DEC 0030	242	14.
1 DEC 0830	18	0.	*	2 DEC 2200	93	244.	*	4 DEC 1130	168	57.	*	6 DEC 0100	243	13.
1 DEC 0900	19	0.	*	2 DEC 2230	94	241.	*	4 DEC 1200	169	55.	*	6 DEC 0130	244	13.
1 DEC 0930	20	0.	*	2 DEC 2300	95	238.	*	4 DEC 1230	170	54.	*	6 DEC 0200	245	13.
1 DEC 1000	21	0.	*	2 DEC 2330	96	234.	*	4 DEC 1300	171	53.	*	6 DEC 0230	246	13.
1 DEC 1030	22	0.	*	3 DEC 0000	97	231.	*	4 DEC 1330	172	52.	*	6 DEC 0300	247	12.
1 DEC 1100	23	1.	*	3 DEC 0030	98	227.	*	4 DEC 1400	173	51.	*	6 DEC 0330	248	12.
1 DEC 1130	24	1.	*	3 DEC 0100	99	223.	*	4 DEC 1430	174	50.	*	6 DEC 0400	249	12.
1 DEC 1200	25	3.	*	3 DEC 0130	100	220.	*	4 DEC 1500	175	49.	*	6 DEC 0430	250	12.
1 DEC 1230	26	9.	*	3 DEC 0200	101	216.	*	4 DEC 1530	176	48.	*	6 DEC 0500	251	12.
1 DEC 1300	27	26.	*	3 DEC 0230	102	212.	*	4 DEC 1600	177	47.	*	6 DEC 0530	252	11.
1 DEC 1330	28	44.	*	3 DEC 0300	103	208.	*	4 DEC 1630	178	47.	*	6 DEC 0600	253	11.
1 DEC 1400	29	49.	*	3 DEC 0330	104	204.	*	4 DEC 1700	179	46.	*	6 DEC 0630	254	11.
1 DEC 1430	30	44.	*	3 DEC 0400	105	201.	*	4 DEC 1730	180	45.	*	6 DEC 0700	255	11.

1	DEC	1500	31	36.	*	3	DEC	0430	106	197.	*	4	DEC	1800	181	44.	*	6	DEC	0730	256	10.
1	DEC	1530	32	30.	*	3	DEC	0500	107	193.	*	4	DEC	1830	182	43.	*	6	DEC	0800	257	10.
1	DEC	1600	33	27.	*	3	DEC	0530	108	189.	*	4	DEC	1900	183	42.	*	6	DEC	0830	258	10.
1	DEC	1630	34	26.	*	3	DEC	0600	109	186.	*	4	DEC	1930	184	41.	*	6	DEC	0900	259	10.
1	DEC	1700	35	26.	*	3	DEC	0630	110	182.	*	4	DEC	2000	185	41.	*	6	DEC	0930	260	10.
1	DEC	1730	36	28.	*	3	DEC	0700	111	179.	*	4	DEC	2030	186	40.	*	6	DEC	1000	261	10.
1	DEC	1800	37	30.	*	3	DEC	0730	112	175.	*	4	DEC	2100	187	39.	*	6	DEC	1030	262	9.
1	DEC	1830	38	33.	*	3	DEC	0800	113	172.	*	4	DEC	2130	188	38.	*	6	DEC	1100	263	9.
1	DEC	1900	39	37.	*	3	DEC	0830	114	168.	*	4	DEC	2200	189	38.	*	6	DEC	1130	264	9.
1	DEC	1930	40	41.	*	3	DEC	0900	115	165.	*	4	DEC	2230	190	37.	*	6	DEC	1200	265	9.
1	DEC	2000	41	46.	*	3	DEC	0930	116	161.	*	4	DEC	2300	191	36.	*	6	DEC	1230	266	9.
1	DEC	2030	42	52.	*	3	DEC	1000	117	158.	*	4	DEC	2330	192	36.	*	6	DEC	1300	267	9.
1	DEC	2100	43	58.	*	3	DEC	1030	118	155.	*	5	DEC	0000	193	35.	*	6	DEC	1330	268	8.
1	DEC	2130	44	67.	*	3	DEC	1100	119	152.	*	5	DEC	0030	194	34.	*	6	DEC	1400	269	8.
1	DEC	2200	45	76.	*	3	DEC	1130	120	149.	*	5	DEC	0100	195	34.	*	6	DEC	1430	270	8.
1	DEC	2230	46	88.	*	3	DEC	1200	121	146.	*	5	DEC	0130	196	33.	*	6	DEC	1500	271	8.
1	DEC	2300	47	100.	*	3	DEC	1230	122	143.	*	5	DEC	0200	197	32.	*	6	DEC	1530	272	8.
1	DEC	2330	48	113.	*	3	DEC	1300	123	140.	*	5	DEC	0230	198	32.	*	6	DEC	1600	273	8.
2	DEC	0000	49	125.	*	3	DEC	1330	124	137.	*	5	DEC	0300	199	31.	*	6	DEC	1630	274	8.
2	DEC	0030	50	137.	*	3	DEC	1400	125	134.	*	5	DEC	0330	200	31.	*	6	DEC	1700	275	7.
2	DEC	0100	51	149.	*	3	DEC	1430	126	131.	*	5	DEC	0400	201	30.	*	6	DEC	1730	276	7.
2	DEC	0130	52	160.	*	3	DEC	1500	127	129.	*	5	DEC	0430	202	29.	*	6	DEC	1800	277	7.
2	DEC	0200	53	171.	*	3	DEC	1530	128	126.	*	5	DEC	0500	203	29.	*	6	DEC	1830	278	7.
2	DEC	0230	54	182.	*	3	DEC	1600	129	123.	*	5	DEC	0530	204	28.	*	6	DEC	1900	279	7.
2	DEC	0300	55	193.	*	3	DEC	1630	130	121.	*	5	DEC	0600	205	28.	*	6	DEC	1930	280	7.
2	DEC	0330	56	203.	*	3	DEC	1700	131	118.	*	5	DEC	0630	206	27.	*	6	DEC	2000	281	7.
2	DEC	0400	57	212.	*	3	DEC	1730	132	116.	*	5	DEC	0700	207	27.	*	6	DEC	2030	282	7.
2	DEC	0430	58	221.	*	3	DEC	1800	133	114.	*	5	DEC	0730	208	26.	*	6	DEC	2100	283	6.
2	DEC	0500	59	229.	*	3	DEC	1830	134	111.	*	5	DEC	0800	209	26.	*	6	DEC	2130	284	6.
2	DEC	0530	60	237.	*	3	DEC	1900	135	109.	*	5	DEC	0830	210	25.	*	6	DEC	2200	285	6.
2	DEC	0600	61	243.	*	3	DEC	1930	136	107.	*	5	DEC	0900	211	25.	*	6	DEC	2230	286	6.
2	DEC	0630	62	250.	*	3	DEC	2000	137	105.	*	5	DEC	0930	212	24.	*	6	DEC	2300	287	6.
2	DEC	0700	63	255.	*	3	DEC	2030	138	103.	*	5	DEC	1000	213	24.	*	6	DEC	2330	288	6.
2	DEC	0730	64	260.	*	3	DEC	2100	139	101.	*	5	DEC	1030	214	23.	*	7	DEC	0000	289	6.
2	DEC	0800	65	264.	*	3	DEC	2130	140	98.	*	5	DEC	1100	215	23.	*	7	DEC	0030	290	6.
2	DEC	0830	66	268.	*	3	DEC	2200	141	96.	*	5	DEC	1130	216	22.	*	7	DEC	0100	291	6.
2	DEC	0900	67	271.	*	3	DEC	2230	142	95.	*	5	DEC	1200	217	22.	*	7	DEC	0130	292	5.
2	DEC	0930	68	274.	*	3	DEC	2300	143	93.	*	5	DEC	1230	218	22.	*	7	DEC	0200	293	5.
2	DEC	1000	69	276.	*	3	DEC	2330	144	91.	*	5	DEC	1300	219	21.	*	7	DEC	0230	294	5.
2	DEC	1030	70	277.	*	4	DEC	0000	145	89.	*	5	DEC	1330	220	21.	*	7	DEC	0300	295	5.
2	DEC	1100	71	278.	*	4	DEC	0030	146	87.	*	5	DEC	1400	221	20.	*	7	DEC	0330	296	5.
2	DEC	1130	72	279.	*	4	DEC	0100	147	86.	*	5	DEC	1430	222	20.	*	7	DEC	0400	297	5.
2	DEC	1200	73	279.	*	4	DEC	0130	148	84.	*	5	DEC	1500	223	20.	*	7	DEC	0430	298	5.
2	DEC	1230	74	279.	*	4	DEC	0200	149	82.	*	5	DEC	1530	224	19.	*	7	DEC	0500	299	5.
2	DEC	1300	75	279.	*	4	DEC	0230	150	81.	*	5	DEC	1600	225	19.	*	7	DEC	0530	300	5.
					*						*						*					

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
279.	36.00	(CFS)	277.	253.	154.	82.
		(INCHES)	0.233	0.851	1.551	1.720
		(AC-FT)	138.	502.	914.	1014.

CUMULATIVE AREA = 11.05 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	18.	29.50	17.	14.	7.	0.40		
ROUTED TO	JAJB	18.	31.00	17.	14.	7.	0.40		
HYDROGRAPH AT	102	19.	48.50	19.	18.	12.	1.00		
HYDROGRAPH AT	100	27.	39.00	27.	24.	14.	1.00		
3 COMBINED AT	JB	57.	38.00	56.	52.	33.	2.40		
ROUTED TO	JBJC	56.	39.50	56.	51.	33.	2.40		
HYDROGRAPH AT	104	12.	44.50	11.	10.	7.	0.51		
HYDROGRAPH AT	103	19.	31.50	19.	15.	8.	0.48		
ROUTED TO	JDJC	19.	33.00	19.	15.	8.	0.48		
HYDROGRAPH AT	105	25.	43.50	25.	22.	14.	1.03		
4 COMBINED AT	JC	107.	39.00	107.	98.	62.	4.42		
ROUTED TO	JCJE	107.	40.50	107.	98.	61.	4.42		
HYDROGRAPH AT	108	12.	45.00	12.	11.	7.	0.53		
HYDROGRAPH AT	124	11.	28.50	11.	9.	4.	0.27		
ROUTED TO	JLJM	11.	30.50	11.	8.	4.	0.27		
HYDROGRAPH AT	125	8.	29.50	8.	6.	3.	0.22		
2 COMBINED AT	JM	19.	30.00	19.	15.	7.	0.49		
ROUTED TO	JMJN	19.	30.50	19.	15.	7.	0.49		
HYDROGRAPH AT	120	23.	42.50	23.	21.	13.	0.82		
ROUTED TO	JHJI	23.	43.00	23.	21.	13.	0.82		
HYDROGRAPH AT	121	37.	29.00	36.	28.	13.	0.82		
2 COMBINED AT	JI	52.	30.50	51.	45.	26.	1.64		
ROUTED TO	JIJJ	52.	31.00	51.	45.	26.	1.64		
HYDROGRAPH AT	122	25.	42.00	25.	22.	14.	1.00		
2 COMBINED AT	JJ	72.	34.50	72.	66.	40.	2.64		
ROUTED TO	JJJK	72.	36.00	72.	66.	40.	2.64		
HYDROGRAPH AT	123	20.	41.00	19.	17.	11.	0.76		
2 COMBINED AT	JK	91.	37.50	91.	83.	51.	3.40		
ROUTED TO	JKJN	91.	37.50	91.	83.	51.	3.40		
2 COMBINED AT	JN	107.	35.00	106.	97.	58.	3.89		
ROUTED TO	JNJZ	107.	35.00	106.	97.	58.	3.89		
ROUTED TO	JZJO	107.	35.50	106.	97.	58.	3.89		
HYDROGRAPH AT	127	10.	37.00	10.	9.	5.	0.46		
2 COMBINED AT	JO	117.	36.00	116.	106.	63.	4.35		
ROUTED TO	JOJE	117.	36.50	116.	106.	63.	4.35		

3 COMBINED AT	JE	234.	38.50	233.	213.	131.	9.30
ROUTED TO	JEJY	234.	39.00	232.	213.	131.	9.30
HYDROGRAPH AT	131	32.	13.50	14.	4.	1.	0.10
2 COMBINED AT	JY	234.	39.00	232.	213.	131.	9.40
ROUTED TO	JYJR	234.	39.00	232.	213.	131.	9.40
HYDROGRAPH AT	106	56.	29.00	55.	43.	20.	1.30
ROUTED TO	JQJR	56.	29.50	55.	43.	20.	1.30
HYDROGRAPH AT	107	13.	27.00	13.	9.	4.	0.30
3 COMBINED AT	JR	279.	36.00	277.	253.	154.	11.00
ROUTED TO	JRJX	279.	36.00	277.	253.	154.	11.00
HYDROGRAPH AT	130	22.	13.50	9.	3.	1.	0.05
2 COMBINED AT	JX	279.	36.00	277.	253.	154.	11.05
ROUTED TO	JXJS	279.	36.00	277.	253.	154.	11.05
HYDROGRAPH AT	109	33.	24.00	31.	22.	9.	0.55
2 COMBINED AT	JS	294.	35.00	291.	265.	162.	11.60

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	INTERPOLATED TO COMPUTATION INTERVAL PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	17.58	1860.00	1.84	30.00	17.58	1860.00	1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3926E+02 EXCESS=0.0000E+00 OUTFLOW=0.3924E+02 BASIN STORAGE=0.2165E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	56.44	2370.00	1.68	30.00	56.44	2370.00	1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2158E+03 EXCESS=0.0000E+00 OUTFLOW=0.2154E+03 BASIN STORAGE=0.6581E+00 PERCENT ERROR= -0.2

JDJC	MANE	30.00	19.44	1980.00	1.86	30.00	19.44	1980.00	1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4766E+02 EXCESS=0.0000E+00 OUTFLOW=0.4765E+02 BASIN STORAGE=0.2876E-01 PERCENT ERROR= -0.1

JCJE	MANE	30.00	107.21	2430.00	1.72	30.00	107.21	2430.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4056E+03 EXCESS=0.0000E+00 OUTFLOW=0.4049E+03 BASIN STORAGE=0.1336E+01 PERCENT ERROR= -0.2

JLJM	MANE	30.00	11.30	1830.00	1.64	30.00	11.30	1830.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2367E+02 EXCESS=0.0000E+00 OUTFLOW=0.2369E+02 BASIN STORAGE=0.5912E-02 PERCENT ERROR= -0.1

JMJN	MANE	30.00	19.39	1830.00	1.60	30.00	19.39	1830.00	1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4174E+02 EXCESS=0.0000E+00 OUTFLOW=0.4174E+02 BASIN STORAGE=0.2511E-02 PERCENT ERROR= 0.0

JHJI	MANE	30.00	23.42	2580.00	2.01	30.00	23.42	2580.00	2.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8815E+02 EXCESS=0.0000E+00 OUTFLOW=0.8810E+02 BASIN STORAGE=0.9712E-01 PERCENT ERROR= -0.1

JIJJ	MANE	30.00	52.24	1860.00	1.92	30.00	52.24	1860.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1680E+03 EXCESS=0.0000E+00 OUTFLOW=0.1679E+03 BASIN STORAGE=0.2397E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	72.15	2160.00	1.85	30.00	72.15	2160.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2603E+03 EXCESS=0.0000E+00 OUTFLOW=0.2600E+03 BASIN STORAGE=0.5090E+00 PERCENT ERROR= -0.1

JKJN	MANE	6.18	90.91	2256.83	1.82	30.00	90.90	2250.00	1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3294E+03 EXCESS=0.0000E+00 OUTFLOW=0.3294E+03 BASIN STORAGE=0.5581E-01 PERCENT ERROR= 0.0

JNJZ	MANE	30.00	106.82	2100.00	1.79	30.00	106.82	2100.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3712E+03 EXCESS=0.0000E+00 OUTFLOW=0.3711E+03 BASIN STORAGE=0.1174E+00 PERCENT ERROR= 0.0

JZJO	MANE	30.00	106.79	2130.00	1.79	30.00	106.79	2130.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3711E+03 EXCESS=0.0000E+00 OUTFLOW=0.3710E+03 BASIN STORAGE=0.1560E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	117.13	2190.00	1.73	30.00	117.13	2190.00	1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4028E+03 EXCESS=0.0000E+00 OUTFLOW=0.4025E+03 BASIN STORAGE=0.2456E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.97	233.62	2337.99	1.72	30.00	233.61	2340.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8550E+03 EXCESS=0.0000E+00 OUTFLOW=0.8546E+03 BASIN STORAGE=0.6643E+00 PERCENT ERROR= 0.0

JYJR	MANE	5.33	233.60	2345.85	1.72	30.00	233.59	2340.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8631E+03 EXCESS=0.0000E+00 OUTFLOW=0.8631E+03 BASIN STORAGE=0.1017E+00 PERCENT ERROR= 0.0

JQJR	MANE	21.36	56.24	1751.59	1.74	30.00	56.20	1770.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1208E+03 EXCESS=0.0000E+00 OUTFLOW=0.1208E+03 BASIN STORAGE=0.6865E-02 PERCENT ERROR= 0.0

JRJX	MANE	8.24	279.34	2167.35	1.72	30.00	279.30	2160.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1009E+04 EXCESS=0.0000E+00 OUTFLOW=0.1009E+04 BASIN STORAGE=0.1552E+00 PERCENT ERROR= 0.0

JXJS	MANE	4.12	279.30	2167.49	1.72	30.00	279.27	2160.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1014E+04 EXCESS=0.0000E+00 OUTFLOW=0.1013E+04 BASIN STORAGE=0.7804E-01 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY  1991                 *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  12/11/98  TIME  08:34:39   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1     ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
    2     ID        NICK HOFFMAN, EIT E-7577
    3     ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
    4     ID      10 YEAR STORM EVENT WITH WETLAND INFLUENCE
          *
    5     IT      30  1DEC98     0000      300
    6     IO       5        1
          *

    7     KK     101         COMPUTE RUNOFF HYDROGRAPH
    8     PH      .1              0.58     1.13     2.18     2.55     2.64     3.07     3.41     3.84
    9     BA     0.4
   10     LS    0.55       87     3.39
   11     UC   18.72    15.13
          *

   12     KK    JAJB         ROUTE HYDROGRAPH
   13     RD    6700 0.00075     0.05             TRAP       10      0.3
          *

   14     KK     102         COMPUTE RUNOFF HYDROGRAPH
   15     BA       1
   16     LS    0.66       84     6.43
   17     UC   40.12     32.1
          *

   18     KK     100         COMPUTE RUNOFF HYDROGRAPH
   19     BA       1
   20     LS    0.62       85     4.57
   21     UC   29.01    23.21
          *

   22     KK      JB         COMBINE HYDROGRAPHS
   23     HC       3

   24     KK    JBJC         ROUTE HYDROGRAPH
   25     RD    8200 0.00061     0.05             TRAP       10      0.3
          *

   26     KK     104         COMPUTE RUNOFF HYDROGRAPH
   27     BA    0.51
   28     LS    0.68       83    12.83
   29     UC   35.34    28.27
          *

   30     KK     103         COMPUTE RUNOFF HYDROGRAPH
   31     BA    0.48
   32     LS    0.66       84    18.23
   33     UC   20.71    16.57
          *
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SEL 0.0083 ENERGY SLOPE
ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

		--- LEFT OVERBANK ---	+	------ MAIN CHANNEL -------	+	--- RIGHT OVERBANK ---		
167 RY	ELEVATION	1280.00	1279.00	1278.00	1273.70	1275.00	1277.00	1277.20	1281.00
166 RX	DISTANCE	0.00	55.00	152.00	302.00	365.00	382.00	399.00	430.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.06	0.23	0.51	0.89	1.34	1.85	2.41	3.04	3.73
OUTFLOW	0.00	2.78	17.64	52.02	115.66	208.55	329.23	479.26	660.36	878.04
ELEVATION	1273.70	1274.08	1274.47	1274.85	1275.24	1275.62	1276.00	1276.39	1276.77	1277.16
STORAGE	4.52	5.38	6.32	7.40	8.62	9.95	11.36	12.84	14.34	15.85
OUTFLOW	1139.87	1442.05	1833.82	2290.27	2809.10	3396.79	4050.80	4787.10	5600.58	6478.99
ELEVATION	1277.54	1277.93	1278.31	1278.69	1279.08	1279.46	1279.85	1280.23	1280.61	1281.00

COMPUTED MUSKINGUM-CUNGE PARAMETERS
COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN			3.77	200.00	352.03	2136.50	2.16	1.77

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN			30.00		352.00	2130.00	2.16	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1273E+04 EXCESS=0.0000E+00 OUTFLOW=0.1273E+04 BASIN STORAGE=0.9064E-01 PERCENT ERROR= 0.0

****

HYDROGRAPH AT STATION JXJS

****

DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	*	2 DEC 1330	76	350.	*	4 DEC 0300	151	97.	*	5 DEC 1630	226	23.
1 DEC 0030	2	0.	*	2 DEC 1400	77	348.	*	4 DEC 0330	152	95.	*	5 DEC 1700	227	22.
1 DEC 0100	3	0.	*	2 DEC 1430	78	347.	*	4 DEC 0400	153	93.	*	5 DEC 1730	228	22.
1 DEC 0130	4	0.	*	2 DEC 1500	79	345.	*	4 DEC 0430	154	92.	*	5 DEC 1800	229	21.
1 DEC 0200	5	0.	*	2 DEC 1530	80	343.	*	4 DEC 0500	155	90.	*	5 DEC 1830	230	21.
1 DEC 0230	6	0.	*	2 DEC 1600	81	341.	*	4 DEC 0530	156	88.	*	5 DEC 1900	231	21.
1 DEC 0300	7	0.	*	2 DEC 1630	82	339.	*	4 DEC 0600	157	86.	*	5 DEC 1930	232	20.
1 DEC 0330	8	0.	*	2 DEC 1700	83	336.	*	4 DEC 0630	158	85.	*	5 DEC 2000	233	20.
1 DEC 0400	9	0.	*	2 DEC 1730	84	334.	*	4 DEC 0700	159	83.	*	5 DEC 2030	234	20.
1 DEC 0430	10	0.	*	2 DEC 1800	85	331.	*	4 DEC 0730	160	81.	*	5 DEC 2100	235	19.
1 DEC 0500	11	0.	*	2 DEC 1830	86	328.	*	4 DEC 0800	161	80.	*	5 DEC 2130	236	19.
1 DEC 0530	12	0.	*	2 DEC 1900	87	325.	*	4 DEC 0830	162	78.	*	5 DEC 2200	237	19.
1 DEC 0600	13	0.	*	2 DEC 1930	88	322.	*	4 DEC 0900	163	77.	*	5 DEC 2230	238	18.
1 DEC 0630	14	0.	*	2 DEC 2000	89	319.	*	4 DEC 0930	164	75.	*	5 DEC 2300	239	18.
1 DEC 0700	15	0.	*	2 DEC 2030	90	315.	*	4 DEC 1000	165	74.	*	5 DEC 2330	240	18.
1 DEC 0730	16	0.	*	2 DEC 2100	91	312.	*	4 DEC 1030	166	72.	*	6 DEC 0000	241	17.
1 DEC 0800	17	0.	*	2 DEC 2130	92	308.	*	4 DEC 1100	167	71.	*	6 DEC 0030	242	17.
1 DEC 0830	18	0.	*	2 DEC 2200	93	304.	*	4 DEC 1130	168	70.	*	6 DEC 0100	243	17.
1 DEC 0900	19	0.	*	2 DEC 2230	94	300.	*	4 DEC 1200	169	68.	*	6 DEC 0130	244	16.
1 DEC 0930	20	0.	*	2 DEC 2300	95	295.	*	4 DEC 1230	170	67.	*	6 DEC 0200	245	16.
1 DEC 1000	21	0.	*	2 DEC 2330	96	291.	*	4 DEC 1300	171	66.	*	6 DEC 0230	246	16.
1 DEC 1030	22	1.	*	3 DEC 0000	97	287.	*	4 DEC 1330	172	64.	*	6 DEC 0300	247	15.
1 DEC 1100	23	1.	*	3 DEC 0030	98	282.	*	4 DEC 1400	173	63.	*	6 DEC 0330	248	15.
1 DEC 1130	24	1.	*	3 DEC 0100	99	277.	*	4 DEC 1430	174	62.	*	6 DEC 0400	249	15.
1 DEC 1200	25	2.	*	3 DEC 0130	100	272.	*	4 DEC 1500	175	61.	*	6 DEC 0430	250	14.
1 DEC 1230	26	13.	*	3 DEC 0200	101	268.	*	4 DEC 1530	176	60.	*	6 DEC 0500	251	14.
1 DEC 1300	27	41.	*	3 DEC 0230	102	263.	*	4 DEC 1600	177	58.	*	6 DEC 0530	252	14.
1 DEC 1330	28	65.	*	3 DEC 0300	103	258.	*	4 DEC 1630	178	57.	*	6 DEC 0600	253	14.
1 DEC 1400	29	65.	*	3 DEC 0330	104	253.	*	4 DEC 1700	179	56.	*	6 DEC 0630	254	13.
1 DEC 1430	30	55.	*	3 DEC 0400	105	248.	*	4 DEC 1730	180	55.	*	6 DEC 0700	255	13.

1	DEC	1500	31	45.	*	3	DEC	0430	106	244.	*	4	DEC	1800	181	54.	*	6	DEC	0730	256	13.
1	DEC	1530	32	38.	*	3	DEC	0500	107	239.	*	4	DEC	1830	182	53.	*	6	DEC	0800	257	13.
1	DEC	1600	33	35.	*	3	DEC	0530	108	234.	*	4	DEC	1900	183	52.	*	6	DEC	0830	258	13.
1	DEC	1630	34	33.	*	3	DEC	0600	109	230.	*	4	DEC	1930	184	51.	*	6	DEC	0900	259	12.
1	DEC	1700	35	34.	*	3	DEC	0630	110	225.	*	4	DEC	2000	185	50.	*	6	DEC	0930	260	12.
1	DEC	1730	36	35.	*	3	DEC	0700	111	221.	*	4	DEC	2030	186	49.	*	6	DEC	1000	261	12.
1	DEC	1800	37	38.	*	3	DEC	0730	112	216.	*	4	DEC	2100	187	48.	*	6	DEC	1030	262	12.
1	DEC	1830	38	43.	*	3	DEC	0800	113	212.	*	4	DEC	2130	188	47.	*	6	DEC	1100	263	11.
1	DEC	1900	39	48.	*	3	DEC	0830	114	208.	*	4	DEC	2200	189	46.	*	6	DEC	1130	264	11.
1	DEC	1930	40	54.	*	3	DEC	0900	115	203.	*	4	DEC	2230	190	46.	*	6	DEC	1200	265	11.
1	DEC	2000	41	61.	*	3	DEC	0930	116	199.	*	4	DEC	2300	191	45.	*	6	DEC	1230	266	11.
1	DEC	2030	42	69.	*	3	DEC	1000	117	195.	*	4	DEC	2330	192	44.	*	6	DEC	1300	267	11.
1	DEC	2100	43	80.	*	3	DEC	1030	118	191.	*	5	DEC	0000	193	43.	*	6	DEC	1330	268	10.
1	DEC	2130	44	93.	*	3	DEC	1100	119	187.	*	5	DEC	0030	194	42.	*	6	DEC	1400	269	10.
1	DEC	2200	45	107.	*	3	DEC	1130	120	183.	*	5	DEC	0100	195	41.	*	6	DEC	1430	270	10.
1	DEC	2230	46	123.	*	3	DEC	1200	121	180.	*	5	DEC	0130	196	41.	*	6	DEC	1500	271	10.
1	DEC	2300	47	139.	*	3	DEC	1230	122	176.	*	5	DEC	0200	197	40.	*	6	DEC	1530	272	10.
1	DEC	2330	48	155.	*	3	DEC	1300	123	172.	*	5	DEC	0230	198	39.	*	6	DEC	1600	273	10.
2	DEC	0000	49	171.	*	3	DEC	1330	124	169.	*	5	DEC	0300	199	38.	*	6	DEC	1630	274	9.
2	DEC	0030	50	186.	*	3	DEC	1400	125	165.	*	5	DEC	0330	200	37.	*	6	DEC	1700	275	9.
2	DEC	0100	51	201.	*	3	DEC	1430	126	162.	*	5	DEC	0400	201	37.	*	6	DEC	1730	276	9.
2	DEC	0130	52	215.	*	3	DEC	1500	127	159.	*	5	DEC	0430	202	36.	*	6	DEC	1800	277	9.
2	DEC	0200	53	229.	*	3	DEC	1530	128	155.	*	5	DEC	0500	203	35.	*	6	DEC	1830	278	9.
2	DEC	0230	54	242.	*	3	DEC	1600	129	152.	*	5	DEC	0530	204	35.	*	6	DEC	1900	279	9.
2	DEC	0300	55	255.	*	3	DEC	1630	130	149.	*	5	DEC	0600	205	34.	*	6	DEC	1930	280	8.
2	DEC	0330	56	266.	*	3	DEC	1700	131	146.	*	5	DEC	0630	206	33.	*	6	DEC	2000	281	8.
2	DEC	0400	57	277.	*	3	DEC	1730	132	143.	*	5	DEC	0700	207	33.	*	6	DEC	2030	282	8.
2	DEC	0430	58	288.	*	3	DEC	1800	133	140.	*	5	DEC	0730	208	32.	*	6	DEC	2100	283	8.
2	DEC	0500	59	297.	*	3	DEC	1830	134	137.	*	5	DEC	0800	209	32.	*	6	DEC	2130	284	8.
2	DEC	0530	60	306.	*	3	DEC	1900	135	135.	*	5	DEC	0830	210	31.	*	6	DEC	2200	285	8.
2	DEC	0600	61	314.	*	3	DEC	1930	136	132.	*	5	DEC	0900	211	30.	*	6	DEC	2230	286	7.
2	DEC	0630	62	321.	*	3	DEC	2000	137	129.	*	5	DEC	0930	212	30.	*	6	DEC	2300	287	7.
2	DEC	0700	63	327.	*	3	DEC	2030	138	126.	*	5	DEC	1000	213	29.	*	6	DEC	2330	288	7.
2	DEC	0730	64	333.	*	3	DEC	2100	139	124.	*	5	DEC	1030	214	29.	*	7	DEC	0000	289	7.
2	DEC	0800	65	337.	*	3	DEC	2130	140	121.	*	5	DEC	1100	215	28.	*	7	DEC	0030	290	7.
2	DEC	0830	66	341.	*	3	DEC	2200	141	119.	*	5	DEC	1130	216	27.	*	7	DEC	0100	291	7.
2	DEC	0900	67	345.	*	3	DEC	2230	142	117.	*	5	DEC	1200	217	27.	*	7	DEC	0130	292	7.
2	DEC	0930	68	347.	*	3	DEC	2300	143	114.	*	5	DEC	1230	218	26.	*	7	DEC	0200	293	7.
2	DEC	1000	69	349.	*	3	DEC	2330	144	112.	*	5	DEC	1300	219	26.	*	7	DEC	0230	294	6.
2	DEC	1030	70	351.	*	4	DEC	0000	145	110.	*	5	DEC	1330	220	25.	*	7	DEC	0300	295	6.
2	DEC	1100	71	352.	*	4	DEC	0030	146	108.	*	5	DEC	1400	221	25.	*	7	DEC	0330	296	6.
2	DEC	1130	72	352.	*	4	DEC	0100	147	105.	*	5	DEC	1430	222	24.	*	7	DEC	0400	297	6.
2	DEC	1200	73	352.	*	4	DEC	0130	148	103.	*	5	DEC	1500	223	24.	*	7	DEC	0430	298	6.
2	DEC	1230	74	351.	*	4	DEC	0200	149	101.	*	5	DEC	1530	224	24.	*	7	DEC	0500	299	6.
2	DEC	1300	75	351.	*	4	DEC	0230	150	99.	*	5	DEC	1600	225	23.	*	7	DEC	0530	300	6.
					*						*						*					

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
352.	35.50	(CFS)	350.	319.	193.	103.
		(INCHES)	0.294	1.073	1.950	2.161
		(AC-FT)	173.	632.	1149.	1273.

CUMULATIVE AREA = 11.05 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	22.	29.50	22.	17.	8.	0.40		
ROUTED TO	JAJB	22.	30.50	22.	17.	8.	0.40		
HYDROGRAPH AT	102	25.	48.50	24.	23.	16.	1.00		
HYDROGRAPH AT	100	34.	39.00	34.	30.	18.	1.00		
3 COMBINED AT	JB	71.	38.00	71.	65.	41.	2.40		
ROUTED TO	JBJC	71.	39.00	71.	65.	41.	2.40		
HYDROGRAPH AT	104	15.	44.00	14.	13.	9.	0.51		
HYDROGRAPH AT	103	24.	31.00	24.	19.	10.	0.48		
ROUTED TO	JDJC	24.	33.00	24.	19.	10.	0.48		
HYDROGRAPH AT	105	31.	43.00	31.	28.	18.	1.03		
4 COMBINED AT	JC	135.	38.50	134.	123.	77.	4.42		
ROUTED TO	JCJE	135.	40.00	134.	123.	77.	4.42		
HYDROGRAPH AT	108	15.	45.00	15.	13.	9.	0.53		
HYDROGRAPH AT	124	14.	28.50	14.	11.	5.	0.27		
ROUTED TO	JLJM	14.	30.50	14.	11.	5.	0.27		
HYDROGRAPH AT	125	10.	29.50	10.	8.	4.	0.22		
2 COMBINED AT	JM	25.	30.00	24.	19.	9.	0.49		
ROUTED TO	JMJN	25.	30.50	24.	19.	9.	0.49		
HYDROGRAPH AT	120	29.	42.50	29.	26.	16.	0.82		
ROUTED TO	JHJI	29.	42.50	29.	26.	16.	0.82		
HYDROGRAPH AT	121	47.	29.00	45.	35.	17.	0.82		
2 COMBINED AT	JI	66.	30.00	64.	57.	33.	1.64		
ROUTED TO	JIJJ	65.	31.00	64.	57.	33.	1.64		
HYDROGRAPH AT	122	31.	42.00	31.	28.	18.	1.00		
2 COMBINED AT	JJ	90.	34.00	90.	83.	50.	2.64		
ROUTED TO	JJJK	90.	35.00	90.	83.	50.	2.64		
HYDROGRAPH AT	123	25.	40.50	25.	22.	13.	0.76		
2 COMBINED AT	JK	114.	37.50	113.	104.	63.	3.40		
ROUTED TO	JKJN	114.	37.50	113.	104.	63.	3.40		
2 COMBINED AT	JN	134.	34.00	133.	121.	72.	3.89		
ROUTED TO	JNJZ	134.	34.50	133.	121.	72.	3.89		
ROUTED TO	JZJO	134.	35.00	133.	121.	72.	3.89		
HYDROGRAPH AT	127	14.	36.50	13.	11.	7.	0.46		
2 COMBINED AT	JO	147.	35.00	146.	133.	79.	4.35		
ROUTED TO	JOJE	147.	35.50	146.	133.	79.	4.35		

3 COMBINED AT	JE	294.	38.00	292.	268.	165.	9.30
ROUTED TO	JEJY	293.	38.50	292.	268.	165.	9.30
HYDROGRAPH AT	131	46.	13.50	19.	6.	2.	0.10
2 COMBINED AT	JY	293.	38.50	292.	268.	165.	9.40
ROUTED TO	JYJR	293.	38.50	292.	268.	165.	9.40
HYDROGRAPH AT	106	71.	29.00	69.	54.	25.	1.30
ROUTED TO	JQJR	71.	29.00	69.	54.	25.	1.30
HYDROGRAPH AT	107	17.	26.50	16.	12.	5.	0.30
3 COMBINED AT	JR	352.	35.50	350.	319.	193.	11.00
ROUTED TO	JRJX	352.	35.50	350.	319.	193.	11.00
HYDROGRAPH AT	130	29.	13.50	11.	3.	1.	0.05
2 COMBINED AT	JX	352.	35.50	350.	319.	193.	11.05
ROUTED TO	JXJS	352.	35.50	350.	319.	193.	11.05
HYDROGRAPH AT	109	42.	24.00	40.	27.	11.	0.55
2 COMBINED AT	JS	370.	34.50	368.	335.	203.	11.60

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	22.15	1830.00	2.30	30.00	22.15	1830.00	2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4912E+02 EXCESS=0.0000E+00 OUTFLOW=0.4910E+02 BASIN STORAGE=0.1996E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	71.25	2340.00	2.13	30.00	71.25	2340.00	2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2725E+03 EXCESS=0.0000E+00 OUTFLOW=0.2721E+03 BASIN STORAGE=0.7665E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	24.33	1980.00	2.31	30.00	24.33	1980.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5920E+02 EXCESS=0.0000E+00 OUTFLOW=0.5920E+02 BASIN STORAGE=0.3124E-01 PERCENT ERROR= 0.0

JCJE	MANE	30.00	134.78	2400.00	2.16	30.00	134.78	2400.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5101E+03 EXCESS=0.0000E+00 OUTFLOW=0.5093E+03 BASIN STORAGE=0.1552E+01 PERCENT ERROR= -0.1

JLJM	MANE	30.00	14.33	1830.00	2.07	30.00	14.33	1830.00	2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2975E+02 EXCESS=0.0000E+00 OUTFLOW=0.2977E+02 BASIN STORAGE=0.5346E-02 PERCENT ERROR= -0.1

JMJN	MANE	30.00	24.74	1830.00	2.02	30.00	24.74	1830.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5272E+02 EXCESS=0.0000E+00 OUTFLOW=0.5272E+02 BASIN STORAGE=0.2471E-02 PERCENT ERROR= 0.0

JHJI	MANE	30.00	28.94	2550.00	2.48	30.00	28.94	2550.00	2.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1087E+03 EXCESS=0.0000E+00 OUTFLOW=0.1086E+03 BASIN STORAGE=0.1111E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	65.41	1860.00	2.38	30.00	65.41	1860.00	2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2083E+03 EXCESS=0.0000E+00 OUTFLOW=0.2082E+03 BASIN STORAGE=0.2742E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	90.04	2100.00	2.30	30.00	90.04	2100.00	2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3242E+03 EXCESS=0.0000E+00 OUTFLOW=0.3238E+03 BASIN STORAGE=0.5853E+00 PERCENT ERROR= -0.1

JKJN	MANE	5.74	113.61	2245.04	2.27	30.00	113.61	2250.00	2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4113E+03 EXCESS=0.0000E+00 OUTFLOW=0.4113E+03 BASIN STORAGE=0.6425E-01 PERCENT ERROR= 0.0

JNJZ	MANE	26.92	133.91	2072.63	2.24	30.00	133.91	2070.00	2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4640E+03 EXCESS=0.0000E+00 OUTFLOW=0.4640E+03 BASIN STORAGE=0.1378E+00 PERCENT ERROR= 0.0

JZJO	MANE	30.00	133.87	2100.00	2.24	30.00	133.87	2100.00	2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4640E-03 EXCESS=0.0000E+00 OUTFLOW=0.4638E+03 BASIN STORAGE=0.1823E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	147.28	2130.00	2.18	30.00	147.28	2130.00	2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5051E+03 EXCESS=0.0000E+00 OUTFLOW=0.5049E+03 BASIN STORAGE=0.2888E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.23	293.45	2308.85	2.16	30.00	293.45	2310.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1074E+04 EXCESS=0.0000E+00 OUTFLOW=0.1073E+04 BASIN STORAGE=0.7949E+00 PERCENT ERROR= 0.0

JYJR	MANE	4.96	293.43	2315.71	2.16	30.00	293.42	2310.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1084E+04 EXCESS=0.0000E+00 OUTFLOW=0.1084E+04 BASIN STORAGE=0.1266E+00 PERCENT ERROR= 0.0

JQJR	MANE	19.75	71.23	1757.76	2.19	30.00	71.22	1740.00	2.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1516E+03 EXCESS=0.0000E+00 OUTFLOW=0.1516E+03 BASIN STORAGE=0.7181E-02 PERCENT ERROR= 0.0

JRJX	MANE	7.54	352.06	2140.13	2.16	30.00	352.04	2130.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1267E+04 EXCESS=0.0000E+00 OUTFLOW=0.1267E+04 BASIN STORAGE=0.1805E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.77	352.03	2136.50	2.16	30.00	352.00	2130.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1273E+04 EXCESS=0.0000E+00 OUTFLOW=0.1273E+04 BASIN STORAGE=0.9064E-01 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY  1991                *
*           VERSION 4.0.1E              *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  12/11/98  TIME  08:35:36   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   1      ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
   2      ID        NICK HOFFMAN, EIT E-7577
   3      ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
   4      ID      25 YEAR STORM EVENT WITH WETLAND INFLUENCE
          *
   5      IT      30  1DEC98    0000     300
   6      IO       5       1
          *
   7      KK     101         COMPUTE RUNOFF HYDROGRAPH
   8      PH                     0.69    1.39     2.6    2.98    3.08    3.54       4    4.51
   9      BA     0.4
  10      LS    0.55      87    3.39
  11      UC   18.72   15.13
          *
  12      KK    JAJB         ROUTE HYDROGRAPH
  13      RD    6700 0.00075    0.05             TRAP      10     0.3
          *
  14      KK     102         COMPUTE RUNOFF HYDROGRAPH
  15      BA       1
  16      LS    0.66      84    6.43
  17      UC   40.12    32.1
          *
  18      KK     100         COMPUTE RUNOFF HYDROGRAPH
  19      BA       1
  20      LS    0.62      85    4.57
  21      UC   29.01   23.21
          *
  22      KK      JB         COMBINE HYDROGRAPHS
  23      HC       3
  24      KK    JBJC         ROUTE HYDROGRAPH
  25      RD    8200 0.00061    0.05             TRAP      10     0.3
          *
  26      KK     104         COMPUTE RUNOFF HYDROGRAPH
  27      BA    0.51
  28      LS    0.68      83   12.83
  29      UC   35.34   28.27
          *
  30      KK     103         COMPUTE RUNOFF HYDROGRAPH
  31      BA    0.48
  32      LS    0.66      84   18.23
  33      UC   20.71   16.57
          *
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SEL 0.0083 ENERGY SLOPE
ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

		--- LEFT OVERBANK ---	+	------ MAIN CHANNEL -------	+	--- RIGHT OVERBANK ---		
167 RY	ELEVATION	1280.00	1279.00	1278.00	1273.70	1275.00	1277.00	1277.20	1281.00
166 RX	DISTANCE	0.00	55.00	152.00	302.00	365.00	382.00	399.00	430.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.06	0.23	0.51	0.89	1.34	1.85	2.41	3.04	3.73
OUTFLOW	0.00	2.78	17.64	52.02	115.66	208.55	329.23	479.26	660.36	878.04
ELEVATION	1273.70	1274.08	1274.47	1274.85	1275.24	1275.62	1276.00	1276.39	1276.77	1277.16
STORAGE	4.52	5.38	6.32	7.40	8.62	9.95	11.36	12.84	14.34	15.85
OUTFLOW	1139.87	1442.05	1333.82	2290.27	2809.10	3396.79	4050.80	4787.10	5600.58	6478.99
ELEVATION	1277.54	1277.93	1278.31	1278.69	1279.08	1279.46	1279.85	1280.23	1280.61	1281.00

COMPUTED MUSKINGUM-CUNGE PARAMETERS
COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN			3.43	200.00	448.30	2129.23	2.75	1.94

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN			30.00		448.29	2130.00	2.75	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1619E+04 EXCESS=0.0000E+00 OUTFLOW=0.1619E+04 BASIN STORAGE=0.1067E+00 PERCENT ERROR= 0.0

****

HYDROGRAPH AT STATION JXJS

****

DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	*	2 DEC 1330	76	444.	*	4 DEC 0300	151	122.	*	5 DEC 1630	226	28.
1 DEC 0030	2	0.	*	2 DEC 1400	77	442.	*	4 DEC 0330	152	120.	*	5 DEC 1700	227	28.
1 DEC 0100	3	0.	*	2 DEC 1430	78	440.	*	4 DEC 0400	153	117.	*	5 DEC 1730	228	27.
1 DEC 0130	4	0.	*	2 DEC 1500	79	438.	*	4 DEC 0430	154	115.	*	5 DEC 1800	229	27.
1 DEC 0200	5	0.	*	2 DEC 1530	80	435.	*	4 DEC 0500	155	113.	*	5 DEC 1830	230	26.
1 DEC 0230	6	0.	*	2 DEC 1600	81	433.	*	4 DEC 0530	156	111.	*	5 DEC 1900	231	26.
1 DEC 0300	7	0.	*	2 DEC 1630	82	430.	*	4 DEC 0600	157	108.	*	5 DEC 1930	232	25.
1 DEC 0330	8	0.	*	2 DEC 1700	83	426.	*	4 DEC 0630	158	106.	*	5 DEC 2000	233	25.
1 DEC 0400	9	0.	*	2 DEC 1730	84	423.	*	4 DEC 0700	159	104.	*	5 DEC 2030	234	24.
1 DEC 0430	10	0.	*	2 DEC 1800	85	419.	*	4 DEC 0730	160	102.	*	5 DEC 2100	235	24.
1 DEC 0500	11	0.	*	2 DEC 1830	86	416.	*	4 DEC 0800	161	100.	*	5 DEC 2130	236	23.
1 DEC 0530	12	0.	*	2 DEC 1900	87	412.	*	4 DEC 0830	162	98.	*	5 DEC 2200	237	23.
1 DEC 0600	13	0.	*	2 DEC 1930	88	407.	*	4 DEC 0900	163	96.	*	5 DEC 2230	238	23.
1 DEC 0630	14	0.	*	2 DEC 2000	89	403.	*	4 DEC 0930	164	94.	*	5 DEC 2300	239	22.
1 DEC 0700	15	0.	*	2 DEC 2030	90	398.	*	4 DEC 1000	165	93.	*	5 DEC 2330	240	22.
1 DEC 0730	16	0.	*	2 DEC 2100	91	394.	*	4 DEC 1030	166	91.	*	6 DEC 0000	241	21.
1 DEC 0800	17	0.	*	2 DEC 2130	92	389.	*	4 DEC 1100	167	89.	*	6 DEC 0030	242	21.
1 DEC 0830	18	0.	*	2 DEC 2200	93	383.	*	4 DEC 1130	168	87.	*	6 DEC 0100	243	21.
1 DEC 0900	19	0.	*	2 DEC 2230	94	378.	*	4 DEC 1200	169	86.	*	6 DEC 0130	244	20.
1 DEC 0930	20	0.	*	2 DEC 2300	95	373.	*	4 DEC 1230	170	84.	*	6 DEC 0200	245	20.
1 DEC 1000	21	1.	*	2 DEC 2330	96	367.	*	4 DEC 1300	171	82.	*	6 DEC 0230	246	19.
1 DEC 1030	22	1.	*	3 DEC 0000	97	361.	*	4 DEC 1330	172	81.	*	6 DEC 0300	247	19.
1 DEC 1100	23	1.	*	3 DEC 0030	98	355.	*	4 DEC 1400	173	79.	*	6 DEC 0330	248	19.
1 DEC 1130	24	1.	*	3 DEC 0100	99	349.	*	4 DEC 1430	174	78.	*	6 DEC 0400	249	18.
1 DEC 1200	25	4.	*	3 DEC 0130	100	343.	*	4 DEC 1500	175	76.	*	6 DEC 0430	250	18.
1 DEC 1230	26	20.	*	3 DEC 0200	101	337.	*	4 DEC 1530	176	75.	*	6 DEC 0500	251	18.
1 DEC 1300	27	58.	*	3 DEC 0230	102	331.	*	4 DEC 1600	177	73.	*	6 DEC 0530	252	17.
1 DEC 1330	28	87.	*	3 DEC 0300	103	325.	*	4 DEC 1630	178	72.	*	6 DEC 0600	253	17.
1 DEC 1400	29	84.	*	3 DEC 0330	104	319.	*	4 DEC 1700	179	70.	*	6 DEC 0630	254	17.
1 DEC 1430	30	69.	*	3 DEC 0400	105	313.	*	4 DEC 1730	180	69.	*	6 DEC 0700	255	16.

1	DEC	1500	31	56.	*	3	DEC	0430	106	307.	*	4	DEC	1800	181	68.	*	6	DEC	0730	256	16.
1	DEC	1530	32	48.	*	3	DEC	0500	107	301.	*	4	DEC	1830	182	67.	*	6	DEC	0800	257	16.
1	DEC	1600	33	44.	*	3	DEC	0530	108	295.	*	4	DEC	1900	183	65.	*	6	DEC	0830	258	16.
1	DEC	1630	34	43.	*	3	DEC	0600	109	289.	*	4	DEC	1930	184	64.	*	6	DEC	0900	259	15.
1	DEC	1700	35	44.	*	3	DEC	0630	110	284.	*	4	DEC	2000	185	63.	*	6	DEC	0930	260	15.
1	DEC	1730	36	47.	*	3	DEC	0700	111	278.	*	4	DEC	2030	186	62.	*	6	DEC	1000	261	15.
1	DEC	1800	37	51.	*	3	DEC	0730	112	272.	*	4	DEC	2100	187	60.	*	6	DEC	1030	262	15.
1	DEC	1830	38	57.	*	3	DEC	0800	113	267.	*	4	DEC	2130	188	59.	*	6	DEC	1100	263	14.
1	DEC	1900	39	64.	*	3	DEC	0830	114	261.	*	4	DEC	2200	189	58.	*	6	DEC	1130	264	14.
1	DEC	1930	40	73.	*	3	DEC	0900	115	256.	*	4	DEC	2230	190	57.	*	6	DEC	1200	265	14.
1	DEC	2000	41	84.	*	3	DEC	0930	116	251.	*	4	DEC	2300	191	56.	*	6	DEC	1230	266	13.
1	DEC	2030	42	98.	*	3	DEC	1000	117	246.	*	4	DEC	2330	192	55.	*	6	DEC	1300	267	13.
1	DEC	2100	43	113.	*	3	DEC	1030	118	241.	*	5	DEC	0000	193	54.	*	6	DEC	1330	268	13.
1	DEC	2130	44	131.	*	3	DEC	1100	119	236.	*	5	DEC	0030	194	53.	*	6	DEC	1400	269	13.
1	DEC	2200	45	150.	*	3	DEC	1130	120	231.	*	5	DEC	0100	195	52.	*	6	DEC	1430	270	13.
1	DEC	2230	46	170.	*	3	DEC	1200	121	226.	*	5	DEC	0130	196	51.	*	6	DEC	1500	271	12.
1	DEC	2300	47	190.	*	3	DEC	1230	122	221.	*	5	DEC	0200	197	50.	*	6	DEC	1530	272	12.
1	DEC	2330	48	210.	*	3	DEC	1300	123	217.	*	5	DEC	0230	198	49.	*	6	DEC	1600	273	12.
2	DEC	0000	49	229.	*	3	DEC	1330	124	212.	*	5	DEC	0300	199	48.	*	6	DEC	1630	274	12.
2	DEC	0030	50	249.	*	3	DEC	1400	125	208.	*	5	DEC	0330	200	47.	*	6	DEC	1700	275	11.
2	DEC	0100	51	267.	*	3	DEC	1430	126	204.	*	5	DEC	0400	201	46.	*	6	DEC	1730	276	11.
2	DEC	0130	52	284.	*	3	DEC	1500	127	199.	*	5	DEC	0430	202	45.	*	6	DEC	1800	277	11.
2	DEC	0200	53	300.	*	3	DEC	1530	128	195.	*	5	DEC	0500	203	44.	*	6	DEC	1830	278	11.
2	DEC	0230	54	316.	*	3	DEC	1600	129	191.	*	5	DEC	0530	204	43.	*	6	DEC	1900	279	11.
2	DEC	0300	55	332.	*	3	DEC	1630	130	187.	*	5	DEC	0600	205	42.	*	6	DEC	1930	280	10.
2	DEC	0330	56	346.	*	3	DEC	1700	131	183.	*	5	DEC	0630	206	42.	*	6	DEC	2000	281	10.
2	DEC	0400	57	360.	*	3	DEC	1730	132	180.	*	5	DEC	0700	207	41.	*	6	DEC	2030	282	10.
2	DEC	0430	58	373.	*	3	DEC	1800	133	176.	*	5	DEC	0730	208	40.	*	6	DEC	2100	283	10.
2	DEC	0500	59	384.	*	3	DEC	1830	134	172.	*	5	DEC	0800	209	39.	*	6	DEC	2130	284	10.
2	DEC	0530	60	395.	*	3	DEC	1900	135	169.	*	5	DEC	0830	210	39.	*	6	DEC	2200	285	9.
2	DEC	0600	61	405.	*	3	DEC	1930	136	166.	*	5	DEC	0900	211	38.	*	6	DEC	2230	286	9.
2	DEC	0630	62	414.	*	3	DEC	2000	137	162.	*	5	DEC	0930	212	37.	*	6	DEC	2300	287	9.
2	DEC	0700	63	421.	*	3	DEC	2030	138	159.	*	5	DEC	1000	213	36.	*	6	DEC	2330	288	9.
2	DEC	0730	64	428.	*	3	DEC	2100	139	156.	*	5	DEC	1030	214	36.	*	7	DEC	0000	289	9.
2	DEC	0800	65	433.	*	3	DEC	2130	140	153.	*	5	DEC	1100	215	35.	*	7	DEC	0030	290	9.
2	DEC	0830	66	438.	*	3	DEC	2200	141	150.	*	5	DEC	1130	216	34.	*	7	DEC	0100	291	8.
2	DEC	0900	67	441.	*	3	DEC	2230	142	147.	*	5	DEC	1200	217	33.	*	7	DEC	0130	292	8.
2	DEC	0930	68	444.	*	3	DEC	2300	143	144.	*	5	DEC	1230	218	33.	*	7	DEC	0200	293	8.
2	DEC	1000	69	446.	*	3	DEC	2330	144	141.	*	5	DEC	1300	219	32.	*	7	DEC	0230	294	8.
2	DEC	1030	70	448.	*	4	DEC	0000	145	138.	*	5	DEC	1330	220	32.	*	7	DEC	0300	295	8.
2	DEC	1100	71	448.	*	4	DEC	0030	146	135.	*	5	DEC	1400	221	31.	*	7	DEC	0330	296	8.
2	DEC	1130	72	448.	*	4	DEC	0100	147	132.	*	5	DEC	1430	222	30.	*	7	DEC	0400	297	8.
2	DEC	1200	73	448.	*	4	DEC	0130	148	130.	*	5	DEC	1500	223	30.	*	7	DEC	0430	298	7.
2	DEC	1230	74	447.	*	4	DEC	0200	149	127.	*	5	DEC	1530	224	29.	*	7	DEC	0500	299	7.
2	DEC	1300	75	446.	*	4	DEC	0230	150	125.	*	5	DEC	1600	225	29.	*	7	DEC	0530	300	7.
					*						*						*					

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
448.	35.50	(CFS)	445.	406.	246.	131.
		(INCHES)	0.375	1.365	2.483	2.748
		(AC-FT)	221.	805.	1463.	1619.

CUMULATIVE AREA = 11.05 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	28.	29.50	27.	22.	10.	0.40		
ROUTED TO	JAJB	28.	30.50	27.	21.	10.	0.40		
HYDROGRAPH AT	102	31.	48.50	31.	29.	20.	1.00		
HYDROGRAPH AT	100	44.	38.50	44.	38.	23.	1.00		
3 COMBINED AT	JB	91.	38.00	90.	83.	53.	2.40		
ROUTED TO	JBJC	91.	39.00	90.	83.	53.	2.40		
HYDROGRAPH AT	104	19.	44.00	18.	17.	11.	0.51		
HYDROGRAPH AT	103	31.	31.00	30.	24.	12.	0.48		
ROUTED TO	JDJC	31.	32.50	30.	24.	12.	0.48		
HYDROGRAPH AT	105	40.	43.00	40.	36.	23.	1.03		
4 COMBINED AT	JC	171.	38.50	170.	157.	98.	4.42		
ROUTED TO	JCJE	171.	39.50	170.	157.	98.	4.42		
HYDROGRAPH AT	108	19.	45.00	19.	17.	11.	0.53		
HYDROGRAPH AT	124	18.	28.50	18.	14.	6.	0.27		
ROUTED TO	JLJM	18.	30.00	18.	14.	6.	0.27		
HYDROGRAPH AT	125	13.	29.50	13.	10.	5.	0.22		
2 COMBINED AT	JM	32.	30.00	31.	24.	11.	0.49		
ROUTED TO	JMJN	32.	30.50	31.	24.	11.	0.49		
HYDROGRAPH AT	120	36.	42.00	36.	32.	20.	0.82		
ROUTED TO	JHJI	36.	42.50	36.	32.	20.	0.82		
HYDROGRAPH AT	121	59.	29.00	57.	45.	21.	0.82		
2 COMBINED AT	JI	83.	30.00	81.	71.	41.	1.64		
ROUTED TO	JIJJ	82.	31.00	81.	71.	41.	1.64		
HYDROGRAPH AT	122	40.	42.00	40.	35.	22.	1.00		
2 COMBINED AT	JJ	114.	34.00	113.	104.	63.	2.64		
ROUTED TO	JJJK	114.	35.00	113.	104.	63.	2.64		
HYDROGRAPH AT	123	32.	40.50	31.	28.	17.	0.76		
2 COMBINED AT	JK	144.	37.00	143.	132.	80.	3.40		
ROUTED TO	JKJN	144.	37.00	143.	132.	80.	3.40		
2 COMBINED AT	JN	170.	34.00	169.	154.	91.	3.89		
ROUTED TO	JNJZ	170.	34.00	169.	154.	91.	3.89		
ROUTED TO	JZJO	170.	34.50	169.	153.	91.	3.89		
HYDROGRAPH AT	127	18.	36.50	18.	15.	9.	0.46		
2 COMBINED AT	JO	187.	35.00	186.	169.	100.	4.35		
ROUTED TO	JOJE	187.	35.50	186.	169.	100.	4.35		

3 COMBINED AT	JE	373.	38.00	371.	340.	209.	9.30
ROUTED TO	JEJY	373.	38.50	371.	340.	209.	9.30
HYDROGRAPH AT	131	60.	13.50	24.	7.	2.	0.10
2 COMBINED AT	JY	373.	38.50	371.	340.	209.	9.40
ROUTED TO	JYJR	373.	38.50	371.	340.	209.	9.40
HYDROGRAPH AT	106	91.	29.00	88.	68.	32.	1.30
ROUTED TO	JQJR	91.	29.00	88.	68.	32.	1.30
HYDROGRAPH AT	107	22.	26.50	21.	16.	7.	0.30
3 COMBINED AT	JR	448.	35.00	445.	406.	246.	11.00
ROUTED TO	JRJX	448.	35.50	445.	406.	246.	11.00
HYDROGRAPH AT	130	37.	13.50	14.	4.	1.	0.05
2 COMBINED AT	JX	448.	35.50	445.	406.	246.	11.05
ROUTED TO	JXJS	448.	35.50	445.	406.	246.	11.05
HYDROGRAPH AT	109	54.	24.00	51.	35.	14.	0.55
2 COMBINED AT	JS	472.	34.50	469.	426.	259.	11.60

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	28.05	1830.00	2.91	30.00	28.05	1830.00	2.91
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6216E+02 EXCESS=0.0000E+00 OUTFLOW=0.6213E+02 BASIN STORAGE=0.2011E-01 PERCENT ERROR= 0.0									
JBJC	MANE	30.00	90.80	2340.00	2.71	30.00	90.80	2340.00	2.71
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3479E+03 EXCESS=0.0000E+00 OUTFLOW=0.3474E+03 BASIN STORAGE=0.9032E+00 PERCENT ERROR= -0.1									
JDJC	MANE	30.00	30.63	1980.00	2.91	30.00	30.63	1980.00	2.91
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7453E+02 EXCESS=0.0000E+00 OUTFLOW=0.7452E+02 BASIN STORAGE=0.3176E-01 PERCENT ERROR= 0.0									
JCJE	MANE	30.00	171.16	2370.00	2.75	30.00	171.16	2370.00	2.75
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6491E+03 EXCESS=0.0000E+00 OUTFLOW=0.6483E+03 BASIN STORAGE=0.1812E+01 PERCENT ERROR= -0.2									
JLJM	MANE	30.00	18.28	1800.00	2.63	30.00	18.28	1800.00	2.63
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3791E+02 EXCESS=0.0000E+00 OUTFLOW=0.3792E+02 BASIN STORAGE=0.5847E-02 PERCENT ERROR= -0.1									
JMJN	MANE	30.00	31.69	1830.00	2.58	30.00	31.69	1830.00	2.58
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6746E+02 EXCESS=0.0000E+00 OUTFLOW=0.6746E+02 BASIN STORAGE=0.2786E-02 PERCENT ERROR= 0.0									
JHJI	MANE	29.00	36.13	2552.29	3.10	30.00	36.13	2550.00	3.10
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1357E+03 EXCESS=0.0000E+00 OUTFLOW=0.1356E+03 BASIN STORAGE=0.1291E+00 PERCENT ERROR= 0.0									
JIJJ	MANE	30.00	82.41	1860.00	2.99	30.00	82.41	1860.00	2.99
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2616E+03 EXCESS=0.0000E+00 OUTFLOW=0.2615E+03 BASIN STORAGE=0.3152E+00 PERCENT ERROR= -0.1									
JJJK	MANE	30.00	113.60	2100.00	2.90	30.00	113.60	2100.00	2.90
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4088E+03 EXCESS=0.0000E+00 OUTFLOW=0.4083E+03 BASIN STORAGE=0.6767E+00 PERCENT ERROR= 0.0									
JKJN	MANE	5.31	143.57	2225.78	2.87	30.00	143.56	2220.00	2.87
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5199E+03 EXCESS=0.0000E+00 OUTFLOW=0.5199E+03 BASIN STORAGE=0.7456E-01 PERCENT ERROR= 0.0									
JNJZ	MANE	23.47	169.55	2042.20	2.83	30.00	169.55	2040.00	2.83
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5874E+03 EXCESS=0.0000E+00 OUTFLOW=0.5873E+03 BASIN STORAGE=0.1622E+00 PERCENT ERROR= 0.0									
JZJO	MANE	30.00	169.52	2070.00	2.83	30.00	169.52	2070.00	2.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5873E+03 EXCESS=0.0000E+00 OUTFLOW=0.5871E+03 BASIN STORAGE=0.2161E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	187.11	2130.00	2.76	30.00	187.11	2130.00	2.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6414E+03 EXCESS=0.0000E+00 OUTFLOW=0.6412E+03 BASIN STORAGE=0.3474E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.20	372.57	2306.80	2.75	30.00	372.55	2310.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1365E+04 EXCESS=0.0000E+00 OUTFLOW=0.1365E+04 BASIN STORAGE=0.9487E+00 PERCENT ERROR= 0.0

JYJR	MANE	4.65	372.54	2308.67	2.75	30.00	372.54	2310.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1379E+04 EXCESS=0.0000E+00 OUTFLOW=0.1379E+04 BASIN STORAGE=0.1417E+00 PERCENT ERROR= 0.0

JQJR	MANE	18.23	90.61	1750.40	2.78	30.00	90.59	1740.00	2.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1927E-03 EXCESS=0.0000E+00 OUTFLOW=0.1927E+03 BASIN STORAGE=0.7524E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.87	448.35	2108.55	2.75	30.00	448.30	2130.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1612E+04 EXCESS=0.0000E+00 OUTFLOW=0.1612E+04 BASIN STORAGE=0.2120E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.43	448.30	2129.23	2.75	30.00	448.29	2130.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1619E+04 EXCESS=0.0000E+00 OUTFLOW=0.1619E+04 BASIN STORAGE=0.1067E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*           VERSION 4.0.1E              *
*      Lahey F77L-EM/32 version 5.01    *
*        Dodson & Associates, Inc.      *
*  RUN DATE  12/11/98  TIME  08:30:45   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*            (916) 551-1748             *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1 ID    STONEY RUN EXISTING CONDITIONS SPN # 9083
    2 ID    NICK HOFFMAN, EIT E-7577
    3 ID    SCHMUCHER PAUL NOHR AND ASSOCIATES
    4 ID   50 YEAR STORM EVENT WITH WETLAND INFLUENCE
      *
    5 IT    30  1DEC93    0000     300
    6 IO     5       1
      *

    7 KK   101        COMPUTE RUNOFF HYDROGRAPH
    8 PH  0.02            0.77    1.6    2.93    3.28    3.56    4.1    4.5      5
    9 BA   0.4
   10 LS  0.55      87    3.39
   11 UC 18.72   15.13
      *

   12 KK  JAJB       ROUTE HYDROGRAPH
   13 RD  6700 0.00075    0.05            TRAP      10     0.3
      *

   14 KK   102        COMPUTE RUNOFF HYDROGRAPH
   15 BA     1
   16 LS  0.66      84    6.43
   17 UC 40.12    32.1
      *

   18 KK   100        COMPUTE RUNOFF HYDROGRAPH
   19 BA     1
   20 LS  0.62      85    4.57
   21 UC 29.01   23.21
      *

   22 KK    JB        COMBINE HYDROGRAPHS
   23 HC     3

   24 KK  JBJC       ROUTE HYDROGRAPH
   25 RD  8200 0.00061    0.05            TRAP      10     0.3
      *

   26 KK   104        COMPUTE RUNOFF HYDROGRAPH
   27 BA  0.51
   28 LS  0.68      83   12.83
   29 UC 35.34   28.27
      *

   30 KK   103        COMPUTE RUNOFF HYDROGRAPH
   31 BA  0.48
   32 LS  0.66      84   18.23
   33 UC 20.71   16.57
      *
```

SEL 0.0083 ENERGY SLOPE
ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

		--- LEFT OVERBANK ---	+	------ MAIN CHANNEL -------	+	--- RIGHT OVERBANK ---			
167 RY	ELEVATION	1280.00	1279.00	1278.00	1273.70	1275.00	1277.00	1277.20	1281.00
166 RX	DISTANCE	0.00	55.00	152.00	302.00	365.00	382.00	399.00	430.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.06	0.23	0.51	0.89	1.34	1.85	2.41	3.04	3.73
OUTFLOW	0.00	2.78	17.64	52.02	115.66	208.55	329.23	479.26	660.36	878.04
ELEVATION	1273.70	1274.08	1274.47	1274.85	1275.24	1275.62	1276.00	1276.39	1276.77	1277.16
STORAGE	4.52	5.38	6.32	7.40	8.62	9.95	11.36	12.84	14.34	15.85
OUTFLOW	1139.87	1442.05	1833.82	2290.27	2809.10	3396.79	4050.80	4787.10	5600.58	6478.99
ELEVATION	1277.54	1277.93	1278.31	1278.69	1279.08	1279.46	1279.85	1280.23	1280.61	1281.00

COMPUTED MUSKINGUM-CUNGE PARAMETERS
COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN			3.29	200.00	521.89	2101.19	3.19	2.03

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN			30.00		521.89	2100.00	3.19	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1879E+04 EXCESS=0.0000E+00 OUTFLOW=0.1878E+04 BASIN STORAGE=0.1185E+00 PERCENT ERROR= 0.0

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HYDROGRAPH AT STATION JXJS

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DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	*	2 DEC 1330	76	515.	*	4 DEC 0300	151	140.	*	5 DEC 1630	226	32.
1 DEC 0030	2	0.	*	2 DEC 1400	77	513.	*	4 DEC 0330	152	137.	*	5 DEC 1700	227	32.
1 DEC 0100	3	0.	*	2 DEC 1430	78	510.	*	4 DEC 0400	153	134.	*	5 DEC 1730	228	31.
1 DEC 0130	4	0.	*	2 DEC 1500	79	507.	*	4 DEC 0430	154	132.	*	5 DEC 1800	229	30.
1 DEC 0200	5	0.	*	2 DEC 1530	80	504.	*	4 DEC 0500	155	129.	*	5 DEC 1830	230	30.
1 DEC 0230	6	0.	*	2 DEC 1600	81	501.	*	4 DEC 0530	156	127.	*	5 DEC 1900	231	29.
1 DEC 0300	7	0.	*	2 DEC 1630	82	497.	*	4 DEC 0600	157	124.	*	5 DEC 1930	232	29.
1 DEC 0330	8	0.	*	2 DEC 1700	83	493.	*	4 DEC 0630	158	122.	*	5 DEC 2000	233	28.
1 DEC 0400	9	0.	*	2 DEC 1730	84	489.	*	4 DEC 0700	159	119.	*	5 DEC 2030	234	28.
1 DEC 0430	10	0.	*	2 DEC 1800	85	485.	*	4 DEC 0730	160	117.	*	5 DEC 2100	235	27.
1 DEC 0500	11	0.	*	2 DEC 1830	86	480.	*	4 DEC 0800	161	115.	*	5 DEC 2130	236	27.
1 DEC 0530	12	0.	*	2 DEC 1900	87	475.	*	4 DEC 0830	162	112.	*	5 DEC 2200	237	26.
1 DEC 0600	13	0.	*	2 DEC 1930	88	470.	*	4 DEC 0900	163	110.	*	5 DEC 2230	238	26.
1 DEC 0630	14	0.	*	2 DEC 2000	89	465.	*	4 DEC 0930	164	108.	*	5 DEC 2300	239	25.
1 DEC 0700	15	0.	*	2 DEC 2030	90	459.	*	4 DEC 1000	165	106.	*	5 DEC 2330	240	25.
1 DEC 0730	16	0.	*	2 DEC 2100	91	454.	*	4 DEC 1030	166	104.	*	6 DEC 0000	241	24.
1 DEC 0800	17	0.	*	2 DEC 2130	92	448.	*	4 DEC 1100	167	102.	*	6 DEC 0030	242	24.
1 DEC 0830	18	0.	*	2 DEC 2200	93	442.	*	4 DEC 1130	168	100.	*	6 DEC 0100	243	23.
1 DEC 0900	19	0.	*	2 DEC 2230	94	435.	*	4 DEC 1200	169	98.	*	6 DEC 0130	244	23.
1 DEC 0930	20	0.	*	2 DEC 2300	95	429.	*	4 DEC 1230	170	96.	*	6 DEC 0200	245	23.
1 DEC 1000	21	1.	*	2 DEC 2330	96	422.	*	4 DEC 1300	171	94.	*	6 DEC 0230	246	22.
1 DEC 1030	22	1.	*	3 DEC 0000	97	415.	*	4 DEC 1330	172	92.	*	6 DEC 0300	247	22.
1 DEC 1100	23	1.	*	3 DEC 0030	98	408.	*	4 DEC 1400	173	91.	*	6 DEC 0330	248	21.
1 DEC 1130	24	2.	*	3 DEC 0100	99	401.	*	4 DEC 1430	174	89.	*	6 DEC 0400	249	21.
1 DEC 1200	25	5.	*	3 DEC 0130	100	394.	*	4 DEC 1500	175	87.	*	6 DEC 0430	250	21.
1 DEC 1230	26	25.	*	3 DEC 0200	101	387.	*	4 DEC 1530	176	85.	*	6 DEC 0500	251	20.
1 DEC 1300	27	70.	*	3 DEC 0230	102	380.	*	4 DEC 1600	177	84.	*	6 DEC 0530	252	20.
1 DEC 1330	28	103.	*	3 DEC 0300	103	373.	*	4 DEC 1630	178	82.	*	6 DEC 0600	253	19.
1 DEC 1400	29	100.	*	3 DEC 0330	104	366.	*	4 DEC 1700	179	81.	*	6 DEC 0630	254	19.
1 DEC 1430	30	83.	*	3 DEC 0400	105	359.	*	4 DEC 1730	180	79.	*	6 DEC 0700	255	19.

1	DEC	1500	31	68.	*	3	DEC	0430	106	352.	*	4	DEC	1800	181	78.	*	6	DEC	0730	256	18.
1	DEC	1530	32	58.	*	3	DEC	0500	107	345.	*	4	DEC	1830	182	76.	*	6	DEC	0800	257	18.
1	DEC	1600	33	52.	*	3	DEC	0530	108	338.	*	4	DEC	1900	183	75.	*	6	DEC	0830	258	18.
1	DEC	1630	34	50.	*	3	DEC	0600	109	332.	*	4	DEC	1930	184	73.	*	6	DEC	0900	259	17.
1	DEC	1700	35	51.	*	3	DEC	0630	110	325.	*	4	DEC	2000	185	72.	*	6	DEC	0930	260	17.
1	DEC	1730	36	55.	*	3	DEC	0700	111	319.	*	4	DEC	2030	186	70.	*	6	DEC	1000	261	17.
1	DEC	1800	37	60.	*	3	DEC	0730	112	312.	*	4	DEC	2100	187	69.	*	6	DEC	1030	262	17.
1	DEC	1830	38	68.	*	3	DEC	0800	113	306.	*	4	DEC	2130	188	68.	*	6	DEC	1100	263	16.
1	DEC	1900	39	77.	*	3	DEC	0830	114	300.	*	4	DEC	2200	189	67.	*	6	DEC	1130	264	16.
1	DEC	1930	40	90.	*	3	DEC	0900	115	294.	*	4	DEC	2230	190	65.	*	6	DEC	1200	265	16.
1	DEC	2000	41	105.	*	3	DEC	0930	116	287.	*	4	DEC	2300	191	64.	*	6	DEC	1230	266	15.
1	DEC	2030	42	122.	*	3	DEC	1000	117	282.	*	4	DEC	2330	192	63.	*	6	DEC	1300	267	15.
1	DEC	2100	43	142.	*	3	DEC	1030	118	276.	*	5	DEC	0000	193	62.	*	6	DEC	1330	268	15.
1	DEC	2130	44	163.	*	3	DEC	1100	119	270.	*	5	DEC	0030	194	61.	*	6	DEC	1400	269	15.
1	DEC	2200	45	186.	*	3	DEC	1130	120	264.	*	5	DEC	0100	195	59.	*	6	DEC	1430	270	14.
1	DEC	2230	46	210.	*	3	DEC	1200	121	259.	*	5	DEC	0130	196	58.	*	6	DEC	1500	271	14.
1	DEC	2300	47	233.	*	3	DEC	1230	122	254.	*	5	DEC	0200	197	57.	*	6	DEC	1530	272	14.
1	DEC	2330	48	256.	*	3	DEC	1300	123	248.	*	5	DEC	0230	198	56.	*	6	DEC	1600	273	14.
2	DEC	0000	49	278.	*	3	DEC	1330	124	243.	*	5	DEC	0300	199	55.	*	6	DEC	1630	274	13.
2	DEC	0030	50	300.	*	3	DEC	1400	125	238.	*	5	DEC	0330	200	54.	*	6	DEC	1700	275	13.
2	DEC	0100	51	321.	*	3	DEC	1430	126	233.	*	5	DEC	0400	201	52.	*	6	DEC	1730	276	13.
2	DEC	0130	52	340.	*	3	DEC	1500	127	228.	*	5	DEC	0430	202	51.	*	6	DEC	1800	277	13.
2	DEC	0200	53	359.	*	3	DEC	1530	128	224.	*	5	DEC	0500	203	50.	*	6	DEC	1830	278	12.
2	DEC	0230	54	378.	*	3	DEC	1600	129	219.	*	5	DEC	0530	204	49.	*	6	DEC	1900	279	12.
2	DEC	0300	55	396.	*	3	DEC	1630	130	215.	*	5	DEC	0600	205	49.	*	6	DEC	1930	280	12.
2	DEC	0330	56	412.	*	3	DEC	1700	131	210.	*	5	DEC	0630	206	48.	*	6	DEC	2000	281	12.
2	DEC	0400	57	428.	*	3	DEC	1730	132	206.	*	5	DEC	0700	207	47.	*	6	DEC	2030	282	12.
2	DEC	0430	58	442.	*	3	DEC	1800	133	202.	*	5	DEC	0730	208	46.	*	6	DEC	2100	283	11.
2	DEC	0500	59	456.	*	3	DEC	1830	134	198.	*	5	DEC	0800	209	45.	*	6	DEC	2130	284	11.
2	DEC	0530	60	468.	*	3	DEC	1900	135	194.	*	5	DEC	0830	210	44.	*	6	DEC	2200	285	11.
2	DEC	0600	61	479.	*	3	DEC	1930	136	190.	*	5	DEC	0900	211	43.	*	6	DEC	2230	286	11.
2	DEC	0630	62	488.	*	3	DEC	2000	137	186.	*	5	DEC	0930	212	42.	*	6	DEC	2300	287	10.
2	DEC	0700	63	496.	*	3	DEC	2030	138	182.	*	5	DEC	1000	213	41.	*	6	DEC	2330	288	10.
2	DEC	0730	64	503.	*	3	DEC	2100	139	178.	*	5	DEC	1030	214	41.	*	7	DEC	0000	289	10.
2	DEC	0800	65	508.	*	3	DEC	2130	140	175.	*	5	DEC	1100	215	40.	*	7	DEC	0030	290	10.
2	DEC	0830	66	513.	*	3	DEC	2200	141	171.	*	5	DEC	1130	216	39.	*	7	DEC	0100	291	10.
2	DEC	0900	67	517.	*	3	DEC	2230	142	168.	*	5	DEC	1200	217	38.	*	7	DEC	0130	292	9.
2	DEC	0930	68	519.	*	3	DEC	2300	143	164.	*	5	DEC	1230	218	37.	*	7	DEC	0200	293	9.
2	DEC	1000	69	521.	*	3	DEC	2330	144	161.	*	5	DEC	1300	219	37.	*	7	DEC	0230	294	9.
2	DEC	1030	70	522.	*	4	DEC	0000	145	158.	*	5	DEC	1330	220	36.	*	7	DEC	0300	295	9.
2	DEC	1100	71	522.	*	4	DEC	0030	146	155.	*	5	DEC	1400	221	35.	*	7	DEC	0330	296	9.
2	DEC	1130	72	521.	*	4	DEC	0100	147	152.	*	5	DEC	1430	222	35.	*	7	DEC	0400	297	9.
2	DEC	1200	73	521.	*	4	DEC	0130	148	149.	*	5	DEC	1500	223	34.	*	7	DEC	0430	298	8.
2	DEC	1230	74	519.	*	4	DEC	0200	149	146.	*	5	DEC	1530	224	33.	*	7	DEC	0500	299	8.
2	DEC	1300	75	517.	*	4	DEC	0230	150	143.	*	5	DEC	1600	225	33.	*	7	DEC	0530	300	8.
					*						*						*					

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
522.	35.00	(CFS)	518.	472.	285.	152.
		(INCHES)	0.436	1.588	2.882	3.188
		(AC-FT)	257.	936.	1698.	1879.

CUMULATIVE AREA = 11.05 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	33.	29.50	32.	25.	12.	0.40		
ROUTED TO	JAJB	33.	30.50	32.	25.	12.	0.40		
HYDROGRAPH AT	102	37.	48.50	36.	34.	23.	1.00		
HYDROGRAPH AT	100	51.	38.50	51.	44.	26.	1.00		
3 COMBINED AT	JB	106.	37.50	105.	97.	61.	2.40		
ROUTED TO	JBJC	106.	38.50	105.	96.	61.	2.40		
HYDROGRAPH AT	104	22.	44.00	21.	19.	13.	0.51		
HYDROGRAPH AT	103	36.	31.00	35.	28.	14.	0.48		
ROUTED TO	JDJC	36.	32.50	35.	28.	14.	0.48		
HYDROGRAPH AT	105	46.	43.00	46.	41.	27.	1.03		
4 COMBINED AT	JC	199.	38.50	198.	182.	114.	4.42		
ROUTED TO	JCJE	199.	39.50	198.	182.	114.	4.42		
HYDROGRAPH AT	108	22.	45.00	22.	20.	13.	0.53		
HYDROGRAPH AT	124	21.	28.00	21.	16.	7.	0.27		
ROUTED TO	JLJM	21.	30.00	21.	16.	7.	0.27		
HYDROGRAPH AT	125	16.	29.00	15.	12.	6.	0.22		
2 COMBINED AT	JM	37.	29.50	36.	28.	13.	0.49		
ROUTED TO	JMJN	37.	30.00	36.	28.	13.	0.49		
HYDROGRAPH AT	120	42.	42.00	41.	37.	23.	0.82		
ROUTED TO	JHJI	42.	42.50	41.	37.	23.	0.82		
HYDROGRAPH AT	121	69.	29.00	67.	52.	24.	0.82		
2 COMBINED AT	JI	96.	30.00	94.	82.	47.	1.64		
ROUTED TO	JIJJ	96.	30.50	94.	82.	47.	1.64		
HYDROGRAPH AT	122	46.	41.50	46.	41.	26.	1.00		
2 COMBINED AT	JJ	132.	33.50	131.	121.	73.	2.64		
ROUTED TO	JJJK	131.	34.50	131.	121.	73.	2.64		
HYDROGRAPH AT	123	37.	40.50	36.	32.	20.	0.76		
2 COMBINED AT	JK	166.	37.00	166.	152.	93.	3.40		
ROUTED TO	JKJN	166.	37.00	166.	152.	93.	3.40		
2 COMBINED AT	JN	197.	33.50	196.	178.	106.	3.89		
ROUTED TO	JNJZ	197.	33.50	196.	178.	106.	3.89		
ROUTED TO	JZJO	197.	34.00	196.	178.	106.	3.89		
HYDROGRAPH AT	127	21.	36.50	21.	18.	10.	0.46		
2 COMBINED AT	JO	218.	34.50	216.	196.	116.	4.35		
ROUTED TO	JOJE	218.	35.00	216.	196.	116.	4.35		

3 COMBINED AT	JE	433.	37.50	431.	395.	243.	9.30
ROUTED TO	JEJY	433.	38.00	430.	395.	243.	9.30
HYDROGRAPH AT	131	71.	13.50	29.	8.	3.	0.10
2 COMBINED AT	JY	433.	38.00	430.	395.	243.	9.40
ROUTED TO	JYJR	433.	38.00	430.	395.	243.	9.40
HYDROGRAPH AT	106	106.	28.50	103.	80.	37.	1.30
ROUTED TO	JQJR	106.	29.00	103.	79.	37.	1.30
HYDROGRAPH AT	107	26.	26.50	25.	18.	8.	0.30
3 COMBINED AT	JR	522.	35.00	518.	472.	285.	11.00
ROUTED TO	JRJX	522.	35.00	518.	472.	285.	11.00
HYDROGRAPH AT	130	43.	13.50	17.	5.	2.	0.05
2 COMBINED AT	JX	522.	35.00	518.	472.	285.	11.05
ROUTED TO	JXJS	522.	35.00	518.	472.	285.	11.05
HYDROGRAPH AT	109	63.	24.00	60.	41.	16.	0.55
2 COMBINED AT	JS	550.	34.00	546.	496.	300.	11.60

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	32.64	1830.00	3.37	30.00	32.64	1830.00	3.37
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7187E+02 EXCESS=0.0000E+00 OUTFLOW=0.7184E+02 BASIN STORAGE=0.2251E-01 PERCENT ERROR= 0.0									
JBJC	MANE	30.00	105.57	2310.00	3.16	30.00	105.57	2310.00	3.16
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4043E+03 EXCESS=0.0000E+00 OUTFLOW=0.4039E+03 BASIN STORAGE=0.9880E+00 PERCENT ERROR= -0.1									
JDJC	MANE	30.00	35.58	1950.00	3.36	30.00	35.58	1950.00	3.36
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8597E+02 EXCESS=0.0000E+00 OUTFLOW=0.8596E+02 BASIN STORAGE=0.2942E-01 PERCENT ERROR= 0.0									
JCJE	MANE	30.00	198.70	2370.00	3.19	30.00	198.70	2370.00	3.19
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7532E+03 EXCESS=0.0000E+00 OUTFLOW=0.7523E+03 BASIN STORAGE=0.1977E+01 PERCENT ERROR= -0.1									
JLJM	MANE	30.00	21.41	1800.00	3.06	30.00	21.41	1800.00	3.06
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4405E-02 EXCESS=0.0000E+00 OUTFLOW=0.4406E+02 BASIN STORAGE=0.5826E-02 PERCENT ERROR= 0.0									
JMJN	MANE	30.00	37.23	1800.00	3.01	30.00	37.23	1800.00	3.01
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7857E+02 EXCESS=0.0000E+00 OUTFLOW=0.7857E+02 BASIN STORAGE=0.2783E-02 PERCENT ERROR= 0.0									
JHJI	MANE	27.69	41.56	2547.05	3.56	30.00	41.56	2550.00	3.56
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1557E+03 EXCESS=0.0000E+00 OUTFLOW=0.1556E+03 BASIN STORAGE=0.1418E+00 PERCENT ERROR= 0.0									
JIJJ	MANE	30.00	95.62	1830.00	3.44	30.00	95.62	1830.00	3.44
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3012E+03 EXCESS=0.0000E+00 OUTFLOW=0.3011E+03 BASIN STORAGE=0.3443E+00 PERCENT ERROR= -0.1									
JJJK	MANE	30.00	131.49	2070.00	3.35	30.00	131.49	2070.00	3.35
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4719E+03 EXCESS=0.0000E+00 OUTFLOW=0.4713E+03 BASIN STORAGE=0.7409E+00 PERCENT ERROR= 0.0									
JKJN	MANE	5.06	166.15	2221.54	3.31	30.00	166.15	2220.00	3.31
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6009E+03 EXCESS=0.0000E+00 OUTFLOW=0.6008E+03 BASIN STORAGE=0.8172E-01 PERCENT ERROR= 0.0									
JNJZ	MANE	21.38	196.90	2009.35	3.27	30.00	196.90	2010.00	3.27
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6794E+03 EXCESS=0.0000E+00 OUTFLOW=0.6793E+03 BASIN STORAGE=0.1809E+00 PERCENT ERROR= 0.0									
JZJO	MANE	29.80	196.81	2056.26	3.27	30.00	196.80	2040.00	3.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6793E+03 EXCESS=0.0000E+00 OUTFLOW=0.6791E+03 BASIN STORAGE=0.2437E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	217.57	2100.00	3.20	30.00	217.57	2100.00	3.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7433E+03 EXCESS=0.0000E+00 OUTFLOW=0.7431E+03 BASIN STORAGE=0.3915E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.89	432.55	2271.48	3.19	30.00	432.53	2280.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1583E+04 EXCESS=0.0000E+00 OUTFLOW=0.1583E+04 BASIN STORAGE=0.1063E+01 PERCENT ERROR= 0.0

JYJR	MANE	4.46	432.51	2283.78	3.19	30.00	432.51	2280.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1599E+04 EXCESS=0.0000E+00 OUTFLOW=0.1599E+04 BASIN STORAGE=0.1527E+00 PERCENT ERROR= 0.0

JQJR	MANE	17.31	105.85	1731.50	3.22	30.00	105.84	1740.00	3.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2234E+03 EXCESS=0.0000E+00 OUTFLOW=0.2234E+03 BASIN STORAGE=0.7442E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.58	521.91	2097.88	3.19	30.00	521.90	2100.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1870E+04 EXCESS=0.0000E+00 OUTFLOW=0.1869E+04 BASIN STORAGE=0.2356E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.29	521.89	2101.19	3.19	30.00	521.89	2100.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1879E+04 EXCESS=0.0000E+00 OUTFLOW=0.1878E+04 BASIN STORAGE=0.1185E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY  1991                *
*            VERSION 4.0.1E             *
*      Lahey F77L-EM/32 version 5.01    *
*        Dodson & Associates, Inc.      *
*  RUN DATE  12/11/98  TIME  08:36:59   *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   1      ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
   2      ID        NICK HOFFMAN, EIT E-7577
   3      ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
   4      ID     100 YEAR STORM EVENT WITH WETLAND INFLUENCE
          *
   5      IT      30  1DEC98     0000     300
   6      IO       5        1
          *

   7      KK     101         COMPUTE RUNOFF HYDROGRAPH
   8      PH    0.01             0.85     1.8     3.25     3.65       4     4.4     5.1     5.6
   9      BA     0.4
  10      LS    0.55       87     3.39
  11      UC   18.72    15.13
          *

  12      KK    JAJB         ROUTE HYDROGRAPH
  13      RD    6700 0.00075     0.05             TRAP      10      0.3
          *

  14      KK     102         COMPUTE RUNOFF HYDROGRAPH
  15      BA       1
  16      LS    0.66       84     6.43
  17      UC   40.12     32.1
          *

  18      KK     100         COMPUTE RUNOFF HYDROGRAPH
  19      BA       1
  20      LS    0.62       85     4.57
  21      UC   29.01    23.21
          *

  22      KK      JB         COMBINE HYDROGRAPHS
  23      HC       3

  24      KK    JBJC         ROUTE HYDROGRAPH
  25      RD    8200 0.00061     0.05             TRAP      10      0.3
          *

  26      KK     104         COMPUTE RUNOFF HYDROGRAPH
  27      BA    0.51
  28      LS    0.68       83    12.83
  29      UC   35.34    28.27
          *

  30      KK     103         COMPUTE RUNOFF HYDROGRAPH
  31      BA    0.48
  32      LS    0.66       84    18.23
  33      UC   20.71    16.57
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SEL 0.0083 ENERGY SLOPE
ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

		--- LEFT OVERBANK ---			+ ------ MAIN CHANNEL -------			+ --- RIGHT OVERBANK ---	
167 RY	ELEVATION	1280.00	1279.00	1278.00	1273.70	1275.00	1277.00	1277.20	1281.00
166 RX	DISTANCE	0.00	55.00	152.00	302.00	365.00	382.00	399.00	430.00

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COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.06	0.23	0.51	0.89	1.34	1.85	2.41	3.04	3.73
OUTFLOW	0.00	2.78	17.64	52.02	115.66	208.55	329.23	479.26	660.36	878.04
ELEVATION	1273.70	1274.08	1274.47	1274.85	1275.24	1275.62	1276.00	1276.39	1276.77	1277.16
STORAGE	4.52	5.38	6.32	7.40	8.62	9.95	11.36	12.84	14.34	15.85
OUTFLOW	1139.87	1442.05	1833.82	2290.27	2809.10	3395.79	4050.80	4787.10	5600.58	6478.99
ELEVATION	1277.54	1277.93	1278.31	1278.69	1279.08	1279.46	1279.85	1280.23	1280.61	1281.00

COMPUTED MUSKINGUM-CUNGE PARAMETERS
COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN			3.12	200.00	612.48	2074.81	3.73	2.13

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN			30.00		612.43	2070.00	3.73	

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2201E+04 EXCESS=0.0000E+00 OUTFLOW=0.2200E+04 BASIN STORAGE=0.1340E+00 PERCENT ERROR= 0.0

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HYDROGRAPH AT STATION JXJS

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DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW	DA MON HRMN	ORD	FLOW
1 DEC 0000	1	0.	2 DEC 1330	76	604.	4 DEC 0300	151	163.	5 DEC 1630	226	37.
1 DEC 0030	2	0.	2 DEC 1400	77	601.	4 DEC 0330	152	159.	5 DEC 1700	227	37.
1 DEC 0100	3	0.	2 DEC 1430	78	597.	4 DEC 0400	153	156.	5 DEC 1730	228	36.
1 DEC 0130	4	0.	2 DEC 1500	79	594.	4 DEC 0430	154	153.	5 DEC 1800	229	35.
1 DEC 0200	5	0.	2 DEC 1530	80	590.	4 DEC 0500	155	150.	5 DEC 1830	230	35.
1 DEC 0230	6	0.	2 DEC 1600	81	586.	4 DEC 0530	156	147.	5 DEC 1900	231	34.
1 DEC 0300	7	0.	2 DEC 1630	82	581.	4 DEC 0600	157	144.	5 DEC 1930	232	33.
1 DEC 0330	8	0.	2 DEC 1700	83	576.	4 DEC 0630	158	142.	5 DEC 2000	233	33.
1 DEC 0400	9	0.	2 DEC 1730	84	572.	4 DEC 0700	159	139.	5 DEC 2030	234	32.
1 DEC 0430	10	0.	2 DEC 1800	85	566.	4 DEC 0730	160	136.	5 DEC 2100	235	32.
1 DEC 0500	11	0.	2 DEC 1830	86	561.	4 DEC 0800	161	133.	5 DEC 2130	236	31.
1 DEC 0530	12	0.	2 DEC 1900	87	555.	4 DEC 0830	162	131.	5 DEC 2200	237	30.
1 DEC 0600	13	0.	2 DEC 1930	88	549.	4 DEC 0900	163	128.	5 DEC 2230	238	30.
1 DEC 0630	14	0.	2 DEC 2000	89	543.	4 DEC 0930	164	126.	5 DEC 2300	239	29.
1 DEC 0700	15	0.	2 DEC 2030	90	536.	4 DEC 1000	165	123.	5 DEC 2330	240	29.
1 DEC 0730	16	0.	2 DEC 2100	91	529.	4 DEC 1030	166	121.	6 DEC 0000	241	28.
1 DEC 0800	17	0.	2 DEC 2130	92	522.	4 DEC 1100	167	119.	6 DEC 0030	242	28.
1 DEC 0830	18	0.	2 DEC 2200	93	515.	4 DEC 1130	168	116.	6 DEC 0100	243	27.
1 DEC 0900	19	0.	2 DEC 2230	94	508.	4 DEC 1200	169	114.	6 DEC 0130	244	27.
1 DEC 0930	20	0.	2 DEC 2300	95	500.	4 DEC 1230	170	112.	6 DEC 0200	245	26.
1 DEC 1000	21	1.	2 DEC 2330	96	492.	4 DEC 1300	171	110.	6 DEC 0230	246	26.
1 DEC 1030	22	1.	3 DEC 0000	97	484.	4 DEC 1330	172	107.	6 DEC 0300	247	25.
1 DEC 1100	23	1.	3 DEC 0030	98	476.	4 DEC 1400	173	105.	6 DEC 0330	248	25.
1 DEC 1130	24	3.	3 DEC 0100	99	467.	4 DEC 1430	174	103.	6 DEC 0400	249	24.
1 DEC 1200	25	8.	3 DEC 0130	100	459.	4 DEC 1500	175	101.	6 DEC 0430	250	24.
1 DEC 1230	26	32.	3 DEC 0200	101	451.	4 DEC 1530	176	99.	6 DEC 0500	251	24.
1 DEC 1300	27	86.	3 DEC 0230	102	442.	4 DEC 1600	177	97.	6 DEC 0530	252	23.
1 DEC 1330	28	123.	3 DEC 0300	103	434.	4 DEC 1630	178	95.	6 DEC 0600	253	23.
1 DEC 1400	29	117.	3 DEC 0330	104	426.	4 DEC 1700	179	94.	6 DEC 0630	254	22.
1 DEC 1430	30	96.	3 DEC 0400	105	417.	4 DEC 1730	180	92.	6 DEC 0700	255	22.

1	DEC	1500	31	77.	*	3	DEC	0430	106	409.	*	4	DEC	1800	181	90.	*	6	DEC	0730	256	21.
1	DEC	1530	32	64.	*	3	DEC	0500	107	401.	*	4	DEC	1830	182	88.	*	6	DEC	0800	257	21.
1	DEC	1600	33	58.	*	3	DEC	0530	108	394.	*	4	DEC	1900	183	87.	*	6	DEC	0830	258	21.
1	DEC	1630	34	59.	*	3	DEC	0600	109	386.	*	4	DEC	1930	184	85.	*	6	DEC	0900	259	20.
1	DEC	1700	35	61.	*	3	DEC	0630	110	378.	*	4	DEC	2000	185	83.	*	6	DEC	0930	260	20.
1	DEC	1730	36	67.	*	3	DEC	0700	111	371.	*	4	DEC	2030	186	82.	*	6	DEC	1000	261	20.
1	DEC	1800	37	74.	*	3	DEC	0730	112	363.	*	4	DEC	2100	187	80.	*	6	DEC	1030	262	19.
1	DEC	1830	38	84.	*	3	DEC	0800	113	356.	*	4	DEC	2130	188	79.	*	6	DEC	1100	263	19.
1	DEC	1900	39	96.	*	3	DEC	0830	114	348.	*	4	DEC	2200	189	77.	*	6	DEC	1130	264	19.
1	DEC	1930	40	110.	*	3	DEC	0900	115	341.	*	4	DEC	2230	190	76.	*	6	DEC	1200	265	18.
1	DEC	2000	41	128.	*	3	DEC	0930	116	334.	*	4	DEC	2300	191	74.	*	6	DEC	1230	266	18.
1	DEC	2030	42	149.	*	3	DEC	1000	117	327.	*	4	DEC	2330	192	73.	*	6	DEC	1300	267	18.
1	DEC	2100	43	173.	*	3	DEC	1030	118	321.	*	5	DEC	0000	193	72.	*	6	DEC	1330	268	17.
1	DEC	2130	44	200.	*	3	DEC	1100	119	314.	*	5	DEC	0030	194	70.	*	6	DEC	1400	269	17.
1	DEC	2200	45	227.	*	3	DEC	1130	120	308.	*	5	DEC	0100	195	69.	*	6	DEC	1430	270	17.
1	DEC	2230	46	254.	*	3	DEC	1200	121	301.	*	5	DEC	0130	196	68.	*	6	DEC	1500	271	16.
1	DEC	2300	47	281.	*	3	DEC	1230	122	295.	*	5	DEC	0200	197	66.	*	6	DEC	1530	272	16.
1	DEC	2330	48	308.	*	3	DEC	1300	123	289.	*	5	DEC	0230	198	65.	*	6	DEC	1600	273	16.
2	DEC	0000	49	334.	*	3	DEC	1330	124	283.	*	5	DEC	0300	199	64.	*	6	DEC	1630	274	16.
2	DEC	0030	50	359.	*	3	DEC	1400	125	277.	*	5	DEC	0330	200	62.	*	6	DEC	1700	275	15.
2	DEC	0100	51	383.	*	3	DEC	1430	126	271.	*	5	DEC	0400	201	61.	*	6	DEC	1730	276	15.
2	DEC	0130	52	406.	*	3	DEC	1500	127	266.	*	5	DEC	0430	202	60.	*	6	DEC	1800	277	15.
2	DEC	0200	53	428.	*	3	DEC	1530	128	260.	*	5	DEC	0500	203	59.	*	6	DEC	1830	278	14.
2	DEC	0230	54	450.	*	3	DEC	1600	129	255.	*	5	DEC	0530	204	58.	*	6	DEC	1900	279	14.
2	DEC	0300	55	471.	*	3	DEC	1630	130	250.	*	5	DEC	0600	205	56.	*	6	DEC	1930	280	14.
2	DEC	0330	56	490.	*	3	DEC	1700	131	245.	*	5	DEC	0630	206	55.	*	6	DEC	2000	281	14.
2	DEC	0400	57	508.	*	3	DEC	1730	132	240.	*	5	DEC	0700	207	54.	*	6	DEC	2030	282	13.
2	DEC	0430	58	524.	*	3	DEC	1800	133	235.	*	5	DEC	0730	208	53.	*	6	DEC	2100	283	13.
2	DEC	0500	59	540.	*	3	DEC	1830	134	230.	*	5	DEC	0800	209	52.	*	6	DEC	2130	284	13.
2	DEC	0530	60	554.	*	3	DEC	1900	135	225.	*	5	DEC	0830	210	51.	*	6	DEC	2200	285	13.
2	DEC	0600	61	566.	*	3	DEC	1930	136	221.	*	5	DEC	0900	211	50.	*	6	DEC	2230	286	12.
2	DEC	0630	62	576.	*	3	DEC	2000	137	216.	*	5	DEC	0930	212	49.	*	6	DEC	2300	287	12.
2	DEC	0700	63	585.	*	3	DEC	2030	138	212.	*	5	DEC	1000	213	48.	*	6	DEC	2330	288	12.
2	DEC	0730	64	593.	*	3	DEC	2100	139	207.	*	5	DEC	1030	214	47.	*	7	DEC	0000	289	12.
2	DEC	0800	65	599.	*	3	DEC	2130	140	203.	*	5	DEC	1100	215	46.	*	7	DEC	0030	290	11.
2	DEC	0830	66	604.	*	3	DEC	2200	141	199.	*	5	DEC	1130	216	45.	*	7	DEC	0100	291	11.
2	DEC	0900	67	607.	*	3	DEC	2230	142	195.	*	5	DEC	1200	217	44.	*	7	DEC	0130	292	11.
2	DEC	0930	68	610.	*	3	DEC	2300	143	191.	*	5	DEC	1230	218	44.	*	7	DEC	0200	293	11.
2	DEC	1000	69	612.	*	3	DEC	2330	144	187.	*	5	DEC	1300	219	43.	*	7	DEC	0230	294	11.
2	DEC	1030	70	612.	*	4	DEC	0000	145	183.	*	5	DEC	1330	220	42.	*	7	DEC	0300	295	10.
2	DEC	1100	71	612.	*	4	DEC	0030	146	180.	*	5	DEC	1400	221	41.	*	7	DEC	0330	296	10.
2	DEC	1130	72	612.	*	4	DEC	0100	147	176.	*	5	DEC	1430	222	40.	*	7	DEC	0400	297	10.
2	DEC	1200	73	610.	*	4	DEC	0130	148	173.	*	5	DEC	1500	223	40.	*	7	DEC	0430	298	10.
2	DEC	1230	74	608.	*	4	DEC	0200	149	169.	*	5	DEC	1530	224	39.	*	7	DEC	0500	299	10.
2	DEC	1300	75	606.	*	4	DEC	0230	150	166.	*	5	DEC	1600	225	38.	*	7	DEC	0530	300	10.
					*						*						*					

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	149.50-HR
612.	34.50	(CFS)	608.	553.	334.	178.
		(INCHES)	0.512	1.862	3.377	3.734
		(AC-FT)	302.	1097.	1990.	2201.

CUMULATIVE AREA = 11.05 SQ MI

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	38.	29.50	37.	29.	14.	0.40		
ROUTED TO	JAJB	38.	30.50	37.	29.	14.	0.40		
HYDROGRAPH AT	102	43.	48.50	43.	40.	27.	1.00		
HYDROGRAPH AT	100	60.	38.50	60.	52.	31.	1.00		
3 COMBINED AT	JB	124.	37.50	123.	113.	72.	2.40		
ROUTED TO	JBJC	124.	38.50	123.	113.	72.	2.40		
HYDROGRAPH AT	104	25.	44.00	25.	23.	15.	0.51		
HYDROGRAPH AT	103	42.	31.00	41.	33.	16.	0.48		
ROUTED TO	JDJC	42.	32.50	41.	33.	16.	0.48		
HYDROGRAPH AT	105	54.	43.00	54.	48.	31.	1.03		
4 COMBINED AT	JC	233.	38.50	232.	213.	134.	4.42		
ROUTED TO	JCJE	233.	39.50	232.	213.	134.	4.42		
HYDROGRAPH AT	108	25.	45.00	25.	23.	15.	0.53		
HYDROGRAPH AT	124	25.	28.00	24.	19.	9.	0.27		
ROUTED TO	JLJM	25.	30.00	24.	19.	9.	0.27		
HYDROGRAPH AT	125	19.	29.00	18.	14.	7.	0.22		
2 COMBINED AT	JM	44.	29.50	43.	33.	15.	0.49		
ROUTED TO	JMJN	44.	30.00	43.	33.	15.	0.49		
HYDROGRAPH AT	120	48.	42.00	48.	43.	27.	0.82		
ROUTED TO	JHJI	48.	42.50	48.	43.	27.	0.82		
HYDROGRAPH AT	121	80.	28.50	78.	60.	28.	0.82		
2 COMBINED AT	JI	112.	30.00	110.	96.	55.	1.64		
ROUTED TO	JIJJ	112.	30.50	109.	96.	55.	1.64		
HYDROGRAPH AT	122	54.	41.50	54.	48.	30.	1.00		
2 COMBINED AT	JJ	154.	33.50	153.	141.	85.	2.64		
ROUTED TO	JJJK	153.	34.50	153.	141.	85.	2.64		
HYDROGRAPH AT	123	43.	40.50	43.	38.	23.	0.76		
2 COMBINED AT	JK	194.	36.50	193.	178.	108.	3.40		
ROUTED TO	JKJN	194.	36.50	193.	178.	108.	3.40		
2 COMBINED AT	JN	230.	33.50	229.	208.	123.	3.89		
ROUTED TO	JNJZ	230.	33.50	229.	208.	123.	3.89		
ROUTED TO	JZJO	230.	34.00	229.	208.	123.	3.89		
HYDROGRAPH AT	127	25.	36.50	25.	21.	12.	0.46		
2 COMBINED AT	JO	255.	34.50	254.	229.	135.	4.35		
ROUTED TO	JOJE	255.	35.00	254.	229.	135.	4.35		

3 COMBINED AT	JE	507.	37.50	504.	463.	284.	9.30
ROUTED TO	JEJY	507.	38.00	504.	462.	284.	9.30
HYDROGRAPH AT	131	83.	13.50	34.	10.	3.	0.10
2 COMBINED AT	JY	507.	38.00	504.	462.	284.	9.40
ROUTED TO	JYJR	507.	38.00	504.	462.	284.	9.40
HYDROGRAPH AT	106	124.	28.50	121.	93.	44.	1.30
ROUTED TO	JQJR	124.	29.00	121.	93.	44.	1.30
HYDROGRAPH AT	107	30.	26.50	29.	21.	9.	0.30
3 COMBINED AT	JR	613.	34.50	608.	553.	334.	11.00
ROUTED TO	JRJX	612.	34.50	608.	553.	334.	11.00
HYDROGRAPH AT	130	50.	13.50	19.	5.	2.	0.05
2 COMBINED AT	JX	612.	34.50	608.	553.	334.	11.05
ROUTED TO	JXJS	612.	34.50	608.	553.	334.	11.05
HYDROGRAPH AT	109	74.	24.00	71.	48.	19.	0.55
2 COMBINED AT	JS	646.	33.50	641.	582.	352.	11.60

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	38.13	1830.00	3.93	30.00	38.13	1830.00	3.93
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8389E+02 EXCESS=0.0000E+00 OUTFLOW=0.8386E+02 BASIN STORAGE=0.2308E-01 PERCENT ERROR= 0.0									
JBJC	MANE	30.00	123.82	2310.00	3.70	30.00	123.82	2310.00	3.70
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4745E+03 EXCESS=0.0000E+00 OUTFLOW=0.4739E+03 BASIN STORAGE=0.1100E+01 PERCENT ERROR= -0.1									
JDJC	MANE	30.00	41.51	1950.00	3.91	30.00	41.51	1950.00	3.91
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1002E+03 EXCESS=0.0000E+00 OUTFLOW=0.1002E+03 BASIN STORAGE=0.2980E-01 PERCENT ERROR= 0.0									
JCJE	MANE	30.00	232.66	2370.00	3.74	30.00	232.66	2370.00	3.74
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8824E+03 EXCESS=0.0000E+00 OUTFLOW=0.8813E+03 BASIN STORAGE=0.2198E+01 PERCENT ERROR= -0.1									
JLJM	MANE	30.00	25.16	1800.00	3.59	30.00	25.16	1800.00	3.59
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5172E+02 EXCESS=0.0000E+00 OUTFLOW=0.5173E+02 BASIN STORAGE=0.5927E-02 PERCENT ERROR= 0.0									
JMJN	MANE	30.00	43.89	1800.00	3.54	30.00	43.89	1800.00	3.54
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9247E+02 EXCESS=0.0000E+00 OUTFLOW=0.9247E+02 BASIN STORAGE=0.2456E-02 PERCENT ERROR= 0.0									
JHJI	MANE	26.36	48.17	2556.74	4.12	30.00	48.17	2550.00	4.13
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1805E+03 EXCESS=0.0000E+00 OUTFLOW=0.1804E+03 BASIN STORAGE=0.1552E+00 PERCENT ERROR= 0.0									
JIJJ	MANE	30.00	111.54	1830.00	4.00	30.00	111.54	1830.00	4.00
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3503E+03 EXCESS=0.0000E+00 OUTFLOW=0.3501E+03 BASIN STORAGE=0.3787E+00 PERCENT ERROR= -0.1									
JJJK	MANE	30.00	153.50	2070.00	3.90	30.00	153.50	2070.00	3.90
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5501E+03 EXCESS=0.0000E+00 OUTFLOW=0.5494E+03 BASIN STORAGE=0.8193E+00 PERCENT ERROR= 0.0									
JKJN	MANE	4.81	194.07	2196.32	3.87	30.00	194.06	2220.00	3.87
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7014E+03 EXCESS=0.0000E+00 OUTFLOW=0.7013E+03 BASIN STORAGE=0.9046E-01 PERCENT ERROR= 0.0									
JNJZ	MANE	19.27	230.34	2004.07	3.83	30.00	230.34	2010.00	3.83
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7938E+03 EXCESS=0.0000E+00 OUTFLOW=0.7937E+03 BASIN STORAGE=0.2018E+00 PERCENT ERROR= 0.0									
JZJO	MANE	28.71	230.28	2038.58	3.82	30.00	230.27	2040.00	3.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7937E+03 EXCESS=0.0000E+00 OUTFLOW=0.7935E+03 BASIN STORAGE=0.2695E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	255.06	2100.00	3.75	30.00	255.06	2100.00	3.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8702E+03 EXCESS=0.0000E+00 OUTFLOW=0.8699E+03 BASIN STORAGE=0.4461E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.80	506.67	2264.49	3.74	30.00	506.62	2280.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1854E+04 EXCESS=0.0000E+00 OUTFLOW=0.1854E+04 BASIN STORAGE=0.1167E+01 PERCENT ERROR= 0.0

JYJR	MANE	4.25	506.60	2278.89	3.74	30.00	506.60	2280.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1873E+04 EXCESS=0.0000E+00 OUTFLOW=0.1873E+04 BASIN STORAGE=0.1675E+00 PERCENT ERROR= 0.0

JQJR	MANE	16.42	124.14	1740.76	3.77	30.00	124.14	1740.00	3.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2616E+03 EXCESS=0.0000E+00 OUTFLOW=0.2617E+03 BASIN STORAGE=0.6940E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.25	612.55	2074.70	3.73	30.00	612.49	2070.00	3.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2190E+04 EXCESS=0.0000E+00 OUTFLOW=0.2190E+04 BASIN STORAGE=0.2664E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.12	612.48	2074.81	3.73	30.00	612.43	2070.00	3.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2201E+04 EXCESS=0.0000E+00 OUTFLOW=0.2200E+04 BASIN STORAGE=0.1340E+00 PERCENT ERROR= 0.0

*** NORMAL END OF HEC-1 ***

Appendix 2

(HEC-2 Analysis)

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    29DEC98    TIME   15:35:53  *
*******************************************
```


```
***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

Profile 1 models the HEC-1 5 year generated flows.

Profile 2 models the HEC-1 10 year generated flows.

Profile 3 models the HEC-1 25 year generated flows.

Profile 4 models the HEC-1 50 year generated flows.

Profile 5 models the HEC-1 100 year generated flows.

Profile 6 models the Rational Method 2 year generated flows.

Profile 7 models the Rational Method 5 year generated flows.

Profile 8 models the Rational Method 10 year generated flows.

Profile 9 models the Rational Method 25 year generated flows.

Profile 10 models the Rational Method 50 year generated flows.

Profile 11 models the Rational Method 100 year generated flows.

```
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       21st STREET BRIDGE TO HIGHWAY 14
T3       HEC-1 GENERATED  5 YEAR PROPOSED FLOWS
*
J1       0        2        0        0                  0  0.0000   0.0000     1271         0
J2       0                                                    -1
J5     -10      -10
*        ********
*        FLOWS FROM JUNCTION JS HEC-1
*        CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT      11      358      450      568      658      768      756      945     1040     1198
QT    1325     1483
*        ********
*        500 FEET DS OF 21st ST BRIDGE
NC  0.03     0.03    0.025
X1       1       63   166.98    247.3                                                0        0
X3      10
GR1279.8         0  1279.43    12.82  1279.32    21.64   1279.3    26.79  1278.52     42.9
GR1278.7     50.28     1278    60.04     1279    71.61     1278    72.68     1277    74.37
GR1276.7      75.9     1277    80.02     1278    86.25  1278.67    93.48  1278.92    95.64
GR1279.1     98.74   1279.2   103.57     1279      109  1279.05   112.62     1278   117.29
GR  1277    121.46     1276   125.65  1275.73   126.77  1275.66   127.07  1275.51    129.2
GR1275.3    137.15     1275   138.61  1274.97   138.74  1274.46   141.03     1274   143.09
GR  1273    147.94     1273   147.97  1272.11   154.85     1272   164.72  1271.96   165.71
GR1271.9    166.98  1271.83   168.41  1270.59   192.92   1270.5    223.2  1271.08   229.93
GR1271.1    237.39  1271.11   239.81  1271.62    247.3  1271.3   261.06   1271.5   289.61
GR1271.5    294.09  1270.99   298.33  1271.12   300.03  1271.1   300.39  1271.83   307.81
GR  1272     308.8  1272.19   311.76  1272.28   312.51  1272.5   314.88  1272.54   315.09
GR  1273    319.02  1273.92   326.92  1273.98   327.45    1275   335.89  1275.47   340.55
GR1276.6    358.86  1277.75   377.73   1278.2   396.76
*        *********
*         MISC XC STATION 1+81
X1       2       40    81.68   256.64      146      195      181
X3      10
GR1278.7         0  1278.61     9.05   1278.5    16.96  1278.46    20.77   1278.3    31.77
GR  1278     60.04  1277.34    77.06   1277.3    80.02   1277.3    81.68     1277    87.63
GR1276.3     95.95     1276    99.59  1275.04   109.86  1274.86   111.71  1274.17    118.8
GR  1274    120.78  1273.77   124.29     1273   128.67  1272.29   133.55     1272   135.93
GR1271.9    181.13  1271.47   218.32   1271.5   218.53  1271.37   220.02     1271   226.34
GR1271.9    256.64   1272.9   282.11     1274   293.16     1276   301.63     1277   305.29
GR  1278    317.98  1277.22   337.39   1275.6   342.72   1275.7   347.38     1277   358.97
GR1277.4     363.2     1278   371.14   1278.3   377.45  1278.3   399.05   1278.2   407.72
*        *********
QT      11      338      425      537      621      724      756      945     1040     1198
QT    1325     1483
*        ********
*        88 FEET SOUTH OF 21st STREET BRIDGE     STATION 3+62
X1       3       49   171.49   313.62      136      205      181
X3      10
GR1278.8         0  1278.73     9.84  1278.69    11.44  1278.51    28.78  1278.46    32.85
GR1278.4     39.51  1278.46     39.8  1278.41     44.5   1278.3    47.05  1278.29    50.23
GR1278.2     50.44  1278.08    73.86  1278.12       90  1277.87   108.06  1277.51   117.44
GR1277.2    131.79  1277.16   132.35     1277   138.82  1276.32    143.4     1276   145.57
GR1275.2    151.36     1275   153.17  1274.27   161.16     1274   163.82  1273.71   166.01
GR  1273    171.49  1272.49    178.5     1272   185.15  1271.61   200.04   1271.5    204.2
GR1271.5    205.52  1271.44   206.17  1271.36   208.17  1271.32   211.09  1271.02   242.02
GR1271.2    255.29  1271.29   262.12  1271.44   272.36  1271.98   306.74     1272   313.62
GR  1274    356.15     1274   356.23   1274.3   357.19  1274.43   357.51  1274.42   357.61
GR1274.5    357.63     1276   359.55   1276.1    362.7  1276.45   370.99
*        *********
*        DS FACE OF 21st STREET BRIDGE   STATION 4+50
NC  0.03     0.03    0.025     0.04     0.06
X1       4        8       75   118.5      138       47       88
X3      10
GR1277.8         0  1275.87       75  1271.96    75.16  1270.98    96.54  1272.04   118.47
GR  1276     118.5  1276.28   132.48  1276.28   213.05
*        *********
SB               1.6      3.0      213       31          144.151
*        *********
*        US FACE OF 21st STREET BRIDGE   STATION 5+00
X1       5       11   105.19    136.2       50       50       50
X2                        1  1275.63  1276.11
X3      10                    105.2  1276.63    136.1  1276.67
GR1278.1         0  1277.26     51.1  1276.77    78.65  1276.67   105.19  1272.53    105.2
GR1271.5     118.2   1272.5    136.1     1276    136.2  1276.55   153.68  1276.29   224.11
GR1276.7     248.2
```

```
*         *********
*         STATION      5+50
NC   0.03     0.03    0.025
X1       6       22       53      296       50       50       50                 0         0
X3      10
GR1278.1         0   1278.6       53   1271.5       82   1271.5      182   1271.5       282
GR1275.1       296   1274.9      300     1274      310     1275    310.1   1275.3       346
GR1274.3     346.1   1274.9      381   1275.1      381   1275.1      419   1275.6       460
GR1276.6       550   1277.8      641     1279      705   1279.3    727.8   1280.3     727.9
GR1281.4       743   1280.8    757.7
*         *********
QT      11      338      425      537      621      724      538      727      822       980
QT    1107     1307
*         *********
*         STATION 8+50
X1       7        0        0        0      300      300      300                0.28         0
X3      10
*         *********
*         STATION 12+50
X1       8       14       79    304.7      400      400      400                 0         0
X3      10
GR1280.9         0  1278.93     25.8  1277.01     62.1  1277.47      79.  1272.21      99.6
GR1272.2     199.6  1272.21    299.6  1273.57    304.7   1273.7    312.1  1276.57     331.1
GR1277.1       369  1276.37      433  1277.77      494  1279.97      535
*         *********
*         STATION     15+00
X1       9                                 250      250      250                0.24         0
X3      10
*         *********
QT      11      276      348      439      507      591      525      710       803       957
QT    1081     1235
*         *********
*         STATION 19+00
NC   0.03     0.03    0.021
X1      10        7       70      385      400      400      400                             0
X3      10
GR1281.1         0   1280.2       50   1279.3       70   1272.9      128   1272.9       338
GR1279.3       385   1281.4      595
*         *********
*         STATION     19+50
X1      11                                  50       50       50                0.05         0
X3      10
*         *********
*         STATION     23+00
NC   0.03     0.03    0.025
X1      12       14     99.4    257.7      450      450      450                 0         0
X3      10
GR1278.9         0  1277.86       30   1276.4       43  1274.65       64  1274.01      99.4
GR1273.2     102.5  1273.19    177.5  1273.19    252.5  1274.61    257.7  1275.01       302
GR1276.5       396  1281.51      477  1282.41      506  1282.41      546
*         *********
*         STATION     25+00
X1      13                                 200      200      200                0.19         0
X3      10
*         *********
*         STATION  27+50  SPECIAL SECTION E-E
NC   0.03     0.03    0.021
X1      14        7       36      256      250      250      250
X3      10
GR1280.5         0   1279.6       36   1273.8       85   1273.8      150   1273.8       235
GR1276.3       256   1276.7      315
*         *********
*         STATION   28+00 SPECIAL SECTION E-E
X1      15                                  50       50       50                0.05
X3      10
*         *********
*         STATION  29+00
NC   0.03     0.03    0.025
X1      16       20    221.8    379.6      100      100      100                             0
X3      10
GR1281.9         0   1281.3     44.2   1277.3      103   1275.7      118   1275.2     142.3
GR1274.3       153   1273.9      197  1273.82    221.8  1273.75    223.4  1273.75     298.4
GR1273.8     373.4  1282.12    379.6   1275.3      395   1274.4      416     1275       435
GR1275.3       478   1276.8      495   1274.2      502   1277.6      624   1278.1       740
*         *********
QT      11      276      348      439      507      591      225      332       415       462
```

```
QT   486      533
*         *********
*          STATION    33+00
X1     17         20    221.8    379.6       400       400       400                 0         0
X3     10
GR1281.9          0   1281.3     44.2   1277.3       103    1275.7       118   1275.2     142.3
GR1274.3        153   1273.9      197   1274.2     221.8   1274.13     223.4  1274.13     298.4
GR1274.1      373.4   1282.5    379.6   1275.3       395    1274.4       416     1275       435
GR1275.3        478   1276.8      495   1274.2       502    1277.6       624   1278.1       740
*         ********
*          STATION     35+00
X1     18         13    130.8    298.3       200       200       200                 0         0
X3     10
GR1278.9          0   1277.3       40   1275.3        77    1274.5      96.2   1274.5       115
GR1274.4      130.8 1274.32     130.9 1274.32     205.8   1274.32     280.8   1278.9     298.3
GR1279.3      307.5   1276.9      322   1278.2       339
*         ********
*          STATION     40+22
X1     19         20     54.3    271.9       522       522       522                 0         0
X3     10
GR  1280          0   1279.2     54.3 1274.75      73.1   1274.81     166.2  1274.85     259.2
GR1277.8      271.9   1277.9      314     1276       355    1275.4       399  1277.36       423
GR1277.0        472 1277.87      480   1279.4       610     1279       703   1276.8       828
GR  1277        961     1279     1041 1278.15      1075   1278.28      1157  1280.68      1213
*         ********
*          STATION   45+00
X1     20         11     31.3    219.4       478       478       478                 0         0
X3     10
GR1280.3          0   1280.4     31.3 1285.26      50.6   1275.26     125.6  1275.26     200.6
GR1280.3      219.4     1280      261   1279.5       285   1279.48       367  1279.74       392
GR1281.3        467
*         ********
*          STATION    49+00 SPECIAL SECTION
NC   0.03     0.03     0.021
X1     21         8        46       206       400       400       400                         0
X3     10
GR  1281          0     1280        38 1279.48        46  1275.73        76  1275.73       126
GR1275.7        176 1279.48       206     1280       258
*         ********
*          STATION 49+50    SPECIAL SECTION
X1     22                                    50        50        50              0.05         0
X3     10
*         ********
*          STATION 55+00
NC   0.03     0.03     0.025
X1     23         13    128.2       253       550       550       550                 0         0
X3     10
GR1281.1          0   1280.9       29   1280.3        70    1279.2        90   1278.3       111
GR1277.9      128.2   1276.2    133.7   1276.2     183.7    1276.2     233.7  1281.35       253
GR1281.2        289   1280.5      367   1281.5       454
*         ********
*          STATION 59+50    SPECIAL SECTION
NC   0.03     0.03     0.021
X1     24         8        42       182       450       450       450
X3     10
GR  1280          0 1279.17        42 1276.67        62  1276.67       112  1276.67       162
GR1279.2        182     1280      196     1281       217
*         ********
*          STATION    60+00 SPECIAL SECTION
X1     25                                    50        50        50              0.05
X3     10
*         ********
*          STATION     62+00
NC   0.03     0.03     0.025
X1     26         13    128.2       253       200       200       200                 0         0
X3     10
GR1281.8          0   1281.6       29     1281        70    1279.9        90  1278.96       111
GR1278.6      128.2 1276.86    133.7 1276.86     183.7   1276.86      233.7     1282       253
GR1281.9        289 1281.16      367 1282.16       454
*         ********
*          DS FACE OF 9TH STREET CULVERTS   64+00
NC   0.03     0.03     0.025      0.3       0.5
X1     27                                   200       200       200              0.19
X3     10
*         ********
SC 6.012      0.6         3      100         4                  65       3.2 1277.47  1277.4
```

```
*        ********
QT    11      142      181      229      264      308      197      315      394      443
QT   443      492
*        ********
*        US FACE 9TH STREET CULVERTS      STATION    64+65
X1    28       17      460    583.3       65       65       65                 0        0
X2     0        0        2        0     1282
X3    10
GR1286.5        0  1281.15     18.5   1286.6     42.1  1286.26       72  1285.36      120
GR1284.4      192  1281.33      375  1281.25      460  1277.14    474.6  1277.14    524.6
GR1277.2    574.6   1279.7    583.3  1280.61      652  1280.79      666  1278.92      742
GR1281.3      893  1283.39     1026
*        ********
*        STATION     69+00
NC  0.03     0.03    0.025
X1    29       15     19.9    213.9      600      300      445                 0        0
X3    10
GR1281.6        0   1281.4      9.3  1281.55     19.9  1277.52      79.4  1277.52    116.9
GR1277.5    154.4     1280    213.9   1279.1      244  1279.48       259  1280.62      281
GR1281.8    312.7   1280.3    321.7  1279.86    332.1  1282.65     345.1  1283.14      357
*        ********
*        STATION     74+50
X1    30                                500      600      550              0.512        0
X3    10
*        ********
QT    11       19       24       31       37       44      192      256      320      360
QT   400      480
*        ********
*        STATION     78+50
X1    31       10       57      157      400      400      400                 0        0
X3    10
GR  1283        0     1282       57     1281       61     1280       65     1279       69
GR1278.8      100     1279      148     1280      152     1281      157     1283      350
*        ********
*        STATION 79+00
X1    32       12       95      192.      50       50       50                 0        0
X3    10
GR  1283        0     1282       95     1281       99     1280      104     1279      108
GR  1278      112   1277.9      130     1278      180     1279      184     1280      188
GR  1281      192     1283      310
*        ********
*        STATION     84+00
NC  0.03     0.03    0.025      0.3
X1    33       13      160      331      492      535      500                 0        0
X3    10
GR  1283        0     1283       55     1282      160     1281      164     1280      168
GR  1279      172     1278      176   1277.9      200     1278      318     1279      322
GR  1280      327     1281      331     1283      747
*        ********
*        STATION     90+00
NC  0.03     0.03    0.025
X1    34       14      165      853      577      985      600                 0        0
X3    10
GR  1282        0   1281.5       94     1282      165     1281      169     1280      173
GR  1279      177     1278      181   1277.9      355     1278      837     1279      841
GR  1280      845     1281      849     1282      853     1282      979
*        ********
*        STATION     94+00
X1    35       13      211      945      408      400      400                 0        0
X3    10
GR1281.8        0     1282      211     1281      215     1280      219     1279      223
GR  1278      227   1277.9      452     1278      933     1279      937     1280      941
GR  1281      945     1282      949     1283     1007
*        ********
*        STATION     98+00
X1    36       16      160      755      550       23      400                 0        0
X3    10
GR  1283        0     1282       40   1281.5       65     1282       80     1282      160
GR  1281      164     1280      168     1279      172     1278      176   1277.8      265
GR  1278      739     1279      743     1280      747     1281      751     1282      755
GR  1283      818
*        ********
*        STATION    102+00
NC  0.03     0.03    0.025                0.6
X1    37        9       71      160      415      459      400                 0        0
X3    10
```

```
GR  1283       0    1283      71    1282      74    1281    77.5 1280.82     115
GR  1281   152.5    1282     156    1283     160    1283     252
*       ********
*       STATION 105+00
NC  0.03    0.03   0.025
X1    38                          300     300     300             0.28
X3    10
*       ********
*       STATION   109+00
X1    39      16   172.1   257.6     400     400     400                0       0
X3    10
GR1284.3       0    1284    36.9  1286.1      89 1283.37   110.9 1283.32  165.62
GR1283.4   172.1 1281.28   182.5 1281.28     220 1281.28   257.5  1281.1   257.6
GR1281.6   285.8 1282.46   305.8 1282.58  313.25 1283.19  382.57 1283.47   407.2
GR1283.8     442
*       ********
EJ
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      21st STREET BRIDGE TO HIGHWAY 14
T3      HEC-1 GENERATED 10 YEAR EXISTING FLOWS
*
J1    0       3       0       0                0  0.0000  0.0000     1271       0
J2    2                                                 -1
*       ********
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      21st STREET BRIDGE TO HIGHWAY 14
T3      HEC-1 GENERATED 25 YEAR EXISTING FLOWS
*
J1    0       4       0       0                0  0.0000  0.0000     1271       0
J2    3                                                 -1
*       ********
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      HEC-1 GENERATED 50 YEAR EXISTING FLOWS
T3      21st STREET BRIDGE TO HIGHWAY 14
*
J1    0       5       0       0                0  0.0000  0.0000     1271       0
J2    4                                                 -1
*       ********
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      HEC-1 GENERATED 100 YEAR EXISTING FLOWS
T3      21st STREET BRIDGE TO HIGHWAY 14
*
J1    0       6       0       0                0  0.0000  0.0000     1271       0
J2    5                                                 -1
*       ********
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      RATIONAL METHOD GENERATED  2 YEAR EXISTING FLOWS
T3      21st STREET BRIDGE TO HIGHWAY 14
*
J1    0       7       0       0                0  0.0000  0.0000     1271       0
J2    6                                                 -1
*       ********
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      RATIONAL METHOD GENERATED  5 YEAR EXISTING FLOWS
T3      21st STREET BRIDGE TO HIGHWAY 14
*
J1    0       8       0       0                0  0.0000  0.0000     1271       0
J2    7                                                 -1
*       ********
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      RATIONAL METHOD GENERATED 10 YEAR EXISTING FLOWS
T3      21st STREET BRIDGE TO HIGHWAY 14
*
J1    0       9       0       0                0  0.0000  0.0000     1271       0
J2    8                                                 -1
*       ********
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      RATIONAL METHOD GENERATED 25 YEAR EXISTING FLOWS
```

```
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       10        0        0                0  0.0000  0.0000     1271        0
J2      9                                                  -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED 50 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       11        0        0                0  0.0000  0.0000     1271        0
J2     10                                                  -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED 100 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       12        0        0                0  0.0000  0.0000     1271        0
J2     15                                                  -1
*        ********
ER
```

THIS RUN EXECUTED 29DEC98 15:36:02

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

HEC-1 GENERATED 5 YEAR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	1.000	.00	.00	.00	1270.50	358.00	1271.75	1271.75	1272.06	80.36	4.76	86.00	39.94
*	1.000	.00	.00	.00	1270.50	450.00	1271.87	1271.87	1272.21	77.64	5.02	102.78	51.07
*	1.000	.00	.00	.00	1270.50	568.00	1271.97	1271.97	1272.39	82.79	5.54	117.65	62.43
*	1.000	.00	.00	.00	1270.50	658.00	1272.07	1272.07	1272.51	79.09	5.74	131.71	73.99
*	1.000	.00	.00	.00	1270.50	768.00	1272.17	1272.17	1272.65	78.07	6.03	147.03	86.92
*	1.000	.00	.00	.00	1270.50	756.00	1272.16	1272.16	1272.64	78.04	6.00	145.48	85.58
*	1.000	.00	.00	.00	1270.50	945.00	1272.32	1272.32	1272.86	74.88	6.39	171.53	109.21
*	1.000	.00	.00	.00	1270.50	1040.00	1272.40	1272.40	1272.96	73.20	6.56	184.25	121.56
*	1.000	.00	.00	.00	1270.50	1198.00	1272.51	1272.51	1273.13	74.11	6.91	201.55	139.16
*	1.000	.00	.00	.00	1270.50	1325.00	1272.60	1272.60	1273.26	73.45	7.14	216.07	154.61
*	1.000	.00	.00	.00	1270.50	1483.00	1272.70	1272.70	1273.41	72.26	7.39	233.95	174.46
*	2.000	181.00	.00	.00	1271.00	358.00	1272.68	1272.34	1272.81	24.64	2.87	128.80	72.12
*	2.000	181.00	.00	.00	1271.00	450.00	1272.81	1272.44	1272.96	25.42	3.16	147.98	89.26
*	2.000	181.00	.00	.00	1271.00	568.00	1272.97	1272.56	1273.15	25.18	3.43	172.73	113.20
*	2.000	181.00	.00	.00	1271.00	658.00	1273.08	1272.65	1273.28	25.81	3.65	188.36	129.52
*	2.000	181.00	.00	.00	1271.00	768.00	1273.20	1272.75	1273.42	26.19	3.88	207.05	150.08
*	2.000	181.00	.00	.00	1271.00	756.00	1273.18	1272.74	1273.40	26.16	3.86	205.03	147.81
*	2.000	181.00	.00	.00	1271.00	945.00	1273.37	1272.92	1273.64	27.24	4.24	233.63	181.07
*	2.000	181.00	.00	.00	1271.00	1040.00	1273.45	1272.99	1273.74	27.61	4.41	247.42	197.92
*	2.000	181.00	.00	.00	1271.00	1198.00	1273.59	1273.10	1273.91	27.78	4.65	270.54	227.30
*	2.000	181.00	.00	.00	1271.00	1325.00	1273.70	1273.19	1274.04	28.12	4.84	287.64	249.88
*	2.000	181.00	.00	.00	1271.00	1483.00	1273.82	1273.30	1274.20	28.49	5.06	308.55	277.84

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29DEC98 15:35:53 PAGE 20

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	3.000	181.00	.00	.00	1271.02	338.00	1272.95	1272.07	1272.99	5.25	1.69	205.37	147.46
*	3.000	181.00	.00	.00	1271.02	425.00	1273.10	1272.17	1273.16	5.76	1.90	231.35	177.05
*	3.000	181.00	.00	.00	1271.02	537.00	1273.29	1272.29	1273.36	6.23	2.13	262.51	215.18
*	3.000	181.00	.00	.00	1271.02	621.00	1273.41	1272.37	1273.49	6.57	2.29	283.74	242.33
*	3.000	181.00	.00	.00	1271.02	724.00	1273.55	1272.47	1273.65	7.01	2.48	307.28	273.48
*	3.000	181.00	.00	.00	1271.02	756.00	1273.54	1272.50	1273.64	7.83	2.61	304.83	270.19
*	3.000	181.00	.00	.00	1271.02	945.00	1273.76	1272.66	1273.89	8.35	2.89	346.01	326.94
*	3.000	181.00	.00	.00	1271.02	1040.00	1273.86	1272.74	1274.00	8.63	3.03	364.94	354.02
*	3.000	181.00	.00	.00	1271.02	1198.00	1274.02	1272.86	1274.18	8.97	3.24	396.04	399.95
*	3.000	181.00	.00	.00	1271.02	1325.00	1274.15	1272.95	1274.32	9.19	3.39	419.83	437.03
*	3.000	181.00	.00	.00	1271.02	1483.00	1274.29	1273.06	1274.48	9.46	3.56	447.81	482.14
*	4.000	88.00	.00	.00	1270.98	338.00	1272.72	1272.72	1273.35	90.67	6.35	53.23	35.50
*	4.000	88.00	.00	.00	1270.98	425.00	1272.92	1272.92	1273.65	87.15	6.85	62.03	45.53
*	4.000	88.00	.00	.00	1270.98	537.00	1273.17	1273.17	1274.02	82.36	7.36	72.91	59.17
*	4.000	88.00	.00	.00	1270.98	621.00	1273.33	1273.33	1274.27	82.96	7.80	79.60	68.18
*	4.000	88.00	.00	.00	1270.98	724.00	1273.54	1273.54	1274.57	78.96	8.14	88.91	81.47
*	4.000	88.00	.00	.00	1270.98	756.00	1273.59	1273.59	1274.66	79.57	8.30	91.11	84.75
*	4.000	88.00	.00	.00	1270.98	945.00	1273.93	1273.93	1275.17	76.87	8.93	105.86	107.78
*	4.000	88.00	.00	.00	1270.98	1040.00	1274.10	1274.10	1275.41	75.68	9.21	112.96	119.55
*	4.000	88.00	.00	.00	1270.98	1198.00	1274.36	1274.36	1275.80	74.03	9.64	124.33	139.23
*	4.000	88.00	.00	.00	1270.98	1325.00	1274.56	1274.56	1276.10	72.91	9.95	133.13	155.17
*	4.000	88.00	.00	.00	1270.98	1483.00	1274.80	1274.80	1276.46	71.72	10.32	143.72	175.12
*	5.000	50.00	1276.11	1275.63	1271.50	338.00	1273.55	1273.55	1274.33	87.30	7.09	47.66	36.18
*	5.000	50.00	1276.11	1275.63	1271.50	425.00	1273.80	1273.80	1274.71	85.25	7.67	55.41	46.03
*	5.000	50.00	1276.11	1275.63	1271.50	537.00	1274.10	1274.10	1275.17	82.76	8.29	64.79	59.03
*	5.000	50.00	1276.11	1275.63	1271.50	621.00	1274.32	1274.32	1275.49	81.05	8.69	71.50	68.98
*	5.000	50.00	1276.11	1275.63	1271.50	724.00	1274.57	1274.57	1275.87	80.11	9.15	79.12	80.89
*	5.000	50.00	1276.11	1275.63	1271.50	756.00	1274.64	1274.64	1275.98	79.86	9.29	81.41	84.60

*	5.000	50.00	1276.11	1275.63	1271.50	945.00	1275.07	1275.07	1276.62	78.29	10.00	94.53	106.80
*	5.000	50.00	1276.11	1275.63	1271.50	1040.00	1275.39	1275.27	1276.93	69.41	9.95	104.54	124.83
*	5.000	50.00	1276.11	1275.63	1271.50	1198.00	1275.65	1275.59	1277.41	73.34	10.64	112.56	139.89
*	5.000	50.00	1276.11	1275.63	1271.50	1325.00	1275.96	1275.84	1277.79	69.94	10.85	122.09	158.44
*	5.000	50.00	1276.11	1275.63	1271.50	1483.00	1276.31	1276.14	1278.24	67.55	11.15	132.98	180.44
*	6.000	50.00	.00	.00	1271.50	338.00	1274.36	1271.94	1274.36	.23	.56	604.58	697.67
*	6.000	50.00	.00	.00	1271.50	425.00	1274.75	1272.02	1274.75	.24	.61	691.61	864.77
*	6.000	50.00	.00	.00	1271.50	537.00	1275.21	1272.10	1275.22	.24	.67	833.74	1095.55
*	6.000	50.00	.00	.00	1271.50	621.00	1275.53	1272.16	1275.54	.23	.70	955.32	1285.30
*	6.000	50.00	.00	.00	1271.50	724.00	1275.91	1272.24	1275.92	.22	.72	1109.90	1536.48
*	6.000	50.00	.00	.00	1271.50	756.00	1276.03	1272.26	1276.04	.22	.73	1159.11	1618.27
*	6.000	50.00	.00	.00	1271.50	945.00	1276.67	1272.38	1276.68	.20	.75	1459.51	2134.30
*	6.000	50.00	.00	.00	1271.50	1040.00	1276.98	1272.44	1276.99	.19	.76	1615.94	2417.27
*	6.000	50.00	.00	.00	1271.50	1198.00	1277.47	1272.52	1277.48	.17	.76	1880.41	2914.18
*	6.000	50.00	.00	.00	1271.50	1325.00	1277.85	1272.60	1277.86	.16	.77	2099.16	3341.45
*	6.000	50.00	.00	.00	1271.50	1483.00	1278.31	1272.68	1278.32	.14	.77	2374.97	3908.21

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
7.000	300.00	.00	.00	1271.78	338.00	1274.37	1272.22	1274.37	.33	.62	544.17	589.34
7.000	300.00	.00	.00	1271.78	425.00	1274.76	1272.30	1274.76	.32	.67	630.33	745.80
7.000	300.00	.00	.00	1271.78	537.00	1275.22	1272.38	1275.22	.32	.73	734.47	951.57
7.000	300.00	.00	.00	1271.78	621.00	1275.54	1272.44	1275.55	.30	.76	852.45	1124.62
7.000	300.00	.00	.00	1271.78	724.00	1275.92	1272.51	1275.93	.29	.78	997.38	1352.61
7.000	300.00	.00	.00	1271.78	538.00	1276.04	1272.38	1276.04	.14	.56	1044.54	1429.12
7.000	300.00	.00	.00	1271.78	727.00	1276.68	1272.52	1276.69	.15	.62	1327.88	1904.54
7.000	300.00	.00	.00	1271.78	822.00	1276.99	1272.58	1277.00	.14	.65	1476.95	2165.41
7.000	300.00	.00	.00	1271.78	980.00	1277.48	1272.68	1277.49	.14	.67	1730.18	2629.20
7.000	300.00	.00	.00	1271.78	1107.00	1277.86	1272.75	1277.87	.13	.69	1940.19	3029.44
7.000	300.00	.00	.00	1271.78	1307.00	1278.32	1272.87	1278.32	.13	.72	2207.55	3560.79
8.000	400.00	.00	.00	1272.20	338.00	1274.38	1272.65	1274.39	.58	.74	458.54	444.05
8.000	400.00	.00	.00	1272.20	425.00	1274.77	1272.72	1274.78	.52	.79	546.78	587.94
8.000	400.00	.00	.00	1272.20	537.00	1275.23	1272.81	1275.24	.47	.83	653.81	780.81
8.000	400.00	.00	.00	1272.20	621.00	1275.55	1272.87	1275.57	.45	.87	730.46	930.20
8.000	400.00	.00	.00	1272.20	724.00	1275.93	1272.94	1275.94	.42	.90	821.34	1118.53
8.000	400.00	.00	.00	1272.20	538.00	1276.04	1272.81	1276.05	.21	.65	848.95	1178.03
8.000	400.00	.00	.00	1272.20	727.00	1276.69	1272.94	1276.69	.22	.74	1014.73	1540.52
8.000	400.00	.00	.00	1272.20	822.00	1276.99	1273.01	1277.00	.22	.77	1116.48	1734.55
8.000	400.00	.00	.00	1272.20	980.00	1277.48	1273.10	1277.49	.22	.82	1313.17	2085.08
8.000	400.00	.00	.00	1272.20	1107.00	1277.86	1273.18	1277.87	.21	.84	1480.50	2402.96
8.000	400.00	.00	.00	1272.20	1307.00	1278.32	1273.29	1278.33	.21	.89	1690.24	2828.43
9.000	250.00	.00	.00	1272.44	338.00	1274.40	1272.89	1274.41	.84	.83	408.03	368.42
9.000	250.00	.00	.00	1272.44	425.00	1274.78	1272.96	1274.79	.72	.87	494.99	501.72
9.000	250.00	.00	.00	1272.44	537.00	1275.24	1273.05	1275.25	.62	.91	600.57	682.48
9.000	250.00	.00	.00	1272.44	621.00	1275.56	1273.11	1275.58	.57	.93	676.20	823.53
9.000	250.00	.00	.00	1272.44	724.00	1275.94	1273.18	1275.96	.52	.96	765.88	1002.21
9.000	250.00	.00	.00	1272.44	538.00	1276.05	1273.05	1276.06	.26	.69	791.54	1055.50
9.000	250.00	.00	.00	1272.44	727.00	1276.69	1273.18	1276.70	.27	.78	948.99	1401.01
9.000	250.00	.00	.00	1272.44	822.00	1277.00	1273.24	1277.01	.27	.82	1036.06	1583.05
9.000	250.00	.00	.00	1272.44	980.00	1277.49	1273.34	1277.50	.26	.87	1212.34	1907.37
9.000	250.00	.00	.00	1272.44	1107.00	1277.87	1273.42	1277.88	.25	.89	1374.47	2199.58
9.000	250.00	.00	.00	1272.44	1307.00	1278.32	1273.54	1278.34	.25	.94	1579.86	2601.08
10.000	400.00	.00	.00	1272.90	276.00	1274.43	1273.27	1274.44	.81	.81	339.48	306.79
10.000	400.00	.00	.00	1272.90	348.00	1274.81	1273.34	1274.82	.60	.81	430.30	447.49
10.000	400.00	.00	.00	1272.90	439.00	1275.27	1273.41	1275.28	.46	.81	542.01	644.11
10.000	400.00	.00	.00	1272.90	507.00	1275.59	1273.46	1275.60	.40	.81	622.88	800.76
10.000	400.00	.00	.00	1272.90	591.00	1275.96	1273.52	1275.97	.35	.82	719.55	1002.19
10.000	400.00	.00	.00	1272.90	525.00	1276.06	1273.47	1276.07	.25	.70	744.85	1057.27
10.000	400.00	.00	.00	1272.90	710.00	1276.70	1273.60	1276.71	.24	.77	916.90	1455.74
10.000	400.00	.00	.00	1272.90	803.00	1277.01	1273.66	1277.02	.23	.80	1001.29	1665.26
10.000	400.00	.00	.00	1272.90	957.00	1277.50	1273.75	1277.51	.22	.84	1138.70	2024.30
10.000	400.00	.00	.00	1272.90	1081.00	1277.88	1273.82	1277.89	.22	.87	1248.13	2324.96
10.000	400.00	.00	.00	1272.90	1235.00	1278.33	1273.91	1278.35	.21	.89	1383.24	2712.81

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K

	11.000	50.00	.00	.00	1272.95	276.00	1274.43	1273.32	1274.45	.89	.84	329.91	293.07
	11.000	50.00	.00	.00	1272.95	348.00	1274.81	1273.39	1274.82	.65	.83	419.83	430.35
	11.000	50.00	.00	.00	1272.95	439.00	1275.27	1273.46	1275.28	.50	.83	530.85	623.40
	11.000	50.00	.00	.00	1272.95	507.00	1275.59	1273.51	1275.60	.42	.83	611.39	777.83
	11.000	50.00	.00	.00	1272.95	591.00	1275.96	1273.57	1275.98	.37	.84	707.69	976.69
	11.000	50.00	.00	.00	1272.95	525.00	1276.06	1273.52	1276.07	.26	.72	732.18	1029.57
	11.000	50.00	.00	.00	1272.95	710.00	1276.70	1273.65	1276.71	.25	.79	903.72	1423.82
	11.000	50.00	.00	.00	1272.95	803.00	1277.01	1273.71	1277.02	.24	.81	987.87	1631.35
	11.000	50.00	.00	.00	1272.95	957.00	1277.50	1273.80	1277.51	.23	.85	1124.89	1987.25
	11.000	50.00	.00	.00	1272.95	1081.00	1277.88	1273.87	1277.89	.22	.88	1233.98	2285.39
	11.000	50.00	.00	.00	1272.95	1235.00	1278.33	1273.96	1278.35	.21	.90	1368.73	2670.31
*	12.000	450.00	.00	.00	1273.19	276.00	1274.49	1273.66	1274.52	3.93	1.37	205.31	139.24
*	12.000	450.00	.00	.00	1273.19	348.00	1274.85	1273.74	1274.88	2.61	1.32	277.34	215.57
*	12.000	450.00	.00	.00	1273.19	439.00	1275.29	1273.83	1275.32	1.68	1.25	386.98	338.42
*	12.000	450.00	.00	.00	1273.19	507.00	1275.61	1273.89	1275.63	1.30	1.21	474.57	445.22
*	12.000	450.00	.00	.00	1273.19	591.00	1275.98	1273.97	1276.00	1.00	1.17	586.95	591.33
*	12.000	450.00	.00	.00	1273.19	525.00	1276.07	1273.91	1276.09	.69	.99	615.61	630.00
*	12.000	450.00	.00	.00	1273.19	710.00	1276.72	1274.07	1276.73	.56	1.02	837.12	950.81
*	12.000	450.00	.00	.00	1273.19	803.00	1277.02	1274.15	1277.04	.50	1.02	948.55	1132.19
	12.000	450.00	.00	.00	1273.19	957.00	1277.51	1274.27	1277.52	.43	1.03	1130.48	1453.11
	12.000	450.00	.00	.00	1273.19	1081.00	1277.89	1274.36	1277.90	.39	1.04	1275.86	1729.47
	12.000	450.00	.00	.00	1273.19	1235.00	1278.35	1274.47	1278.36	.35	1.04	1458.49	2095.47
	13.000	200.00	.00	.00	1273.38	276.00	1274.58	1273.85	1274.61	5.14	1.49	187.83	121.76
	13.000	200.00	.00	.00	1273.38	348.00	1274.91	1273.93	1274.94	3.48	1.45	250.37	186.59
	13.000	200.00	.00	.00	1273.38	439.00	1275.33	1274.02	1275.36	2.27	1.38	346.40	291.44
	13.000	200.00	.00	.00	1273.38	507.00	1275.64	1274.09	1275.66	1.72	1.32	426.86	386.18
	13.000	200.00	.00	.00	1273.38	591.00	1276.00	1274.16	1276.02	1.29	1.27	533.12	520.18
	13.000	200.00	.00	.00	1273.38	525.00	1276.08	1274.10	1276.10	.90	1.08	559.13	554.30
	13.000	200.00	.00	.00	1273.38	710.00	1276.73	1274.26	1276.74	.69	1.10	772.67	851.70
	13.000	200.00	.00	.00	1273.38	803.00	1277.03	1274.34	1277.05	.62	1.10	882.49	1023.17
	13.000	200.00	.00	.00	1273.38	957.00	1277.52	1274.46	1277.53	.52	1.10	1062.02	1328.94
	13.000	200.00	.00	.00	1273.38	1081.00	1277.90	1274.55	1277.91	.46	1.09	1205.53	1593.68
	13.000	200.00	.00	.00	1273.38	1235.00	1278.35	1274.66	1278.37	.40	1.09	1384.51	1945.24
	14.000	250.00	.00	.00	1273.80	276.00	1274.72	1274.27	1274.77	8.66	1.91	144.87	93.78
	14.000	250.00	.00	.00	1273.80	348.00	1275.00	1274.34	1275.05	5.76	1.83	190.25	145.02
	14.000	250.00	.00	.00	1273.80	439.00	1275.38	1274.43	1275.43	3.52	1.71	257.44	234.08
	14.000	250.00	.00	.00	1273.80	507.00	1275.67	1274.50	1275.71	2.61	1.63	310.51	313.98
	14.000	250.00	.00	.00	1273.80	591.00	1276.03	1274.57	1276.06	1.95	1.57	376.34	423.26
	14.000	250.00	.00	.00	1273.80	525.00	1276.10	1274.51	1276.13	1.37	1.34	390.43	447.97
	14.000	250.00	.00	.00	1273.80	710.00	1276.73	1274.67	1276.76	1.05	1.38	527.40	692.19
	14.000	250.00	.00	.00	1273.80	803.00	1277.04	1274.74	1277.07	.93	1.38	605.31	832.29
	14.000	250.00	.00	.00	1273.80	957.00	1277.52	1274.86	1277.55	.78	1.39	731.02	1082.56
	14.000	250.00	.00	.00	1273.80	1081.00	1277.90	1274.95	1277.93	.69	1.39	830.17	1298.78
	14.000	250.00	.00	.00	1273.80	1235.00	1278.35	1275.05	1278.38	.61	1.39	950.12	1580.50

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	15.000	50.00	.00	.00	1273.85	276.00	1274.76	1274.32	1274.82	9.17	1.94	142.31	91.13
	15.000	50.00	.00	.00	1273.85	348.00	1275.02	1274.39	1275.08	6.09	1.86	186.92	140.99
	15.000	50.00	.00	.00	1273.85	439.00	1275.40	1274.48	1275.44	3.77	1.74	251.91	226.21
	15.000	50.00	.00	.00	1273.85	507.00	1275.68	1274.55	1275.73	2.80	1.67	303.34	302.74
	15.000	50.00	.00	.00	1273.85	591.00	1276.03	1274.62	1276.07	2.09	1.61	367.73	408.37
	15.000	50.00	.00	.00	1273.85	525.00	1276.11	1274.56	1276.14	1.48	1.38	381.41	432.09
	15.000	50.00	.00	.00	1273.85	710.00	1276.74	1274.72	1276.77	1.12	1.41	514.01	669.44
	15.000	50.00	.00	.00	1273.85	803.00	1277.04	1274.80	1277.07	.99	1.41	591.37	806.33
	15.000	50.00	.00	.00	1273.85	957.00	1277.52	1274.91	1277.55	.83	1.41	716.38	1051.99
	15.000	50.00	.00	.00	1273.85	1081.00	1277.90	1274.99	1277.93	.73	1.41	815.12	1264.97
	15.000	50.00	.00	.00	1273.85	1235.00	1278.35	1275.10	1278.38	.64	1.41	935.97	1546.18
*	16.000	100.00	.00	.00	1273.75	276.00	1274.86	1274.20	1274.88	4.55	1.33	224.66	129.45
	16.000	100.00	.00	.00	1273.75	348.00	1275.10	1274.27	1275.12	3.56	1.35	279.96	184.31
	16.000	100.00	.00	.00	1273.75	439.00	1275.45	1274.35	1275.48	2.48	1.32	362.87	278.50
	16.000	100.00	.00	.00	1273.75	507.00	1275.73	1274.40	1275.75	1.93	1.28	432.50	364.92
	16.000	100.00	.00	.00	1273.75	591.00	1276.07	1274.46	1276.09	1.47	1.25	521.16	486.63
	16.000	100.00	.00	.00	1273.75	525.00	1276.13	1274.42	1276.15	1.05	1.07	538.00	511.29
	16.000	100.00	.00	.00	1273.75	710.00	1276.76	1274.54	1276.78	.83	1.11	704.07	778.45
	16.000	100.00	.00	.00	1273.75	803.00	1277.06	1274.60	1277.08	.76	1.13	785.06	923.30
	16.000	100.00	.00	.00	1273.75	957.00	1277.54	1274.70	1277.56	.66	1.16	916.47	1176.95
	16.000	100.00	.00	.00	1273.75	1081.00	1277.92	1274.77	1277.94	.60	1.17	1021.17	1393.27
	16.000	100.00	.00	.00	1273.75	1235.00	1278.37	1274.86	1278.39	.54	1.19	1150.74	1676.29

17.000	400.00	.00	.00	1273.90	276.00	1275.06	1274.47	1275.09	5.79	1.37	213.38	114.73
17.000	400.00	.00	.00	1273.90	348.00	1275.26	1274.53	1275.29	4.83	1.42	259.87	158.36
17.000	400.00	.00	.00	1273.90	439.00	1275.56	1274.60	1275.59	3.43	1.40	334.73	237.02
17.000	400.00	.00	.00	1273.90	507.00	1275.82	1274.66	1275.84	2.64	1.37	399.44	312.13
17.000	400.00	.00	.00	1273.90	591.00	1276.14	1274.71	1276.16	1.98	1.33	482.20	419.68
17.000	400.00	.00	.00	1273.90	225.00	1276.17	1274.42	1276.18	.27	.50	491.41	432.41
17.000	400.00	.00	.00	1273.90	332.00	1276.80	1274.52	1276.80	.24	.55	656.35	683.74
17.000	400.00	.00	.00	1273.90	415.00	1277.10	1274.59	1277.10	.26	.62	736.21	820.16
17.000	400.00	.00	.00	1273.90	462.00	1277.57	1274.62	1277.58	.19	.58	866.20	1061.01
17.000	400.00	.00	.00	1273.90	486.00	1277.95	1274.64	1277.95	.15	.55	970.08	1267.85
17.000	400.00	.00	.00	1273.90	533.00	1278.40	1274.68	1278.40	.12	.53	1098.78	1539.76
18.000	200.00	.00	.00	1274.32	276.00	1275.20	1274.77	1275.24	10.95	1.79	164.01	83.42
18.000	200.00	.00	.00	1274.32	348.00	1275.37	1274.83	1275.42	9.25	1.85	200.06	114.43
18.000	200.00	.00	.00	1274.32	439.00	1275.64	1274.92	1275.69	6.80	1.84	254.98	168.33
18.000	200.00	.00	.00	1274.32	507.00	1275.87	1274.97	1275.91	5.15	1.78	305.06	223.49
18.000	200.00	.00	.00	1274.32	591.00	1276.17	1275.04	1276.21	3.68	1.69	374.26	308.02
18.000	200.00	.00	.00	1274.32	225.00	1276.18	1274.71	1276.18	.52	.64	377.42	312.10
18.000	200.00	.00	.00	1274.32	332.00	1276.80	1274.82	1276.81	.41	.69	522.96	517.41
18.000	200.00	.00	.00	1274.32	415.00	1277.10	1274.89	1277.11	.43	.75	596.08	632.28
18.000	200.00	.00	.00	1274.32	462.00	1277.58	1274.93	1277.58	.30	.70	716.99	838.29
18.000	200.00	.00	.00	1274.32	486.00	1277.95	1274.95	1277.95	.23	.65	815.87	1018.57
18.000	200.00	.00	.00	1274.32	533.00	1278.40	1274.99	1278.41	.18	.62	941.02	1259.03

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	19.000	522.00	.00	.00	1274.75	276.00	1275.71	1275.21	1275.75	8.63	1.61	171.57	93.95
	19.000	522.00	.00	.00	1274.75	348.00	1275.84	1275.28	1275.89	8.69	1.76	197.27	118.08
	19.000	522.00	.00	.00	1274.75	439.00	1276.02	1275.36	1276.07	8.12	1.89	232.13	154.05
	19.000	522.00	.00	.00	1274.75	507.00	1276.17	1275.41	1276.23	7.24	1.93	262.72	188.48
	19.000	522.00	.00	.00	1274.75	591.00	1276.40	1275.48	1276.46	5.91	1.92	307.34	243.20
*	19.000	522.00	.00	.00	1274.75	225.00	1276.21	1275.16	1276.22	1.32	.84	269.03	195.90
*	19.000	522.00	.00	.00	1274.75	332.00	1276.83	1275.26	1276.84	.85	.85	391.66	359.91
	19.000	522.00	.00	.00	1274.75	415.00	1277.12	1275.34	1277.14	.83	.92	453.20	455.09
	19.000	522.00	.00	.00	1274.75	462.00	1277.59	1275.38	1277.60	.55	.84	551.27	622.53
	19.000	522.00	.00	.00	1274.75	486.00	1277.96	1275.40	1277.97	.23	.59	1052.39	1009.74
	19.000	522.00	.00	.00	1274.75	533.00	1278.41	1275.43	1278.41	.15	.51	1387.45	1389.47
*	20.000	478.00	.00	.00	1275.26	276.00	1276.30	1275.99	1276.47	31.50	3.27	84.38	49.17
*	20.000	478.00	.00	.00	1275.26	348.00	1276.43	1276.11	1276.63	34.14	3.65	95.28	59.56
*	20.000	478.00	.00	.00	1275.26	439.00	1276.55	1276.25	1276.81	37.99	4.11	106.79	71.23
*	20.000	478.00	.00	.00	1275.26	507.00	1276.63	1276.35	1276.94	41.58	4.46	113.75	78.63
*	20.000	478.00	.00	.00	1275.26	591.00	1276.72	1276.46	1277.09	45.83	4.86	121.66	87.30
*	20.000	478.00	.00	.00	1275.26	225.00	1276.28	1275.90	1276.39	22.81	2.74	82.12	47.11
*	20.000	478.00	.00	.00	1275.26	332.00	1276.84	1276.09	1276.94	10.85	2.49	133.45	100.80
*	20.000	478.00	.00	.00	1275.26	415.00	1277.13	1276.22	1277.24	9.63	2.59	160.32	133.74
*	20.000	478.00	.00	.00	1275.26	462.00	1277.59	1276.29	1277.67	5.61	2.25	205.28	194.97
*	20.000	478.00	.00	.00	1275.26	486.00	1277.94	1276.32	1278.00	3.84	2.02	240.85	248.10
*	20.000	478.00	.00	.00	1275.26	533.00	1278.38	1276.38	1278.44	2.68	1.84	288.93	325.60
*	21.000	400.00	.00	.00	1275.70	276.00	1276.94	1276.33	1277.01	7.37	2.07	133.56	101.70
*	21.000	400.00	.00	.00	1275.70	348.00	1277.11	1276.43	1277.19	7.47	2.26	154.24	127.34
*	21.000	400.00	.00	.00	1275.70	439.00	1277.31	1276.54	1277.40	7.60	2.46	178.16	159.24
*	21.000	400.00	.00	.00	1275.70	507.00	1277.44	1276.62	1277.54	7.67	2.60	195.01	183.04
*	21.000	400.00	.00	.00	1275.70	591.00	1277.60	1276.72	1277.71	7.68	2.74	215.40	213.21
*	21.000	400.00	.00	.00	1275.70	225.00	1276.81	1276.25	1276.87	7.22	1.91	118.03	83.75
	21.000	400.00	.00	.00	1275.70	332.00	1277.18	1276.41	1277.25	5.70	2.03	163.27	139.10
	21.000	400.00	.00	.00	1275.70	415.00	1277.44	1276.51	1277.51	5.08	2.12	195.75	184.12
	21.000	400.00	.00	.00	1275.70	462.00	1277.78	1276.57	1277.84	3.36	1.92	240.24	251.86
	21.000	400.00	.00	.00	1275.70	486.00	1278.07	1276.60	1278.12	2.36	1.74	279.07	316.05
	21.000	400.00	.00	.00	1275.70	533.00	1278.48	1276.65	1278.52	1.62	1.58	336.53	418.62
	22.000	50.00	.00	.00	1275.75	276.00	1276.98	1276.38	1277.05	7.59	2.09	132.30	100.20
	22.000	50.00	.00	.00	1275.75	348.00	1277.15	1276.48	1277.23	7.65	2.27	153.05	125.81
	22.000	50.00	.00	.00	1275.75	439.00	1277.34	1276.59	1277.44	7.76	2.48	176.94	157.55
	22.000	50.00	.00	.00	1275.75	507.00	1277.48	1276.67	1277.58	7.82	2.62	193.82	181.33
	22.000	50.00	.00	.00	1275.75	591.00	1277.63	1276.77	1277.75	7.83	2.76	214.11	211.27
	22.000	50.00	.00	.00	1275.75	225.00	1276.85	1276.30	1276.91	7.42	1.92	117.01	82.61
	22.000	50.00	.00	.00	1275.75	332.00	1277.21	1276.46	1277.28	5.89	2.06	161.49	136.76
	22.000	50.00	.00	.00	1275.75	415.00	1277.47	1276.56	1277.54	5.28	2.15	193.34	180.64
	22.000	50.00	.00	.00	1275.75	462.00	1277.80	1276.62	1277.86	3.53	1.95	236.58	246.03
	22.000	50.00	.00	.00	1275.75	486.00	1278.08	1276.65	1278.13	2.49	1.77	274.33	307.98
	22.000	50.00	.00	.00	1275.75	533.00	1278.49	1276.70	1278.53	1.71	1.61	330.88	408.16

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	23.000	550.00	.00	.00	1276.20	276.00	1277.45	1276.81	1277.52	9.94	2.11	130.63	87.55
	23.000	550.00	.00	.00	1276.20	348.00	1277.63	1276.92	1277.71	10.13	2.32	149.97	109.36
	23.000	550.00	.00	.00	1276.20	439.00	1277.83	1277.03	1277.93	10.36	2.55	172.14	136.41
	23.000	550.00	.00	.00	1276.20	507.00	1277.97	1277.12	1278.08	10.50	2.71	187.52	156.47
	23.000	550.00	.00	.00	1276.20	591.00	1278.12	1277.21	1278.25	10.62	2.88	206.24	181.40
	23.000	550.00	.00	.00	1276.20	225.00	1277.31	1276.74	1277.37	9.78	1.94	115.69	71.96
	23.000	550.00	.00	.00	1276.20	332.00	1277.61	1276.89	1277.69	9.67	2.25	147.77	106.79
	23.000	550.00	.00	.00	1276.20	415.00	1277.83	1277.00	1277.92	9.30	2.41	171.91	136.12
*	23.000	550.00	.00	.00	1276.20	462.00	1278.05	1277.06	1278.13	7.47	2.35	197.00	169.08
*	23.000	550.00	.00	.00	1276.20	486.00	1278.26	1277.09	1278.33	5.70	2.20	222.77	203.54
*	23.000	550.00	.00	.00	1276.20	533.00	1278.60	1277.15	1278.66	3.96	2.03	269.10	267.99
	24.000	450.00	.00	.00	1276.67	276.00	1277.85	1277.28	1277.93	8.15	2.14	129.27	96.69
	24.000	450.00	.00	.00	1276.67	348.00	1278.03	1277.37	1278.12	8.05	2.31	150.53	122.69
	24.000	450.00	.00	.00	1276.67	439.00	1278.24	1277.49	1278.33	7.86	2.49	176.17	156.61
	24.000	450.00	.00	.00	1276.67	507.00	1278.38	1277.57	1278.48	7.79	2.61	193.94	181.63
	24.000	450.00	.00	.00	1276.67	591.00	1278.54	1277.67	1278.66	7.76	2.75	214.60	212.17
	24.000	450.00	.00	.00	1276.67	225.00	1277.72	1277.20	1277.78	8.32	2.00	112.76	77.99
	24.000	450.00	.00	.00	1276.67	332.00	1278.00	1277.36	1278.08	7.88	2.26	147.00	118.23
	24.000	450.00	.00	.00	1276.67	415.00	1278.20	1277.46	1278.29	7.56	2.41	172.00	150.91
	24.000	450.00	.00	.00	1276.67	462.00	1278.36	1277.52	1278.45	6.70	2.41	191.77	178.51
	24.000	450.00	.00	.00	1276.67	486.00	1278.50	1277.55	1278.59	5.62	2.32	209.90	205.08
	24.000	450.00	.00	.00	1276.67	533.00	1278.77	1277.60	1278.85	4.18	2.17	245.69	260.78
	25.000	50.00	.00	.00	1276.72	276.00	1277.90	1277.33	1277.97	8.20	2.14	129.02	96.40
	25.000	50.00	.00	.00	1276.72	348.00	1278.07	1277.43	1278.16	8.03	2.31	150.63	122.82
	25.000	50.00	.00	.00	1276.72	439.00	1278.28	1277.54	1278.37	7.92	2.50	175.73	156.00
	25.000	50.00	.00	.00	1276.72	507.00	1278.42	1277.62	1278.52	7.85	2.62	193.46	180.94
	25.000	50.00	.00	.00	1276.72	591.00	1278.58	1277.72	1278.70	7.79	2.76	214.35	211.78
	25.000	50.00	.00	.00	1276.72	225.00	1277.76	1277.25	1277.82	8.32	2.00	112.76	77.99
	25.000	50.00	.00	.00	1276.72	332.00	1278.04	1277.40	1278.12	8.01	2.27	146.26	117.31
	25.000	50.00	.00	.00	1276.72	415.00	1278.24	1277.51	1278.33	7.70	2.43	171.01	149.58
	25.000	50.00	.00	.00	1276.72	462.00	1278.39	1277.57	1278.48	6.90	2.43	189.94	175.90
	25.000	50.00	.00	.00	1276.72	486.00	1278.53	1277.60	1278.61	5.85	2.35	207.12	200.95
	25.000	50.00	.00	.00	1276.72	533.00	1278.79	1277.65	1278.87	4.39	2.20	241.75	254.46
	26.000	200.00	.00	.00	1276.86	276.00	1278.08	1277.47	1278.15	10.81	2.17	127.22	83.94
	26.000	200.00	.00	.00	1276.86	348.00	1278.26	1277.57	1278.34	10.95	2.38	146.34	105.18
	26.000	200.00	.00	.00	1276.86	439.00	1278.45	1277.69	1278.56	11.12	2.61	168.28	131.62
	26.000	200.00	.00	.00	1276.86	507.00	1278.59	1277.78	1278.71	11.44	2.78	182.54	149.91
	26.000	200.00	.00	.00	1276.86	591.00	1278.75	1277.87	1278.89	11.46	2.95	200.98	174.62
	26.000	200.00	.00	.00	1276.86	225.00	1277.95	1277.40	1278.01	10.66	2.00	112.61	68.90
	26.000	200.00	.00	.00	1276.86	332.00	1278.22	1277.55	1278.30	10.87	2.33	142.42	100.69
	26.000	200.00	.00	.00	1276.86	415.00	1278.41	1277.66	1278.51	10.85	2.53	163.76	126.00
	26.000	200.00	.00	.00	1276.86	462.00	1278.55	1277.72	1278.65	10.37	2.60	177.60	143.48
	26.000	200.00	.00	.00	1276.86	486.00	1278.66	1277.75	1278.76	9.20	2.55	190.28	160.26
	26.000	200.00	.00	.00	1276.86	533.00	1278.89	1277.81	1278.98	7.30	2.46	217.83	197.23

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	27.000	200.00	.00	.00	1277.05	276.00	1278.29	1277.66	1278.36	10.15	2.13	129.73	86.62
	27.000	200.00	.00	.00	1277.05	348.00	1278.47	1277.76	1278.56	10.28	2.33	149.25	108.56
	27.000	200.00	.00	.00	1277.05	439.00	1278.68	1277.88	1278.78	10.43	2.56	171.70	135.93
	27.000	200.00	.00	.00	1277.05	507.00	1278.82	1277.96	1278.93	10.44	2.70	187.77	156.89
	27.000	200.00	.00	.00	1277.05	591.00	1278.98	1278.06	1279.11	10.52	2.87	206.62	182.18
	27.000	200.00	.00	.00	1277.05	225.00	1278.16	1277.58	1278.22	10.29	1.98	113.87	70.15
	27.000	200.00	.00	.00	1277.05	332.00	1278.43	1277.74	1278.52	10.23	2.29	145.15	103.81
	27.000	200.00	.00	.00	1277.05	415.00	1278.63	1277.85	1278.73	10.28	2.49	166.53	129.44
	27.000	200.00	.00	.00	1277.05	462.00	1278.75	1277.91	1278.86	9.86	2.56	180.41	147.12
	27.000	200.00	.00	.00	1277.05	486.00	1278.84	1277.94	1278.94	9.17	2.55	190.43	160.46
	27.000	200.00	.00	.00	1277.05	533.00	1279.04	1277.99	1279.13	7.74	2.51	213.66	191.63
*	28.000	65.00	1282.00	.00	1277.14	142.00	1280.71	.00	1280.71	.05	.30	604.46	610.26
*	28.000	65.00	1282.00	.00	1277.14	181.00	1281.19	.00	1281.19	.05	.31	800.63	835.63
*	28.000	65.00	1282.00	.00	1277.14	229.00	1281.78	.00	1281.78	.04	.29	1109.03	1212.11
*	28.000	65.00	1282.00	.00	1277.14	264.00	1282.21	.00	1282.21	.03	.28	1373.22	1563.77
*	28.000	65.00	1282.00	.00	1277.14	308.00	1282.76	.00	1282.76	.02	.26	1745.28	2097.42
*	28.000	65.00	1282.00	.00	1277.14	197.00	1280.35	.00	1280.35	.17	.50	478.05	478.63

*	28.000	65.00	1282.00	.00	1277.14	315.00	1281.08	.00	1281.09	.16	.56	756.48	782.11
*	28.000	65.00	1282.00	.00	1277.14	394.00	1281.62	.00	1281.62	.13	.54	1021.87	1102.14
*	28.000	65.00	1282.00	.00	1277.14	443.00	1281.92	.00	1281.92	.11	.53	1195.30	1324.08
*	28.000	65.00	1282.00	.00	1277.14	443.00	1282.07	.00	1282.08	.09	.50	1288.60	1448.38
*	28.000	65.00	1282.00	.00	1277.14	492.00	1282.08	.00	1282.08	.11	.55	1290.80	1451.34
	29.000	445.00	.00	.00	1277.50	142.00	1280.72	1277.97	1280.72	.08	.30	512.35	498.90
	29.000	445.00	.00	.00	1277.50	181.00	1281.19	1278.05	1281.20	.07	.31	646.74	687.82
	29.000	445.00	.00	.00	1277.50	229.00	1281.78	1278.14	1281.78	.06	.31	832.07	971.81
	29.000	445.00	.00	.00	1277.50	264.00	1282.21	1278.20	1282.21	.05	.30	980.54	1231.21
	29.000	445.00	.00	.00	1277.50	308.00	1282.76	1278.26	1282.77	.04	.30	1171.04	1603.74
	29.000	445.00	.00	.00	1277.50	197.00	1280.36	1278.08	1280.36	.27	.50	420.05	379.64
	29.000	445.00	.00	.00	1277.50	315.00	1281.09	1278.27	1281.10	.24	.56	617.16	644.96
	29.000	445.00	.00	.00	1277.50	394.00	1281.63	1278.33	1281.63	.20	.56	781.08	889.42
	29.000	445.00	.00	.00	1277.50	443.00	1281.92	1278.45	1281.93	.18	.56	882.53	1056.69
	29.000	445.00	.00	.00	1277.50	443.00	1282.08	1278.45	1282.08	.15	.53	934.73	1148.11
	29.000	445.00	.00	.00	1277.50	492.00	1282.08	1278.52	1282.09	.18	.59	936.06	1150.50
*	30.000	550.00	.00	.00	1278.01	142.00	1280.72	1278.49	1280.72	.18	.40	382.17	333.74
	30.000	550.00	.00	.00	1278.01	181.00	1281.20	1278.56	1281.20	.14	.39	504.35	488.15
	30.000	550.00	.00	.00	1278.01	229.00	1281.78	1278.65	1281.78	.10	.38	668.54	719.83
	30.000	550.00	.00	.00	1278.01	264.00	1282.21	1278.71	1282.22	.08	.37	806.43	930.07
	30.000	550.00	.00	.00	1278.01	308.00	1282.77	1278.78	1282.77	.06	.35	995.03	1258.04
*	30.000	550.00	.00	.00	1278.01	197.00	1280.38	1278.59	1280.39	.68	.70	282.55	239.58
	30.000	550.00	.00	.00	1278.01	315.00	1281.11	1278.79	1281.12	.48	.71	479.54	455.28
	30.000	550.00	.00	.00	1278.01	394.00	1281.64	1278.90	1281.65	.36	.69	626.11	657.86
	30.000	550.00	.00	.00	1278.01	443.00	1281.94	1278.97	1281.94	.32	.68	714.64	788.66
	30.000	550.00	.00	.00	1278.01	443.00	1282.09	1278.96	1282.09	.26	.64	763.18	861.09
	30.000	550.00	.00	.00	1278.01	492.00	1282.09	1279.03	1282.10	.32	.71	764.92	863.83

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	31.000	400.00	.00	.00	1278.80	19.00	1280.73	1279.02	1280.73	.02	.12	156.46	130.67
*	31.000	400.00	.00	.00	1278.80	24.00	1281.21	1279.04	1281.21	.02	.12	203.97	195.58
*	31.000	400.00	.00	.00	1278.80	31.00	1281.79	1279.07	1281.79	.01	.12	288.56	298.61
*	31.000	400.00	.00	.00	1278.80	37.00	1282.22	1279.09	1282.22	.01	.11	374.91	399.37
*	31.000	400.00	.00	.00	1278.80	44.00	1282.77	1279.11	1282.77	.01	.11	524.89	567.47
*	31.000	400.00	.00	.00	1278.80	192.00	1280.42	1279.46	1280.46	4.02	1.50	128.28	95.78
*	31.000	400.00	.00	.00	1278.80	256.00	1281.13	1279.58	1281.16	1.94	1.32	195.01	183.57
*	31.000	400.00	.00	.00	1278.80	320.00	1281.65	1279.69	1281.68	1.38	1.28	266.11	272.22
*	31.000	400.00	.00	.00	1278.80	360.00	1281.95	1279.76	1281.97	1.17	1.26	318.26	333.15
*	31.000	400.00	.00	.00	1278.80	400.00	1282.10	1279.81	1282.12	1.18	1.31	348.18	368.37
*	31.000	400.00	.00	.00	1278.80	480.00	1282.10	1279.93	1282.14	1.68	1.56	349.84	370.31
*	32.000	50.00	.00	.00	1277.90	19.00	1280.73	1278.08	1280.73	.01	.09	219.04	233.48
*	32.000	50.00	.00	.00	1277.90	24.00	1281.21	1278.11	1281.21	.01	.09	264.34	309.49
*	32.000	50.00	.00	.00	1277.90	31.00	1281.79	1278.13	1281.79	.01	.10	336.48	422.66
	32.000	50.00	.00	.00	1277.90	37.00	1282.22	1278.16	1282.22	.00	.10	406.23	526.20
	32.000	50.00	.00	.00	1277.90	44.00	1282.77	1278.19	1282.77	.00	.10	534.14	692.29
*	32.000	50.00	.00	.00	1277.90	192.00	1280.45	1278.57	1280.47	.97	.99	194.53	195.20
*	32.000	50.00	.00	.00	1277.90	256.00	1281.15	1278.70	1281.17	.73	.99	258.02	298.87
*	32.000	50.00	.00	.00	1277.90	320.00	1281.67	1278.82	1281.69	.65	1.04	319.51	396.92
	32.000	50.00	.00	.00	1277.90	360.00	1281.96	1278.89	1281.98	.61	1.06	361.03	459.43
	32.000	50.00	.00	.00	1277.90	400.00	1282.11	1278.95	1282.13	.65	1.12	384.83	495.38
	32.000	50.00	.00	.00	1277.90	480.00	1282.12	1279.08	1282.15	.92	1.34	387.40	499.17
*	33.000	500.00	.00	.00	1277.90	19.00	1280.73	1278.03	1280.73	.00	.04	425.74	475.14
*	33.000	500.00	.00	.00	1277.90	24.00	1281.21	1278.05	1281.21	.00	.05	509.46	624.43
*	33.000	500.00	.00	.00	1277.90	31.00	1281.79	1278.06	1281.79	.00	.05	667.47	848.02
*	33.000	500.00	.00	.00	1277.90	37.00	1282.22	1278.08	1282.22	.00	.05	834.16	1059.34
*	33.000	500.00	.00	.00	1277.90	44.00	1282.77	1278.09	1282.77	.00	.05	1128.23	1404.41
*	33.000	500.00	.00	.00	1277.90	192.00	1280.49	1278.33	1280.49	.22	.50	386.41	407.52
*	33.000	500.00	.00	.00	1277.90	256.00	1281.18	1278.41	1281.19	.17	.51	504.56	616.41
*	33.000	500.00	.00	.00	1277.90	320.00	1281.70	1278.49	1281.70	.16	.54	639.19	810.80
*	33.000	500.00	.00	.00	1277.90	360.00	1281.99	1278.53	1282.00	.15	.54	743.14	944.99
*	33.000	500.00	.00	.00	1277.90	400.00	1282.14	1278.57	1282.15	.15	.57	803.30	1021.36
*	33.000	500.00	.00	.00	1277.90	480.00	1282.17	1278.65	1282.17	.22	.68	811.57	1031.60
*	34.000	600.00	.00	.00	1277.90	19.00	1280.73	1277.97	1280.73	.00	.01	1853.06	2152.15
*	34.000	600.00	.00	.00	1277.90	24.00	1281.21	1277.98	1281.21	.00	.01	2176.91	2804.07
*	34.000	600.00	.00	.00	1277.90	31.00	1281.79	1277.99	1281.79	.00	.01	2574.09	3690.38
*	34.000	600.00	.00	.00	1277.90	37.00	1282.22	1277.99	1282.22	.00	.01	2976.68	4448.96
*	34.000	600.00	.00	.00	1277.90	44.00	1282.77	1278.00	1282.77	.00	.01	3516.01	5560.02
*	34.000	600.00	.00	.00	1277.90	192.00	1280.50	1278.09	1280.50	.01	.11	1695.07	1858.62

*	34.000	600.00	.00	.00	1277.90	256.00	1281.19	1278.12	1281.19	.01	.12	2165.26	2779.49
*	34.000	600.00	.00	.00	1277.90	320.00	1281.71	1278.14	1281.71	.01	.13	2518.90	3561.75
*	34.000	600.00	.00	.00	1277.90	360.00	1282.00	1278.16	1282.00	.01	.13	2719.28	4036.98
*	34.000	600.00	.00	.00	1277.90	400.00	1282.15	1278.18	1282.15	.01	.14	2907.36	4316.80
*	34.000	600.00	.00	.00	1277.90	480.00	1282.18	1278.21	1282.18	.01	.17	2936.40	4371.85

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	35.000	400.00	.00	.00	1277.90	19.00	1280.73	1277.97	1280.73	.00	.01	1991.85	2315.07
	35.000	400.00	.00	.00	1277.90	24.00	1281.21	1277.98	1281.21	.00	.01	2339.52	3018.36
	35.000	400.00	.00	.00	1277.90	31.00	1281.79	1277.99	1281.79	.00	.01	2765.73	3978.35
	35.000	400.00	.00	.00	1277.90	37.00	1282.22	1277.99	1282.22	.00	.01	3153.60	4781.40
	35.000	400.00	.00	.00	1277.90	44.00	1282.77	1278.00	1282.77	.00	.01	3692.33	5941.65
	35.000	400.00	.00	.00	1277.90	192.00	1280.50	1278.08	1280.50	.01	.11	1825.73	2005.78
	35.000	400.00	.00	.00	1277.90	256.00	1281.19	1278.11	1281.19	.01	.11	2329.97	2998.01
	35.000	400.00	.00	.00	1277.90	320.00	1281.71	1278.13	1281.71	.01	.12	2709.13	3845.11
	35.000	400.00	.00	.00	1277.90	360.00	1282.00	1278.15	1282.00	.01	.12	2945.08	4361.88
	35.000	400.00	.00	.00	1277.90	400.00	1282.15	1278.16	1282.15	.01	.13	3089.17	4649.78
	35.000	400.00	.00	.00	1277.90	480.00	1282.18	1278.19	1282.18	.01	.16	3118.66	4709.81
	36.000	400.00	.00	.00	1277.80	19.00	1280.73	1277.90	1280.73	.00	.01	1622.58	1902.90
	36.000	400.00	.00	.00	1277.80	24.00	1281.21	1277.91	1281.21	.00	.01	1902.12	2469.09
	36.000	400.00	.00	.00	1277.80	31.00	1281.79	1277.92	1281.79	.00	.01	2245.29	3237.82
	36.000	400.00	.00	.00	1277.80	37.00	1282.22	1277.93	1282.22	.00	.01	2541.34	3880.95
	36.000	400.00	.00	.00	1277.80	44.00	1282.77	1277.94	1282.77	.00	.02	2963.39	4807.86
	36.000	400.00	.00	.00	1277.80	192.00	1280.50	1278.05	1280.50	.01	.13	1486.94	1648.82
	36.000	400.00	.00	.00	1277.80	256.00	1281.19	1278.08	1281.19	.01	.14	1892.64	2448.97
	36.000	400.00	.00	.00	1277.80	320.00	1281.71	1278.11	1281.71	.01	.15	2198.10	3127.49
	36.000	400.00	.00	.00	1277.80	360.00	1282.00	1278.13	1282.00	.01	.15	2371.20	3539.12
	36.000	400.00	.00	.00	1277.80	400.00	1282.15	1278.15	1282.15	.01	.16	2490.18	3771.61
	36.000	400.00	.00	.00	1277.80	480.00	1282.18	1278.18	1282.18	.02	.19	2511.89	3817.92
*	37.000	400.00	.00	.00	1280.82	19.00	1281.03	1281.03	1281.10	192.44	2.04	9.29	1.37
*	37.000	400.00	.00	.00	1280.82	24.00	1281.20	1281.06	1281.22	16.92	1.08	22.32	5.84
*	37.000	400.00	.00	.00	1280.82	31.00	1281.78	1281.08	1281.79	.74	.46	67.88	35.95
*	37.000	400.00	.00	.00	1280.82	37.00	1282.22	1281.10	1282.22	.27	.36	103.38	70.64
*	37.000	400.00	.00	.00	1280.82	44.00	1282.77	1281.13	1282.77	.12	.29	150.47	128.00
*	37.000	400.00	.00	.00	1280.82	192.00	1281.49	1281.49	1281.78	112.27	4.31	44.52	18.12
*	37.000	400.00	.00	.00	1280.82	256.00	1281.62	1281.62	1281.96	105.01	4.72	54.23	24.98
*	37.000	400.00	.00	.00	1280.82	320.00	1281.73	1281.73	1282.13	100.31	5.07	63.11	31.95
*	37.000	400.00	.00	.00	1280.82	360.00	1281.85	1281.79	1282.22	77.47	4.90	73.53	40.90
*	37.000	400.00	.00	.00	1280.82	400.00	1282.02	1281.86	1282.35	55.34	4.59	87.17	53.77
*	37.000	400.00	.00	.00	1280.82	480.00	1281.98	1281.98	1282.49	92.18	5.76	83.30	49.99
*	38.000	300.00	.00	.00	1281.10	19.00	1281.56	1281.32	1281.56	5.02	.68	28.01	8.48
*	38.000	300.00	.00	.00	1281.10	24.00	1281.56	1281.33	1281.57	8.61	.88	27.40	8.18
*	38.000	300.00	.00	.00	1281.10	31.00	1281.82	1281.36	1281.83	2.25	.64	48.26	20.66
*	38.000	300.00	.00	.00	1281.10	37.00	1282.23	1281.38	1282.23	.61	.46	80.54	47.36
	38.000	300.00	.00	.00	1281.10	44.00	1282.77	1281.41	1282.78	.20	.35	126.39	97.21
*	38.000	300.00	.00	.00	1281.10	192.00	1282.44	1281.77	1282.50	8.82	1.96	97.82	64.67
*	38.000	300.00	.00	.00	1281.10	256.00	1282.64	1281.90	1282.71	9.46	2.23	114.61	83.24
*	38.000	300.00	.00	.00	1281.10	320.00	1282.81	1282.01	1282.91	9.93	2.46	129.91	101.53
*	38.000	300.00	.00	.00	1281.10	360.00	1282.88	1282.08	1282.99	10.89	2.65	135.96	109.11
*	38.000	300.00	.00	.00	1281.10	400.00	1282.95	1282.14	1283.07	11.84	2.83	141.56	116.27
*	38.000	300.00	.00	.00	1281.10	480.00	1283.19	1282.26	1283.33	10.87	2.94	163.36	145.61

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	39.000	400.00	.00	.00	1281.10	19.00	1281.69	1281.38	1281.69	2.30	.49	41.03	12.52
*	39.000	400.00	.00	.00	1281.10	24.00	1281.74	1281.41	1281.74	2.46	.55	46.46	15.30
	39.000	400.00	.00	.00	1281.10	31.00	1281.90	1281.42	1281.90	1.56	.53	62.88	24.80
	39.000	400.00	.00	.00	1281.10	37.00	1282.25	1281.44	1282.25	.45	.38	105.11	55.42
	39.000	400.00	.00	.00	1281.10	44.00	1282.78	1281.46	1282.78	.13	.27	177.78	121.28
*	39.000	400.00	.00	.00	1281.10	192.00	1282.68	1281.78	1282.71	3.20	1.29	162.70	107.29
*	39.000	400.00	.00	.00	1281.10	256.00	1282.91	1281.88	1282.94	3.28	1.44	199.44	141.33
*	39.000	400.00	.00	.00	1281.10	320.00	1283.11	1281.97	1283.14	3.26	1.55	238.05	177.23
*	39.000	400.00	.00	.00	1281.10	360.00	1283.21	1282.02	1283.24	3.38	1.63	257.72	195.81
*	39.000	400.00	.00	.00	1281.10	400.00	1283.30	1282.07	1283.33	3.48	1.70	276.78	214.45
*	39.000	400.00	.00	.00	1281.10	480.00	1283.53	1282.17	1283.57	3.09	1.72	343.68	273.06

HEC-1 GENERATED 5 YEAR

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.000	358.00	1271.75	.00	.00	.75	136.92	.00
*	1.000	450.00	1271.87	.12	.00	.87	140.40	.00
*	1.000	568.00	1271.97	.10	.00	.97	143.25	.00
*	1.000	658.00	1272.07	.10	.00	1.07	151.32	.00
*	1.000	768.00	1272.17	.10	.00	1.17	157.00	.00
*	1.000	756.00	1272.16	-.01	.00	1.16	156.77	.00
*	1.000	945.00	1272.32	.16	.00	1.32	159.75	.00
*	1.000	1040.00	1272.40	.08	.00	1.40	161.22	.00
*	1.000	1198.00	1272.51	.11	.00	1.51	163.15	.00
*	1.000	1325.00	1272.60	.09	.00	1.60	164.49	.00
*	1.000	1483.00	1272.70	.11	.00	1.70	166.25	.00
*	2.000	358.00	1272.68	.00	.94	.00	145.73	181.00
*	2.000	450.00	1272.81	.13	.94	.00	149.93	181.00
*	2.000	568.00	1272.97	.16	1.00	.00	154.03	181.00
*	2.000	658.00	1273.08	.10	1.01	.00	155.64	181.00
*	2.000	768.00	1273.20	.12	1.03	.00	157.52	181.00
*	2.000	756.00	1273.18	-.01	1.02	.00	157.32	181.00
*	2.000	945.00	1273.37	.19	1.05	.00	160.15	181.00
*	2.000	1040.00	1273.45	.08	1.05	.00	161.50	181.00
*	2.000	1198.00	1273.59	.14	1.09	.00	163.74	181.00
*	2.000	1325.00	1273.70	.10	1.10	.00	165.37	181.00
*	2.000	1483.00	1273.82	.12	1.12	.00	167.83	181.00
*	3.000	338.00	1272.95	.00	.26	.00	161.54	181.00
*	3.000	425.00	1273.10	.16	.29	.00	166.45	181.00
*	3.000	537.00	1273.29	.18	.31	.00	171.79	181.00
*	3.000	621.00	1273.41	.12	.34	.00	175.33	181.00
*	3.000	724.00	1273.55	.14	.36	.00	179.18	181.00
*	3.000	756.00	1273.54	-.01	.36	.00	178.79	181.00
*	3.000	945.00	1273.76	.22	.39	.00	185.33	181.00
*	3.000	1040.00	1273.86	.10	.41	.00	188.25	181.00
*	3.000	1198.00	1274.02	.16	.43	.00	192.69	181.00
*	3.000	1325.00	1274.15	.12	.45	.00	194.30	181.00
*	3.000	1483.00	1274.29	.14	.47	.00	196.19	181.00
*	4.000	338.00	1272.72	.00	-.23	.00	43.35	88.00
*	4.000	425.00	1272.92	.20	-.18	.00	43.36	88.00
*	4.000	537.00	1273.17	.25	-.12	.00	43.37	88.00
*	4.000	621.00	1273.33	.15	-.08	.00	43.38	88.00
*	4.000	724.00	1273.54	.21	-.01	.00	43.39	88.00
*	4.000	756.00	1273.59	.05	.05	.00	43.39	88.00
*	4.000	945.00	1273.93	.34	.17	.00	43.41	88.00
*	4.000	1040.00	1274.10	.16	.23	.00	43.41	88.00
*	4.000	1198.00	1274.36	.26	.33	.00	43.43	88.00
*	4.000	1325.00	1274.56	.20	.41	.00	43.44	88.00
*	4.000	1483.00	1274.80	.24	.51	.00	43.45	88.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.000	338.00	1273.55	.00	.83	.00	30.90	50.00
*	5.000	425.00	1273.80	.25	.88	.00	30.90	50.00
*	5.000	537.00	1274.10	.30	.93	.00	30.90	50.00
*	5.000	621.00	1274.32	.22	.99	.00	30.90	50.00
*	5.000	724.00	1274.57	.25	1.02	.00	30.90	50.00
*	5.000	756.00	1274.64	.07	1.05	.00	30.91	50.00
*	5.000	945.00	1275.07	.42	1.13	.00	30.91	50.00
*	5.000	1040.00	1275.39	.32	1.29	.00	30.91	50.00
*	5.000	1198.00	1275.65	.26	1.29	.00	30.91	50.00
*	5.000	1325.00	1275.96	.31	1.40	.00	30.91	50.00
*	5.000	1483.00	1276.31	.35	1.51	.00	30.91	50.00
*	6.000	338.00	1274.36	.00	.81	.00	222.80	50.00

*	6.000	425.00	1274.75	.39	.95	.00	225.90	50.00
*	6.000	537.00	1275.21	.46	1.11	.00	350.23	50.00
*	6.000	621.00	1275.53	.33	1.21	.00	389.12	50.00
*	6.000	724.00	1275.91	.38	1.35	.00	424.38	50.00
*	6.000	756.00	1276.03	.11	1.39	.00	435.15	50.00
*	6.000	945.00	1276.67	.65	1.61	.00	494.81	50.00
*	6.000	1040.00	1276.98	.31	1.59	.00	519.46	50.00
*	6.000	1198.00	1277.47	.49	1.82	.00	558.67	50.00
*	6.000	1325.00	1277.85	.38	1.90	.00	587.89	50.00
*	6.000	1483.00	1278.31	.46	2.00	.00	614.24	50.00
	7.000	338.00	1274.37	.00	.01	.00	220.63	300.00
	7.000	425.00	1274.76	.39	.01	.00	223.72	300.00
	7.000	537.00	1275.22	.46	.01	.00	227.40	300.00
	7.000	621.00	1275.54	.33	.01	.00	361.06	300.00
	7.000	724.00	1275.92	.38	.01	.00	398.65	300.00
	7.000	538.00	1276.04	.12	.01	.00	409.63	300.00
	7.000	727.00	1276.68	.64	.01	.00	470.23	300.00
	7.000	822.00	1276.99	.31	.01	.00	497.62	300.00
	7.000	980.00	1277.48	.49	.01	.00	536.75	300.00
	7.000	1107.00	1277.86	.38	.01	.00	567.15	300.00
	7.000	1307.00	1278.32	.46	.01	.00	598.39	300.00
	8.000	338.00	1274.38	.00	.01	.00	225.49	400.00
	8.000	425.00	1274.77	.39	.01	.00	229.57	400.00
	8.000	537.00	1275.23	.46	.01	.00	234.43	400.00
	8.000	621.00	1275.55	.32	.01	.00	237.85	400.00
	8.000	724.00	1275.93	.38	.01	.00	241.84	400.00
	8.000	538.00	1276.04	.11	.01	.00	243.04	400.00
	8.000	727.00	1276.69	.64	.00	.00	299.39	400.00
	8.000	822.00	1276.99	.31	.00	.00	362.89	400.00
	8.000	980.00	1277.48	.49	.00	.00	428.48	400.00
	8.000	1107.00	1277.86	.38	.00	.00	449.85	400.00
	8.000	1307.00	1278.32	.46	.00	.00	467.03	400.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	9.000	338.00	1274.40	.00	.02	.00	223.11	250.00
	9.000	425.00	1274.78	.39	.01	.00	227.18	250.00
	9.000	537.00	1275.24	.46	.01	.00	232.03	250.00
	9.000	621.00	1275.56	.32	.01	.00	235.44	250.00
	9.000	724.00	1275.94	.38	.01	.00	239.42	250.00
	9.000	538.00	1276.05	.11	.00	.00	240.54	250.00
	9.000	727.00	1276.69	.64	.01	.00	257.99	250.00
	9.000	822.00	1277.00	.31	.01	.00	313.77	250.00
	9.000	980.00	1277.49	.49	.00	.00	391.34	250.00
	9.000	1107.00	1277.87	.38	.00	.00	437.32	250.00
	9.000	1307.00	1278.32	.46	.00	.00	458.07	250.00
	10.000	276.00	1274.43	.00	.03	.00	235.03	400.00
	10.000	348.00	1274.81	.38	.03	.00	241.29	400.00
	10.000	439.00	1275.27	.46	.02	.00	248.77	400.00
	10.000	507.00	1275.59	.32	.02	.00	254.04	400.00
	10.000	591.00	1275.96	.38	.02	.00	260.21	400.00
	10.000	525.00	1276.06	.10	.01	.00	261.80	400.00
	10.000	710.00	1276.70	.64	.01	.00	272.37	400.00
	10.000	803.00	1277.01	.31	.01	.00	277.41	400.00
	10.000	957.00	1277.50	.49	.01	.00	285.42	400.00
	10.000	1081.00	1277.88	.38	.01	.00	291.64	400.00
	10.000	1235.00	1278.33	.46	.01	.00	299.14	400.00
	11.000	276.00	1274.43	.00	.00	.00	234.36	50.00
	11.000	348.00	1274.81	.38	.00	.00	240.57	50.00
	11.000	439.00	1275.27	.45	.00	.00	248.03	50.00
	11.000	507.00	1275.59	.32	.00	.00	253.30	50.00
	11.000	591.00	1275.96	.38	.00	.00	259.46	50.00
	11.000	525.00	1276.06	.09	.00	.00	261.01	50.00
	11.000	710.00	1276.70	.64	.00	.00	271.58	50.00
	11.000	803.00	1277.01	.31	.00	.00	276.61	50.00
	11.000	957.00	1277.50	.49	.00	.00	284.62	50.00
	11.000	1081.00	1277.88	.38	.00	.00	290.84	50.00
	11.000	1235.00	1278.33	.46	.00	.00	298.35	50.00
*	12.000	276.00	1274.49	.00	.06	.00	183.92	450.00

*	12.000	348.00	1274.85	.36	.04	.00	221.61	450.00
*	12.000	439.00	1275.29	.44	.03	.00	263.26	450.00
*	12.000	507.00	1275.61	.32	.02	.00	287.16	450.00
*	12.000	591.00	1275.98	.37	.02	.00	315.18	450.00
*	12.000	525.00	1276.07	.09	.01	.00	321.94	450.00
*	12.000	710.00	1276.72	.64	.01	.00	359.25	450.00
*	12.000	803.00	1277.02	.31	.01	.00	366.95	450.00
	12.000	957.00	1277.51	.49	.01	.00	379.17	450.00
	12.000	1081.00	1277.89	.38	.01	.00	389.21	450.00
	12.000	1235.00	1278.35	.46	.01	.00	409.79	450.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
13.000	276.00	1274.58	.00	.08	.00	178.23	200.00
13.000	348.00	1274.91	.33	.05	.00	206.14	200.00
13.000	439.00	1275.33	.42	.03	.00	251.42	200.00
13.000	507.00	1275.64	.31	.03	.00	274.40	200.00
13.000	591.00	1276.00	.37	.02	.00	302.08	200.00
13.000	525.00	1276.08	.08	.01	.00	308.48	200.00
13.000	710.00	1276.73	.64	.01	.00	354.73	200.00
13.000	803.00	1277.03	.31	.01	.00	362.40	200.00
13.000	957.00	1277.52	.49	.01	.00	374.62	200.00
13.000	1081.00	1277.90	.38	.01	.00	384.10	200.00
13.000	1235.00	1278.35	.46	.01	.00	401.58	200.00
14.000	276.00	1274.72	.00	.14	.00	165.47	250.00
14.000	348.00	1275.00	.28	.09	.00	170.03	250.00
14.000	439.00	1275.38	.38	.05	.00	176.56	250.00
14.000	507.00	1275.67	.29	.04	.00	181.56	250.00
14.000	591.00	1276.03	.35	.02	.00	187.57	250.00
14.000	525.00	1276.10	.08	.02	.00	188.83	250.00
14.000	710.00	1276.73	.63	.01	.00	254.85	250.00
14.000	803.00	1277.04	.30	.01	.00	257.42	250.00
14.000	957.00	1277.52	.48	.00	.00	261.51	250.00
14.000	1081.00	1277.90	.38	.00	.00	264.69	250.00
14.000	1235.00	1278.35	.45	.00	.00	268.49	250.00
15.000	276.00	1274.76	.00	.04	.00	165.21	50.00
15.000	348.00	1275.02	.26	.03	.00	169.70	50.00
15.000	439.00	1275.40	.37	.02	.00	176.04	50.00
15.000	507.00	1275.68	.29	.01	.00	180.89	50.00
15.000	591.00	1276.03	.35	.01	.00	186.79	50.00
15.000	525.00	1276.11	.07	.01	.00	188.02	50.00
15.000	710.00	1276.74	.63	.00	.00	252.69	50.00
15.000	803.00	1277.04	.30	.00	.00	256.96	50.00
15.000	957.00	1277.52	.48	.00	.00	261.04	50.00
15.000	1081.00	1277.90	.38	.00	.00	264.21	50.00
15.000	1235.00	1278.35	.45	.00	.00	268.05	50.00
* 16.000	276.00	1274.86	.00	.10	.00	227.73	100.00
16.000	348.00	1275.10	.24	.08	.00	230.77	100.00
16.000	439.00	1275.45	.35	.05	.00	244.12	100.00
16.000	507.00	1275.73	.28	.04	.00	257.02	100.00
16.000	591.00	1276.07	.34	.04	.00	260.49	100.00
16.000	525.00	1276.13	.06	.03	.00	261.14	100.00
16.000	710.00	1276.76	.63	.02	.00	267.50	100.00
16.000	803.00	1277.06	.30	.02	.00	270.55	100.00
16.000	957.00	1277.54	.48	.02	.00	276.68	100.00
16.000	1081.00	1277.92	.37	.02	.00	282.46	100.00
16.000	1235.00	1278.37	.45	.02	.00	289.46	100.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
17.000	276.00	1275.06	.00	.20	.00	230.16	400.00
17.000	348.00	1275.26	.20	.16	.00	234.96	400.00
17.000	439.00	1275.56	.30	.11	.00	250.18	400.00
17.000	507.00	1275.82	.25	.09	.00	257.83	400.00
17.000	591.00	1276.14	.32	.07	.00	261.06	400.00
17.000	225.00	1276.17	.04	.04	.00	261.42	400.00
17.000	332.00	1276.80	.62	.03	.00	267.72	400.00

	17.000	415.00	1277.10	.30	.03	.00	270.72	400.00
	17.000	462.00	1277.57	.48	.03	.00	276.98	400.00
	17.000	486.00	1277.95	.37	.03	.00	282.71	400.00
	17.000	533.00	1278.40	.45	.03	.00	289.65	400.00
	18.000	276.00	1275.20	.00	.14	.00	204.71	200.00
	18.000	348.00	1275.37	.17	.11	.00	209.16	200.00
	18.000	439.00	1275.64	.27	.07	.00	214.94	200.00
	18.000	507.00	1275.87	.23	.05	.00	220.08	200.00
	18.000	591.00	1276.17	.30	.04	.00	226.99	200.00
	18.000	225.00	1276.18	.00	.01	.00	227.30	200.00
	18.000	332.00	1276.80	.62	.00	.00	241.17	200.00
	18.000	415.00	1277.10	.30	.00	.00	247.84	200.00
	18.000	462.00	1277.58	.48	.00	.00	260.31	200.00
	18.000	486.00	1277.95	.37	.00	.00	271.04	200.00
	18.000	533.00	1278.40	.45	.00	.00	284.04	200.00
	19.000	276.00	1275.71	.00	.51	.00	193.84	522.00
	19.000	348.00	1275.84	.13	.47	.00	194.97	522.00
	19.000	439.00	1276.02	.18	.38	.00	196.49	522.00
	19.000	507.00	1276.17	.15	.30	.00	197.81	522.00
	19.000	591.00	1276.40	.22	.22	.00	199.73	522.00
*	19.000	225.00	1276.21	-.19	.04	.00	198.08	522.00
*	19.000	332.00	1276.83	.61	.03	.00	203.30	522.00
	19.000	415.00	1277.12	.30	.03	.00	205.86	522.00
	19.000	462.00	1277.59	.47	.02	.00	209.89	522.00
	19.000	486.00	1277.96	.37	.01	.00	665.11	522.00
	19.000	533.00	1278.41	.45	.01	.00	844.01	522.00
*	20.000	276.00	1276.30	.00	.59	.00	86.72	478.00
*	20.000	348.00	1276.43	.12	.58	.00	88.12	478.00
*	20.000	439.00	1276.55	.13	.53	.00	89.57	478.00
*	20.000	507.00	1276.63	.08	.45	.00	90.44	478.00
*	20.000	591.00	1276.72	.09	.32	.00	91.42	478.00
*	20.000	225.00	1276.28	-.44	.06	.00	86.43	478.00
*	20.000	332.00	1276.84	.57	.02	.00	92.86	478.00
*	20.000	415.00	1277.13	.29	.01	.00	96.05	478.00
*	20.000	462.00	1277.59	.46	.00	.00	101.17	478.00
*	20.000	486.00	1277.94	.34	-.03	.00	105.05	478.00
*	20.000	533.00	1278.38	.45	-.03	.00	110.07	478.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	21.000	276.00	1276.94	.00	.64	.00	119.50	400.00
*	21.000	348.00	1277.11	.17	.69	.00	122.23	400.00
*	21.000	439.00	1277.31	.19	.76	.00	125.31	400.00
*	21.000	507.00	1277.44	.13	.81	.00	127.43	400.00
*	21.000	591.00	1277.60	.16	.88	.00	129.96	400.00
*	21.000	225.00	1276.81	-.78	.54	.00	117.41	400.00
	21.000	332.00	1277.18	.37	.34	.00	123.40	400.00
	21.000	415.00	1277.44	.26	.31	.00	127.53	400.00
	21.000	462.00	1277.78	.34	.19	.00	132.97	400.00
	21.000	486.00	1278.07	.29	.14	.00	137.54	400.00
	21.000	533.00	1278.48	.41	.10	.00	144.05	400.00
	22.000	276.00	1276.98	.00	.04	.00	119.33	50.00
	22.000	348.00	1277.15	.17	.04	.00	122.07	50.00
	22.000	439.00	1277.34	.19	.04	.00	125.15	50.00
	22.000	507.00	1277.48	.13	.04	.00	127.28	50.00
	22.000	591.00	1277.63	.16	.04	.00	129.80	50.00
	22.000	225.00	1276.85	-.79	.04	.00	117.27	50.00
	22.000	332.00	1277.21	.36	.03	.00	123.17	50.00
	22.000	415.00	1277.47	.26	.02	.00	127.22	50.00
	22.000	462.00	1277.80	.33	.02	.00	132.53	50.00
	22.000	486.00	1278.08	.28	.01	.00	136.99	50.00
	22.000	533.00	1278.49	.40	.01	.00	143.42	50.00
	23.000	276.00	1277.45	.00	.47	.00	108.74	550.00
	23.000	348.00	1277.63	.18	.48	.00	109.97	550.00
	23.000	439.00	1277.83	.20	.49	.00	111.37	550.00
	23.000	507.00	1277.97	.14	.49	.00	114.93	550.00
	23.000	591.00	1278.12	.16	.49	.00	122.31	550.00
	23.000	225.00	1277.31	-.81	.46	.00	107.78	550.00
	23.000	332.00	1277.61	.29	.40	.00	109.83	550.00

	23.000	415.00	1277.83	.22	.36	.00	111.36	550.00
*	23.000	462.00	1278.05	.22	.25	.00	118.72	550.00
*	23.000	486.00	1278.26	.21	.17	.00	128.47	550.00
*	23.000	533.00	1278.60	.35	.11	.00	138.72	550.00
	24.000	276.00	1277.85	.00	.40	.00	118.79	450.00
	24.000	348.00	1278.03	.18	.41	.00	121.61	450.00
	24.000	439.00	1278.24	.20	.41	.00	124.92	450.00
	24.000	507.00	1278.38	.14	.41	.00	127.16	450.00
	24.000	591.00	1278.54	.16	.42	.00	129.72	450.00
	24.000	225.00	1277.72	-.82	.40	.00	116.56	450.00
	24.000	332.00	1278.00	.28	.39	.00	121.15	450.00
	24.000	415.00	1278.20	.20	.38	.00	124.38	450.00
	24.000	462.00	1278.36	.16	.31	.00	126.89	450.00
	24.000	486.00	1278.50	.14	.25	.00	129.14	450.00
	24.000	533.00	1278.77	.27	.17	.00	133.47	450.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
25.000	276.00	1277.90	.00	.04	.00	118.76	50.00
25.000	348.00	1278.07	.18	.04	.00	121.62	50.00
25.000	439.00	1278.28	.20	.04	.00	124.86	50.00
25.000	507.00	1278.42	.14	.04	.00	127.10	50.00
25.000	591.00	1278.58	.16	.04	.00	129.69	50.00
25.000	225.00	1277.76	-.82	.04	.00	116.56	50.00
25.000	332.00	1278.04	.28	.04	.00	121.05	50.00
25.000	415.00	1278.24	.20	.04	.00	124.26	50.00
25.000	462.00	1278.39	.15	.03	.00	126.66	50.00
25.000	486.00	1278.53	.14	.03	.00	128.80	50.00
25.000	533.00	1278.79	.27	.02	.00	133.00	50.00
26.000	276.00	1278.08	.00	.19	.00	108.44	200.00
26.000	348.00	1278.26	.18	.18	.00	109.65	200.00
26.000	439.00	1278.45	.20	.18	.00	111.03	200.00
26.000	507.00	1278.59	.14	.18	.00	111.91	200.00
26.000	591.00	1278.75	.16	.17	.00	119.39	200.00
26.000	225.00	1277.95	-.81	.19	.00	107.51	200.00
26.000	332.00	1278.22	.27	.18	.00	109.41	200.00
26.000	415.00	1278.41	.19	.17	.00	110.75	200.00
26.000	462.00	1278.55	.13	.16	.00	111.61	200.00
26.000	486.00	1278.66	.11	.13	.00	114.68	200.00
26.000	533.00	1278.89	.23	.09	.00	126.45	200.00
27.000	276.00	1278.29	.00	.21	.00	108.60	200.00
27.000	348.00	1278.47	.18	.22	.00	109.84	200.00
27.000	439.00	1278.68	.20	.22	.00	111.24	200.00
27.000	507.00	1278.82	.14	.23	.00	113.54	200.00
27.000	591.00	1278.98	.16	.23	.00	121.80	200.00
27.000	225.00	1278.16	-.82	.21	.00	107.59	200.00
27.000	332.00	1278.43	.28	.21	.00	109.58	200.00
27.000	415.00	1278.63	.19	.22	.00	110.92	200.00
27.000	462.00	1278.75	.13	.21	.00	111.78	200.00
27.000	486.00	1278.84	.09	.18	.00	114.74	200.00
27.000	533.00	1279.04	.19	.15	.00	124.74	200.00
* 28.000	142.00	1280.71	.00	2.42	.00	384.84	65.00
* 28.000	181.00	1281.19	.48	2.72	.00	426.01	65.00
* 28.000	229.00	1281.78	.58	3.10	.00	579.83	65.00
* 28.000	264.00	1282.21	.43	3.39	.00	636.74	65.00
* 28.000	308.00	1282.76	.55	3.78	.00	709.19	65.00
* 28.000	197.00	1280.35	-2.41	2.19	.00	318.79	65.00
* 28.000	315.00	1281.08	.73	2.65	.00	419.00	65.00
* 28.000	394.00	1281.62	.54	2.99	.00	559.79	65.00
* 28.000	443.00	1281.92	.30	3.17	.00	599.01	65.00
* 28.000	443.00	1282.07	.15	3.23	.00	619.08	65.00
* 28.000	492.00	1282.08	.00	3.04	.00	619.55	65.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
29.000	142.00	1280.72	.00	.00	.00	268.21	445.00

	29.000	181.00	1281.19	.48	.00	.00	293.24	445.00
	29.000	229.00	1281.78	.58	.00	.00	340.28	445.00
	29.000	264.00	1282.21	.43	.00	.00	343.06	445.00
	29.000	308.00	1282.76	.55	.00	.00	347.87	445.00
	29.000	197.00	1280.36	-2.40	.01	.00	251.59	445.00
	29.000	315.00	1281.09	.73	.01	.00	287.92	445.00
	29.000	394.00	1281.63	.53	.01	.00	334.61	445.00
	29.000	443.00	1281.92	.30	.01	.00	341.72	445.00
	29.000	443.00	1282.08	.15	.00	.00	342.43	445.00
	29.000	492.00	1282.08	.00	.01	.00	342.45	445.00
*	30.000	142.00	1280.72	.00	.01	.00	243.11	550.00
	30.000	181.00	1281.20	.48	.00	.00	266.64	550.00
	30.000	229.00	1281.78	.58	.00	.00	297.10	550.00
	30.000	264.00	1282.21	.43	.00	.00	337.44	550.00
	30.000	308.00	1282.77	.55	.00	.00	343.25	550.00
*	30.000	197.00	1280.38	-2.39	.02	.00	165.71	550.00
	30.000	315.00	1281.11	.73	.02	.00	261.95	550.00
	30.000	394.00	1281.64	.53	.01	.00	289.54	550.00
	30.000	443.00	1281.94	.30	.01	.00	305.11	550.00
	30.000	443.00	1282.09	.15	.01	.00	331.31	550.00
	30.000	492.00	1282.09	.01	.01	.00	331.76	550.00
*	31.000	19.00	1280.73	.00	.01	.00	93.54	400.00
*	31.000	24.00	1281.21	.48	.01	.00	116.41	400.00
*	31.000	31.00	1281.79	.58	.01	.00	174.80	400.00
*	31.000	37.00	1282.22	.43	.00	.00	229.82	400.00
*	31.000	44.00	1282.77	.55	.00	.00	314.42	400.00
*	31.000	192.00	1280.42	-2.35	.04	.00	90.78	400.00
*	31.000	256.00	1281.13	.71	.02	.00	108.40	400.00
*	31.000	320.00	1281.65	.52	.01	.00	161.38	400.00
*	31.000	360.00	1281.95	.29	.01	.00	191.11	400.00
*	31.000	400.00	1282.10	.15	.01	.00	211.21	400.00
*	31.000	480.00	1282.10	.01	.01	.00	212.41	400.00
*	32.000	19.00	1280.73	.00	.00	.00	90.56	50.00
*	32.000	24.00	1281.21	.48	.00	.00	105.94	50.00
*	32.000	31.00	1281.79	.58	.00	.00	142.53	50.00
	32.000	37.00	1282.22	.43	.00	.00	189.71	50.00
	32.000	44.00	1282.77	.55	.00	.00	274.56	50.00
*	32.000	192.00	1280.45	-2.32	.03	.00	88.09	50.00
*	32.000	256.00	1281.15	.70	.02	.00	102.12	50.00
*	32.000	320.00	1281.67	.52	.02	.00	134.82	50.00
	32.000	360.00	1281.96	.29	.01	.00	152.99	50.00
	32.000	400.00	1282.11	.15	.01	.00	171.45	50.00
	32.000	480.00	1282.12	.01	.02	.00	173.75	50.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	33.000	19.00	1280.73	.00	.00	.00	164.84	500.00
*	33.000	24.00	1281.21	.48	.00	.00	210.63	500.00
*	33.000	31.00	1281.79	.58	.00	.00	333.71	500.00
*	33.000	37.00	1282.22	.43	.00	.00	447.58	500.00
*	33.000	44.00	1282.77	.55	.00	.00	620.02	500.00
*	33.000	192.00	1280.49	-2.28	.04	.00	162.92	500.00
*	33.000	256.00	1281.18	.69	.03	.00	205.64	500.00
*	33.000	320.00	1281.70	.52	.03	.00	315.23	500.00
*	33.000	360.00	1281.99	.29	.03	.00	378.74	500.00
*	33.000	400.00	1282.14	.15	.03	.00	425.46	500.00
*	33.000	480.00	1282.17	.03	.05	.00	431.50	500.00
*	34.000	19.00	1280.73	.00	.00	.00	677.83	600.00
*	34.000	24.00	1281.21	.48	.00	.00	681.65	600.00
*	34.000	31.00	1281.79	.58	.00	.00	686.29	600.00
*	34.000	37.00	1282.22	.43	.00	.00	979.00	600.00
*	34.000	44.00	1282.77	.55	.00	.00	979.00	600.00
*	34.000	192.00	1280.50	-2.27	.01	.00	675.97	600.00
*	34.000	256.00	1281.19	.69	.01	.00	681.51	600.00
*	34.000	320.00	1281.71	.52	.01	.00	685.65	600.00
*	34.000	360.00	1282.00	.29	.01	.00	687.98	600.00
*	34.000	400.00	1282.15	.15	.01	.00	979.00	600.00
*	34.000	480.00	1282.18	.03	.01	.00	979.00	600.00
	35.000	19.00	1280.73	.00	.00	.00	727.83	400.00

35.000	24.00	1281.21	.48	.00	.00	731.64	400.00
35.000	31.00	1281.79	.58	.00	.00	736.29	400.00
35.000	37.00	1282.22	.43	.00	.00	961.70	400.00
35.000	44.00	1282.77	.55	.00	.00	993.66	400.00
35.000	192.00	1280.50	-2.27	.00	.00	726.00	400.00
35.000	256.00	1281.19	.69	.00	.00	731.54	400.00
35.000	320.00	1281.71	.52	.00	.00	735.67	400.00
35.000	360.00	1282.00	.29	.00	.00	949.04	400.00
35.000	400.00	1282.15	.15	.00	.00	957.81	400.00
35.000	480.00	1282.18	.03	.00	.00	959.59	400.00
36.000	19.00	1280.73	.00	.00	.00	584.83	400.00
36.000	24.00	1281.21	.48	.00	.00	588.64	400.00
36.000	31.00	1281.79	.58	.00	.00	593.29	400.00
36.000	37.00	1282.22	.43	.00	.00	737.56	400.00
36.000	44.00	1282.77	.55	.00	.00	794.31	400.00
36.000	192.00	1280.50	-2.27	.00	.00	582.97	400.00
36.000	256.00	1281.19	.69	.00	.00	588.52	400.00
36.000	320.00	1281.71	.52	.00	.00	592.65	400.00
36.000	360.00	1282.00	.29	.00	.00	594.99	400.00
36.000	400.00	1282.15	.15	.00	.00	730.38	400.00
36.000	480.00	1282.18	.03	.00	.00	733.43	400.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	37.000	19.00	1281.03	.00	.30	.00	75.24	400.00
*	37.000	24.00	1281.20	.16	-.01	.00	76.44	400.00
*	37.000	31.00	1281.78	.59	.00	.00	80.50	400.00
*	37.000	37.00	1282.22	.43	.00	.00	83.53	400.00
*	37.000	44.00	1282.77	.55	.00	.00	87.39	400.00
*	37.000	192.00	1281.49	-1.28	1.00	.00	78.45	400.00
*	37.000	256.00	1281.62	.12	.43	.00	79.31	400.00
*	37.000	320.00	1281.73	.11	.02	.00	80.09	400.00
*	37.000	360.00	1281.85	.12	-.15	.00	80.99	400.00
*	37.000	400.00	1282.02	.17	-.13	.00	82.16	400.00
*	37.000	480.00	1281.98	-.04	-.20	.00	81.83	400.00
*	38.000	19.00	1281.56	.00	.52	.00	76.96	300.00
*	38.000	24.00	1281.56	.00	.36	.00	76.90	300.00
*	38.000	31.00	1281.82	.26	.03	.00	78.78	300.00
*	38.000	37.00	1282.23	.41	.01	.00	81.60	300.00
	38.000	44.00	1282.77	.54	.00	.00	85.44	300.00
*	38.000	192.00	1282.44	-.34	.94	.00	83.07	300.00
*	38.000	256.00	1282.64	.20	1.02	.00	84.47	300.00
*	38.000	320.00	1282.81	.18	1.09	.00	85.73	300.00
*	38.000	360.00	1282.88	.07	1.03	.00	86.22	300.00
*	38.000	400.00	1282.95	.06	.93	.00	86.67	300.00
*	38.000	480.00	1283.19	.25	1.22	.00	88.42	300.00
*	39.000	19.00	1281.69	.00	.14	.00	107.44	400.00
*	39.000	24.00	1281.74	.04	.18	.00	108.85	400.00
	39.000	31.00	1281.90	.16	.08	.00	113.02	400.00
	39.000	37.00	1282.25	.35	.02	.00	123.10	400.00
	39.000	44.00	1282.78	.53	.01	.00	160.89	400.00
*	39.000	192.00	1282.68	-.10	.25	.00	149.37	400.00
*	39.000	256.00	1282.91	.23	.27	.00	176.13	400.00
*	39.000	320.00	1283.11	.20	.29	.00	200.44	400.00
*	39.000	360.00	1283.21	.10	.32	.00	211.25	400.00
*	39.000	400.00	1283.30	.09	.35	.00	219.47	400.00
*	39.000	480.00	1283.53	.24	.34	.00	304.72	400.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 4 CRITICAL DEPTH ASSUMED

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CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 10  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 11  CRITICAL DEPTH ASSUMED

WARNING SECNO=      2.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  7  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  8  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  9  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE= 10  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE= 11  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  7  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  8  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  9  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE= 10  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE= 11  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      4.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      4.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

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*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version  4.6.2;  May 1991              *
*                                         *
*  RUN DATE    28DEC98    TIME   07:34:16  *
*******************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616-4687
*           (916) 756-1104
*****************************************
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X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

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T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       21st STREET BRIDGE TO HIGHWAY 14
T3       HEC-1 GENERATED  5 YEAR EXISTING FLOWS
*
J1       0        2        0        0                0  0.0000  0.0000     1272         0
J2       1                                                  -1
J5     -10      -10
*        ********
*        FLOWS FROM JUNCTION JS HEC-1
*        CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT      11      294      370      472      550      646      688      854      937     1076
QT    1187     1325
*        ********
*        500 FEET DS OF 21st ST BRIDGE
NC 0.035    0.035      0.1
X1       1       90   166.98    247.3     0.00     0.00     0.00        0        0        0
X3      10
GR1279.8         0 1279.43    12.82 1279.32    21.64   1279.3    26.79 1278.52     42.9
GR1278.9      47.8   1278.8    48.64 1278.67    50.28     1278    60.04     1279    71.61
GR  1279     72.11 1278.83    72.21     1278    72.68 1277.69    73.07     1277    74.37
GR1276.8     75.43 1276.72    75.78   1276.7     75.9 1276.68    76.05 1276.69    77.17
GR1276.7     77.23 1276.71    77.43 1276.73    77.63     1277    80.02 1277.12    80.71
GR1277.3     81.55     1278    86.25 1278.67    93.48 1278.92    95.64     1279    97.06
GR1279.1     98.74 1279.16    99.85   1279.2   100.58 1279.21   101.49   1279.2   102.35
GR1279.2    103.57 1279.11   105.34 1279.03   108.11     1279      109 1279.05   112.62
GR  1279    112.83 1278.72    114.5     1278   117.29 1277.43   119.66     1277   121.46
GR1276.2    124.87     1276   125.65 1275.73   126.77 1275.66   127.07 1275.51    129.2
GR1275.3    137.15     1275   138.61 1274.97   138.74 1274.46   141.03     1274   143.09
GR  1273    147.94     1273   147.97     1273   148.02 1272.11   154.85 1272.08   157.07
GR  1272    164.72 1271.96   165.71   1271.9   166.98 1271.83   168.41 1270.59   192.92
GR1270.5     223.2 1271.08   229.93   1271.1   237.39 1271.11   239.81 1271.62    247.3
GR1271.3    261.06   1271.5   289.61   1271.5   294.09 1270.99   298.33 1271.12   300.03
GR1271.1    300.39 1271.83   307.84     1272    308.8 1272.19   311.76 1272.28   312.51
GR1272.5    314.88 1272.54   315.09     1273   319.02 1273.92   326.93 1273.98   327.45
GR  1275    335.89 1275.47   340.55   1276.6   358.86 1277.75   377.73   1278.2   396.76
*        ********
*        FLOWS FROM JUNCTION JX HEC-1
*        CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT      11      279      352      448      522      612      688      854      937     1076
QT    1187     1325
*        ********
*         MISC XC
X1       2       40    81.68   256.64      146      195      181
X3      10
GR1278.7         0 1278.61     9.05   1278.5    16.96 1278.46    20.77   1278.3    31.77
GR  1278     60.04 1277.34    77.06   1277.3    80.02   1277.3    81.68     1277    87.63
GR1276.3     95.95     1276    99.59 1275.04   109.86 1274.86   111.71 1274.17    118.8
GR  1274    120.78 1273.77   124.29     1273   128.67 1272.29   133.55     1272   135.93
GR1271.9    181.13 1271.47   218.32   1271.5   218.53 1271.37   220.02     1271   226.34
GR1271.9    256.64   1272.9   282.11     1274   293.16     1276   301.63     1277   305.29
GR  1278    317.98 1277.22   337.39   1275.6   342.72   1275.7   347.38     1277   358.97
GR1277.4     363.2     1278   371.14   1278.3   377.45   1278.3   399.05   1278.2   407.72
*        ********
*        88 FEET SOUTH OF 21st ST BRIDGE
X1       3       57   171.49   313.62      136      205      181        0        0        0
X3      10
GR1278.8      0.00 1278.73     9.84 1278.69    11.44 1278.51    28.78 1278.46    32.85
GR1278.4     39.51 1278.46    39.80 1278.41    44.50 1278.30    47.05 1278.29    50.23
GR1278.2     50.44 1278.08    73.86 1278.12    90.00 1277.87   108.06 1277.51   117.44
GR1277.2    131.79 1277.16   132.35 1277.00   138.82 1276.32   143.40 1276.00   145.57
GR1275.2    151.36 1275.00   153.17 1274.27   161.16 1274.00   163.82 1273.71   166.01
GR1273.0    171.49 1272.49   178.50 1272.00   185.15 1271.61   200.04 1271.50   204.20
GR1271.5    205.52 1271.44   206.17 1271.36   208.17 1271.32   211.09 1271.02   242.02
GR1271.2    255.29 1271.29   262.12 1271.44   272.36 1271.98   306.74 1272.00   313.62
GR1272.3    323.33 1272.56   328.78 1272.71   333.69 1273.00   339.08 1273.66   350.62
GR1274.0    356.15 1274.00   356.23 1274.30   357.19 1274.43   357.51 1274.42   357.61
GR1274.5    357.63 1274.59   357.69 1275.00   358.25 1275.65   359.10 1276.00   359.55
GR1276.1    362.70 1276.45   370.99
*        ********
*        DS FACE OF 21st ST BRIDGE
NC 0.035    0.035     0.02     0.04     0.06
X1       4        8       75    118.5      138       47       88        0        0        0
X3      10        0        0    81.77   1276.8   112.98   1276.8
GR1277.8         0 1275.87       75 1271.96    75.16 1270.98    96.54 1272.04   118.47
GR  1276     118.5 1276.28   132.48 1276.28   213.05
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*        ********
SB            1.6      3.0      213       31          144.151
*        ********
*        US FACE OF 21st ST BRIDGE
X1      5       11   105.19    136.2       50       50       50        0        0        0
X2      0        0        1 1275.63 1276.11
X3     10        0        0    105.2 1276.63    136.1 1276.67
GR1278.1          0 1277.26     51.1 1276.77    78.65 1276.67   105.19 1272.53    105.2
GR1271.5      118.2   1272.5    136.1     1276    136.2 1276.55   153.68 1276.29   224.11
GR1276.7      248.2
*        ********
*         MISC XC
X1      6       37    80.29   193.99      114     84.7      125
X3     10
GR   1280          0 1279.52    25.37     1279     35.6   1278.2    41.94 1277.74    44.51
GR   1277      47.98 1276.22    51.63 1275.82     54.8 1274.69    63.84     1274    69.55
GR1273.4      74.08 1272.68    80.29 1272.41    87.31     1272    98.55   1271.6    109.2
GR1271.4     118.18   1271.4   126.03 1271.71   154.5 1271.84   164.87     1272   175.71
GR1272.1     181.62 1272.22    190.18   1272.5  193.99     1273   199.34   1273.3   205.12
GR1273.8     214.93     1274   222.09 1274.43   234.32     1275   250.93   1275.1   255.63
GR1275.4     268.94 1275.51    277.54 1275.57   281.68 1275.79   293.98   1275.9   299.89
GR   1276    306.54 1276.36    322.93
*        ********
*        FLOWS FROM JUNCTION JR HEC-1
*        CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT     11       279       352       448       522       613       480       636       719       858
QT    987      1129
*        ********
*        275 FEET US OF 21st ST BRIDGE
NC    0.1       0.1       0.1
X1      7        48    79.61   240.82      139      168      150        0        0        0
X3     10
GR1280.1         0.00 1280.14     1.19 1280.03    12.34 1280.00    15.29 1279.97    15.99
GR1279.0        26.03 1278.65    28.92 1278.00    34.32 1277.74    41.06 1277.00    57.62
GR1276.4        71.68 1276.00    79.61 1275.37    81.98 1275.00    83.40 1274.17    86.71
GR1274.0        87.40 1273.91    87.80 1273.00    91.77 1272.82   100.77 1272.76   115.16
GR1272.6       133.40 1272.50   141.78 1272.45   148.14 1272.46   181.66 1272.55   186.53
GR1272.7       196.33 1272.77   208.50 1273.00   210.84 1273.98   220.91 1274.00   221.15
GR1274.0       221.32 1274.07   221.84 1274.63   228.21 1275.00   232.41 1275.49   237.45
GR1275.6       238.69 1275.78   240.82 1276.00   243.19 1276.03   243.43 1276.02   244.20
GR1276.5       262.49 1276.73   281.33 1276.96   305.95 1276.98   314.52 1277.00   319.03
GR1277.0       323.35 1277.10   331.30 1277.02   355.84
*        ********
*        FLOWS FROM JUNCTION JY HEC-1
*        CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT     11       234       293       373       433       507       470       636       719       858
QT    968      1107
*         MISC XC
X1      8        63   115.65   372.53      652      698      656        0        0        0
X3     10
GR1278.7         0.00 1278.48     1.69 1278.05     4.73 1278.00     5.11 1277.99     5.40
GR1278.0         6.15 1278.00     6.71 1278.00     6.89 1278.00     9.48 1277.99     9.66
GR1277.3        25.12 1277.37    37.08 1277.92    68.40 1277.92    70.40 1277.81    86.29
GR1277.3       100.25 1277.00   115.65 1276.08   124.34 1276.00   125.07 1275.89   126.06
GR1275.0       134.14 1274.44   138.20 1274.00   141.72 1273.86   150.39 1273.11   191.41
GR1273.2       206.13 1273.16   206.51 1273.17   208.80 1273.51   246.09 1273.44   273.82
GR1273.9       306.85 1273.98   312.93 1273.95   313.88 1274.00   314.25 1274.05   314.76
GR1275.0       326.18 1275.23   328.95 1275.36   330.45 1276.00   337.31 1276.70   345.29
GR1277.0       348.62 1277.14   350.28 1278.00   360.26 1278.86   372.53 1278.86   372.53
GR1278.9       372.53 1278.86   372.53 1278.86   372.53 1278.86   372.53 1278.86   372.53
GR1278.9       372.53 1278.86   372.53 1279.00   379.52 1279.25   392.62 1279.46   405.57
GR1279.6       412.79 1280.00   429.07 1280.03   431.14 1280.23   442.82 1280.30   449.70
GR1280.4       454.71 1280.76   469.58 1280.78   479.56
*        ********
*        64 FEET DS OF 18th ST CULVERTS
X1      9       97   264.93   382.47      345      492      495        0        0        0
X3     10
GR1279.0         0.00 1278.60    29.37 1280.79   144.17 1280.91   146.05 1280.91   152.04
GR1280.9       152.70 1280.82   153.63 1280.93   157.06 1280.94   161.55 1280.98   172.32
GR1281.0       177.76 1281.00   178.48 1281.00   180.02 1280.47   185.34 1280.00   190.01
GR1279.9       190.76 1279.77   192.36 1279.39   196.11 1279.00   200.01 1278.85   201.50
GR1278.9       201.50 1278.02   206.68 1278.00   206.82 1277.05   212.79 1277.02   212.93
GR1277.0       213.08 1276.95   213.40 1276.00   220.44 1275.03   242.16 1275.00   242.70
GR1275.0       242.92 1274.93   244.75 1274.93   245.17 1275.00   245.22 1275.16   245.32
GR1276.0       245.89 1276.09   245.96 1276.21   246.04 1276.26   249.30 1276.18   249.86
GR1276.0       250.73 1276.00   251.04 1275.31   256.52 1275.00   258.84 1274.55   264.93
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GR1274.3   275.73 1274.00   283.32 1273.56   316.05 1273.55   316.62 1273.52   319.81
GR1273.5   321.70 1273.52   323.88 1273.53   326.23 1273.53   328.77 1273.55   330.23
GR1273.6   331.23 1274.00   333.52 1274.07   333.90 1274.08   334.48 1274.08   337.10
GR1274.0   344.06 1274.02   346.03 1274.00   347.15 1273.97   348.75 1273.89   349.99
GR1273.8   350.73 1273.82   351.22 1273.82   354.68 1273.86   357.63 1273.93   362.50
GR1274.0   367.72 1274.42   370.28 1275.00   373.92 1275.18   378.75 1275.26   382.47
GR1275.3   385.90 1275.28   386.15 1275.15   388.54 1275.00   391.28 1274.97   393.56
GR1274.8   403.01 1274.84   405.54 1274.90   407.10 1275.00   407.86 1275.15   409.07
GR1275.3   412.48 1276.00   420.83 1276.74   440.13 1277.00   446.65 1277.18   451.03
GR1277.6   462.87 1277.98   471.18 1278.00   472.03 1278.07   474.85 1278.07   475.04
GR1278.1   478.39 1278.22   486.48
*        ********
*        DS FACE OF 18th ST CULVERTS
NC   0.1       0.1      0.03       0.4
X1    10        12        52    155.47       126        30        64         0         0         0
X3    10         0         0       122      1278    144.25   1276.56
GR1281.2         0   1280.29        52   1272.56     56.99   1274.41     72.51   1273.76     96.28
GR1273.7    124.07   1273.11    126.26   1273.66    132.42    1273.2    143.51    1274.6    152.05
GR1276.1    155.47   1277.95    198.34
*        ********
SC  4.02       0.5         3       104      1.75         0        40       1.3   1273.55   1273.11
*        ********
*        FLOWS FROM JUNCTION JE HEC-1
*        CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT    11       234       294       373       433       507       461       624       705       841
QT   949      1085
*        US FACE OF 18th ST CULVERTS
NC 0.035     0.035      0.03       0.6
X1    11        15        63    250.65        40        40        40         0         0         0
X2     0         0         2         0   1276.64
X3    10         0         0       117    1278.5       142    1276.5
GR1281.2         0   1279.68     53.42   1276.61        63   1274.84     73.23   1274.87     91.51
GR1273.8     98.89    1273.7    118.55   1273.55    120.89   1274.16       128   1373.49     140.6
GR1275.1    146.15    1275.1    156.71      1275     157.7   1274.76    211.36   1278.27    250.65
*        ********
*        MISC XC
X1    12        39    189.11    419.41       135       145       146
X3    10
GR1278.5         0   1277.75     33.59   1277.98     63.52   1277.92     66.82    1278.2      79.4
GR1278.7     84.76   1279.38    108.94    1280.2    137.44   1280.54    139.74    1280.4    148.35
GR1279.7    160.18      1279    164.04      1278    168.66    1277.2     171.9   1276.55    177.51
GR   1276    183.9    1275.2    189.11   1274.19    236.77      1274    248.73    1273.9    262.72
GR1273.9    270.98    1274.3     318.5    1274.9    375.93      1275     386.4    1275.2    406.41
GR1275.3    414.55    1275.3    419.41      1276    466.56    1276.8    486.87      1277    501.48
GR   1278   517.85   1278.13    520.52   1278.83    531.92    1279.1    547.66   1279.32    559.03
GR1279.4     565.8    1279.9    595.32      1280    611.19   1280.39    627.77
*        291 FEET US OF 18th ST CULVERTS
NC 0.035     0.035     0.035
X1    13        76     28.47    441.18       143       145       145         0         0         0
X3    10
GR1279.7         0   1279.44     11.40   1279.15     20.59   1279.09     22.21   1279.00     24.24
GR1278.8     28.47   1278.00     47.07   1277.03     69.36   1277.00     70.16   1276.94     71.57
GR1276.9     74.61   1276.80     76.83   1276.47     89.96   1276.19    101.47   1276.08    105.64
GR1276.0    108.87   1275.02    148.75   1275.00    149.39   1275.00    149.42   1275.00    150.41
GR1274.7    238.05   1274.87    248.95   1274.88    251.63   1274.88    254.39   1274.84    257.80
GR1274.2    337.04   1274.12    341.90   1274.02    352.89   1274.03    353.04   1274.03    353.33
GR1274.0    353.62   1274.02    353.96   1274.01    357.59   1274.00    360.07   1274.00    360.54
GR1274.0    365.88   1274.00    367.61   1274.00    368.13   1274.03    370.94   1274.07    374.63
GR1274.1    378.23   1274.32    393.58   1274.76    424.26   1274.93    440.53   1275.00    441.15
GR1275.0    441.16   1275.00    441.18   1276.00    448.52   1276.67    452.70   1277.00    454.81
GR1277.3    458.73   1277.43    461.63   1277.44    461.85   1277.47    464.44   1278.00    469.27
GR1278.6    473.59   1279.00    476.23   1279.28    478.21   1279.29    478.85   1279.22    479.64
GR1279.2    480.16   1279.24    480.22   1279.24    480.26   1280.00    481.59   1280.64    490.54
GR1280.8    492.94   1280.41    493.51   1280.34    493.62   1280.70    509.58   1280.83    515.00
GR1280.8    515.57   1280.86    516.33   1280.90    518.29   1278.65    540.91   1279.88    594.88
GR1279.3    708.12
*        ********
*        71 FEET DS OF 17th ST CULVERTS
X1    14        84     24.47    440.21       5.00      5.00      5.00         0         0         0
X3    10
GR1279.7         0   1279.39     12.86   1279.37     13.53   1279.24     17.76   1279.22     18.33
GR1279.2     19.06   1279.00     23.34   1278.95     24.47   1278.51     34.40   1278.34     38.32
GR1278.0     46.13   1277.59     55.49   1277.00     69.10   1276.96     69.97   1276.62     81.98
GR1276.4     90.78   1276.00    107.03   1275.87    112.27   1275.66    120.76   1275.00    147.42
GR1275.0    153.58   1274.65    237.65   1274.87    250.65   1274.89    253.84   1274.89    257.13
GR1274.8    261.20   1274.23    334.16   1274.18    338.62   1274.09    348.75   1274.10    349.32
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GR1274.1  350.47 1274.10  351.58 1274.07  352.93 1274.06  356.30 1274.06  358.59
GR1274.0  364.52 1274.00  366.36 1274.06  366.60 1274.06  368.15 1274.06  368.75
GR1274.1  369.35 1274.06  370.16 1274.07  371.57 1274.07  372.04 1274.08  372.68
GR1274.1  374.47 1274.15  377.92 1274.18  381.15 1274.21  384.26 1274.37  395.68
GR1274.5  406.57 1275.00  440.21 1275.19  441.89 1275.80  446.93 1275.89  447.72
GR1276.0  448.54 1276.07  449.00 1277.00  454.83 1277.81  465.70 1277.85  466.47
GR1277.8  466.53 1277.86  467.22 1278.00  468.51 1278.17  469.66 1279.00  475.47
GR1279.6  479.81 1279.62  480.16 1279.58  480.59 1279.59  480.87 1279.58  481.02
GR1279.6  481.11 1280.00  481.84 1280.35  486.77 1280.79  493.43 1280.54  493.80
GR1280.3  494.11 1280.56  504.46 1280.77  512.89 1280.79  513.79 1280.82  514.97
GR1280.9  518.02 1278.69  539.95 1279.89  592.26 1279.31  708.12
*         **************
*         DS FACE OF 17th ST CULVERTS
NC 0.035    0.035     0.02       0.4        0.6
X1     15       12       21       240         92        90         71         0         0         0
X3     10        0        0       104     1276.5       113     1276.5
GR1279.4         0  1277.16        21    1274.89      40.7    1274.88     49.85    1274.79     69.06
GR1273.8    107.22 1274.07    111.19    1274.78    130.34    1274.86    169.33    1274.97    197.06
GR1274.8    206.35 1276.78       240
*         **************
SC 2.012       0.5         3       408         2         0         20       1.3    1274.14   1273.93
*         **************
*         US FACE OF 17th ST CULVERTS
X1     16       12      9.69     511.8        20        20         20         0         0         0
X2      0        0         2         0   1276.45
X3     10        0         0      70.5     1276.5        79     1276.5
GR1277.9         0  1277.17      9.69     1274.8     19.56    1274.46     23.47    1274.31     39.24
GR1274.1     71.22 1274.22     77.98    1274.49    103.91     1274.5    162.98    1274.98    168.09
GR1276.9    447.13 1281.35     511.8
*         **************
*         331 FEET US OF 17th ST CULVERTS
NC   0.03     0.03     0.03       0.1        0.3
X1     17       75   176.65    609.38         348       348        331         0         0         0
X3     10
GR1282.7         0.00 1282.69     28.79    1282.32     39.58    1282.00     48.91    1281.63     57.31
GR1281.4        61.67 1281.00     68.42    1280.38     78.77    1280.16     82.55    1280.00     85.16
GR1279.5        94.10 1279.00    101.82    1278.40    111.76    1278.00    118.44    1277.73    122.85
GR1277.0       135.06 1276.55    142.46    1276.49    144.60    1276.48    145.32    1276.42    149.04
GR1276.0       176.65 1275.59    203.90    1275.38    217.28    1275.37    217.85    1275.33    220.98
GR1275.3       223.05 1275.29    224.41    1275.28    225.37    1275.28    225.87    1275.26    226.62
GR1275.0       254.42 1275.00    259.27    1274.89    273.60    1274.84    277.44    1274.56    294.27
GR1274.4       306.66 1274.27    312.79    1274.00    331.08    1273.98    332.55    1273.84    340.57
GR1273.8       343.80 1273.80    348.22    1273.83    352.56    1273.97    362.54    1274.00    364.88
GR1274.2       381.60 1274.39    390.48    1274.75    418.87    1274.79    419.26    1275.00    421.05
GR1275.0       421.07 1275.00    421.10    1276.00    429.48    1276.03    429.72    1276.84    447.17
GR1276.9       448.04 1277.00    450.70    1277.16    454.27    1278.00    472.85    1278.93    498.14
GR1279.0       500.12 1279.02    500.59    1279.03    501.80    1279.76    551.22    1279.78    553.42
GR1280.2       579.07 1280.30    583.40    1280.39    589.35    1280.82    607.99    1280.85    609.38
GR1280.4       651.32 1280.17    664.89    1280.22    673.38    1280.10    673.78    1279.94    707.28
*         **************
*         66 FEET DS OF 16th ST CULVERTS
X1     18       30    41.87    259.59         27       278        103         0         0         0
X3     10
GR1277.3         0.00 1277.16      3.52    1277.00      9.43    1276.85     14.68    1276.62     22.80
GR1276.4        30.31 1276.00     41.87    1275.74     46.16    1275.30     55.62    1275.09     59.89
GR1275.0        61.97 1274.91     74.95    1274.66     99.95    1274.50    117.86    1274.29    128.71
GR1274.2       141.53 1274.15    144.08    1274.15    144.88    1274.44    181.25    1274.65    192.25
GR1275.0       211.90 1275.00    212.35    1275.04    214.64    1275.65    251.20    1275.74    257.22
GR1275.8       259.59 1275.92    270.62    1276.00    276.12    1276.03    278.28    1276.24    294.50
*         **************
*         DS FACE OF 16th ST CULVERTS
NC   0.03     0.03     0.02       0.3
X1     19        9     18.3    204.49         126         5         66         0         0         0
X3     10        0        0        88      1276.5     100.5      1276
GR1278.6         0  1278.53      18.3     1276.5     58.18    1274.68        82    1273.2      88.9
GR1273.2     99.32 1274.59    161.64    1275.52    204.49    1276.31    265.68
*         **************
SC 2.012       0.5         3       164         2         0         53       1.3    1273.57   1273.2
*         **************
*         US FACE OF 16th ST CULVERTS
NC 0.035    0.035     0.02                  0.5
X1     20        9    62.97    226.66          53        53         53         0         0         0
X2                       2              1275.26
X3     10        0        0     109.5     1276.5     121.5      1276
GR1279.1         0   1277.2     62.97     1275.2     83.43    1273.54    110.69    1273.59    120.3
GR1274.2     152.8 1274.18    182.78    1275.28    226.66    1276.69    277.69
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*         ************
*        140 FEET US OF 16th ST CULVERTS
NC 0.045    0.055       0.1
X1    21       91    253.33    403.67       130       180       140         0         0         0
X3    10
GR1279.9      0.00  1280.08     30.37  1280.24     30.90  1280.20     37.38  1280.61     57.55
GR1281.0     96.18  1281.17    101.26  1281.15    103.73  1281.00    162.10  1280.77    182.42
GR1280.4    190.67  1280.23    195.79  1280.00    201.63  1279.73    208.32  1279.71    209.07
GR1279.4    217.16  1279.38    217.42  1279.37    218.83  1279.39    219.84  1279.81    224.99
GR1279.9    228.06  1279.87    228.81  1279.79    232.08  1279.00    238.86  1278.97    240.31
GR1278.9    242.27  1278.28    253.33  1278.04    258.16  1278.00    258.49  1277.92    258.77
GR1277.0    261.82  1276.08    264.86  1276.00    265.14  1275.54    266.76  1275.00    268.58
GR1274.7    278.90  1274.00    299.38  1273.89    304.43  1273.87    305.40  1273.75    322.14
GR1273.8    324.81  1273.74    326.09  1273.74    327.53  1273.82    329.59  1274.00    334.68
GR1274.2    340.69  1274.28    342.28  1274.76    355.67  1274.99    363.57  1275.00    364.14
GR1275.3    378.24  1275.42    381.97  1275.99    403.22  1276.00    403.67  1276.00    403.85
GR1276.3    414.94  1276.34    417.35  1276.14    445.58  1276.07    470.86  1276.00    475.97
GR1276.0    477.43  1275.79    493.30  1275.63    525.25  1275.50    533.22  1275.82    563.08
GR1275.8    563.27  1275.81    563.58  1275.82    563.77  1275.91    568.75  1276.00    574.65
GR1276.0    576.48  1276.05    576.73  1276.37    595.18  1276.46    600.60  1276.56    605.77
GR1276.7    611.80  1276.81    618.40  1276.97    627.81  1276.98    628.36  1277.00    629.89
GR1277.1    641.82  1277.17    644.11  1277.32    651.94  1277.33    652.06  1277.39    655.10
GR1277.6    660.61  1277.60    662.26  1277.65    664.41  1277.78    668.76  1277.80    672.80
GR1277.8    673.19
*         ************
*          MISC XC
NC 0.055      0.07        0.1
X1    22       32     84.17    236.86       180         2       102
X3    10
GR1279.6         0  1279.35      4.92      1279     14.29  1278.46     18.94      1278     21.46
GR1277.1     26.37      1276     31.81    1275.9     36.53  1275.54     53.31  1275.39     60.52
GR1275.3        70  1275.15     82.47      1275     84.17  1274.54     94.07  1274.21       118
GR   1274   126.08  1273.75    171.95    1273.7    182.42  1273.67    185.55    1273.7    190.28
GR   1274   206.44  1274.27    216.83  1274.74    236.86      1275    247.73  1275.58     263.3
GR   1276    277.5  1276.38    293.32  1276.44    299.51  1276.37    304.47      1276    330.39
GR1275.9    340.85   1275.8    374.14
*          MISC XC
NC 0.055      0.07        0.1
X1    23      100     237.19    518.42         2       200       102         0         0         0
X3    10
GR1278.6      0.00  1278.66      0.76  1279.64     16.00  1280.04     97.10  1280.27     97.85
GR1280.2    101.19  1280.88    130.67  1281.01    142.23  1281.41    155.31  1281.49    156.32
GR1281.4    157.65  1281.23    164.46  1281.00    172.54  1280.38    195.52  1280.29    199.05
GR1280.2    202.88  1280.00    211.02  1279.47    219.65  1279.00    229.31  1278.30    237.19
GR1278.0    239.94  1277.28    243.86  1277.00    245.39  1276.45    248.26  1276.00    250.63
GR1275.3    283.60  1275.00    297.43  1274.51    312.10  1274.00    328.05  1273.96    332.75
GR1273.7    367.27  1273.62    383.23  1273.89    413.37  1273.94    421.19  1273.95    423.20
GR1274.0    429.26  1274.00    432.52  1274.02    435.53  1274.04    439.11  1274.19    469.79
GR1274.2    470.92  1274.39    484.21  1274.52    486.13  1274.54    486.69  1274.43    494.96
GR1274.4    495.08  1274.43    495.18  1274.44    495.66  1274.46    496.26  1274.50    498.18
GR1274.8    506.36  1275.00    511.61  1275.00    511.61  1275.26    517.35  1275.24    518.42
GR1275.2    518.58  1275.28    537.91  1275.25    540.09  1275.50    546.69  1275.53    550.94
GR1275.5    554.61  1275.44    555.11  1275.00    564.90  1274.83    579.34  1274.78    584.00
GR1275.0    591.75  1274.98    598.68  1275.00    599.04  1275.07    600.12  1275.09    601.03
GR1275.1    604.68  1275.13    611.94  1275.12    614.89  1275.10    617.99  1275.00    625.10
GR1274.9    635.20  1274.84    635.78  1274.83    637.79  1275.00    639.74  1275.25    642.66
GR1275.4    643.94  1275.38    644.09  1275.49    646.37  1275.49    646.57  1275.47    649.20
GR1275.6    650.77  1275.60    651.14  1275.55    658.29  1276.00    666.21  1275.67    677.40
GR1275.7    677.45  1275.68    678.06  1275.70    678.88  1275.71    679.23  1275.71    680.27
GR1275.8    688.92  1276.00    694.00  1276.28    700.69  1276.29    701.80   1275.2    782.11
*         ************
*          MISC XC
NC 0.055      0.07        0.03        0.2         0.4
X1    24      100     268.63         634         124       199       127         0         0         0
X3    10
GR1280.3    200.34  1280.28    201.99  1280.86    228.81  1280.92    229.66  1281.00    230.70
GR1281.4    242.86  1281.57    248.32  1281.62    268.63  1281.54    271.52  1281.41    276.04
GR1281.2    284.14  1281.00    290.14  1280.38    314.39  1280.33    316.34  1280.00    330.89
GR1279.4    340.85  1279.00    346.60  1278.27    353.70  1278.00    355.87  1277.37    362.53
GR1277.0    366.37  1276.22    374.53  1276.10    381.69  1276.07    382.12  1276.06    382.64
GR1276.0    385.37  1275.79    399.40  1275.74    400.68  1275.74    401.06  1275.58    410.75
GR1275.5    416.40  1275.58    431.43  1275.57    432.28  1275.62    434.52  1275.55    436.56
GR1275.0    460.56  1274.96    462.72  1274.95    464.86  1274.94    467.01  1274.92    468.48
GR1274.7    474.26  1274.60    477.43  1274.51    479.30  1274.38    481.92  1274.31    483.17
GR1274.3    484.04  1274.12    488.23  1274.00    491.15  1273.93    492.80  1273.82    495.09
GR1273.8    496.04  1273.75    497.92  1273.74    498.67  1273.75    498.98  1273.80    503.42
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GR1273.8   506.03 1273.84   508.82 1273.94   517.61 1274.00   523.12 1274.36   537.47
GR1274.4   554.34 1274.44   561.49 1274.97   574.90 1275.00   575.20 1275.08   575.82
GR1276.0   584.61 1276.51   588.90 1277.00   593.01 1277.32   595.68 1278.00   601.40
GR1278.1   602.56 1278.37   604.50 1279.00   609.80 1279.60   614.82 1280.00   618.20
GR1280.2   619.88 1280.38   621.27 1280.67   623.61 1281.00   626.01 1281.33   632.46
GR1281.3   632.95 1281.36   633.47 1281.37   634.00 1281.37   634.81 1281.37   635.53
GR1281.3   647.96 1281.33   653.03 1281.34   658.44 1281.28   670.78 1281.29   675.33
GR1281.2   688.90 1281.22   692.32 1281.12   707.60 1281.10   709.56 1281.08   710.47
GR1281.0   712.13 1280.89   714.29 1280.85   715.14 1280.80   716.47 1280.68   718.85
*        **********
*       22 FEET DS OF 14th ST CULVERTS
NC 0.045    0.055     0.03
X1    25       85   119.89   218.55      399      405      392        0        0        0
X3    10
GR1279.2     0.00 1279.15     2.64 1279.12     3.18 1279.00     6.63 1278.50    20.15
GR1278.5    20.23 1278.45    23.47 1278.27    28.77 1278.27    29.53 1278.27    29.60
GR1278.3    30.50 1278.31    30.97 1278.39    34.11 1278.08    40.40 1278.12    47.43
GR1278.2    50.01 1278.15    72.50 1278.39    89.85 1278.38    90.94 1278.39    91.86
GR1278.4    92.49 1278.40    93.09 1278.38    95.21 1278.37    96.25 1278.32    99.95
GR1278.3   102.33 1278.00   119.89 1277.94   124.54 1277.20   140.19 1277.00   142.03
GR1276.5   146.07 1276.00   150.23 1275.09   158.20 1275.00   158.94 1274.99   159.03
GR1274.7   162.69 1274.69   162.81 1274.69   162.97 1274.69   163.19 1274.75   167.02
GR1274.8   170.03 1274.64   178.70 1274.78   180.77 1275.00   183.98 1275.00   184.01
GR1275.0   184.02 1275.02   184.27 1275.93   196.97 1275.95   197.25 1276.00   197.79
GR1276.2   200.36 1277.00   208.99 1277.20   211.74 1277.50   214.60 1277.85   218.55
GR1277.9   218.65 1277.86   218.75 1278.00   220.20 1278.06   220.87 1278.17   223.77
GR1278.2   224.31 1278.28   229.84 1278.18   238.26 1278.13   242.92 1278.10   248.85
GR1278.0   256.58 1278.00   257.16 1277.99   257.31 1277.89   258.29 1277.05   267.31
GR1277.0   268.68 1276.88   271.43 1276.95   276.00 1277.00   276.76 1277.19   279.24
GR1278.0   287.80 1278.36   291.57 1279.00   298.37 1279.98   348.66 1279.99   348.83
GR1280.0   349.13 1279.99   349.28 1280.00   349.47 1280.00   349.72 1280.01   349.94
*        **********
*       DS FACE OF 14th ST CULVERTS
NC 0.045    0.045     0.03      0.4      0.6
X1    26        9   118.36   176.6       25       25       22        0        0        0
X3    10        0        0     148     1278      152     1278
GR1279.8        0     1278   118.36 1275.16   133.02 1272.86   150.18 1275.06    154.9
GR1274.6   165.16 1276.94    176.6 1277.83   192.02 1278.14   239.66
*        **********
SC 1.012      0.5        3      140        2        0     16.6      1.3 1273.65 1272.86
*        **********
*       US FACE OF 14th ST CULVERTS
X1    27       10    81.21   220.82       17       17       17        0        0        0
X2                      2                1277.11
X3    10        0        0    148.5     1278    151.5     1278
GR1279.8        0 1277.11    81.21 1276.34    82.18 1275.25   112.34 1273.61   134.25
GR1273.6   150.18 1275.17   182.11 1277.47   191.03 1280.94   220.82 1279.99   227.91
*        **********
*        MISC XC
X1    28       30    85.79   227.65      124       20       62
X3    10
GR1279.1        0   1278.5    27.44 1278.33    35.08 1277.43    60.68     1277    69.19
GR1276.6       78 1276.28    85.79     1276    92.16 1275.01   114.38 1274.99   126.35
GR1274.9   140.26   1274.9   140.26 1274.71   153.81 1274.55   166.13 1274.73   191.46
GR  1275   200.55 1275.68   204.76     1276   206.78   1276.5   209.91     1277      213
GR1277.7   217.57 1278.39   221.63     1279   225.42   1279.4   227.65 1280.11   246.31
GR1280.1   248.19 1279.78   249.77     1279   253.74 1278.64   255.96   1278.8   272.49
*        **********
*       124 FEET US OF 14th ST CULVERTS
NC  0.08     0.08      0.1
X1    29       59   128.35   296.11       62       58       62        0        0        0
X3    10
GR1279.8     0.00 1279.53    16.92 1279.44    23.88 1279.39    27.85 1279.36    30.41
GR1279.4    31.17 1279.38    31.68 1279.47    33.50 1279.68    38.58 1279.74    40.15
GR1280.0    48.05 1280.39    58.18 1280.41    58.64 1280.55    61.79 1280.53    62.80
GR1280.6    64.82 1280.87    69.60 1280.56    84.35 1280.53    86.09 1280.49    87.86
GR1280.5    89.57 1280.00   108.72 1279.01   113.59 1279.00   113.62 1278.25   117.30
GR1278.0   118.53 1277.88   119.13 1277.00   123.44 1276.02   128.25 1276.00   128.35
GR1276.0   128.62 1275.00   134.37 1274.98   135.18 1274.97   135.74 1275.00   165.31
GR1275.0   165.96 1275.00   166.03 1275.01   166.12 1275.07   169.99 1275.12   177.68
GR1275.0   187.82 1274.95   192.56 1274.89   197.10 1274.80   214.50 1274.88   215.87
GR1275.0   218.17 1275.24   222.46 1276.00   235.53 1276.45   241.80 1277.00   249.77
GR1277.5   257.01 1277.70   259.83 1278.00   265.60 1278.90   293.38 1279.00   296.11
GR1279.2   301.84 1279.45   308.26 1279.60   320.62 1279.88   351.08
*        **********
*        MISC XC
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X1     30       35    92.51   366.72      114      280      164
X3     10
GR   1280        0 1279.76     35.3 1279.88    42.18     1279    63.67 1278.43    78.23
GR1278.1    92.51 1277.72   121.99     1277   131.25 1276.12   141.88 1275.93   143.97
GR1275.3   151.91     1275   156.31     1275   170.27 1275.24   179.35 1274.89   192.55
GR1279.3   199.67 1275.59   224.73   1275.7    236.3 1275.81   254.56     1276   281.71
GR1276.2   294.59     1277   364.76   1277.9      365 1278.21   366.72     1278   381.59
GR1278.4   412.29   1278.5   423.51 1278.48   438.56 1278.53   447.84 1279.05   483.41
GR1279.1   489.66   1279.1    494.2 1279.14   495.45 1279.57   514.46 1279.77   525.83
*          **********
*          FLOWS FROM JUNCTION JO HEC-1
*          CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT     11      117      147      187      218      255      193      254      317      353
QT    400      468
*          MISC XC
X1     31      100   179.76   549.17      159      238      164        0        0        0
X3     10
GR1280.5     0.00 1280.21    25.34 1279.89    48.36 1280.00    62.15 1280.07    70.91
GR1280.0    96.20 1280.00    96.89 1279.97   100.07 1279.96   101.11 1279.96   101.20
GR1279.9   102.57 1279.62   135.15 1279.01   178.72 1279.01   179.68 1279.00   179.76
GR1278.7   181.78 1278.46   183.93 1278.00   187.58 1277.31   193.07 1277.00   195.50
GR1276.4   201.28 1276.10   204.47 1276.00   206.33 1276.85   218.48 1276.77   219.76
GR1276.8   220.66 1276.56   224.09 1276.47   226.00 1276.23   229.93 1276.16   231.00
GR1276.2   232.82 1276.56   233.62 1276.56   233.62 1276.58   234.55 1276.55   236.14
GR1276.3   244.58 1276.00   253.58 1275.99   259.57 1276.00   266.82 1276.00   268.11
GR1276.0   268.68 1276.00   271.89 1276.00   276.30 1276.00   280.98 1275.99   289.73
GR1276.0   297.03 1275.99   312.00 1275.99   316.23 1275.99   319.22 1276.00   320.46
GR1276.1   331.61 1276.36   359.28 1276.22   379.81 1276.34   385.20 1276.24   387.56
GR1276.2   402.06 1276.02   414.33 1276.00   414.49 1275.79   416.41 1275.25   426.17
GR1275.6   429.95 1275.68   431.30 1276.00   433.47 1276.35   435.85 1276.37   436.02
GR1276.4   436.08 1276.25   457.93 1276.46   465.49 1276.59   476.42 1276.76   489.52
GR1276.9   492.13 1276.94   503.95 1276.90   510.06 1277.00   511.03 1277.29   514.62
GR1277.5   519.10 1277.55   520.96 1277.60   522.34 1277.64   523.45 1277.81   528.76
GR1278.0   535.72 1278.04   537.35 1278.17   541.73 1278.26   544.59 1278.39   548.77
GR1278.4   549.17 1278.76   555.73 1278.85   557.28 1279.00   559.42 1279.28   563.24
GR1279.3   563.25 1279.31   564.77 1279.33   566.77 1279.33   567.25 1279.32   569.39
GR1279.2   582.04 1279.15   586.09 1279.09   598.57 1279.15   600.40 1279.98   628.88
*          **********
*          MISC XC
NC   0.08    0.08      0.1      0.4      0.8
X1     32      75   130.01      211      247      158      219        0        0        0
X3     10
GR1280.1     0.00 1280.02     4.70 1280.00     5.39 1279.64    21.34 1279.28    37.46
GR1279.1    44.03 1279.00    49.79 1278.58    69.23 1278.48    73.15 1278.31    80.77
GR1278.2    86.63 1278.09    90.93 1278.00    95.35 1277.99    95.79 1277.95    97.19
GR1277.3   118.16 1277.00   130.01 1276.31   147.21 1276.00   155.37 1275.92   156.72
GR1275.7   160.29 1275.88   178.06 1276.00   180.31 1276.92   189.15 1277.00   189.91
GR1277.0   190.13 1277.17   191.72 1277.89   199.26 1278.00   200.38 1278.75   208.34
GR1279.0   211.00 1279.25   213.67 1279.38   218.68 1279.00   219.18 1278.79   219.68
GR1278.8   219.93 1278.77   221.22 1279.00   222.86 1279.00   225.66 1279.00   230.26
GR1279.0   231.73 1279.00   235.98 1279.00   251.99 1279.10   254.83 1279.12   256.05
GR1279.1   257.75 1279.12   258.62 1279.09   270.90 1279.00   285.46 1279.11   289.81
GR1279.1   296.64 1279.09   297.09 1279.10   305.71 1279.08   309.29 1279.02   311.37
GR1279.0   311.84 1278.88   313.64 1278.85   314.34 1278.52   320.97 1278.00   330.83
GR1277.7   336.29 1277.00   345.30 1276.80   346.87 1276.00   353.64 1275.30   366.36
GR1275.3   367.26 1275.21   370.27 1275.22   370.40 1275.23   370.59 1275.26   371.02
GR1275.3   372.16 1276.00   380.50 1276.06   381.40 1276.38   407.02 1276.74   431.65
*          **********
*          96 FEET DS OF 13th STREET DAM
X1     33       48    97.18    323.1      113      284      180        0        0        0
X3     10
GR1280.3     0.00 1280.35    18.48 1280.26    40.85 1280.00    52.42 1280.00    52.53
GR1280.0    53.83 1279.95    54.96 1279.47    76.19 1279.06    94.48 1279.01    96.58
GR1279.0    97.07 1279.00    97.18 1278.91   102.28 1278.25   138.95 1278.19   141.95
GR1278.1   145.64 1278.18   146.46 1278.08   149.98 1278.00   152.78 1277.63   165.84
GR1277.4   173.66 1277.31   175.68 1277.22   178.53 1277.06   182.26 1277.04   182.92
GR1277.0   183.31 1276.92   183.96 1276.00   192.67 1276.00   207.84 1276.00   209.28
GR1276.3   221.09 1276.33   229.01 1276.81   261.29 1276.94   282.28 1277.00   290.78
GR1277.0   291.45 1277.07   292.51 1277.52   302.09 1277.93   311.15 1278.00   312.36
GR1278.2   314.15 1278.92   323.10 1279.00   326.61 1279.09   330.68 1279.46   347.75
GR1279.6   379.23 1279.61   390.14 1279.61   437.96
*          **********
*          46 feet DS of 13th Street Dam
NC   0.08    0.08      0.1
X1     34      13    69.59   210.99       62       18       45        0        0        0
X3     10
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GR1278.6        0 1278.56   41.13 1279.53   69.59 1275.82   85.08 1275.41   93.75
GR1275.9   100.49  1276.1   106.6 1277.15  116.86 1276.92   160.2  1277.1  193.96
GR1278.6   210.99 1279.56  256.71 1279.74  376.29
*          **************
*          Top 13th Street Dam
NC  0.08     0.08      0.1      0.1      0.3
X1    35        9    27.44       71       53       62       46        0        0        0
X3    10
GR1280.8        0 1278.56   20.23 1278.87    24.9 1278.06   27.44 1276.39   47.28
GR1277.9    55.49 1278.47       71 1280.35  131.26 1280.42  144.29
*          **************
*          24 feet US of 13th Street Dam
X1    36        8    26.47   132.15       24       24       24        0        0        0
X3    10
GR1280.1        0 1279.97   26.47 1276.24   53.66 1275.67    77.9 1276.27   93.56
GR1279.3   132.15 1280.35  221.82 1279.48  327.98
*          **************
*          100 FEET US OF 13th Street Dam
NC  0.08     0.08      0.1
X1    37       44   161.76    343.9      103      132      100        0        0        0
X3    10
GR1281.0     0.00 1280.50    34.44 1280.55   45.05 1280.56   47.30 1280.55   47.87
GR1280.5    58.88 1280.74   100.57 1280.26  138.57 1280.01  160.70 1280.00  161.02
GR1280.0   161.76 1279.98   164.70 1279.97  168.58 1279.89  174.83 1279.85  179.41
GR1279.3   200.35 1279.00   214.88 1278.49  222.62 1278.31  225.38 1278.00  229.77
GR1277.2   237.50 1277.00   238.81 1276.51  245.83 1276.00  253.24 1275.93  255.48
GR1275.9   266.08 1276.00   268.69 1276.06  270.88 1276.62  292.22 1277.00  305.88
GR1277.7   314.88 1278.00   318.61 1278.17  320.44 1278.95  328.92 1278.99  329.37
GR1279.0   329.46 1279.03   329.81 1280.00  340.32 1280.19  342.34 1280.23  343.21
GR1280.3   343.90 1280.19   375.00 1280.14  386.81 1280.04  404.44
*          **************
*          24 FEET DS OF BIRDGE #1
NC  0.04     0.04    0.045
X1    38       10      110      170      542      435      553        0        0        0
X3    10
GR1280.8        0   1278.4   57.76 1279.66      110   1277.6  125.35 1277.55      137
GR1277.6   154.65 1279.74      170     1280  207.72 1280.05      262 1279.91      277
*          **************
*          DS FACE OF BRIDGE #1
NC  0.04     0.04    0.045      0.1      0.3
X1    39       10   125.31   153.77       43       20       24        0        0        0
X3    10
GR1280.8        0   1278.4   57.76 1279.66   125.31   1277.6  125.35 1277.55      137
GR1277.6   148.65 1279.74   153.77     1280  207.72 1280.05      262 1279.91      277
*          **************
SB     0        1        3       29   28.46        0   31.59        0 1277.55 1277.55
*          **************
*          US FACE OF BRIDGE #1
X1    40        0                        10       10       10        0        0        0
X2     0        0        1     1279 1279.66
X3    10
*          **************
*          52 FEET US OF BRIDGE #1
NC  0.04     0.04    0.045
X1    41       44   107.43   140.84       57       49       52        0        0        0
X3    10
GR1279.7     0.00 1279.53     5.51 1279.00   21.49 1279.00   21.53 1279.00   21.55
GR1278.4    70.14 1278.17    84.35 1278.09   94.55 1278.08  105.45 1278.00  107.43
GR1277.1   123.84 1277.03   125.90 1277.11  126.71 1277.16  127.27 1277.39  129.55
GR1278.0   135.26 1278.54   140.84 1278.54  140.84 1278.54  140.84 1278.54  140.84
GR1279.0   149.59 1279.00   149.64 1279.04  150.39 1279.94  167.55 1280.00  168.61
GR1280.2   219.70 1280.27   234.31 1280.30  240.95 1280.30  242.24 1280.30  242.32
GR1280.3   243.45 1280.30   244.54 1280.31  244.61 1280.32  248.27 1280.33  250.04
GR1280.3   253.10 1280.33   253.32 1280.33  253.41 1280.34  253.86 1280.34  254.22
GR1280.3   254.40 1280.34   255.38 1280.35  256.99 1280.36  266.92
*          **************
*          48 FEET DS OF 18" CULVERT
X1    42       49   144.97   301.04      126      141      124        0        0        0
X3    10
GR1281.0     0.00 1281.03     3.07 1281.04    9.21 1281.02   33.38 1281.00   40.20
GR1280.8    55.23 1280.68    69.88 1280.58   75.05 1280.19  102.61 1280.16  104.92
GR1280.0   115.75 1279.12   127.78 1279.00  129.45 1278.01  144.32 1278.00  144.39
GR1278.0   144.41 1278.00   144.97 1278.00  178.90 1278.16  185.73 1278.22  188.13
GR1278.3   201.20 1278.42   217.62 1278.42  217.96 1278.42  218.66 1278.42  218.82
GR1278.4   219.37 1278.44   220.95 1278.46  223.56 1278.52  266.80 1278.53  267.27
GR1278.5   267.30 1278.56   267.96 1278.75  272.44 1279.00  278.09 1279.55  290.62
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GR1280.0   301.04 1280.84   319.67 1281.00   323.33 1281.09   325.31 1281.11   325.93
GR1281.2   328.00 1281.30   343.52 1281.32   347.08 1281.35   350.07 1281.36   352.61
GR1281.4   354.80 1281.45   363.74 1281.46   369.77 1281.50   377.59
*          ************
*          DS FACE OF 18" CULVERT
NC  0.04      0.04    0.045       0.1       0.4
X1    43        10    101.5     114.5        58         60         48          0          0          0
X3    10         0        0       106    1279.4        110    1279.4
GR1278.5        0 1279.26        16 1279.26     101.5 1277.53        103 1277.48        108
GR1277.5      113 1279.26     114.5 1280.38       160 1280.85    239.05 1281.16     326.65
*          ************
SC 1.012      0.5         3        33        1.5          0         11        1.3 1277.59 1277.48
*          ************
*          US FACE OF 18" CULVERT
X1    44        0                             11         11         11          0       0.11          0
X2                          2                 1279.26
X3    10        0          0       106    1279.5        110    1279.5
*          ************
*          76 FEET US OF 18" CULVERT
NC  0.04      0.04      0.02
X1    45        60    108.52    211.25        76         77         76          0          0          0
X3    10
GR1280.7      0.00 1280.61      4.00 1280.48     10.92 1280.35     17.14 1280.12     28.86
GR1280.1     30.43 1280.00     34.85 1279.58     55.87 1279.44     62.75 1279.13     81.44
GR1279.1     83.30 1279.00     89.19 1278.69    107.16 1278.66    108.52 1278.10    122.19
GR1278.1    122.44 1278.05    125.42 1278.06    126.63 1278.00    136.32 1278.08    146.42
GR1278.0    150.72 1277.95    151.45 1277.90    151.99 1277.87    152.28 1277.86    152.45
GR1277.9    152.91 1277.87    153.38 1277.88    153.79 1277.92    154.52 1278.00    156.03
GR1278.0    157.36 1278.00    163.66 1278.03    198.74 1278.03    198.79 1278.15    201.65
GR1278.0    203.26 1277.93    204.06 1277.93    204.07 1277.92    205.11 1278.00    206.02
GR1278.5    211.25 1279.00    216.79 1279.90    226.49 1279.92    226.77 1279.92    226.94
GR1279.9    227.08 1280.00    227.91 1280.02    228.19 1280.04    229.30 1280.06    229.52
GR1280.2    230.77 1280.17    230.81 1280.17    230.84 1280.17    230.87 1280.74    235.36
GR1281.0    237.47 1281.12    238.44 1281.07    253.90 1281.14    267.75 1281.16    273.31
*          ************
*          MISC XC
X1    46        30    101.01    157.36        76         58        133
X3    10
GR1280.7         0 1280.55     11.93 1280.38     29.07 1280.21     45.19  1280.2     62.24
GR  1280     65.58 1279.28     80.51 1279.14      84.1      1279     88.54 1278.73     96.66
GR1278.6     99.18    1278.6  101.01 1278.39     107.4      1278    118.94 1277.86    123.21
GR1277.7    129.27    1277.6  132.09 1277.49    135.09 1277.44    138.17 1277.53    140.55
GR1277.8       148      1278  154.01 1278.19    157.36    1278.2    189.15 1278.22    192.67
GR1278.3     196.8      1279  227.38 1279.68    233.58    1280.6    241.38 1281.15     278.7
*          ************
*          MISC XC
NC  0.04      0.04    0.045
X1    47        30    168.64     293.2       141         115        133          0          0          0
X3    10
GR1280.8      0.00 1280.41    105.23 1280.47    106.46 1280.53    108.80 1280.62    111.86
GR1280.7    116.04 1280.62    118.59 1280.64    119.18 1280.35    125.05 1280.37    126.79
GR1280.3    129.14 1280.00    132.52 1279.63    146.40 1279.00    168.64 1278.61    176.41
GR1278.0    187.70 1277.98    188.02 1277.90    189.06 1277.89    211.87 1277.95    213.36
GR1278.0    214.41 1278.69    249.20 1279.00    264.14 1279.39    274.70 1280.00    293.20
GR1280.6    339.28 1281.00    364.13 1281.00    364.54 1281.08    372.92 1281.09    373.98
*          ************
*          38 FEET DS OF BRIDGE #2
X1    48        63    192.94    232.26       176         215        194          0          0          0
X3    10
GR1281.1      0.00 1281.13      3.48 1281.11      7.19 1281.08     12.40 1281.06     15.43
GR1281.0     22.88 1280.88     31.59 1280.82     35.16 1280.66     45.01 1280.27     69.39
GR1280.0     85.36 1279.73     94.18 1279.00    114.88 1278.96    115.91 1278.90    117.45
GR1278.9    118.36 1278.84    119.63 1278.84    120.27 1278.83    123.09 1278.82    125.52
GR1278.8    126.28 1278.82    131.94 1278.84    142.12 1278.86    143.88 1278.90    146.68
GR1279.0    151.41 1279.00    154.22 1279.17    160.15 1279.38    192.94 1279.21    195.21
GR1279.0    197.15 1278.73    199.81 1278.00    205.25 1277.97    206.03 1277.83    209.30
GR1277.8    211.32 1277.69    213.74 1277.75    215.33 1277.84    216.30 1277.99    217.87
GR1278.0    217.99 1278.96    232.26 1279.00    232.85 1279.09    235.77 1279.71    256.36
GR1280.0    270.29 1280.82    305.22 1280.95    309.90 1280.96    310.21 1280.96    310.66
GR1280.8    319.52 1280.75    325.58 1280.54    341.78 1280.44    350.35 1280.39    355.56
GR1280.1    391.63 1280.09    392.60 1280.32    408.65 1280.34    410.05 1280.36    411.60
GR1280.4    411.87 1280.40    412.86 1280.56    415.22
*          ************
*          DS FACE OF BRIDGE #2
NC  0.04      0.04    0.045       0.1       0.3
X1    49         9    126.36    156.01        43         36         38          0          0          0
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X3    10
GR1280.7        0 1279.06   40.16 1279.92  126.36     1278   126.4  1277.9  140.04
GR  1278      156 1279.26  156.01 1280.95  191.04 1281.16  240.04
*         **************
SB     0        1        3       29   28.46        0   31.59       0  1277.9  1277.9
*         **************
*         US FACE OF BRIDGE #2
X1    50        0                          8        8        8        0       0       0
X2     0        0        1 1278.64 1279.26
X3    10
*         **************
*         172 FEET US OF BRIDGE #2
NC  0.06     0.06     0.08
X1    51       38    47.46   127.8      195      175      172        0       0       0
X3    10
GR1280.9     0.00 1280.91     3.09 1280.81    47.21 1280.81    47.34 1280.81    47.39
GR1280.8    47.40 1280.80    47.46 1280.00    67.63 1279.37    82.22 1279.00    90.71
GR1278.9    93.38 1278.98   120.81 1279.00   121.58 1279.07   122.36 1279.21   124.70
GR1279.3   127.80 1279.06   136.83 1279.06   137.03 1279.07   140.19 1279.06   140.26
GR1279.0   142.14 1279.10   147.83 1279.22   154.36 1279.21   182.49 1279.50   202.86
GR1279.6   206.23 1280.00   219.09 1280.03   220.08 1280.07   221.32 1281.00   251.04
GR1281.3   262.93 1281.38   267.23 1281.39   272.75 1281.35   331.80 1281.37   333.02
GR1281.4   333.52 1281.46   334.92 1281.49   348.62
*         **************
*          MISC XC
X1    52       25   130.62   172.74      139      215      162
X3    10
GR1281.6        0 1281.53    20.39 1281.48    31.09 1281.64    39.76 1281.35    58.24
GR1281.3    61.55 1281.24    62.49 1281.19    66.18     1281    84.42 1280.61   107.99
GR1280.3   119.29 1280.23   123.46 1280.15   128.93     1280   130.62 1279.31   134.71
GR  1279   141.15     1279   159.09 1279.63   167.49     1280   172.74 1279.92   176.06
GR1279.2   194.51   1279.4   208.43 1279.47   216.45   1279.8    243.3 1279.85   245.71
*         **************
*         57 FEET DS OF 9th ST CULVERTS
NC  0.06     0.06     0.08
X1    53       58    19.43   115.84      157      202      161        0       0       0
X3    10
GR1282.1     0.00 1282.00     1.73 1281.67     4.70 1281.00    10.79 1280.02    19.27
GR1280.0    19.43 1279.75    21.38 1279.63    22.35 1279.56    22.93 1279.53    31.19
GR1279.6    32.47 1279.83    36.76 1280.00    41.13 1280.00    41.24 1280.09    43.95
GR1280.1    46.02 1280.06    47.81 1280.00    51.16 1279.15    72.82 1279.15    75.42
GR1279.2    75.53 1279.00    77.02 1278.80    79.17 1278.00    86.59 1277.89    86.72
GR1278.0    88.96 1278.00    89.01 1278.02    89.24 1279.00   107.40 1279.70   113.32
GR1280.0   115.84 1280.05   116.25 1280.05   116.44 1280.05   116.75 1280.05   117.06
GR1280.0   120.43 1280.14   140.71 1280.03   154.12 1280.01   156.23 1280.02   162.20
GR1280.0   163.16 1280.03   163.19 1280.03   163.20 1280.03   163.22 1280.11   171.25
GR1280.1   171.30 1280.15   178.59 1280.17   197.39 1280.16   198.10 1280.16   198.48
GR1280.1   199.68 1280.17   204.67 1280.21   215.28 1280.27   228.99 1280.30   235.23
GR1280.4   249.71 1280.41   265.48 1280.42   267.27
*         **************
*         DS FACE OF 9TH ST. CULVERTS
NC 0.035    0.035    0.032      0.1      0.3
X1    54       11   231.52   285.05       89       45       57        0       0       0
X3    10        0        0      246     1282      260     1282
GR1283.3        0 1282.76   102.85 1282.34   208.51 1279.01   231.52 1278.82   241.31
GR  1278   248.13 1277.72   260.09 1277.28   263.75   1279.9   285.05 1282.22   393.64
GR1282.5   493.62
*         **************
SC 2.024      0.5        3       43        4        0       51      2.3 1277.94 1277.72
*         **************
*         FLOWS FROM JUNCTION JZ HEC-1
*         CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT    11      107      134      170      197      230      152      203      253      285
QT   317      380
*         US FACE OF 9TH ST. CULVERTS
X1    55       13      212      632       51       51       51        0       0       0
X2                      2                1282.5
X3    10        0        0      248     1282      262     1282
GR1283.7        0 1283.21      106 1282.87      212 1278.03      250 1278.05   258.92
GR1277.9   260.44 1287.26   295.07 1279.86      393   1279.9      419 1279.89      482
GR1279.8      631 1282.65      632 1282.86      763
*         **************
*         98 FEET US OF 9TH ST. CULVERTS
NC 0.045    0.045    0.045
X1    56       45    31.67   131.32      106       90       98        0       0       0
X3    10
```

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GR  1281         0     1281     5.38 1281.12    31.67     1281    40.96  1280.9    48.11
GR1280.8     55.81 1280.43    64.53 1280.33     69.2 1280.28    72.08    1280    79.33
GR1280.0     79.81     1280    80.01 1279.97    80.18 1279.26    90.15  1279.7   101.47
GR1279.7    101.51 1279.67   103.13 1279.65   103.61 1279.65   103.62  1279.7    105.1
GR1279.9    116.73 1279.86   116.92 1279.94   122.48 1279.95    124.3  1279.9   124.58
GR1279.9    124.59 1279.91   126.34     1280   130.76 1280.07   131.32  1280.2   138.06
GR1280.0    138.56     1280   138.59 1279.92   138.84     1279   144.03    1279   147.68
GR  1279    149.08 1279.26   153.51     1280   163.47 1280.89   166.69  1280.9   166.77
GR  1281    166.96 1281.09   167.11     1282   167.84 1282.11   169.42  1282.1   170.18
*         ************
*         304 FEET US OF 9TH ST CULVERTS
NC  0.05      0.04      0.08
X1    57        66      8.33   149.71      176      223      206        0        0        0
X3    10
GR1282.2      0.00 1282.00     3.02 1281.31     6.68 1281.00     8.33 1280.79     9.41
GR1280.0     13.37 1279.99    13.44 1279.96    13.57 1279.98    16.50 1280.00    17.10
GR1280.0     17.11 1280.00    17.18 1280.00    20.01 1280.00    20.75 1280.00    20.76
GR1280.0     20.78 1279.77    25.48 1279.63    28.43 1279.61    29.81 1279.62    30.51
GR1279.7     30.55 1279.83    30.61 1280.00    30.69 1280.01    30.77 1280.04    33.18
GR1280.0     36.80 1280.00    37.03 1279.99    37.49 1279.69    45.00 1279.53    48.54
GR1279.5     49.81 1279.41    50.78 1279.36    51.55 1279.45    69.64 1279.47    69.85
GR1279.6     75.33 1279.71    83.60 1279.95    97.52 1280.00   100.32 1280.04   101.83
GR1280.3    109.12 1280.38   113.28 1280.45   115.97 1280.47   117.10 1280.47   119.03
GR1280.5    120.14 1280.40   121.70 1280.31   123.95 1280.16   127.51 1280.00   131.46
GR1279.9    134.94 1279.82   136.78 1279.83   139.64 1280.00   149.25 1280.01   149.71
GR1280.0    150.19 1280.03   150.71 1280.29   163.42 1280.32   165.19 1280.54   175.23
GR1280.7    183.33 1281.00   195.39 1281.08   198.67 1281.01   202.63 1281.03   213.25
GR1281.0    235.85
*         ************
*         MISC XC
NC 0.045   0.045      0.08
X1    58        58    101.87   156.75      243      275      251        0        0        0
X3    10
GR1282.7      0.00 1282.04    17.02 1282.00    17.21 1281.21    18.19 1281.00    18.44
GR1280.8     19.34 1280.60    19.90 1280.50    20.27 1280.48    20.41 1280.47    20.63
GR1280.5     20.75 1280.56    21.10 1280.70    21.61 1280.93    22.47 1281.00    22.72
GR1281.7     43.57 1281.73    44.35 1281.74    44.93 1281.74    45.09 1281.74    45.23
GR1281.7     45.27 1281.74    45.31 1281.74    45.34 1281.69   101.87 1281.69   101.87
GR1281.7    101.87 1281.69   101.87 1281.00   110.14 1280.02   120.67 1280.00   120.89
GR1279.6    121.90 1279.27   129.53 1279.54   140.47 1279.49   142.65 1279.64   147.29
GR1280.0    153.16 1280.43   156.75 1280.43   156.75 1280.35   173.87 1280.36   175.41
GR1280.4    176.93 1280.51   186.62 1280.50   190.81 1280.59   197.77 1280.61   225.86
GR1280.6    230.15 1280.66   232.21 1280.66   234.23 1280.76   245.36 1280.92   267.59
GR1280.9    272.78 1280.87   274.39 1280.91   279.79 1280.95   286.48 1281.00   298.17
GR1281.0    307.45 1281.05   308.33 1281.05   310.43
*         ************
*         MISC XC
X1    59        16    68.11    136.5      280      243      250
X3    10
GR1281.2         0     1281     9.63 1281.08    35.12 1280.39    68.11     1280    87.93
GR1279.8      92.1 1279.73   105.87 1279.97   108.01 1280.86   132.41     1281    136.5
GR1281.5    163.31   1281.7   174.68 1281.73   184.94   1281.7   190.24 1282.08   201.82
GR1282.3    217.35
*         ************
*         MISC XC
X1    60        45    97.82   203.46      399      400      405        0        0        0
X3    10
GR1281.6      0.00 1281.38    51.19 1281.35    59.18 1281.34    61.25 1281.34    61.42
GR1281.3     62.44 1281.32    64.03 1281.31    64.73 1281.30    65.96 1281.27    68.75
GR1281.3     70.16 1281.22    73.59 1281.17    78.35 1281.00    95.12 1280.94    97.82
GR1280.2    109.53 1280.08   112.14 1280.00   113.41 1279.65   119.17 1279.65   119.17
GR1279.7    119.17 1279.65   119.17 1279.65   119.17 1279.65   119.17 1279.65   119.17
GR1279.7    119.17 1279.65   119.17 1279.65   119.17 1279.65   119.17 1279.65   119.17
GR1279.6    119.17 1279.65   119.17 1279.65   119.17 1279.65   119.17 1280.00   128.13
GR1280.1    130.59 1280.74   167.33 1281.00   182.56 1281.13   189.41 1281.23   195.33
GR1281.3    199.04 1281.35   201.60 1281.38   203.46 1281.15   239.38 1281.19   253.62
*         ************
*         MISC XC
X1    61        51     88.7   196.94      505      502      525        0        0        0
X3    10
GR1281.6      0.00 1281.56    13.38 1281.57    14.78 1281.57    16.39 1281.58    18.26
GR1281.6     19.90 1281.59    21.71 1281.60    23.75 1281.60    24.17 1281.61    26.04
GR1281.7     52.62 1281.20    79.51 1281.00    88.70 1280.83   113.29 1280.76   124.83
GR1280.7    127.73 1280.54   135.49 1280.33   141.44 1280.00   149.54 1279.90   153.59
GR1279.9    153.59 1279.90   153.59 1279.90   153.59 1279.90   153.59 1279.90   153.59
GR1280.0    154.05 1280.13   155.64 1280.87   167.67 1281.00   171.06 1281.30   179.56
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GR1281.2   189.76 1281.29   196.94 1281.29   212.22 1281.25   213.87 1281.14   217.55
GR1281.0   222.78 1280.96   224.29 1280.93   225.45 1280.91   225.99 1280.91   226.16
GR1280.9   226.67 1280.93   227.13 1280.96   228.16 1281.00   229.23 1281.13   233.03
GR1281.3   237.45 1281.36   239.74 1281.49   252.48 1281.14   265.97 1281.09   284.19
GR1281.1   287.90
*        **************
*         MISC XC
X1     62        49    76.31   134.87      551      515      538        0        0        0
X3     10
GR1281.3     0.00 1281.66    42.95 1281.79    62.22 1281.70    65.46 1281.59    67.04
GR1281.5    68.36 1281.25    71.68 1281.00    75.37 1280.92    76.31 1280.92    76.31
GR1280.9    76.31 1280.92    76.31 1280.92    76.31 1280.22    99.48 1280.19   100.45
GR1280.2   101.36 1280.15   101.59 1280.53   114.71 1280.61   118.25 1281.00   126.59
GR1281.6   134.87 1281.64   134.87 1281.64   134.87 1281.64   134.87 1281.64   134.87
GR1281.6   158.26 1281.65   160.28 1281.65   160.44 1281.65   160.61 1281.66   160.76
GR1281.7   160.91 1281.66   161.04 1281.97   182.58 1282.00   184.52 1282.40   212.21
GR1282.4   212.89 1282.42   213.12 1282.42   213.21 1282.42   213.26 1282.42   213.28
GR1282.4   213.29 1282.42   213.30 1282.42   213.33 1282.42   213.40 1282.42   213.43
GR1282.4   213.46 1282.42   213.57 1282.41   213.96 1282.05   240.25
*        **************
*         30 FEET DS OF Y BY 6TH ST
X1     63        23   176.87   222.51      531      504      513        0        0        0
X3     10
GR1282.0     0.00 1282.02     8.85 1282.12    49.01 1282.17    70.61 1282.12   149.31
GR1282.1   151.17 1282.00   153.37 1281.03   176.15 1281.00   176.83 1281.00   176.87
GR1280.9   179.47 1280.77   201.54 1280.93   203.80 1281.00   204.73 1281.64   222.51
GR1282.0   233.81 1282.40   253.59 1282.50   258.19 1282.60   262.66 1282.71   295.18
GR1282.8   321.13 1282.81   348.61 1282.84   382.92
*        **************
*         200 FT US OF Y BY 6TH ST
NC 0.045    0.045     0.08      0.4
X1     64        30    136.6   231.46      222      243      234        0        0        0
X3     10
GR1282.2     0.00 1282.16     3.07 1282.20    36.75 1282.20    45.15 1282.19   113.39
GR1282.2   114.55 1282.21   116.71 1282.22   136.60 1282.13   189.79 1282.09   190.36
GR1282.0   191.78 1281.44   197.74 1281.33   198.99 1281.09   206.61 1281.07   208.04
GR1281.1   208.07 1281.84   227.22 1281.99   230.84 1282.00   231.44 1282.00   231.46
GR1282.4   263.08 1282.45   269.13 1282.52   275.69 1282.53   276.69 1282.54   277.10
GR1282.6   278.06 1282.56   278.12 1282.54   279.59 1282.35   315.77 1282.41   320.27
*        **************
*         FLOWS FROM JUNCTION JM HEC-1
*         CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD
QT     11        19       25       32       37       44      137      205      228      297
QT    320       342
*        **************
*         MISC XC
X1     65        15   236.39   291.71      128       85       84
X3     10
GR1282.3         0 1282.27    28.17 1282.35    87.06   1282.4   144.88     1282   173.64
GR1281.9     177.7 1281.66   236.39   1281.2   246.17 1281.86   261.76   1281.9   269.22
GR   1282   291.71 1282.23   299.07     1283   319.53 1283.63   336.16   1283.3   369.86
*        **************
*         384 FT US OF Y BY 6TH ST
NC 0.045    0.045     0.08
X1     66        71    95.64   344.05       59      158      100        0        0        0
X3     10
GR1282.2     0.00 1282.27    34.39 1282.27    38.98 1282.27    39.06 1282.28    43.56
GR1282.3    45.62 1282.28    46.81 1282.28    47.57 1282.29    48.11 1282.29    48.51
GR1282.3    48.82 1282.29    48.90 1282.29    48.93 1282.29    49.06 1282.29    49.17
GR1282.3    49.44 1282.29    49.70 1282.29    49.96 1282.29    50.20 1282.29    50.44
GR1282.3    50.67 1282.29    50.89 1282.29    51.11 1282.29    51.32 1282.29    51.52
GR1282.3    54.37 1282.62    95.64 1282.61   100.18 1282.53   135.10 1282.58   161.68
GR1282.3   183.52 1282.09   207.69 1282.09   208.52 1282.09   208.93 1282.09   210.59
GR1282.1   211.83 1282.09   212.25 1282.09   219.38 1282.08   222.92 1282.07   226.13
GR1282.1   238.26 1282.04   242.73 1282.00   244.34 1281.64   261.97 1281.64   261.97
GR1281.6   261.97 1281.64   261.97 1281.64   261.97 1281.64   261.97 1281.64   261.97
GR1281.6   261.97 1281.64   261.97 1281.64   261.97 1281.64   261.97 1281.64   261.97
GR1281.6   261.97 1282.00   294.11 1282.00   294.92 1282.01   297.34 1282.02   300.30
GR1282.0   309.74 1282.38   344.05 1282.49   350.91 1282.71   365.79 1282.94   380.40
GR1283.0   385.07 1283.10   393.38 1283.19   400.70 1283.34   412.37 1283.34   416.15
GR1283.3   418.03
*        **************
*         968 FEET US OF 6TH STREET Y
X1     67        29   256.27   518.51      580      590      554        0        0        0
X3     10
GR1284.3     0.00 1283.99   147.51 1283.92   149.94 1283.82   158.55 1283.58   183.71
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GR1283.4   255.84 1283.40   256.27 1283.40   257.01 1283.33   273.43 1283.15   294.49
GR1283.0   317.61 1282.98   320.01 1282.97   322.27 1282.90   332.14 1282.62   388.23
GR1282.6   388.37 1282.78   415.70 1282.77   418.36 1282.86   438.48 1283.00   479.89
GR1283.0   487.88 1283.27   518.51 1283.41   545.83 1283.46   557.11 1283.59   618.73
GR1283.6   633.71 1283.53   640.19 1283.51   664.43 1283.37   709.27
*         **************
*         MISC XC
NC 0.045     0.045     0.08                      0.5
X1     68        37   294.18   415.64       275       183       207         0         0         0
X3     10
GR1284.1      0.00 1284.06    50.83 1283.97    54.60 1283.85    69.11 1283.42   126.29
GR1283.3   180.31 1283.35   214.14 1283.35   216.17 1283.37   218.50 1283.33   222.12
GR1283.2   292.97 1283.20   293.95 1283.19   294.18 1283.00   298.60 1282.59   311.03
GR1282.4   315.79 1282.37   316.96 1282.23   320.56 1282.00   326.08 1281.90   328.60
GR1281.9   328.60 1281.90   328.60 1282.00   336.95 1282.20   352.65 1282.36   365.16
GR1282.4   368.26 1282.41   369.66 1282.42   369.97 1282.53   375.97 1282.59   378.68
GR1283.0   398.50 1283.08   402.53 1283.10   403.48 1283.19   415.64 1283.42   474.30
GR1283.5   484.40 1283.50   489.19
*         **************
*         101 FT DS OF 3rd ST CULVERTS
NC 0.045     0.045     0.08
X1     69        27    48.92   193.25       359       296       329         0         0         0
X3     10
GR1284.0      0.00 1283.94     4.43 1283.60    32.86 1283.55    38.94 1283.52    41.31
GR1283.4    48.92 1283.18    79.66 1283.00    82.81 1282.73    87.50 1282.40   122.53
GR1282.4   122.53 1282.40   122.53 1282.40   122.53 1282.59   158.91 1282.87   176.94
GR1282.9   182.55 1283.00   183.32 1283.93   188.64 1284.00   189.07 1284.17   190.06
GR1284.2   193.25 1284.17   194.04 1284.13   196.99 1284.00   213.41 1283.06   219.72
GR1283.0   220.59 1282.80   223.95
*         **************
*         MISC XC
X1     70        21     54.7   180.62       163        24        50
X3     10
GR1282.6         0 1282.49     4.95     1283    12.27    1283.3    14.85     1284    20.64
GR1284.3    47.58     1284     54.7   1282.9    64.95 1282.49    97.73 1282.43   139.86
GR  1283   164.78     1284   180.62   1285.2   189.61     1286   193.86 1286.19   200.23
GR  1286   203.18 1285.55   210.55     1285   218.79   1284.2   224.84 1284.05    233.5
GR1284.1   236.98
*         **************
*         DS FACE   OF 3rd ST CULVERTS
NC 0.045     0.045    0.035       0.3       0.5
X1     71        10     63.5     174.5       108        25        51         0         0         0
X3     10         0        0       107    1282.4       110    1282.4
GR1285.2         0 1285.05     42.5 1285.23     63.5    1283.1     71.5 1282.79     80.5
GR1281.1     108.5 1282.22    137.5 1284.49    174.5 1284.19    243.5  1283.2    294.5
*         **************
SC 1.024       0.5         3        45       3.5         0        29       2.3 1284.11     1284
*         **************
*         US FACE   OF 3rd ST CULVERTS
X1     72        11       134       309        29        29        29         0         0         0
X2                  2                        1284.9
X3     10         0         0       298    1282.4       302    1282.4
GR1285.6         0 1285.79       86 1286.13       130    1283.2       134 1286.66       196
GR1282.7       235 1282.87       263 1281.29       300    1284.9       309 1284.45       366
GR1284.1       437
*         **************
*         128 FT US OF  3rd ST CULVERTS
NC  0.04      0.04      0.06
X1     73        43    11.08   196.61        10       118       128         0         0         0
X3     10
GR1285.9      0.00 1285.99     7.58 1286.00     8.10 1286.00     8.16 1286.03    11.08
GR1286.0    16.99 1286.00    17.05 1285.61    19.22 1285.00    22.56 1284.49    26.06
GR1284.3    29.50 1284.00    33.18 1283.65    35.84 1283.00    40.22 1282.93    42.91
GR1282.9    44.86 1282.87    46.88 1282.86    47.89 1282.54    62.75 1282.04   100.19
GR1282.0   100.23 1282.19   108.62 1282.57   127.58 1282.63   129.26 1282.64   130.90
GR1282.7   133.67 1282.71   139.30 1282.76   144.85 1282.78   145.93 1283.00   166.06
GR1283.1   177.29 1283.13   177.70 1283.15   178.99 1283.22   185.80 1283.27   190.00
GR1283.3   196.61 1283.82   240.36 1284.00   252.45 1284.17   258.53 1284.30   263.30
GR1284.7   279.36 1284.55   291.85 1284.56   336.89
*         ********
*         265 FT US OF  3rd ST CULVERTS
X1     74        57    92.94   301.66       149       181       137         0         0         0
X3     10
GR1284.5      0.00 1284.54    18.37 1284.12    79.12 1284.07    90.11 1284.00    92.94
GR1283.6   105.86 1283.06   127.07 1283.07   134.03 1283.07   140.74 1283.07   147.22
GR1283.1   148.68 1283.04   168.21 1283.00   178.16 1282.96   182.57 1282.78   200.00
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GR1282.2   235.18 1282.00   238.43 1281.96   239.12 1282.00   242.05 1282.00   243.54
GR1282.0   243.58 1282.54   257.32 1283.00   269.10 1283.13   271.42 1283.22   275.79
GR1283.5   284.89 1284.00   301.66 1284.19   317.71 1284.34   329.04 1284.36   330.85
GR1284.4   334.31 1284.46   336.53 1284.48   338.08 1284.48   338.29 1284.48   338.66
GR1284.5   338.67 1284.43   339.04 1284.35   339.72 1284.15   341.39 1284.00   342.71
GR1284.0   344.05 1283.99   349.42 1284.00   349.46 1284.33   352.48 1285.00   358.81
GR1285.3   361.42 1285.40   362.57 1285.45   363.06 1285.55   369.03 1285.56   377.97
GR1285.6   379.11 1285.55   380.37 1285.55   381.74 1285.55   383.27 1285.55   384.96
GR1285.5   386.86 1285.55   388.32
*       ********
*        MISC XC
X1    75       20   169.27   394.93      270      236      253
X3    10
GR1285.5         0 1285.53    13.04 1285.38    23.03   1285.3    37.65 1285.17     44.6
GR  1285     58.43   1284.6     97.2     1284   169.27   1283.2   207.86 1282.97   218.98
GR  1283    299.25   1283.2   309.82     1284   340.77 1284.13   344.13 1284.32   349.07
GR1284.3   372.34   1284.6   394.93 1284.56   420.69   1284.6    448.5 1284.61   536.78
*       ************
*       752 FT US OF  3rd ST CULVERTS
X1    76       31   161.45   419.05      242      252      234        0        0        0
X3    10
GR1284.8     0.00 1285.02   109.19 1284.89   117.79 1284.56   133.97 1284.23   161.45
GR1284.0   198.76 1284.00   198.84 1283.82   212.42 1283.26   281.94 1283.26   282.13
GR1283.3   282.16 1283.26   282.20 1283.26   282.27 1283.26   283.46 1283.05   346.09
GR1283.0   348.94 1282.99   349.66 1282.90   353.76 1282.88   379.84 1283.00   393.20
GR1283.4   403.67 1284.00   419.05 1284.81   466.16 1285.00   477.03 1285.03   479.69
GR1285.0   480.42 1284.97   500.71 1284.83   520.31 1284.87   544.86 1284.66   573.12
GR1284.7   801.34
*       ********
*       807 FT US OF  3rd ST CULVERTS
X1    77       52   248.25   464.86       75       48       55        0        0        0
X3    10
GR1284.6     0.00 1284.60    12.79 1284.88   150.79 1284.85   152.92 1284.76   156.94
GR1284.6   172.89 1284.07   221.03 1284.00   227.41 1283.89   237.62 1283.80   246.42
GR1283.8   247.31 1283.79   247.59 1283.79   248.25 1283.22   276.24 1283.10   282.62
GR1283.1   282.88 1283.00   306.09 1282.98   311.38 1282.97   315.11 1282.98   320.08
GR1283.0   326.27 1283.02   330.93 1283.02   336.14 1283.04   350.90 1283.06   368.14
GR1283.1   368.46 1283.04   391.79 1283.00   393.03 1282.91   396.36 1282.84   399.08
GR1282.8   400.69 1282.79   406.80 1282.81   407.41 1282.84   408.24 1282.89   409.43
GR1282.9   411.85 1282.98   416.58 1283.00   419.07 1283.24   432.06 1283.83   456.90
GR1284.0   464.86 1284.00   465.57 1284.03   466.89 1284.33   482.40 1284.84   508.83
GR1284.9   517.53 1284.98   529.41 1284.94   552.18 1284.81   569.96 1284.87   604.53
GR1284.7   631.09 1284.70   801.34
*       ********
*       860 FT US OF  3rd ST CULVERTS
X1    78       48   267.85   458.47       61       54    53.00        0        0        0
X3    10
GR1284.8     0.00 1284.94   122.37 1284.73   162.93 1284.73   169.08 1284.60   180.38
GR1284.6   183.64 1284.50   188.21 1284.42   195.07 1284.28   206.50 1284.00   231.85
GR1283.5   267.85 1283.10   303.91 1283.08   307.36 1283.07   312.62 1283.07   313.64
GR1283.1   320.94 1283.08   328.09 1283.08   335.07 1283.00   348.77 1283.09   361.21
GR1283.1   361.37 1283.14   387.73 1283.04   397.39 1283.00   398.38 1282.79   403.28
GR1282.8   403.83 1282.76   403.90 1282.76   404.16 1282.76   404.23 1282.78   404.76
GR1282.9   408.53 1282.98   415.16 1283.00   415.89 1283.07   418.67 1283.24   426.09
GR1283.8   458.47 1284.00   469.62 1284.46   494.62 1284.67   505.69 1284.81   513.30
GR1284.8   514.55 1284.84   516.16 1284.95   541.01 1284.92   561.56 1284.80   577.60
GR1284.9   621.75 1284.69   646.69 1284.71   801.34
*       ********
*       986 FT US OF  3rd ST CULVERTS
X1    79       42   299.13   527.62      149      137      126        0        0        0
X3    10
GR1284.8     0.00 1285.04   125.56 1284.57   211.29 1284.57   230.35 1284.12   272.20
GR1284.0   284.06 1283.84   299.13 1283.73   309.91 1283.55   336.13 1283.54   337.08
GR1283.4   349.53 1283.43   351.15 1283.36   359.55 1283.11   408.10 1283.18   421.35
GR1283.1   427.53 1283.05   434.67 1283.09   442.42 1283.00   445.84 1282.97   449.09
GR1283.0   467.17 1282.89   475.03 1283.00   478.62 1283.12   483.65 1283.13   484.16
GR1283.3   491.85 1283.95   527.62 1284.00   532.62 1284.14   546.75 1284.23   555.19
GR1284.3   560.11 1284.30   562.43 1284.33   563.34 1284.33   564.34 1284.32   565.30
GR1284.8   605.98 1284.86   624.43 1284.83   639.25 1284.76   650.56 1284.88   737.98
GR1284.7   759.40 1284.76   858.45
EJ
*       ********
T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      21st STREET BRIDGE TO HIGHWAY 14
T3      HEC-1 GENERATED 10 YEAR EXISTING FLOWS
*
```

```
J1      0       3       0       0                0  0.0000  0.0000    1272        0
J2      2                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       21st STREET BRIDGE TO HIGHWAY 14
T3       HEC-1 GENERATED 25 YEAR EXISTING FLOWS
*
J1      0       4       0       0                0  0.0000  0.0000    1272        0
J2      3                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       HEC-1 GENERATED 50 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       5       0       0                0  0.0000  0.0000    1272        0
J2      4                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       HEC-1 GENERATED 100 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       6       0       0                0  0.0000  0.0000    1272        0
J2      5                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED  2 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       7       0       0                0  0.0000  0.0000    1272        0
J2      6                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED  5 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       8       0       0                0  0.0000  0.0000    1272        0
J2      7                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED 10 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0       9       0       0                0  0.0000  0.0000    1272        0
J2      8                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED 25 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0      10       0       0                0  0.0000  0.0000    1272        0
J2      9                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED 50 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0      11       0       0                0  0.0000  0.0000    1272        0
J2     10                                                 -1
*        ********
*        ********
T1       HURON, SD, STONEY RUN CREEK WATERSHED
T2       RATIONAL METHOD GENERATED 100 YEAR EXISTING FLOWS
T3       21st STREET BRIDGE TO HIGHWAY 14
*
J1      0      12       0       0                0  0.0000  0.0000    1272        0
J2     15                                                 -1
*        ********
ER
```

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

HEC-1 GENERATED 5 YEAR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.000	.00	.00	.00	1270.50	294.00	1272.00	1271.63	1272.13	148.71	1.89	121.57	24.11
	1.000	.00	.00	.00	1270.50	370.00	1272.00	1271.68	1272.20	235.53	2.38	121.57	24.11
	1.000	.00	.00	.00	1270.50	472.00	1272.00	1271.82	1272.32	383.29	3.03	121.57	24.11
	1.000	.00	.00	.00	1270.50	550.00	1272.00	1271.93	1272.44	520.44	3.53	121.57	24.11
*	1.000	.00	.00	.00	1270.50	646.00	1272.08	1272.08	1272.60	520.00	3.70	133.30	28.33
*	1.000	.00	.00	.00	1270.50	688.00	1272.14	1272.14	1272.66	471.95	3.65	142.27	31.67
*	1.000	.00	.00	.00	1270.50	854.00	1272.32	1272.32	1272.90	384.65	3.62	171.22	43.54
*	1.000	.00	.00	.00	1270.50	937.00	1272.40	1272.40	1273.01	356.19	3.62	184.74	49.65
*	1.000	.00	.00	.00	1270.50	1076.00	1272.52	1272.52	1273.19	336.04	3.70	203.56	58.70
*	1.000	.00	.00	.00	1270.50	1187.00	1272.62	1272.62	1273.32	316.87	3.74	219.19	66.68
*	1.000	.00	.00	.00	1270.50	1325.00	1272.73	1272.73	1273.48	293.76	3.76	238.88	77.31
*	2.000	181.00	.00	.00	1271.00	279.00	1273.28	1272.26	1273.31	34.33	1.15	220.43	47.62
*	2.000	181.00	.00	.00	1271.00	352.00	1273.49	1272.32	1273.53	33.27	1.23	255.06	61.03
*	2.000	181.00	.00	.00	1271.00	448.00	1273.75	1272.43	1273.80	31.97	1.32	297.74	79.23
*	2.000	181.00	.00	.00	1271.00	522.00	1273.94	1272.52	1273.99	31.38	1.37	329.24	93.19
*	2.000	181.00	.00	.00	1271.00	612.00	1274.12	1272.61	1274.19	32.27	1.45	359.87	107.73
*	2.000	181.00	.00	.00	1271.00	688.00	1274.21	1272.67	1274.29	35.36	1.55	375.85	115.71
*	2.000	181.00	.00	.00	1271.00	854.00	1274.45	1272.84	1274.55	38.28	1.70	418.36	138.03
*	2.000	181.00	.00	.00	1271.00	937.00	1274.56	1272.87	1274.67	39.64	1.77	438.04	148.83
*	2.000	181.00	.00	.00	1271.00	1076.00	1274.75	1272.98	1274.88	41.44	1.88	470.31	167.14
*	2.000	181.00	.00	.00	1271.00	1187.00	1274.87	1273.02	1275.02	42.70	1.95	494.98	181.64
*	2.000	181.00	.00	.00	1271.00	1325.00	1275.02	1273.15	1275.19	44.42	2.05	523.35	198.81

1

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	3.000	181.00	.00	.00	1271.02	279.00	1273.62	1271.99	1273.63	10.57	.78	327.28	85.80
*	3.000	181.00	.00	.00	1271.02	352.00	1273.85	1272.08	1273.87	11.21	.86	368.83	105.12
*	3.000	181.00	.00	.00	1271.02	448.00	1274.11	1272.20	1274.14	11.74	.95	419.27	130.75
*	3.000	181.00	.00	.00	1271.02	522.00	1274.30	1272.28	1274.33	11.88	1.00	456.87	151.47
*	3.000	181.00	.00	.00	1271.02	612.00	1274.51	1272.36	1274.54	12.21	1.07	497.14	175.12
*	3.000	181.00	.00	.00	1271.02	688.00	1274.63	1272.42	1274.67	13.11	1.13	521.31	190.00
*	3.000	181.00	.00	.00	1271.02	854.00	1274.91	1272.57	1274.96	14.14	1.25	578.27	227.09
*	3.000	181.00	.00	.00	1271.02	937.00	1275.04	1272.64	1275.10	14.58	1.30	604.95	245.41
*	3.000	181.00	.00	.00	1271.02	1076.00	1275.26	1272.73	1275.32	15.08	1.38	648.98	277.05
*	3.000	181.00	.00	.00	1271.02	1187.00	1275.41	1272.81	1275.48	15.60	1.44	680.30	300.53
*	3.000	181.00	.00	.00	1271.02	1325.00	1275.58	1272.91	1275.66	16.06	1.51	718.88	330.58
	4.000	88.00	.00	.00	1270.98	279.00	1273.48	1272.70	1273.75	13.39	4.19	66.57	76.25
	4.000	88.00	.00	.00	1270.98	352.00	1273.62	1272.92	1274.01	17.38	4.96	70.99	84.43
	4.000	88.00	.00	.00	1270.98	448.00	1273.75	1273.19	1274.30	23.74	5.98	74.93	91.94
*	4.000	88.00	.00	.00	1270.98	522.00	1273.81	1273.40	1274.52	29.70	6.79	76.91	95.78
*	4.000	88.00	.00	.00	1270.98	612.00	1273.73	1273.63	1274.78	45.19	8.22	74.47	91.04
*	4.000	88.00	.00	.00	1270.98	688.00	1273.81	1273.81	1275.06	51.85	8.96	76.79	95.54
*	4.000	88.00	.00	.00	1270.98	854.00	1274.19	1274.19	1275.63	50.96	9.64	88.62	119.63
*	4.000	88.00	.00	.00	1270.98	937.00	1274.37	1274.37	1275.90	50.48	9.93	94.34	131.88
*	4.000	88.00	.00	.00	1270.98	1076.00	1274.67	1274.67	1276.34	49.78	10.39	103.60	152.50
*	4.000	88.00	.00	.00	1270.98	1187.00	1274.89	1274.89	1276.68	49.65	10.74	110.49	168.47
*	4.000	88.00	.00	.00	1270.98	1325.00	1275.16	1275.16	1277.09	49.46	11.15	118.83	188.40
*	5.000	50.00	1276.11	1275.63	1271.50	279.00	1273.36	1273.36	1274.05	57.42	6.65	41.95	36.82
*	5.000	50.00	1276.11	1275.63	1271.50	352.00	1273.59	1273.59	1274.39	55.25	7.18	49.06	47.36
*	5.000	50.00	1276.11	1275.63	1271.50	448.00	1273.87	1273.87	1274.81	53.99	7.80	57.46	60.97
*	5.000	50.00	1276.11	1275.63	1271.50	522.00	1274.06	1274.06	1275.11	53.11	8.21	63.59	71.62
*	5.000	50.00	1276.11	1275.63	1271.50	612.00	1274.30	1274.30	1275.46	51.89	8.64	70.83	84.96
*	5.000	50.00	1276.11	1275.63	1271.50	688.00	1274.48	1274.48	1275.74	51.55	9.00	76.46	95.82

5.000	50.00	1276.11	1275.63	1271.50	854.00	1274.87	1274.87	1276.32	50.50	9.67	88.35	120.18
5.000	50.00	1276.11	1275.63	1271.50	937.00	1275.06	1275.06	1276.59	49.40	9.92	94.44	133.31
5.000	50.00	1276.11	1275.63	1271.50	1076.00	1275.43	1275.43	1277.04	45.67	10.16	105.92	159.22
5.000	50.00	1276.11	1275.63	1271.50	1187.00	1275.63	1275.63	1277.37	104.87	10.60	111.98	115.91
5.000	50.00	1276.11	1275.63	1271.50	1325.00	1275.85	1275.84	1277.78	48.57	11.15	118.88	190.13
6.000	125.00	.00	.00	1271.40	279.00	1274.09	1272.38	1274.11	.69	1.06	283.15	336.45
6.000	125.00	.00	.00	1271.40	352.00	1274.43	1272.49	1274.45	.66	1.14	338.73	432.34
6.000	125.00	.00	.00	1271.40	448.00	1274.85	1272.62	1274.87	.63	1.23	412.28	565.30
6.000	125.00	.00	.00	1271.40	522.00	1275.15	1272.71	1275.18	.60	1.28	469.71	672.80
6.000	125.00	.00	.00	1271.40	612.00	1275.50	1272.81	1275.53	.57	1.33	541.97	809.43
6.000	125.00	.00	.00	1271.40	688.00	1275.78	1272.88	1275.81	.55	1.37	606.64	930.61
6.000	125.00	.00	.00	1271.40	854.00	1276.37	1273.05	1276.39	.49	1.43	756.07	1213.94
6.000	125.00	.00	.00	1271.40	937.00	1276.64	1273.13	1276.67	.47	1.45	831.55	1364.26
6.000	125.00	.00	.00	1271.40	1076.00	1277.09	1273.25	1277.12	.44	1.48	954.24	1626.84
6.000	125.00	.00	.00	1271.40	1187.00	1277.43	1273.35	1277.46	.41	1.51	1049.07	1844.22
6.000	125.00	.00	.00	1271.40	1325.00	1277.84	1273.46	1277.87	.39	1.53	1164.20	2123.81

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
7.000	150.00	.00	.00	1272.45	279.00	1274.11	1273.18	1274.14	67.27	1.50	185.61	34.02
7.000	150.00	.00	.00	1272.45	352.00	1274.45	1273.27	1274.48	52.92	1.51	232.88	48.39
7.000	150.00	.00	.00	1272.45	448.00	1274.87	1273.38	1274.90	42.43	1.53	292.78	68.78
7.000	150.00	.00	.00	1272.45	522.00	1275.17	1273.47	1275.21	37.23	1.55	337.76	85.55
7.000	150.00	.00	.00	1272.45	613.00	1275.52	1273.56	1275.55	32.83	1.57	391.26	106.98
7.000	150.00	.00	.00	1272.45	480.00	1275.81	1273.42	1275.83	14.35	1.10	437.72	126.72
7.000	150.00	.00	.00	1272.45	636.00	1276.39	1273.58	1276.41	13.26	1.20	536.65	174.65
7.000	150.00	.00	.00	1272.45	719.00	1276.66	1273.66	1276.69	12.85	1.24	590.81	200.54
7.000	150.00	.00	.00	1272.45	858.00	1277.11	1273.79	1277.13	11.99	1.30	699.05	247.82
7.000	150.00	.00	.00	1272.45	987.00	1277.45	1273.91	1277.48	11.50	1.34	803.71	291.02
7.000	150.00	.00	.00	1272.45	1129.00	1277.86	1274.02	1277.89	10.42	1.36	932.43	349.77
8.000	656.00	.00	.00	1273.11	234.00	1275.47	1273.86	1275.48	8.65	.65	362.56	79.57
8.000	656.00	.00	.00	1273.11	293.00	1275.74	1273.94	1275.75	8.83	.70	416.62	98.61
8.000	656.00	.00	.00	1273.11	373.00	1276.07	1274.02	1276.08	8.90	.77	486.52	125.03
8.000	656.00	.00	.00	1273.11	433.00	1276.31	1274.07	1276.32	8.81	.80	538.77	145.92
8.000	656.00	.00	.00	1273.11	507.00	1276.59	1274.14	1276.61	8.59	.84	603.20	172.95
8.000	656.00	.00	.00	1273.11	470.00	1276.52	1274.11	1276.53	8.16	.81	583.44	164.52
8.000	656.00	.00	.00	1273.11	636.00	1277.07	1274.25	1277.09	8.23	.89	711.49	221.73
8.000	656.00	.00	.00	1273.11	719.00	1277.34	1274.31	1277.35	8.12	.93	775.54	252.39
8.000	656.00	.00	.00	1273.11	858.00	1277.75	1274.41	1277.76	7.86	.98	894.68	306.10
8.000	656.00	.00	.00	1273.11	968.00	1278.07	1274.49	1278.08	7.54	1.00	1002.77	352.63
8.000	656.00	.00	.00	1273.11	1107.00	1278.44	1274.58	1278.45	7.20	1.03	1136.70	412.57
9.000	495.00	.00	.00	1273.50	234.00	1276.00	1274.42	1276.01	14.03	.88	291.27	62.48
9.000	495.00	.00	.00	1273.50	293.00	1276.27	1274.52	1276.28	13.54	.94	343.97	79.62
9.000	495.00	.00	.00	1273.50	373.00	1276.59	1274.63	1276.60	12.96	1.00	412.80	103.60
9.000	495.00	.00	.00	1273.50	433.00	1276.82	1274.71	1276.83	12.59	1.04	462.18	122.04
9.000	495.00	.00	.00	1273.50	507.00	1277.08	1274.80	1277.10	11.97	1.08	523.87	146.53
9.000	495.00	.00	.00	1273.50	470.00	1276.98	1274.75	1277.00	11.63	1.04	502.29	137.80
9.000	495.00	.00	.00	1273.50	636.00	1277.53	1274.95	1277.54	10.81	1.13	633.65	193.44
9.000	495.00	.00	.00	1273.50	719.00	1277.78	1275.04	1277.79	10.45	1.16	697.43	222.44
9.000	495.00	.00	.00	1273.50	858.00	1278.17	1275.27	1278.19	9.84	1.20	804.19	273.48
9.000	495.00	.00	.00	1273.50	968.00	1278.47	1275.33	1278.49	9.41	1.23	888.80	315.55
9.000	495.00	.00	.00	1273.50	1107.00	1278.82	1275.44	1278.84	9.01	1.27	991.77	368.86
10.000	64.00	.00	.00	1273.11	234.00	1275.87	1274.93	1276.16	30.14	4.32	54.19	42.62
10.000	64.00	.00	.00	1273.11	293.00	1276.04	1275.18	1276.44	37.89	5.03	58.21	47.60
10.000	64.00	.00	.00	1273.11	373.00	1276.22	1275.49	1276.78	50.98	6.03	61.85	52.24
10.000	64.00	.00	.00	1273.11	433.00	1276.32	1275.70	1277.03	61.40	6.75	64.16	55.26
10.000	64.00	.00	.00	1273.11	507.00	1276.38	1275.95	1277.31	78.63	7.73	65.60	57.17
10.000	64.00	.00	.00	1273.11	470.00	1276.41	1275.82	1277.19	65.67	7.10	66.22	58.00
10.000	64.00	.00	.00	1273.11	636.00	1276.35	1276.35	1277.84	128.66	9.82	64.77	56.07
10.000	64.00	.00	.00	1273.11	719.00	1276.92	1276.92	1278.12	121.63	8.79	83.74	65.19
10.000	64.00	.00	.00	1273.11	858.00	1277.26	1277.26	1278.56	112.95	9.17	100.40	80.73
10.000	64.00	.00	.00	1273.11	968.00	1278.19	1278.19	1278.83	127.68	6.61	176.94	85.67
10.000	64.00	.00	.00	1273.11	1107.00	1278.40	1278.33	1279.01	103.32	6.51	206.75	108.90

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K

	11.000	40.00	1276.64	.00	1273.55	234.00	1277.23	.00	1277.33	28.92	2.53	92.49	43.51
	11.000	40.00	1276.64	.00	1273.55	294.00	1277.35	.00	1277.47	32.88	2.85	103.22	51.27
	11.000	40.00	1276.64	.00	1273.55	373.00	1277.51	.00	1277.66	34.57	3.13	119.16	63.44
*	11.000	40.00	1276.64	.00	1273.55	433.00	1277.60	.00	1277.78	37.41	3.37	128.36	70.79
	11.000	40.00	1276.64	.00	1273.55	507.00	1277.72	.00	1277.92	39.10	3.60	140.79	81.08
*	11.000	40.00	1276.64	.00	1273.55	461.00	1277.65	.00	1277.84	37.65	3.45	133.66	75.13
*	11.000	40.00	1276.64	.00	1273.55	624.00	1277.88	.00	1278.12	42.32	3.95	157.99	95.93
*	11.000	40.00	1276.64	.00	1273.55	705.00	1278.02	.00	1278.28	41.50	4.07	173.01	109.44
*	11.000	40.00	1276.64	.00	1273.55	841.00	1278.29	.00	1278.56	37.16	4.15	202.88	137.96
*	11.000	40.00	1276.64	.00	1273.55	949.00	1278.59	.00	1278.83	41.00	3.88	244.90	148.20
	11.000	40.00	1276.64	.00	1273.55	1085.00	1278.77	.00	1279.01	36.51	3.94	275.34	179.55
*	12.000	146.00	.00	.00	1273.90	234.00	1277.38	1274.66	1277.38	.10	.32	785.60	724.39
*	12.000	146.00	.00	.00	1273.90	294.00	1277.53	1274.75	1277.53	.14	.38	836.60	796.11
*	12.000	146.00	.00	.00	1273.90	373.00	1277.73	1274.84	1277.73	.17	.45	904.94	896.07
*	12.000	146.00	.00	.00	1273.90	433.00	1277.85	1274.91	1277.86	.20	.50	949.05	961.48
*	12.000	146.00	.00	.00	1273.90	507.00	1278.01	1274.98	1278.01	.23	.55	1008.15	1045.94
*	12.000	146.00	.00	.00	1273.90	461.00	1277.92	1274.94	1277.92	.21	.52	972.51	995.48
*	12.000	146.00	.00	.00	1273.90	624.00	1278.23	1275.09	1278.23	.28	.63	1097.48	1172.35
*	12.000	146.00	.00	.00	1273.90	705.00	1278.39	1275.16	1278.39	.31	.68	1165.59	1270.38
*	12.000	146.00	.00	.00	1273.90	841.00	1278.67	1275.26	1278.68	.33	.74	1290.87	1456.59
*	12.000	146.00	.00	.00	1273.90	949.00	1278.93	1275.33	1278.93	.33	.77	1408.61	1639.69
*	12.000	146.00	.00	.00	1273.90	1085.00	1279.12	1275.41	1279.13	.37	.83	1498.59	1781.75
	13.000	145.00	.00	.00	1274.00	234.00	1277.38	1274.78	1277.38	.10	.25	949.03	726.87
	13.000	145.00	.00	.00	1274.00	294.00	1277.53	1274.86	1277.53	.14	.29	1010.13	799.96
	13.000	145.00	.00	.00	1274.00	373.00	1277.73	1274.94	1277.73	.17	.34	1092.58	901.84
	13.000	145.00	.00	.00	1274.00	433.00	1277.86	1274.98	1277.86	.20	.38	1145.14	968.80
	13.000	145.00	.00	.00	1274.00	507.00	1278.01	1275.03	1278.02	.23	.42	1210.74	1054.51
	13.000	145.00	.00	.00	1274.00	461.00	1277.92	1275.00	1277.92	.21	.40	1171.67	1003.19
	13.000	145.00	.00	.00	1274.00	624.00	1278.23	1275.10	1278.24	.28	.48	1304.12	1180.38
	13.000	145.00	.00	.00	1274.00	705.00	1278.39	1275.15	1278.40	.31	.52	1373.11	1276.22
	13.000	145.00	.00	.00	1274.00	841.00	1278.68	1275.22	1278.68	.33	.57	1497.68	1455.08
	13.000	145.00	.00	.00	1274.00	949.00	1278.94	1275.27	1278.94	.34	.59	1615.36	1635.33
	13.000	145.00	.00	.00	1274.00	1085.00	1279.13	1275.33	1279.13	.37	.65	1705.23	1779.31
	14.000	5.00	.00	.00	1274.00	234.00	1277.38	1274.79	1277.38	.10	.25	952.31	729.90
	14.000	5.00	.00	.00	1274.00	294.00	1277.53	1274.86	1277.53	.13	.29	1013.41	803.32
	14.000	5.00	.00	.00	1274.00	373.00	1277.73	1274.93	1277.73	.17	.34	1095.58	905.40
	14.000	5.00	.00	.00	1274.00	433.00	1277.86	1274.99	1277.86	.20	.38	1148.05	972.47
	14.000	5.00	.00	.00	1274.00	507.00	1278.01	1275.03	1278.02	.23	.42	1213.57	1058.24
	14.000	5.00	.00	.00	1274.00	461.00	1277.92	1275.00	1277.92	.21	.40	1174.54	1006.85
	14.000	5.00	.00	.00	1274.00	624.00	1278.23	1275.10	1278.24	.28	.48	1307.03	1184.49
	14.000	5.00	.00	.00	1274.00	705.00	1278.39	1275.14	1278.40	.30	.52	1375.96	1280.47
	14.000	5.00	.00	.00	1274.00	841.00	1278.68	1275.21	1278.68	.33	.57	1500.48	1459.84
	14.000	5.00	.00	.00	1274.00	949.00	1278.94	1275.27	1278.94	.34	.59	1617.56	1632.84
	14.000	5.00	.00	.00	1274.00	1085.00	1279.13	1275.33	1279.13	.37	.64	1707.18	1776.54

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	15.000	71.00	.00	.00	1273.80	234.00	1277.37	1276.73	1277.39	2.69	1.14	204.65	142.68
*	15.000	71.00	.00	.00	1273.80	294.00	1277.52	1276.79	1277.55	2.57	1.24	238.38	183.47
*	15.000	71.00	.00	.00	1273.80	373.00	1277.72	1276.85	1277.75	2.34	1.32	283.39	243.66
*	15.000	71.00	.00	.00	1273.80	433.00	1277.85	1276.91	1277.88	2.31	1.40	311.89	284.99
*	15.000	71.00	.00	.00	1273.80	507.00	1278.00	1276.99	1278.04	2.26	1.48	346.00	337.51
*	15.000	71.00	.00	.00	1273.80	461.00	1277.91	1276.94	1277.94	2.26	1.42	326.20	306.63
*	15.000	71.00	.00	.00	1273.80	624.00	1278.22	1277.06	1278.26	2.21	1.59	395.93	420.09
*	15.000	71.00	.00	.00	1273.80	705.00	1278.38	1277.12	1278.42	2.12	1.65	432.56	484.74
*	15.000	71.00	.00	.00	1273.80	841.00	1278.67	1277.20	1278.71	1.91	1.71	498.36	608.96
*	15.000	71.00	.00	.00	1273.80	949.00	1278.92	1277.29	1278.97	1.68	1.73	558.97	731.98
*	15.000	71.00	.00	.00	1273.80	1085.00	1279.11	1277.35	1279.16	1.72	1.84	603.80	827.97
*	16.000	20.00	1276.45	.00	1274.10	234.00	1277.39	.00	1277.39	1.10	.66	353.51	223.53
*	16.000	20.00	1276.45	.00	1274.10	294.00	1277.54	.00	1277.55	.96	.70	423.01	299.91
*	16.000	20.00	1276.45	.00	1274.10	373.00	1277.74	.00	1277.75	.81	.73	515.64	414.14
*	16.000	20.00	1276.45	.00	1274.10	433.00	1277.87	.00	1277.88	.77	.76	574.80	493.95
*	16.000	20.00	1276.45	.00	1274.10	507.00	1278.03	.00	1278.04	.71	.79	648.14	600.08
*	16.000	20.00	1276.45	.00	1274.10	461.00	1277.94	.00	1277.94	.74	.77	604.45	535.90
*	16.000	20.00	1276.45	.00	1274.10	624.00	1278.25	.00	1278.26	.67	.84	749.69	759.71
*	16.000	20.00	1276.45	.00	1274.10	705.00	1278.41	.00	1278.42	.63	.86	825.27	887.55
*	16.000	20.00	1276.45	.00	1274.10	841.00	1278.70	.00	1278.71	.55	.88	960.12	1133.62
*	16.000	20.00	1276.45	.00	1274.10	949.00	1278.96	.00	1278.97	.47	.88	1083.34	1377.46
*	16.000	20.00	1276.45	.00	1274.10	1085.00	1279.15	.00	1279.16	.48	.93	1175.98	1572.08

* 17.000	331.00	.00	.00	1273.80	234.00	1277.40	1274.69	1277.40	.13	.33	738.22	646.97
* 17.000	331.00	.00	.00	1273.80	294.00	1277.56	1274.78	1277.56	.17	.38	790.17	715.25
* 17.000	331.00	.00	.00	1273.80	373.00	1277.76	1274.87	1277.76	.21	.45	859.91	810.12
* 17.000	331.00	.00	.00	1273.80	433.00	1277.89	1274.95	1277.89	.25	.49	904.69	872.98
* 17.000	331.00	.00	.00	1273.80	507.00	1278.05	1275.03	1278.05	.28	.54	960.79	953.19
* 17.000	331.00	.00	.00	1273.80	461.00	1277.95	1274.98	1277.96	.26	.51	927.25	905.18
* 17.000	331.00	.00	.00	1273.80	624.00	1278.27	1275.14	1278.28	.34	.62	1041.67	1070.66
17.000	331.00	.00	.00	1273.80	705.00	1278.43	1275.21	1278.44	.37	.66	1101.28	1159.63
17.000	331.00	.00	.00	1273.80	841.00	1278.72	1275.32	1278.73	.40	.72	1209.55	1326.21
17.000	331.00	.00	.00	1273.80	949.00	1278.98	1275.39	1278.98	.40	.74	1313.99	1492.37
17.000	331.00	.00	.00	1273.80	1085.00	1279.17	1275.48	1279.18	.46	.80	1392.47	1600.66
18.000	103.00	.00	.00	1274.15	234.00	1277.40	1274.97	1277.40	.17	.38	643.15	569.55
18.000	103.00	.00	.00	1274.15	294.00	1277.56	1275.05	1277.56	.22	.45	688.73	633.17
18.000	103.00	.00	.00	1274.15	373.00	1277.76	1275.14	1277.77	.27	.53	748.62	721.29
18.000	103.00	.00	.00	1274.15	433.00	1277.89	1275.20	1277.90	.31	.58	786.66	779.84
18.000	103.00	.00	.00	1274.15	507.00	1278.05	1275.27	1278.06	.35	.64	833.36	854.40
18.000	103.00	.00	.00	1274.15	461.00	1277.96	1275.23	1277.96	.32	.60	805.53	809.62
18.000	103.00	.00	.00	1274.15	624.00	1278.27	1275.38	1278.28	.42	.73	899.18	964.37
18.000	103.00	.00	.00	1274.15	705.00	1278.44	1275.45	1278.45	.45	.79	946.74	1047.28
18.000	103.00	.00	.00	1274.15	841.00	1278.72	1275.55	1278.73	.49	.86	1030.54	1200.22
18.000	103.00	.00	.00	1274.15	949.00	1278.98	1275.63	1278.99	.50	.90	1106.25	1345.72
18.000	103.00	.00	.00	1274.15	1085.00	1279.17	1275.72	1279.19	.55	.98	1163.48	1460.20

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
* 19.000	66.00	.00	.00	1273.20	234.00	1277.40	1276.19	1277.41	.83	.83	309.79	257.58
* 19.000	66.00	.00	.00	1273.20	294.00	1277.55	1276.28	1277.57	.93	.94	345.17	304.83
* 19.000	66.00	.00	.00	1273.20	373.00	1277.76	1276.36	1277.77	1.01	1.04	392.35	372.00
* 19.000	66.00	.00	.00	1273.20	433.00	1277.89	1276.45	1277.90	1.08	1.12	422.63	417.48
* 19.000	66.00	.00	.00	1273.20	507.00	1278.04	1276.53	1278.06	1.13	1.21	460.24	476.39
* 19.000	66.00	.00	.00	1273.20	461.00	1277.95	1276.51	1277.97	1.09	1.15	437.76	440.85
* 19.000	66.00	.00	.00	1273.20	624.00	1278.27	1276.64	1278.29	1.23	1.33	512.84	563.02
* 19.000	66.00	.00	.00	1273.20	705.00	1278.43	1276.64	1278.46	1.25	1.39	552.20	630.91
* 19.000	66.00	.00	.00	1273.20	841.00	1278.71	1276.76	1278.74	1.20	1.47	625.33	766.53
* 19.000	66.00	.00	.00	1273.20	949.00	1278.97	1276.79	1279.00	1.11	1.50	693.63	902.78
* 19.000	66.00	.00	.00	1273.20	1085.00	1279.16	1276.88	1279.20	1.15	1.61	745.10	1011.66
20.000	53.00	1275.26	.00	1273.54	234.00	1277.40	.00	1277.41	1.03	.92	283.09	231.12
20.000	53.00	1275.26	.00	1273.54	294.00	1277.55	.00	1277.57	1.12	1.03	318.04	277.44
20.000	53.00	1275.26	.00	1273.54	373.00	1277.75	.00	1277.77	1.18	1.15	365.12	343.60
20.000	53.00	1275.26	.00	1273.54	433.00	1277.88	.00	1277.90	1.27	1.24	393.02	384.65
20.000	53.00	1275.26	.00	1273.54	507.00	1278.04	.00	1278.06	1.31	1.34	430.75	442.18
20.000	53.00	1275.26	.00	1273.54	461.00	1277.95	.00	1277.97	1.28	1.28	408.18	407.50
20.000	53.00	1275.26	.00	1273.54	624.00	1278.26	.00	1278.29	1.39	1.47	485.36	529.24
20.000	53.00	1275.26	.00	1273.54	705.00	1278.42	.00	1278.46	1.40	1.55	525.84	596.42
20.000	53.00	1275.26	.00	1273.54	841.00	1278.71	.00	1278.74	1.35	1.64	599.54	723.95
20.000	53.00	1275.26	.00	1273.54	949.00	1278.96	.00	1279.00	1.25	1.67	668.59	848.97
20.000	53.00	1275.26	.00	1273.54	1085.00	1279.15	.00	1279.20	1.31	1.79	721.60	948.76
21.000	140.00	.00	.00	1273.74	234.00	1277.43	1274.79	1277.43	1.15	.31	700.98	217.90
21.000	140.00	.00	.00	1273.74	294.00	1277.59	1274.92	1277.59	1.36	.35	767.87	252.00
21.000	140.00	.00	.00	1273.74	373.00	1277.80	1275.05	1277.80	1.57	.39	852.40	297.80
21.000	140.00	.00	.00	1273.74	433.00	1277.93	1275.14	1277.93	1.73	.42	907.56	329.20
21.000	140.00	.00	.00	1273.74	507.00	1278.09	1275.24	1278.10	1.89	.45	974.93	368.84
21.000	140.00	.00	.00	1273.74	461.00	1277.99	1275.18	1278.00	1.78	.43	934.64	345.16
21.000	140.00	.00	.00	1273.74	624.00	1278.32	1275.38	1278.33	2.13	.49	1070.74	427.51
21.000	140.00	.00	.00	1273.74	705.00	1278.48	1275.47	1278.49	2.21	.52	1139.92	474.25
21.000	140.00	.00	.00	1273.74	841.00	1278.77	1275.62	1278.78	2.25	.55	1262.04	561.27
21.000	140.00	.00	.00	1273.74	949.00	1279.03	1276.02	1279.03	2.17	.56	1372.65	644.88
21.000	140.00	.00	.00	1273.74	1085.00	1279.23	1276.02	1279.23	2.31	.60	1459.07	713.36
22.000	102.00	.00	.00	1273.67	234.00	1277.43	1274.46	1277.44	.71	.28	832.77	277.46
22.000	102.00	.00	.00	1273.67	294.00	1277.60	1274.54	1277.60	.91	.33	889.30	308.59
22.000	102.00	.00	.00	1273.67	373.00	1277.81	1274.65	1277.81	1.13	.38	962.96	351.31
22.000	102.00	.00	.00	1273.67	433.00	1277.94	1274.71	1277.94	1.30	.42	1010.23	379.96
22.000	102.00	.00	.00	1273.67	507.00	1278.10	1274.79	1278.11	1.48	.46	1067.77	416.13
22.000	102.00	.00	.00	1273.67	461.00	1278.01	1274.74	1278.01	1.37	.43	1033.38	394.34
22.000	102.00	.00	.00	1273.67	624.00	1278.33	1274.90	1278.34	1.76	.52	1149.37	469.79
22.000	102.00	.00	.00	1273.67	705.00	1278.50	1274.98	1278.50	1.91	.55	1207.70	509.76
22.000	102.00	.00	.00	1273.67	841.00	1278.79	1275.09	1278.79	2.08	.60	1309.92	582.91
22.000	102.00	.00	.00	1273.67	949.00	1279.04	1275.18	1279.05	2.12	.63	1401.73	651.80
22.000	102.00	.00	.00	1273.67	1085.00	1279.24	1275.29	1279.25	2.35	.68	1474.27	707.97

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	23.000	102.00	.00	.00	1273.62	234.00	1277.44	1274.32	1277.44	.29	.17	1355.53	436.34
*	23.000	102.00	.00	.00	1273.62	294.00	1277.60	1274.39	1277.60	.37	.19	1443.79	484.00
*	23.000	102.00	.00	.00	1273.62	373.00	1277.82	1274.48	1277.82	.46	.23	1558.42	548.90
*	23.000	102.00	.00	.00	1273.62	433.00	1277.95	1274.54	1277.95	.53	.25	1632.13	592.34
*	23.000	102.00	.00	.00	1273.62	507.00	1278.12	1274.60	1278.12	.62	.28	1721.54	646.41
*	23.000	102.00	.00	.00	1273.62	461.00	1278.02	1274.57	1278.02	.56	.26	1668.06	613.93
*	23.000	102.00	.00	.00	1273.62	624.00	1278.35	1274.70	1278.35	.74	.31	1848.65	726.66
*	23.000	102.00	.00	.00	1273.62	705.00	1278.52	1274.76	1278.52	.80	.34	1939.11	787.01
*	23.000	102.00	.00	.00	1273.62	841.00	1278.81	1274.86	1278.81	.88	.37	2097.57	896.78
*	23.000	102.00	.00	.00	1273.62	949.00	1279.06	1274.93	1279.07	.90	.39	2240.06	999.34
*	23.000	102.00	.00	.00	1273.62	1085.00	1279.27	1275.02	1279.27	1.00	.42	2353.74	1083.57
	24.000	127.00	.00	.00	1273.74	234.00	1277.44	1274.76	1277.45	.23	.42	552.01	482.76
	24.000	127.00	.00	.00	1273.74	294.00	1277.61	1274.87	1277.61	.30	.50	591.21	536.44
	24.000	127.00	.00	.00	1273.74	373.00	1277.82	1274.99	1277.82	.37	.58	642.76	609.69
	24.000	127.00	.00	.00	1273.74	433.00	1277.96	1275.07	1277.96	.43	.64	675.13	657.15
	24.000	127.00	.00	.00	1273.74	507.00	1278.12	1275.16	1278.13	.50	.71	716.10	718.82
	24.000	127.00	.00	.00	1273.74	461.00	1278.02	1275.11	1278.03	.46	.67	691.55	681.60
	24.000	127.00	.00	.00	1273.74	624.00	1278.36	1275.30	1278.37	.59	.81	774.99	811.82
	24.000	127.00	.00	.00	1273.74	705.00	1278.52	1275.39	1278.53	.64	.86	817.33	880.01
	24.000	127.00	.00	.00	1273.74	841.00	1278.81	1275.56	1278.83	.70	.94	892.02	1004.23
	24.000	127.00	.00	.00	1273.74	949.00	1279.07	1275.65	1279.08	.72	.99	959.46	1119.51
	24.000	127.00	.00	.00	1273.74	1085.00	1279.27	1275.75	1279.29	.81	1.07	1011.16	1208.45
*	25.000	392.00	.00	.00	1274.64	234.00	1277.44	1276.02	1277.49	6.48	1.77	132.14	91.92
*	25.000	392.00	.00	.00	1274.64	294.00	1277.60	1276.18	1277.67	8.06	2.02	145.63	103.55
*	25.000	392.00	.00	.00	1274.64	373.00	1277.81	1276.38	1277.90	9.77	2.28	163.41	119.35
*	25.000	392.00	.00	.00	1274.64	433.00	1277.96	1276.51	1278.04	10.06	2.36	197.02	136.49
*	25.000	392.00	.00	.00	1274.64	507.00	1278.12	1276.66	1278.22	10.69	2.53	218.84	155.09
*	25.000	392.00	.00	.00	1274.64	461.00	1278.02	1276.57	1278.11	10.61	2.43	204.45	141.54
*	25.000	392.00	.00	.00	1274.64	624.00	1278.36	1276.89	1278.47	10.62	2.72	269.53	191.45
*	25.000	392.00	.00	.00	1274.64	705.00	1278.53	1277.01	1278.64	10.06	2.78	314.95	222.32
*	25.000	392.00	.00	.00	1274.64	841.00	1278.82	1277.24	1278.93	8.72	2.80	397.52	284.74
*	25.000	392.00	.00	.00	1274.64	949.00	1279.08	1277.40	1279.18	7.32	2.74	476.01	350.66
*	25.000	392.00	.00	.00	1274.64	1085.00	1279.29	1277.57	1279.39	7.11	2.82	539.61	406.90
*	26.000	22.00	.00	.00	1272.86	234.00	1278.45	1278.45	1278.65	103.92	3.90	78.00	22.95
*	26.000	22.00	.00	.00	1272.86	294.00	1278.52	1278.52	1278.76	119.35	4.40	87.57	26.91
*	26.000	22.00	.00	.00	1272.86	373.00	1278.52	1278.52	1278.90	186.81	5.53	88.46	27.29
*	26.000	22.00	.00	.00	1272.86	433.00	1278.61	1278.61	1278.99	171.22	5.63	101.67	33.09
*	26.000	22.00	.00	.00	1272.86	507.00	1278.67	1278.67	1279.10	177.04	5.99	112.51	38.10
*	26.000	22.00	.00	.00	1272.86	461.00	1278.64	1278.64	1279.03	166.05	5.69	107.53	35.78
*	26.000	22.00	.00	.00	1272.86	624.00	1278.81	1278.81	1279.25	157.68	6.16	136.10	49.69
*	26.000	22.00	.00	.00	1272.86	705.00	1278.89	1278.89	1279.35	152.77	6.35	150.22	57.04
*	26.000	22.00	.00	.00	1272.86	841.00	1279.00	1279.00	1279.51	155.49	6.76	169.40	67.44
*	26.000	22.00	.00	.00	1272.86	949.00	1279.10	1279.10	1279.63	144.74	6.87	189.58	78.88
*	26.000	22.00	.00	.00	1272.86	1085.00	1279.19	1279.19	1279.77	148.05	7.23	207.08	89.17

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	27.000	17.00	1277.11	.00	1273.60	234.00	1278.47	.00	1278.65	111.98	3.45	70.87	22.11
	27.000	17.00	1277.11	.00	1273.60	294.00	1278.54	.00	1278.76	118.55	3.83	80.83	27.00
	27.000	17.00	1277.11	.00	1273.60	373.00	1278.65	.00	1278.90	107.51	4.06	97.82	35.97
	27.000	17.00	1277.11	.00	1273.60	433.00	1278.67	.00	1278.99	133.83	4.59	100.45	37.43
	27.000	17.00	1277.11	.00	1273.60	507.00	1278.75	.00	1279.10	133.76	4.87	111.73	43.84
	27.000	17.00	1277.11	.00	1273.60	461.00	1278.69	.00	1279.03	140.87	4.78	102.98	38.84
*	27.000	17.00	1277.11	.00	1273.60	624.00	1278.89	1278.83	1279.27	123.75	5.12	132.10	56.09
*	27.000	17.00	1277.11	.00	1273.60	705.00	1278.93	1278.91	1279.38	134.71	5.50	139.50	60.74
*	27.000	17.00	1277.11	.00	1273.60	841.00	1279.06	1279.03	1279.54	128.48	5.78	160.14	74.20
*	27.000	17.00	1277.11	.00	1273.60	949.00	1279.14	1279.13	1279.67	129.47	6.05	173.71	83.40
*	27.000	17.00	1277.11	.00	1273.60	1085.00	1279.24	1279.23	1279.81	126.52	6.29	192.31	96.46
*	28.000	62.00	.00	.00	1274.55	234.00	1278.72	1275.39	1278.72	.18	.47	541.96	556.87
*	28.000	62.00	.00	.00	1274.55	294.00	1278.84	1275.49	1278.85	.25	.57	568.35	592.48
*	28.000	62.00	.00	.00	1274.55	373.00	1279.00	1275.61	1279.00	.34	.68	601.65	637.60
*	28.000	62.00	.00	.00	1274.55	433.00	1279.11	1275.69	1279.12	.41	.77	627.70	673.27
*	28.000	62.00	.00	.00	1274.55	507.00	1279.24	1275.79	1279.25	.51	.86	655.98	712.87
*	28.000	62.00	.00	.00	1274.55	461.00	1279.16	1275.73	1279.17	.45	.80	639.16	689.19

*	28.000	62.00	.00	.00	1274.55	624.00	1279.42	1275.93	1279.44	.64	1.00	711.11	777.04
*	28.000	62.00	.00	.00	1274.55	705.00	1279.55	1276.02	1279.57	.73	1.09	742.78	823.49
*	28.000	62.00	.00	.00	1274.55	841.00	1279.73	1276.16	1279.75	.89	1.23	788.86	892.24
*	28.000	62.00	.00	.00	1274.55	949.00	1279.87	1276.26	1279.89	1.00	1.34	824.94	947.00
*	28.000	62.00	.00	.00	1274.55	1085.00	1280.03	1276.38	1280.06	1.15	1.47	867.15	1012.02
*	29.000	62.00	.00	.00	1274.80	234.00	1278.72	1275.58	1278.72	2.91	.50	466.08	137.18
*	29.000	62.00	.00	.00	1274.80	294.00	1278.85	1275.67	1278.85	4.07	.60	488.29	145.76
*	29.000	62.00	.00	.00	1274.80	373.00	1279.00	1275.79	1279.01	5.65	.72	516.18	156.97
*	29.000	62.00	.00	.00	1274.80	433.00	1279.12	1275.87	1279.13	6.66	.81	537.78	167.78
*	29.000	62.00	.00	.00	1274.80	507.00	1279.25	1275.96	1279.26	7.95	.91	561.56	179.79
*	29.000	62.00	.00	.00	1274.80	461.00	1279.17	1275.91	1279.18	7.14	.85	547.22	172.53
*	29.000	62.00	.00	.00	1274.80	624.00	1279.43	1276.10	1279.45	9.91	1.05	597.72	198.19
*	29.000	62.00	.00	.00	1274.80	705.00	1279.56	1276.20	1279.58	11.13	1.14	624.95	211.36
*	29.000	62.00	.00	.00	1274.80	841.00	1279.74	1276.33	1279.77	13.20	1.29	669.19	231.43
*	29.000	62.00	.00	.00	1274.80	949.00	1279.88	1276.44	1279.91	14.64	1.39	707.53	247.99
*	29.000	62.00	.00	.00	1274.80	1085.00	1280.04	1276.57	1280.08	16.33	1.51	754.15	268.53
	30.000	164.00	.00	.00	1274.89	234.00	1278.76	1276.04	1278.76	1.79	.35	689.27	174.74
	30.000	164.00	.00	.00	1274.89	294.00	1278.90	1276.12	1278.90	2.29	.41	744.70	194.12
	30.000	164.00	.00	.00	1274.89	373.00	1279.07	1276.23	1279.08	2.88	.48	815.29	219.71
*	30.000	164.00	.00	.00	1274.89	433.00	1279.20	1276.31	1279.21	3.24	.53	870.69	240.37
*	30.000	164.00	.00	.00	1274.89	507.00	1279.34	1276.40	1279.35	3.67	.58	932.88	264.55
*	30.000	164.00	.00	.00	1274.89	461.00	1279.26	1276.34	1279.26	3.41	.55	895.41	249.81
*	30.000	164.00	.00	.00	1274.89	624.00	1279.55	1276.52	1279.56	4.18	.65	1031.01	305.27
*	30.000	164.00	.00	.00	1274.89	705.00	1279.69	1276.59	1279.70	4.46	.69	1096.59	333.64
*	30.000	164.00	.00	.00	1274.89	841.00	1279.89	1276.71	1279.90	4.96	.76	1196.39	377.74
*	30.000	164.00	.00	.00	1274.89	949.00	1280.05	1276.80	1280.06	5.26	.80	1276.96	413.73
*	30.000	164.00	.00	.00	1274.89	1085.00	1280.23	1276.91	1280.24	5.62	.85	1370.80	457.83

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	31.000	164.00	.00	.00	1275.25	117.00	1278.78	1276.27	1278.78	.29	.14	846.93	218.77
	31.000	164.00	.00	.00	1275.25	147.00	1278.92	1276.32	1278.92	.37	.16	901.66	242.04
	31.000	164.00	.00	.00	1275.25	187.00	1279.10	1276.36	1279.10	.47	.19	969.62	272.21
	31.000	164.00	.00	.00	1275.25	218.00	1279.23	1276.39	1279.23	.54	.21	1023.96	296.06
	31.000	164.00	.00	.00	1275.25	255.00	1279.38	1276.43	1279.38	.62	.24	1088.15	323.56
	31.000	164.00	.00	.00	1275.25	193.00	1279.29	1276.37	1279.29	.40	.19	1047.93	306.40
	31.000	164.00	.00	.00	1275.25	254.00	1279.59	1276.44	1279.59	.48	.22	1185.53	365.75
	31.000	164.00	.00	.00	1275.25	317.00	1279.73	1276.48	1279.73	.64	.26	1256.09	397.07
	31.000	164.00	.00	.00	1275.25	353.00	1279.94	1276.53	1279.94	.63	.27	1363.20	445.11
	31.000	164.00	.00	.00	1275.25	400.00	1280.10	1276.56	1280.10	.68	.29	1452.90	484.49
	31.000	164.00	.00	.00	1275.25	468.00	1280.28	1276.61	1280.28	.77	.32	1563.40	533.56
*	32.000	219.00	.00	.00	1275.70	117.00	1278.79	1276.62	1278.80	4.53	.53	232.01	54.99
*	32.000	219.00	.00	.00	1275.70	147.00	1278.94	1276.73	1278.95	5.53	.61	255.36	62.50
*	32.000	219.00	.00	.00	1275.70	187.00	1279.11	1276.86	1279.11	1.10	.28	579.92	178.11
*	32.000	219.00	.00	.00	1275.70	218.00	1279.25	1276.94	1279.25	1.23	.31	631.73	196.46
*	32.000	219.00	.00	.00	1275.70	255.00	1279.40	1277.03	1279.40	1.36	.34	689.84	218.33
*	32.000	219.00	.00	.00	1275.70	193.00	1279.30	1276.88	1279.30	.90	.27	651.66	203.83
*	32.000	219.00	.00	.00	1275.70	254.00	1279.60	1277.03	1279.60	1.02	.31	772.28	251.46
*	32.000	219.00	.00	.00	1275.70	317.00	1279.75	1277.18	1279.75	1.30	.36	833.61	277.67
	32.000	219.00	.00	.00	1275.70	353.00	1279.96	1277.27	1279.96	1.24	.36	920.82	317.00
	32.000	219.00	.00	.00	1275.21	400.00	1280.12	1277.36	1280.12	1.31	.39	989.28	349.46
	32.000	219.00	.00	.00	1275.21	468.00	1280.30	1277.49	1280.31	1.44	.42	1069.32	389.42
	33.000	180.00	.00	.00	1276.00	117.00	1278.86	1276.74	1278.86	2.81	.34	344.60	69.80
	33.000	180.00	.00	.00	1276.00	147.00	1279.02	1276.83	1279.02	3.38	.39	380.65	80.00
*	33.000	180.00	.00	.00	1276.00	187.00	1279.15	1276.94	1279.16	4.15	.45	414.81	91.82
*	33.000	180.00	.00	.00	1276.00	218.00	1279.29	1277.00	1279.29	4.40	.49	449.35	103.93
*	33.000	180.00	.00	.00	1276.00	255.00	1279.44	1277.06	1279.45	4.67	.53	489.08	118.06
*	33.000	180.00	.00	.00	1276.00	193.00	1279.33	1276.95	1279.33	3.27	.43	457.14	106.68
*	33.000	180.00	.00	.00	1276.00	254.00	1279.63	1277.06	1279.64	3.40	.48	546.54	137.72
*	33.000	180.00	.00	.00	1276.00	317.00	1279.79	1277.16	1279.80	4.12	.55	605.34	156.10
*	33.000	180.00	.00	.00	1276.00	353.00	1280.00	1277.20	1280.00	3.73	.55	683.31	182.85
*	33.000	180.00	.00	.00	1276.00	400.00	1280.16	1277.26	1280.16	3.77	.58	746.13	206.06
*	33.000	180.00	.00	.00	1276.00	468.00	1280.35	1277.35	1280.35	3.95	.62	822.32	235.50
	34.000	45.00	.00	.00	1275.41	117.00	1278.87	1276.68	1278.87	3.52	.43	271.38	62.36
	34.000	45.00	.00	.00	1275.41	147.00	1279.04	1276.83	1279.04	4.23	.50	297.33	71.50
	34.000	45.00	.00	.00	1275.41	187.00	1279.17	1277.16	1279.18	5.57	.60	318.91	79.22
	34.000	45.00	.00	.00	1275.41	218.00	1279.31	1277.18	1279.32	6.16	.65	342.69	87.87
	34.000	45.00	.00	.00	1275.41	255.00	1279.47	1277.23	1279.47	6.78	.71	369.88	97.92
	34.000	45.00	.00	.00	1275.41	193.00	1279.35	1277.14	1279.35	4.61	.57	348.19	89.88

34.000	45.00	.00	.00	1275.41	254.00	1279.65	1277.25	1279.66	4.35	.60	466.90	121.81
34.000	45.00	.00	.00	1275.41	317.00	1279.81	1277.34	1279.82	5.23	.68	523.98	138.64
34.000	45.00	.00	.00	1275.41	353.00	1280.02	1277.39	1280.02	4.66	.67	600.79	163.47
34.000	45.00	.00	.00	1275.41	400.00	1280.18	1277.46	1280.18	4.66	.69	661.60	185.32
34.000	45.00	.00	.00	1275.41	468.00	1280.37	1277.55	1280.37	4.82	.73	733.07	213.26

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	35.000	46.00	.00	.00	1276.39	117.00	1278.88	1278.03	1278.94	117.47	1.95	63.25	10.80
*	35.000	46.00	.00	.00	1276.39	147.00	1279.05	1278.17	1279.11	116.89	2.10	75.19	13.60
*	35.000	46.00	.00	.00	1276.39	187.00	1279.19	1278.35	1279.27	130.98	2.37	86.32	16.34
*	35.000	46.00	.00	.00	1276.39	218.00	1279.34	1278.45	1279.42	126.64	2.46	98.10	19.37
*	35.000	46.00	.00	.00	1276.39	255.00	1279.49	1278.57	1279.58	122.08	2.55	111.92	23.08
*	35.000	46.00	.00	.00	1276.39	193.00	1279.36	1278.38	1279.43	93.28	2.13	100.42	19.98
*	35.000	46.00	.00	.00	1276.39	254.00	1279.66	1278.56	1279.73	83.66	2.24	128.64	27.77
*	35.000	46.00	.00	.00	1276.39	317.00	1279.82	1278.77	1279.91	94.86	2.50	144.98	32.55
*	35.000	46.00	.00	.00	1276.39	353.00	1280.02	1278.88	1280.10	80.87	2.44	166.94	39.25
*	35.000	46.00	.00	.00	1276.39	400.00	1280.18	1279.00	1280.26	78.14	2.50	185.80	45.25
*	35.000	46.00	.00	.00	1276.39	468.00	1280.37	1279.15	1280.46	77.51	2.61	209.50	53.16
*	36.000	24.00	.00	.00	1275.67	117.00	1278.97	1276.60	1278.98	6.31	.60	194.12	46.58
*	36.000	24.00	.00	.00	1275.67	147.00	1279.16	1276.71	1279.17	7.84	.69	211.77	52.49
*	36.000	24.00	.00	.00	1275.67	187.00	1279.33	1276.83	1279.34	10.21	.82	228.87	58.52
*	36.000	24.00	.00	.00	1275.67	218.00	1279.48	1276.92	1279.49	11.22	.89	246.36	65.07
*	36.000	24.00	.00	.00	1275.67	255.00	1279.64	1277.01	1279.66	12.46	.97	268.07	72.23
*	36.000	24.00	.00	.00	1275.67	193.00	1279.47	1276.85	1279.48	8.86	.79	245.68	64.82
*	36.000	24.00	.00	.00	1275.67	254.00	1279.78	1277.01	1279.79	10.48	.91	289.09	78.46
*	36.000	24.00	.00	.00	1275.67	317.00	1279.96	1277.16	1279.98	12.82	1.05	325.40	88.54
*	36.000	24.00	.00	.00	1275.67	353.00	1280.15	1277.25	1280.17	11.94	1.06	375.76	102.14
*	36.000	24.00	.00	.00	1275.67	400.00	1280.31	1277.35	1280.33	12.04	1.10	424.79	115.29
*	36.000	24.00	.00	.00	1275.67	468.00	1280.51	1277.48	1280.53	12.09	1.15	488.18	134.59
	37.000	100.00	.00	.00	1275.90	117.00	1279.03	1276.77	1279.04	5.05	.52	225.73	52.06
	37.000	100.00	.00	.00	1275.90	147.00	1279.23	1276.87	1279.24	6.45	.59	249.95	57.88
	37.000	100.00	.00	.00	1275.90	187.00	1279.43	1276.98	1279.43	8.35	.68	275.48	64.72
	37.000	100.00	.00	.00	1275.90	218.00	1279.59	1277.05	1279.60	9.31	.73	299.03	71.44
	37.000	100.00	.00	.00	1275.90	255.00	1279.76	1277.13	1279.77	10.28	.78	326.59	79.55
	37.000	100.00	.00	.00	1275.90	193.00	1279.56	1277.00	1279.57	7.57	.66	294.50	70.13
	37.000	100.00	.00	.00	1275.90	254.00	1279.88	1277.13	1279.89	9.12	.74	344.82	84.13
	37.000	100.00	.00	.00	1275.90	317.00	1280.09	1277.26	1280.10	11.54	.83	381.17	93.31
	37.000	100.00	.00	.00	1275.90	353.00	1280.27	1277.32	1280.28	11.04	.85	416.67	106.23
	37.000	100.00	.00	.00	1275.90	400.00	1280.44	1277.41	1280.45	10.98	.89	466.39	120.71
	37.000	100.00	.00	.00	1275.90	468.00	1280.63	1277.53	1280.64	11.16	.94	527.17	140.07
*	38.000	553.00	.00	.00	1277.55	117.00	1279.43	1278.32	1279.47	12.81	1.48	79.02	32.69
*	38.000	553.00	.00	.00	1277.55	147.00	1279.66	1278.43	1279.70	13.12	1.60	92.07	40.59
	38.000	553.00	.00	.00	1277.55	187.00	1279.84	1278.57	1279.86	7.17	1.26	171.18	69.83
	38.000	553.00	.00	.00	1277.55	218.00	1280.00	1278.67	1280.02	6.51	1.28	199.94	85.43
	38.000	553.00	.00	.00	1277.55	255.00	1280.17	1278.78	1280.19	5.86	1.28	242.28	105.30
	38.000	553.00	.00	.00	1277.55	193.00	1279.93	1278.59	1279.95	6.17	1.21	185.45	77.71
	38.000	553.00	.00	.00	1277.55	254.00	1280.24	1278.77	1280.25	4.99	1.21	258.76	113.75
*	38.000	553.00	.00	.00	1277.55	317.00	1280.46	1278.94	1280.48	4.59	1.24	318.49	147.91
*	38.000	553.00	.00	.00	1277.55	353.00	1280.61	1279.03	1280.63	4.11	1.22	359.32	174.06
*	38.000	553.00	.00	.00	1277.55	400.00	1280.76	1279.15	1280.78	3.91	1.24	400.35	202.39
*	38.000	553.00	.00	.00	1277.55	468.00	1280.95	1279.68	1280.97	3.74	1.27	452.10	242.12

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	39.000	24.00	.00	.00	1277.55	117.00	1279.44	1278.48	1279.53	30.16	2.47	47.43	21.30
	39.000	24.00	.00	.00	1277.55	147.00	1279.70	1279.70	1279.73	10.69	1.58	120.07	44.95
	39.000	24.00	.00	.00	1277.55	187.00	1279.86	1278.81	1279.89	10.82	1.68	143.31	56.86
	39.000	24.00	.00	.00	1277.55	218.00	1280.02	1278.94	1280.05	9.52	1.66	172.84	70.65
	39.000	24.00	.00	.00	1277.55	255.00	1280.19	1279.09	1280.22	8.13	1.61	216.93	89.42
	39.000	24.00	.00	.00	1277.55	193.00	1279.94	1278.83	1279.97	9.25	1.59	156.99	63.47
	39.000	24.00	.00	.00	1277.55	254.00	1280.25	1279.08	1280.27	6.88	1.50	232.41	96.86
	39.000	24.00	.00	.00	1277.55	317.00	1280.48	1279.31	1280.50	5.91	1.48	294.27	130.39
	39.000	24.00	.00	.00	1277.55	353.00	1280.63	1279.43	1280.65	5.18	1.43	334.50	155.10
	39.000	24.00	.00	.00	1277.55	400.00	1280.78	1279.69	1280.80	4.81	1.43	375.57	182.42
	39.000	24.00	.00	.00	1277.55	468.00	1280.96	1279.74	1280.98	4.52	1.44	426.05	220.21

40.000	10.00	1279.66	1279.00	1277.55	117.00	1279.57	.00	1279.65	24.00	2.29	51.12	23.88
* 40.000	10.00	1279.66	1279.00	1277.55	147.00	1279.95	.00	1279.97	5.14	1.19	159.98	64.87
* 40.000	10.00	1279.66	1279.00	1277.55	187.00	1280.20	.00	1280.21	4.25	1.17	219.72	90.73
* 40.000	10.00	1279.66	1279.00	1277.55	218.00	1280.41	.00	1280.42	3.32	1.09	275.64	119.69
* 40.000	10.00	1279.66	1279.00	1277.55	255.00	1280.63	.00	1280.64	2.73	1.04	333.50	154.46
* 40.000	10.00	1279.66	1279.00	1277.55	193.00	1280.28	.00	1280.29	3.69	1.11	239.70	100.50
* 40.000	10.00	1279.66	1279.00	1277.55	254.00	1280.66	.00	1280.67	2.53	1.01	341.78	159.79
* 40.000	10.00	1279.66	1279.00	1277.55	317.00	1280.99	.00	1281.00	1.95	.95	434.30	226.72
* 40.000	10.00	1279.66	1279.00	1277.55	353.00	1281.18	.00	1281.18	1.71	.93	486.17	269.63
* 40.000	10.00	1279.66	1279.00	1277.55	400.00	1281.39	.00	1281.40	1.54	.92	544.53	321.84
* 40.000	10.00	1279.66	1279.00	1277.55	468.00	1281.68	.00	1281.69	1.36	.91	626.09	401.43
* 41.000	52.00	.00	.00	1277.03	117.00	1279.67	1278.36	1279.68	1.85	.72	191.04	85.95
* 41.000	52.00	.00	.00	1277.03	147.00	1279.98	1278.46	1279.98	1.46	.71	242.78	121.67
* 41.000	52.00	.00	.00	1277.03	187.00	1280.22	1278.56	1280.23	1.46	.75	290.56	154.66
* 41.000	52.00	.00	.00	1277.03	218.00	1280.43	1278.63	1280.44	1.34	.76	342.61	188.10
* 41.000	52.00	.00	.00	1277.03	255.00	1280.64	1278.70	1280.65	1.25	.77	398.85	227.65
* 41.000	52.00	.00	.00	1277.03	193.00	1280.30	1278.57	1280.30	1.36	.74	307.52	165.75
* 41.000	52.00	.00	.00	1277.03	254.00	1280.67	1278.70	1280.68	1.19	.75	406.37	233.31
41.000	52.00	.00	.00	1277.03	317.00	1281.00	1278.81	1281.01	1.08	.77	493.76	305.06
41.000	52.00	.00	.00	1277.03	353.00	1281.18	1278.89	1281.19	1.01	.77	544.56	351.40
41.000	52.00	.00	.00	1277.03	400.00	1281.39	1278.96	1281.40	.97	.79	600.40	406.05
41.000	52.00	.00	.00	1277.03	468.00	1281.69	1279.07	1281.70	.92	.80	678.64	489.00
42.000	124.00	.00	.00	1278.00	117.00	1279.70	1278.57	1279.71	2.04	.55	211.67	82.01
42.000	124.00	.00	.00	1278.00	147.00	1280.00	1278.62	1280.00	1.63	.55	265.46	115.20
42.000	124.00	.00	.00	1278.00	187.00	1280.24	1278.68	1280.25	1.55	.60	314.69	150.15
42.000	124.00	.00	.00	1278.00	218.00	1280.45	1278.72	1280.45	1.43	.62	358.98	182.20
42.000	124.00	.00	.00	1278.00	255.00	1280.66	1278.77	1280.66	1.35	.64	409.40	219.68
42.000	124.00	.00	.00	1278.00	193.00	1280.31	1278.68	1280.32	1.44	.59	329.74	160.97
42.000	124.00	.00	.00	1278.00	254.00	1280.69	1278.77	1280.69	1.28	.63	416.29	224.93
42.000	124.00	.00	.00	1278.00	317.00	1281.01	1278.84	1281.02	1.18	.67	503.16	291.77
42.000	124.00	.00	.00	1278.00	353.00	1281.20	1278.88	1281.21	1.10	.67	562.87	335.90
42.000	124.00	.00	.00	1278.00	400.00	1281.41	1278.94	1281.42	1.04	.69	634.57	391.56
42.000	124.00	.00	.00	1278.00	468.00	1281.70	1279.01	1281.71	.95	.70	743.84	480.34

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	43.000	48.00	.00	.00	1277.48	117.00	1279.67	1279.67	1279.83	267.91	4.11	40.00	7.15
*	43.000	48.00	.00	.00	1277.48	147.00	1280.00	1279.72	1280.05	43.01	2.05	85.12	22.41
*	43.000	48.00	.00	.00	1277.48	187.00	1280.24	1279.78	1280.28	23.27	1.71	121.76	38.77
*	43.000	48.00	.00	.00	1277.48	218.00	1280.45	1279.80	1280.48	15.25	1.51	154.72	55.83
*	43.000	48.00	.00	.00	1277.48	255.00	1280.66	1279.87	1280.69	10.89	1.39	194.69	77.27
*	43.000	48.00	.00	.00	1277.48	193.00	1280.32	1279.76	1280.35	18.98	1.60	132.94	44.30
*	43.000	48.00	.00	.00	1277.48	254.00	1280.69	1279.87	1280.72	9.96	1.34	200.63	80.47
*	43.000	48.00	.00	.00	1277.48	317.00	1281.02	1279.91	1281.04	6.49	1.20	280.59	124.47
*	43.000	48.00	.00	.00	1277.48	353.00	1281.20	1279.98	1281.22	5.10	1.12	338.30	156.38
*	43.000	48.00	.00	.00	1277.48	400.00	1281.41	1280.01	1281.43	4.03	1.06	406.64	199.15
*	43.000	48.00	.00	.00	1277.48	468.00	1281.70	1280.12	1281.72	3.03	.98	502.14	268.69
*	44.000	11.00	1279.26	.00	1277.59	117.00	1280.28	.00	1280.29	11.83	1.18	111.68	34.02
*	44.000	11.00	1279.26	.00	1277.59	147.00	1280.47	.00	1280.49	9.07	1.13	141.58	48.81
*	44.000	11.00	1279.26	.00	1277.59	187.00	1280.68	.00	1280.70	7.27	1.10	179.65	69.36
*	44.000	11.00	1279.26	.00	1277.59	218.00	1280.87	.00	1280.88	5.88	1.06	217.64	89.93
*	44.000	11.00	1279.26	.00	1277.59	255.00	1281.04	.00	1281.06	5.04	1.04	260.26	113.59
*	44.000	11.00	1279.26	.00	1277.59	193.00	1280.73	.00	1280.75	6.81	1.08	188.15	73.94
*	44.000	11.00	1279.26	.00	1277.59	254.00	1281.05	.00	1281.07	4.89	1.02	262.60	114.89
	44.000	11.00	1279.26	.00	1277.59	317.00	1281.35	.00	1281.36	3.66	.97	353.43	165.69
	44.000	11.00	1279.26	.00	1277.59	353.00	1281.54	.00	1281.56	2.93	.91	416.43	206.14
	44.000	11.00	1279.26	.00	1277.59	400.00	1281.74	.00	1281.75	2.50	.88	481.19	252.86
	44.000	11.00	1279.26	.00	1277.59	468.00	1282.05	.00	1282.06	1.96	.84	581.23	334.44
*	45.000	76.00	.00	.00	1277.86	117.00	1280.30	1278.40	1280.30	.13	.46	320.57	323.80
*	45.000	76.00	.00	.00	1277.86	147.00	1280.49	1278.46	1280.49	.15	.52	362.54	378.93
*	45.000	76.00	.00	.00	1277.86	187.00	1280.70	1278.54	1280.71	.18	.59	411.88	445.88
*	45.000	76.00	.00	.00	1277.86	218.00	1280.88	1278.59	1280.89	.19	.64	454.37	506.23
*	45.000	76.00	.00	.00	1277.86	255.00	1281.06	1278.65	1281.06	.20	.69	495.81	568.35
*	45.000	76.00	.00	.00	1277.86	193.00	1280.75	1278.55	1280.75	.18	.60	421.91	459.80
*	45.000	76.00	.00	.00	1277.86	254.00	1281.07	1278.65	1281.07	.20	.68	497.87	571.52
*	45.000	76.00	.00	.00	1277.86	317.00	1281.36	1278.74	1281.37	.21	.76	577.01	685.62
*	45.000	76.00	.00	.00	1277.86	353.00	1281.55	1278.79	1281.56	.21	.79	629.29	765.73
*	45.000	76.00	.00	.00	1277.86	400.00	1281.75	1278.86	1281.76	.22	.83	685.47	856.74
*	45.000	76.00	.00	.00	1277.86	468.00	1282.05	1278.95	1282.06	.22	.87	768.21	999.54

46.000	133.00	.00	.00	1277.44	117.00	1280.30	1278.41	1280.30	.19	.57	314.77	271.36
46.000	133.00	.00	.00	1277.44	147.00	1280.49	1278.49	1280.49	.22	.65	355.58	316.01
46.000	133.00	.00	.00	1277.44	187.00	1280.71	1278.60	1280.71	.25	.74	406.14	371.16
46.000	133.00	.00	.00	1277.44	218.00	1280.89	1278.65	1280.89	.27	.79	452.02	421.69
46.000	133.00	.00	.00	1277.44	255.00	1281.06	1278.71	1281.07	.29	.85	498.74	474.60
46.000	133.00	.00	.00	1277.44	193.00	1280.75	1278.61	1280.75	.25	.75	416.79	382.75
46.000	133.00	.00	.00	1277.44	254.00	1281.07	1278.70	1281.08	.28	.85	501.00	477.20
46.000	133.00	.00	.00	1277.44	317.00	1281.36	1278.82	1281.37	.30	.93	585.08	578.01
46.000	133.00	.00	.00	1277.44	353.00	1281.56	1278.87	1281.56	.30	.96	637.95	646.65
46.000	133.00	.00	.00	1277.44	400.00	1281.75	1278.94	1281.76	.31	1.01	693.98	723.62
46.000	133.00	.00	.00	1277.44	468.00	1282.06	1279.04	1282.07	.31	1.06	778.19	847.05

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	47.000	133.00	.00	.00	1277.89	117.00	1280.30	1278.59	1280.31	1.16	.50	243.24	108.74
*	47.000	133.00	.00	.00	1277.89	147.00	1280.50	1278.68	1280.50	1.21	.55	282.50	133.41
*	47.000	133.00	.00	.00	1277.89	187.00	1280.71	1278.78	1280.72	1.26	.61	342.34	166.46
*	47.000	133.00	.00	.00	1277.89	218.00	1280.89	1278.85	1280.90	1.18	.62	404.59	200.43
*	47.000	133.00	.00	.00	1277.89	255.00	1281.07	1278.92	1281.07	1.14	.64	468.23	239.09
*	47.000	133.00	.00	.00	1277.89	193.00	1280.75	1278.79	1280.76	1.23	.61	356.33	173.89
*	47.000	133.00	.00	.00	1277.89	254.00	1281.08	1278.92	1281.08	1.11	.63	471.40	241.11
*	47.000	133.00	.00	.00	1277.89	317.00	1281.37	1279.03	1281.38	1.00	.65	581.73	317.74
*	47.000	133.00	.00	.00	1277.89	353.00	1281.57	1279.09	1281.57	.89	.64	653.26	374.04
*	47.000	133.00	.00	.00	1277.89	400.00	1281.76	1279.16	1281.77	.84	.65	727.04	437.15
*	47.000	133.00	.00	.00	1277.89	468.00	1282.07	1279.25	1282.07	.74	.65	840.94	544.04
	48.000	194.00	.00	.00	1277.69	117.00	1280.33	1278.95	1280.33	1.31	.59	239.82	102.40
	48.000	194.00	.00	.00	1277.69	147.00	1280.52	1279.09	1280.52	1.26	.62	294.01	130.98
	48.000	194.00	.00	.00	1277.69	187.00	1280.74	1279.22	1280.74	1.20	.64	365.47	170.96
	48.000	194.00	.00	.00	1277.69	218.00	1280.92	1279.43	1280.92	1.07	.64	431.43	210.51
	48.000	194.00	.00	.00	1277.69	255.00	1281.09	1279.39	1281.09	1.00	.64	500.37	254.80
	48.000	194.00	.00	.00	1277.69	193.00	1280.78	1279.25	1280.78	1.15	.64	380.48	179.74
	48.000	194.00	.00	.00	1277.69	254.00	1281.10	1279.38	1281.10	.98	.64	503.63	256.96
	48.000	194.00	.00	.00	1277.69	317.00	1281.39	1279.46	1281.40	.85	.63	626.02	344.25
	48.000	194.00	.00	.00	1277.69	353.00	1281.58	1279.51	1281.59	.75	.62	705.14	408.12
	48.000	194.00	.00	.00	1277.69	400.00	1281.78	1279.58	1281.78	.69	.62	787.10	480.02
	48.000	194.00	.00	.00	1277.69	468.00	1282.08	1279.66	1282.09	.61	.62	913.35	601.54
*	49.000	38.00	.00	.00	1277.90	117.00	1280.33	1278.73	1280.34	2.71	.91	174.51	71.06
*	49.000	38.00	.00	.00	1277.90	147.00	1280.52	1278.86	1280.53	2.64	.94	208.19	90.51
*	49.000	38.00	.00	.00	1277.90	187.00	1280.74	1279.02	1280.75	2.62	.99	247.84	115.64
*	49.000	38.00	.00	.00	1277.90	218.00	1280.92	1279.14	1280.93	2.44	1.00	281.59	139.48
*	49.000	38.00	.00	.00	1277.90	255.00	1281.09	1279.26	1281.10	2.37	1.02	317.39	165.60
*	49.000	38.00	.00	.00	1277.90	193.00	1280.78	1279.04	1280.79	2.54	.99	255.68	121.01
*	49.000	38.00	.00	.00	1277.90	254.00	1281.10	1279.26	1281.11	2.32	1.01	319.15	166.84
*	49.000	38.00	.00	.00	1277.90	317.00	1281.39	1279.51	1281.40	2.11	1.02	389.23	218.18
*	49.000	38.00	.00	.00	1277.90	353.00	1281.58	1279.95	1281.59	1.91	1.01	434.65	255.56
*	49.000	38.00	.00	.00	1277.90	400.00	1281.78	1279.94	1281.79	1.81	1.02	481.86	297.59
*	49.000	38.00	.00	.00	1277.90	468.00	1282.08	1280.00	1282.09	1.61	1.01	554.58	368.31
	50.000	8.00	1279.26	1278.64	1277.90	117.00	1280.36	.00	1280.37	2.47	.87	180.69	74.50
	50.000	8.00	1279.26	1278.64	1277.90	147.00	1280.56	.00	1280.57	2.36	.90	216.57	95.62
	50.000	8.00	1279.26	1278.64	1277.90	187.00	1280.80	.00	1280.81	2.28	.94	259.87	123.93
	50.000	8.00	1279.26	1278.64	1277.90	218.00	1280.99	.00	1281.00	2.10	.94	296.23	150.38
	50.000	8.00	1279.26	1278.64	1277.90	255.00	1281.18	.00	1281.19	2.00	.95	338.81	180.50
	50.000	8.00	1279.26	1278.64	1277.90	193.00	1280.84	.00	1280.85	2.21	.93	268.09	129.73
	50.000	8.00	1279.26	1278.64	1277.90	254.00	1281.18	.00	1281.19	1.96	.95	340.33	181.58
	50.000	8.00	1279.26	1278.64	1277.90	317.00	1281.50	.00	1281.51	1.74	.95	416.84	240.53
	50.000	8.00	1279.26	1278.64	1277.90	353.00	1281.70	.00	1281.71	1.57	.93	464.92	282.15
	50.000	8.00	1279.26	1278.64	1277.90	400.00	1281.92	.00	1281.93	1.47	.94	515.55	329.49
	50.000	8.00	1279.26	1278.64	1277.90	468.00	1282.24	.00	1282.25	1.31	.93	593.99	409.50

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	51.000	172.00	.00	.00	1278.90	117.00	1280.43	1279.45	1280.44	7.31	.53	182.26	43.26
*	51.000	172.00	.00	.00	1278.90	147.00	1280.63	1279.50	1280.64	6.76	.55	218.62	56.53
*	51.000	172.00	.00	.00	1278.90	187.00	1280.86	1279.56	1280.87	6.32	.58	263.93	74.38
*	51.000	172.00	.00	.00	1278.90	218.00	1281.05	1279.61	1281.05	5.75	.60	307.09	90.94
*	51.000	172.00	.00	.00	1278.90	255.00	1281.23	1279.66	1281.24	5.25	.61	355.13	111.30
*	51.000	172.00	.00	.00	1278.90	193.00	1280.90	1279.57	1280.91	6.25	.58	271.32	77.22

* 51.000	172.00	.00	.00	1278.90	254.00	1281.24	1279.66	1281.25	5.15	.61	356.59	111.94
* 51.000	172.00	.00	.00	1278.90	317.00	1281.55	1279.74	1281.56	4.33	.62	452.27	152.33
* 51.000	172.00	.00	.00	1278.90	353.00	1281.75	1279.79	1281.75	3.73	.62	520.70	182.84
* 51.000	172.00	.00	.00	1278.90	400.00	1281.96	1279.84	1281.97	3.31	.62	595.13	219.95
* 51.000	172.00	.00	.00	1278.90	468.00	1282.28	1279.92	1282.29	2.73	.61	707.56	283.04
52.000	162.00	.00	.00	1279.00	117.00	1280.61	1279.85	1280.62	12.08	.79	140.36	33.66
52.000	162.00	.00	.00	1279.00	147.00	1280.79	1280.02	1280.81	11.25	.83	167.13	43.83
52.000	162.00	.00	.00	1279.00	187.00	1281.01	1280.00	1281.03	10.55	.88	201.18	57.57
52.000	162.00	.00	.00	1279.00	218.00	1281.18	1280.01	1281.20	9.74	.90	230.31	69.86
52.000	162.00	.00	.00	1279.00	255.00	1281.36	1280.01	1281.37	9.21	.92	262.51	84.03
52.000	162.00	.00	.00	1279.00	193.00	1281.05	1280.00	1281.07	10.25	.88	207.63	60.27
52.000	162.00	.00	.00	1279.00	254.00	1281.36	1280.00	1281.38	9.08	.92	263.13	84.31
52.000	162.00	.00	.00	1279.00	317.00	1281.65	1280.05	1281.67	8.04	.94	325.18	111.81
52.000	162.00	.00	.00	1279.00	353.00	1281.84	1280.10	1281.85	7.16	.93	369.67	131.96
52.000	162.00	.00	.00	1279.00	400.00	1282.04	1280.16	1282.05	6.49	.94	419.37	156.99
52.000	162.00	.00	.00	1279.00	468.00	1282.35	1280.24	1282.36	5.49	.92	494.95	199.65
* 53.000	161.00	.00	.00	1277.89	117.00	1280.75	1279.27	1280.76	5.37	.56	233.78	50.48
* 53.000	161.00	.00	.00	1277.89	147.00	1280.93	1279.38	1280.94	4.93	.58	278.88	66.24
* 53.000	161.00	.00	.00	1277.89	187.00	1281.14	1279.57	1281.15	4.54	.60	333.07	87.78
* 53.000	161.00	.00	.00	1277.89	218.00	1281.31	1279.66	1281.31	4.22	.61	374.67	106.08
* 53.000	161.00	.00	.00	1277.89	255.00	1281.48	1279.76	1281.48	4.00	.63	419.60	127.44
* 53.000	161.00	.00	.00	1277.89	193.00	1281.18	1279.60	1281.18	4.43	.60	342.33	91.72
* 53.000	161.00	.00	.00	1277.89	254.00	1281.48	1279.75	1281.48	3.96	.63	419.95	127.62
* 53.000	161.00	.00	.00	1277.89	317.00	1281.76	1279.90	1281.77	3.67	.65	492.43	165.40
* 53.000	161.00	.00	.00	1277.89	353.00	1281.93	1279.97	1281.94	3.43	.66	536.86	190.49
53.000	161.00	.00	.00	1277.89	400.00	1282.13	1280.18	1282.14	3.27	.67	588.25	221.23
53.000	161.00	.00	.00	1277.89	468.00	1282.43	1280.26	1282.43	2.97	.69	666.74	271.69
* 54.000	57.00	.00	.00	1277.72	117.00	1280.71	1279.19	1280.85	16.12	2.98	39.28	29.14
* 54.000	57.00	.00	.00	1277.72	147.00	1280.85	1279.40	1281.04	22.07	3.57	41.23	31.29
* 54.000	57.00	.00	.00	1277.72	187.00	1281.00	1279.66	1281.29	30.87	4.32	43.33	33.66
* 54.000	57.00	.00	.00	1277.72	218.00	1281.10	1279.85	1281.47	37.90	4.86	44.87	35.41
* 54.000	57.00	.00	.00	1277.72	255.00	1281.20	1280.07	1281.67	47.45	5.51	46.26	37.02
* 54.000	57.00	.00	.00	1277.72	193.00	1281.02	1279.70	1281.32	32.07	4.42	43.70	34.08
* 54.000	57.00	.00	.00	1277.72	254.00	1281.21	1280.06	1281.67	46.89	5.48	46.32	37.09
* 54.000	57.00	.00	.00	1277.72	317.00	1281.35	1280.41	1282.02	64.88	6.57	48.26	39.35
* 54.000	57.00	.00	.00	1277.72	353.00	1281.43	1280.59	1282.23	74.87	7.13	49.48	40.80
* 54.000	57.00	.00	.00	1277.72	400.00	1281.50	1280.83	1282.48	91.45	7.95	50.34	41.83
54.000	57.00	.00	.00	1277.72	468.00	1281.57	1281.14	1282.87	118.54	9.12	51.31	42.99

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	55.000	51.00	1282.50	.00	1277.90	107.00	1281.73	.00	1281.80	6.06	2.08	51.40	43.45
*	55.000	51.00	1282.50	.00	1277.90	134.00	1282.35	.00	1282.36	9.01	.90	148.15	44.63
*	55.000	51.00	1282.50	.00	1277.90	170.00	1282.66	.00	1282.67	3.23	.71	239.55	94.57
*	55.000	51.00	1282.50	.00	1277.90	197.00	1282.85	.00	1282.85	2.23	.66	308.40	131.92
*	55.000	51.00	1282.50	.00	1277.90	230.00	1283.03	.00	1283.04	1.61	.63	394.97	181.40
*	55.000	51.00	1282.50	.00	1277.90	152.00	1283.50	.00	1283.50	.18	.26	658.71	353.61
*	55.000	51.00	1282.50	.00	1277.90	203.00	1282.88	.00	1282.89	2.10	.65	323.65	140.21
*	55.000	51.00	1282.50	.00	1277.90	253.00	1283.16	.00	1283.17	1.30	.60	461.61	221.74
*	55.000	51.00	1282.50	.00	1277.90	285.00	1283.33	.00	1283.33	1.02	.57	555.85	282.47
*	55.000	51.00	1282.50	.00	1277.90	317.00	1283.48	.00	1283.48	.85	.56	645.37	344.14
	55.000	51.00	1282.50	.00	1277.90	380.00	1283.74	.00	1283.74	.66	.54	813.96	469.10
*	56.000	98.00	.00	.00	1279.26	107.00	1281.82	1280.08	1281.82	.73	.39	265.08	125.16
*	56.000	98.00	.00	.00	1279.26	134.00	1282.37	1280.12	1282.37	.44	.37	358.49	201.11
*	56.000	98.00	.00	.00	1279.26	170.00	1282.68	1280.21	1282.68	.46	.41	411.13	250.22
*	56.000	98.00	.00	.00	1279.26	197.00	1282.86	1280.26	1282.86	.49	.45	442.29	281.38
	56.000	98.00	.00	.00	1279.26	230.00	1283.04	1280.31	1283.05	.54	.49	473.58	314.17
*	56.000	98.00	.00	.00	1279.26	152.00	1283.50	1280.17	1283.51	.14	.28	551.85	402.68
*	56.000	98.00	.00	.00	1279.26	203.00	1282.89	1280.27	1282.90	.50	.45	448.07	287.32
	56.000	98.00	.00	.00	1279.26	253.00	1283.17	1280.34	1283.18	.56	.51	495.20	337.70
	56.000	98.00	.00	.00	1279.26	285.00	1283.34	1280.41	1283.34	.60	.55	523.37	369.46
	56.000	98.00	.00	.00	1279.26	317.00	1283.48	1280.46	1283.49	.63	.58	548.42	398.62
	56.000	98.00	.00	.00	1279.26	380.00	1283.74	1280.55	1283.75	.71	.65	592.24	451.75
	57.000	206.00	.00	.00	1279.36	107.00	1281.83	1280.06	1281.83	.81	.26	371.50	118.93
	57.000	206.00	.00	.00	1279.36	134.00	1282.38	1280.13	1282.38	.47	.23	499.31	195.74
	57.000	206.00	.00	.00	1279.36	170.00	1282.69	1280.20	1282.69	.48	.25	572.33	246.59
	57.000	206.00	.00	.00	1279.36	197.00	1282.87	1280.22	1282.87	.49	.27	617.47	280.46
	57.000	206.00	.00	.00	1279.36	230.00	1283.06	1280.28	1283.06	.53	.29	661.29	315.05
	57.000	206.00	.00	.00	1279.36	152.00	1283.51	1280.15	1283.51	.14	.16	765.42	403.70

57.000	206.00	.00	.00	1279.36	203.00	1282.91	1280.24	1282.91	.50	.27	625.39	286.59
57.000	206.00	.00	.00	1279.36	253.00	1283.19	1280.31	1283.19	.56	.31	690.63	339.12
57.000	206.00	.00	.00	1279.36	285.00	1283.35	1280.36	1283.35	.59	.33	729.03	371.71
57.000	206.00	.00	.00	1279.36	317.00	1283.50	1280.40	1283.50	.62	.34	763.49	401.98
57.000	206.00	.00	.00	1279.36	380.00	1283.76	1280.47	1283.76	.69	.38	823.92	457.33
58.000	251.00	.00	.00	1279.27	107.00	1281.86	1280.24	1281.86	1.21	.30	300.50	97.47
58.000	251.00	.00	.00	1279.27	134.00	1282.39	1280.33	1282.39	.52	.24	459.81	185.74
58.000	251.00	.00	.00	1279.27	170.00	1282.70	1280.62	1282.70	.46	.24	554.79	249.40
58.000	251.00	.00	.00	1279.27	197.00	1282.89	1280.69	1282.89	.46	.25	611.98	291.53
58.000	251.00	.00	.00	1279.27	230.00	1283.07	1280.76	1283.07	.47	.26	669.73	337.07
58.000	251.00	.00	.00	1279.27	152.00	1283.51	1280.52	1283.51	.11	.14	806.45	456.21
58.000	251.00	.00	.00	1279.27	203.00	1282.92	1280.71	1282.92	.46	.25	622.70	299.76
58.000	251.00	.00	.00	1279.27	253.00	1283.20	1280.79	1283.20	.47	.27	709.63	370.23
58.000	251.00	.00	.00	1279.27	285.00	1283.37	1280.81	1283.37	.47	.28	761.51	415.34
58.000	251.00	.00	.00	1279.27	317.00	1283.52	1280.86	1283.52	.48	.29	807.89	457.54
58.000	251.00	.00	.00	1279.27	380.00	1283.78	1280.96	1283.78	.50	.32	888.95	535.39

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	59.000	250.00	.00	.00	1279.73	107.00	1281.90	1280.57	1281.91	3.30	.48	209.42	58.94
*	59.000	250.00	.00	.00	1279.73	134.00	1282.41	1280.65	1282.42	1.48	.38	313.25	109.97
*	59.000	250.00	.00	.00	1279.73	170.00	1282.72	1280.75	1282.72	1.29	.39	380.30	149.93
*	59.000	250.00	.00	.00	1279.73	197.00	1282.90	1280.81	1282.91	1.25	.40	420.26	176.47
*	59.000	250.00	.00	.00	1279.73	230.00	1283.09	1280.88	1283.09	1.25	.42	460.77	205.32
*	59.000	250.00	.00	.00	1279.73	152.00	1283.52	1280.70	1283.52	.30	.22	554.45	279.13
*	59.000	250.00	.00	.00	1279.73	203.00	1282.94	1280.82	1282.94	1.25	.41	427.79	181.69
*	59.000	250.00	.00	.00	1279.73	253.00	1283.22	1280.91	1283.22	1.25	.43	488.73	226.34
*	59.000	250.00	.00	.00	1279.73	285.00	1283.38	1281.00	1283.39	1.25	.45	525.08	254.96
*	59.000	250.00	.00	.00	1279.73	317.00	1283.53	1281.09	1283.54	1.27	.47	557.66	281.83
*	59.000	250.00	.00	.00	1279.73	380.00	1283.79	1281.17	1283.80	1.31	.50	614.58	331.42
	60.000	405.00	.00	.00	1279.60	107.00	1282.03	1280.68	1282.03	2.66	.39	260.99	65.58
	60.000	405.00	.00	.00	1279.60	134.00	1282.47	1280.76	1282.47	1.27	.32	371.33	118.88
	60.000	405.00	.00	.00	1279.60	170.00	1282.77	1280.86	1282.77	1.08	.33	447.43	163.24
	60.000	405.00	.00	.00	1279.60	197.00	1282.95	1280.95	1282.95	1.04	.34	493.56	192.90
	60.000	405.00	.00	.00	1279.60	230.00	1283.13	1281.00	1283.14	1.04	.36	540.77	225.32
	60.000	405.00	.00	.00	1279.60	152.00	1283.53	1280.82	1283.53	.26	.19	640.92	300.67
	60.000	405.00	.00	.00	1279.60	203.00	1282.98	1280.94	1282.99	1.04	.34	502.38	198.80
	60.000	405.00	.00	.00	1279.60	253.00	1283.26	1281.05	1283.27	1.03	.37	573.25	248.80
	60.000	405.00	.00	.00	1279.60	285.00	1283.43	1281.13	1283.43	1.03	.38	615.54	280.75
	60.000	405.00	.00	.00	1279.60	317.00	1283.58	1281.31	1283.58	1.04	.40	653.59	310.81
	60.000	405.00	.00	.00	1279.60	380.00	1283.84	1281.40	1283.85	1.08	.42	720.27	366.39
	61.000	525.00	.00	.00	1279.90	107.00	1282.15	1281.01	1282.15	2.04	.33	289.52	74.96
	61.000	525.00	.00	.00	1279.90	134.00	1282.53	1281.07	1282.53	1.07	.28	401.24	129.63
	61.000	525.00	.00	.00	1279.90	170.00	1282.82	1281.26	1282.82	.90	.29	486.01	179.25
	61.000	525.00	.00	.00	1279.90	197.00	1283.00	1281.31	1283.00	.86	.29	537.71	212.70
	61.000	525.00	.00	.00	1279.90	230.00	1283.18	1281.29	1283.19	.85	.31	589.86	248.78
	61.000	525.00	.00	.00	1279.90	152.00	1283.54	1281.09	1283.54	.22	.17	691.32	325.36
	61.000	525.00	.00	.00	1279.90	203.00	1283.03	1281.32	1283.03	.86	.30	547.69	219.42
	61.000	525.00	.00	.00	1279.90	253.00	1283.31	1281.32	1283.31	.84	.32	626.62	275.57
	61.000	525.00	.00	.00	1279.90	285.00	1283.48	1281.35	1283.48	.83	.33	674.56	312.15
	61.000	525.00	.00	.00	1279.90	317.00	1283.63	1281.37	1283.63	.84	.34	717.92	346.82
	61.000	525.00	.00	.00	1279.90	380.00	1283.89	1281.42	1283.90	.85	.37	794.19	411.28
*	62.000	538.00	.00	.00	1280.15	107.00	1282.30	1281.06	1282.31	4.74	.57	190.64	49.15
*	62.000	538.00	.00	.00	1280.15	134.00	1282.61	1281.15	1282.62	2.80	.49	264.54	80.10
*	62.000	538.00	.00	.00	1280.15	170.00	1282.89	1281.25	1282.89	2.26	.48	328.48	113.09
*	62.000	538.00	.00	.00	1280.15	197.00	1283.06	1281.34	1283.07	2.04	.48	370.74	137.78
*	62.000	538.00	.00	.00	1280.15	230.00	1283.25	1281.45	1283.25	1.92	.49	415.17	166.05
*	62.000	538.00	.00	.00	1280.15	152.00	1283.55	1281.20	1283.56	.48	.26	489.81	218.65
*	62.000	538.00	.00	.00	1280.15	203.00	1283.10	1281.36	1283.10	2.02	.48	379.01	142.87
*	62.000	538.00	.00	.00	1280.15	253.00	1283.37	1281.50	1283.38	1.84	.49	445.55	186.72
*	62.000	538.00	.00	.00	1280.15	285.00	1283.54	1281.61	1283.54	1.75	.50	485.29	215.30
	62.000	538.00	.00	.00	1280.15	317.00	1283.69	1281.70	1283.69	1.72	.51	520.19	241.76
	62.000	538.00	.00	.00	1280.15	380.00	1283.95	1281.79	1283.96	1.68	.53	584.06	293.50

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K

63.000	513.00	.00	.00	1280.77	107.00	1282.58	1281.54	1282.58	5.95	.60	183.09	43.85
63.000	513.00	.00	.00	1280.77	134.00	1282.79	1281.63	1282.79	4.07	.54	243.46	66.40
63.000	513.00	.00	.00	1280.77	170.00	1283.02	1281.74	1283.03	2.89	.50	331.14	100.08
63.000	513.00	.00	.00	1280.77	197.00	1283.18	1281.81	1283.18	2.38	.48	391.39	127.83
63.000	513.00	.00	.00	1280.77	230.00	1283.35	1281.89	1283.35	2.01	.46	457.25	162.20
63.000	513.00	.00	.00	1280.77	152.00	1283.58	1281.69	1283.58	.51	.25	542.65	212.62
63.000	513.00	.00	.00	1280.77	203.00	1283.21	1281.83	1283.21	2.30	.47	403.54	133.87
63.000	513.00	.00	.00	1280.77	253.00	1283.47	1282.14	1283.47	1.81	.45	502.73	188.24
63.000	513.00	.00	.00	1280.77	285.00	1283.63	1282.19	1283.63	1.60	.44	562.98	225.52
63.000	513.00	.00	.00	1280.77	317.00	1283.77	1282.22	1283.78	1.48	.44	615.57	260.45
63.000	513.00	.00	.00	1280.77	380.00	1284.03	1282.27	1284.04	1.30	.44	715.60	332.87
64.000	234.00	.00	.00	1281.07	107.00	1282.74	1282.25	1282.75	8.74	.49	189.61	36.20
64.000	234.00	.00	.00	1281.07	134.00	1282.90	1282.28	1282.91	6.16	.47	240.71	54.01
64.000	234.00	.00	.00	1281.07	170.00	1283.10	1282.32	1283.11	4.45	.45	305.06	80.58
64.000	234.00	.00	.00	1281.07	197.00	1283.25	1282.34	1283.25	3.80	.44	348.69	101.04
64.000	234.00	.00	.00	1281.07	230.00	1283.41	1282.37	1283.41	3.22	.44	401.16	128.09
64.000	234.00	.00	.00	1281.07	152.00	1283.60	1282.30	1283.60	.87	.25	462.34	162.85
64.000	234.00	.00	.00	1281.07	203.00	1283.27	1282.35	1283.28	3.68	.44	358.27	105.78
64.000	234.00	.00	.00	1281.07	253.00	1283.52	1282.40	1283.53	2.94	.44	436.30	147.65
64.000	234.00	.00	.00	1281.07	285.00	1283.67	1282.42	1283.68	2.59	.44	485.64	176.97
64.000	234.00	.00	.00	1281.07	317.00	1283.81	1282.43	1283.82	2.36	.44	531.85	206.34
64.000	234.00	.00	.00	1281.07	380.00	1284.07	1282.47	1284.07	2.09	.45	613.91	262.87
65.000	84.00	.00	.00	1281.20	19.00	1282.77	1281.76	1282.77	.15	.07	208.47	48.89
65.000	84.00	.00	.00	1281.20	25.00	1282.93	1281.80	1282.93	.14	.08	257.01	67.96
65.000	84.00	.00	.00	1281.20	32.00	1283.12	1281.86	1283.12	.11	.08	322.22	97.70
65.000	84.00	.00	.00	1281.20	37.00	1283.27	1281.88	1283.27	.09	.08	367.74	120.98
65.000	84.00	.00	.00	1281.20	44.00	1283.43	1281.89	1283.43	.09	.08	422.06	150.73
65.000	84.00	.00	.00	1281.20	137.00	1283.60	1282.14	1283.61	.55	.21	482.41	185.16
65.000	84.00	.00	.00	1281.20	205.00	1283.31	1282.30	1283.31	2.61	.41	378.92	126.99
65.000	84.00	.00	.00	1281.20	228.00	1283.55	1282.34	1283.55	1.74	.36	460.95	172.75
65.000	84.00	.00	.00	1281.20	297.00	1283.70	1282.40	1283.70	2.10	.42	515.46	204.87
65.000	84.00	.00	.00	1281.20	320.00	1283.84	1282.43	1283.84	1.81	.41	567.47	237.88
65.000	84.00	.00	.00	1281.20	342.00	1284.09	1282.45	1284.09	1.28	.37	660.52	302.54
* 66.000	100.00	.00	.00	1281.60	19.00	1282.77	1281.96	1282.77	.51	.09	187.10	26.48
* 66.000	100.00	.00	.00	1281.60	25.00	1282.93	1282.02	1282.93	.37	.09	244.56	41.26
* 66.000	100.00	.00	.00	1281.60	32.00	1283.12	1282.05	1283.12	.25	.09	320.49	64.39
66.000	100.00	.00	.00	1281.60	37.00	1283.27	1282.09	1283.27	.19	.08	381.40	85.54
66.000	100.00	.00	.00	1281.60	44.00	1283.43	1282.12	1283.43	.16	.08	447.26	110.66
66.000	100.00	.00	.00	1281.60	137.00	1283.61	1282.30	1283.61	.93	.22	521.25	142.29
66.000	100.00	.00	.00	1281.60	205.00	1283.34	1282.40	1283.34	4.58	.43	408.98	95.78
66.000	100.00	.00	.00	1281.60	228.00	1283.57	1282.61	1283.57	2.85	.39	504.77	134.96
66.000	100.00	.00	.00	1281.60	297.00	1283.72	1282.50	1283.72	3.29	.44	567.58	163.81
66.000	100.00	.00	.00	1281.60	320.00	1283.86	1282.54	1283.86	2.77	.43	624.94	192.23
66.000	100.00	.00	.00	1281.60	342.00	1284.10	1282.62	1284.11	1.90	.39	728.07	248.04

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	67.000	554.00	.00	.00	1282.60	19.00	1282.85	1282.84	1282.90	1829.09	1.84	10.33	.44
*	67.000	554.00	.00	.00	1282.60	25.00	1283.00	1282.87	1283.01	198.60	.84	29.59	1.77
*	67.000	554.00	.00	.00	1282.60	32.00	1283.17	1282.89	1283.17	39.48	.51	62.46	5.09
*	67.000	554.00	.00	.00	1282.60	37.00	1283.30	1282.91	1283.30	16.84	.40	92.29	9.02
*	67.000	554.00	.00	.00	1282.60	44.00	1283.45	1282.93	1283.45	8.44	.34	133.02	15.15
*	67.000	554.00	.00	.00	1282.60	137.00	1283.73	1283.10	1283.74	10.95	.52	272.49	41.40
*	67.000	554.00	.00	.00	1282.60	205.00	1283.79	1283.18	1283.80	17.64	.69	302.67	48.81
*	67.000	554.00	.00	.00	1282.60	228.00	1283.87	1283.20	1283.88	14.04	.66	347.23	60.84
*	67.000	554.00	.00	.00	1282.60	297.00	1284.03	1283.27	1284.04	11.19	.65	437.41	88.81
*	67.000	554.00	.00	.00	1282.60	320.00	1284.12	1283.29	1284.12	9.11	.62	489.01	106.02
*	67.000	554.00	.00	.00	1282.60	342.00	1284.28	1283.32	1284.28	5.75	.54	593.99	142.66
*	68.000	207.00	.00	.00	1281.90	19.00	1283.16	1282.28	1283.16	3.14	.25	76.79	10.73
*	68.000	207.00	.00	.00	1281.90	25.00	1283.25	1282.32	1283.25	3.77	.29	87.73	12.87
*	68.000	207.00	.00	.00	1281.90	32.00	1283.35	1282.37	1283.35	3.64	.31	110.38	16.76
*	68.000	207.00	.00	.00	1281.90	37.00	1283.43	1282.40	1283.43	3.13	.30	135.15	20.91
*	68.000	207.00	.00	.00	1281.90	44.00	1283.54	1282.43	1283.54	2.23	.28	176.55	29.49
*	68.000	207.00	.00	.00	1281.90	137.00	1283.87	1282.74	1283.88	4.17	.46	306.40	67.09
*	68.000	207.00	.00	.00	1281.90	205.00	1283.99	1282.89	1284.00	5.57	.56	360.65	86.86
*	68.000	207.00	.00	.00	1281.90	228.00	1284.05	1282.95	1284.06	5.38	.57	389.61	98.32
	68.000	207.00	.00	.00	1281.90	297.00	1284.20	1283.05	1284.21	5.61	.62	457.15	125.35
	68.000	207.00	.00	.00	1281.90	320.00	1284.27	1283.10	1284.28	5.34	.62	487.36	138.47
	68.000	207.00	.00	.00	1281.90	342.00	1284.38	1283.13	1284.39	4.21	.57	547.91	166.76

69.000	329.00	.00	.00	1282.40	19.00	1283.28	1282.65	1283.28	4.41	.27	69.77	9.04
69.000	329.00	.00	.00	1282.40	25.00	1283.39	1282.68	1283.39	4.91	.30	83.79	11.29
69.000	329.00	.00	.00	1282.40	32.00	1283.49	1282.71	1283.49	4.95	.33	97.55	14.38
* 69.000	329.00	.00	.00	1282.40	37.00	1283.56	1282.73	1283.56	5.00	.35	106.60	16.55
* 69.000	329.00	.00	.00	1282.40	44.00	1283.64	1282.75	1283.64	4.91	.37	119.87	19.86
* 69.000	329.00	.00	.00	1282.40	137.00	1284.08	1282.99	1284.09	10.42	.70	197.30	42.44
* 69.000	329.00	.00	.00	1282.40	205.00	1284.26	1283.11	1284.27	12.73	.83	244.99	57.46
* 69.000	329.00	.00	.00	1282.40	228.00	1284.32	1283.14	1284.33	13.30	.88	258.39	62.52
* 69.000	329.00	.00	.00	1282.40	297.00	1284.48	1283.27	1284.50	14.79	.99	294.47	77.23
* 69.000	329.00	.00	.00	1282.40	320.00	1284.54	1283.31	1284.56	14.71	1.01	308.69	83.44
					342.00	1284.61	1283.34	1284.63	14.18	1.02	324.98	90.83
70.000	50.00	.00	.00	1282.43	19.00	1283.30	1282.63	1283.30	3.49	.26	72.00	10.17
70.000	50.00	.00	.00	1282.43	25.00	1283.41	1282.66	1283.41	3.68	.30	84.38	13.03
70.000	50.00	.00	.00	1282.43	32.00	1283.51	1282.69	1283.51	4.13	.34	95.42	15.76
70.000	50.00	.00	.00	1282.43	37.00	1283.58	1282.71	1283.58	4.28	.36	103.58	17.88
70.000	50.00	.00	.00	1282.43	44.00	1283.66	1282.74	1283.67	4.65	.39	112.89	20.40
70.000	50.00	.00	.00	1282.43	137.00	1284.14	1282.99	1284.15	8.37	.66	195.47	47.36
70.000	50.00	.00	.00	1282.43	205.00	1284.34	1283.11	1284.35	11.60	.85	231.44	60.19
70.000	50.00	.00	.00	1282.43	228.00	1284.40	1283.15	1284.41	12.25	.89	244.38	65.15
70.000	50.00	.00	.00	1282.43	297.00	1284.58	1283.25	1284.60	13.86	1.02	279.72	79.77
70.000	50.00	.00	.00	1282.43	320.00	1284.64	1283.28	1284.66	14.24	1.05	291.09	84.79
					342.00	1284.71	1283.32	1284.73	13.79	1.07	307.07	92.09

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	71.000	51.00	.00	.00	1281.10	19.00	1283.31	1282.21	1283.31	.81	.31	61.82	21.13
*	71.000	51.00	.00	.00	1281.10	25.00	1283.42	1282.56	1283.42	.90	.35	71.30	26.31
*	71.000	51.00	.00	.00	1281.10	32.00	1283.52	1282.59	1283.52	1.04	.40	79.98	31.35
*	71.000	51.00	.00	.00	1281.10	37.00	1283.59	1282.62	1283.59	1.12	.43	86.01	35.00
*	71.000	51.00	.00	.00	1281.10	44.00	1283.67	1282.66	1283.68	1.22	.47	93.70	39.84
*	71.000	51.00	.00	.00	1281.10	137.00	1284.17	1282.96	1284.18	3.57	.98	139.95	72.47
*	71.000	51.00	.00	.00	1281.10	205.00	1284.37	1283.11	1284.40	5.26	1.27	161.46	89.41
*	71.000	51.00	.00	.00	1281.10	228.00	1284.44	1283.15	1284.47	5.74	1.35	168.51	95.17
*	71.000	51.00	.00	.00	1281.10	297.00	1284.62	1283.28	1284.65	5.17	1.37	254.85	130.62
*	71.000	51.00	.00	.00	1281.10	320.00	1284.68	1283.35	1284.71	5.25	1.41	268.40	139.60
						342.00	1284.75	1283.37	1284.78	5.17	1.43	284.20	150.48
*	72.000	29.00	1284.90	.00	1281.29	19.00	1285.72	.00	1285.72	.00	.05	492.79	292.31
*	72.000	29.00	1284.90	.00	1281.29	25.00	1285.69	.00	1285.69	.01	.06	482.81	285.26
*	72.000	29.00	1284.90	.00	1281.29	32.00	1285.66	.00	1285.66	.01	.08	473.81	278.73
*	72.000	29.00	1284.90	.00	1281.29	37.00	1285.64	.00	1285.64	.02	.09	467.67	274.17
*	72.000	29.00	1284.90	.00	1281.29	44.00	1285.48	.00	1285.48	.03	.12	423.40	240.03
*	72.000	29.00	1284.90	.00	1281.29	137.00	1285.83	.00	1285.83	.19	.31	531.31	318.36
*	72.000	29.00	1284.90	.00	1281.29	205.00	1286.13	.00	1286.13	.26	.39	653.20	403.07
*	72.000	29.00	1284.90	.00	1281.29	228.00	1286.23	.00	1286.23	.28	.41	693.69	432.83
*	72.000	29.00	1284.90	.00	1281.29	297.00	1286.48	.00	1286.48	.33	.46	803.13	519.25
*	72.000	29.00	1284.90	.00	1281.29	320.00	1286.56	.00	1286.57	.34	.47	839.52	549.79
						342.00	1286.64	.00	1286.65	.35	.48	873.71	579.24
	73.000	128.00	.00	.00	1282.00	19.00	1285.72	1282.38	1285.72	.00	.03	729.94	369.45
	73.000	128.00	.00	.00	1282.00	25.00	1285.69	1282.43	1285.69	.00	.03	720.39	361.74
	73.000	128.00	.00	.00	1282.00	32.00	1285.66	1282.47	1285.66	.01	.04	711.38	354.53
	73.000	128.00	.00	.00	1282.00	37.00	1285.64	1282.49	1285.64	.01	.05	705.02	349.48
	73.000	128.00	.00	.00	1282.00	44.00	1285.48	1282.53	1285.48	.02	.07	654.57	310.58
	73.000	128.00	.00	.00	1282.00	137.00	1285.83	1282.82	1285.83	.12	.18	765.73	398.94
	73.000	128.00	.00	.00	1282.00	205.00	1286.13	1282.95	1286.14	.18	.23	867.41	480.42
	73.000	128.00	.00	.00	1282.00	228.00	1286.23	1282.99	1286.23	.20	.24	896.36	506.71
	73.000	128.00	.00	.00	1282.00	297.00	1286.49	1283.09	1286.49	.25	.29	985.56	591.61
	73.000	128.00	.00	.00	1282.00	320.00	1286.57	1283.12	1286.57	.27	.30	1013.90	619.78
						342.00	1286.65	1283.15	1286.65	.28	.31	1040.30	646.53
	74.000	137.00	.00	.00	1281.96	19.00	1285.72	1282.42	1285.72	.00	.02	791.39	378.44
	74.000	137.00	.00	.00	1281.96	25.00	1285.69	1282.48	1285.69	.00	.03	779.64	369.67
	74.000	137.00	.00	.00	1281.96	32.00	1285.66	1282.52	1285.66	.01	.04	768.45	361.42
	74.000	137.00	.00	.00	1281.96	37.00	1285.64	1282.56	1285.64	.01	.05	760.63	355.71
	74.000	137.00	.00	.00	1281.96	44.00	1285.48	1282.60	1285.48	.02	.06	700.32	312.40
	74.000	137.00	.00	.00	1281.96	137.00	1285.83	1282.94	1285.83	.11	.17	834.67	411.63
	74.000	137.00	.00	.00	1281.96	205.00	1286.14	1283.14	1286.14	.16	.21	954.08	510.22
	74.000	137.00	.00	.00	1281.96	228.00	1286.23	1283.17	1286.23	.18	.23	991.39	543.04
	74.000	137.00	.00	.00	1281.96	297.00	1286.49	1283.24	1286.49	.22	.27	1090.88	635.04
	74.000	137.00	.00	.00	1281.96	320.00	1286.57	1283.27	1286.58	.23	.28	1123.64	666.79
						342.00	1286.65	1283.29	1286.65	.24	.29	1154.16	696.93

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
75.000	253.00	.00	.00	1282.97	19.00	1285.72	1283.10	1285.72	.00	.02	818.60	338.44
75.000	253.00	.00	.00	1282.97	25.00	1285.69	1283.12	1285.69	.01	.03	802.35	327.92
75.000	253.00	.00	.00	1282.97	32.00	1285.66	1283.15	1285.66	.01	.04	786.96	318.11
75.000	253.00	.00	.00	1282.97	37.00	1285.64	1283.16	1285.64	.01	.05	776.08	311.27
75.000	253.00	.00	.00	1282.97	44.00	1285.48	1283.19	1285.48	.03	.07	691.28	260.37
75.000	253.00	.00	.00	1282.97	137.00	1285.83	1283.39	1285.83	.13	.16	879.67	379.43
75.000	253.00	.00	.00	1282.97	205.00	1286.14	1283.51	1286.14	.17	.19	1045.39	501.67
75.000	253.00	.00	.00	1282.97	228.00	1286.24	1283.54	1286.24	.18	.20	1097.08	542.95
75.000	253.00	.00	.00	1282.97	297.00	1286.50	1283.64	1286.50	.20	.23	1235.41	660.38
75.000	253.00	.00	.00	1282.97	320.00	1286.58	1283.67	1286.58	.21	.24	1280.82	701.09
75.000	253.00	.00	.00	1282.97	342.00	1286.66	1283.69	1286.66	.21	.25	1323.28	740.09
76.000	234.00	.00	.00	1282.88	19.00	1285.72	1283.10	1285.72	.00	.02	1126.95	454.41
76.000	234.00	.00	.00	1282.88	25.00	1285.69	1283.13	1285.69	.00	.02	1102.69	438.90
76.000	234.00	.00	.00	1282.88	32.00	1285.66	1283.16	1285.66	.01	.03	1079.80	424.51
76.000	234.00	.00	.00	1282.88	37.00	1285.64	1283.18	1285.64	.01	.04	1063.66	414.50
76.000	234.00	.00	.00	1282.88	44.00	1285.48	1283.21	1285.48	.02	.05	936.59	339.82
76.000	234.00	.00	.00	1282.88	137.00	1285.84	1283.41	1285.84	.07	.12	1220.47	516.54
* 76.000	234.00	.00	.00	1282.88	205.00	1286.15	1283.51	1286.15	.09	.14	1468.54	698.82
* 76.000	234.00	.00	.00	1282.88	228.00	1286.24	1283.55	1286.24	.09	.15	1545.91	760.63
* 76.000	234.00	.00	.00	1282.88	297.00	1286.50	1283.63	1286.50	.10	.17	1752.90	937.03
* 76.000	234.00	.00	.00	1282.88	320.00	1286.58	1283.66	1286.58	.10	.17	1820.88	998.38
76.000	234.00	.00	.00	1282.88	342.00	1286.66	1283.68	1286.66	.10	.18	1884.27	1057.06
77.000	55.00	.00	.00	1282.79	19.00	1285.72	1283.09	1285.72	.00	.02	1172.90	500.58
77.000	55.00	.00	.00	1282.79	25.00	1285.69	1283.10	1285.69	.00	.02	1148.74	484.41
77.000	55.00	.00	.00	1282.79	32.00	1285.66	1283.13	1285.66	.00	.03	1125.75	469.25
77.000	55.00	.00	.00	1282.79	37.00	1285.64	1283.14	1285.64	.01	.04	1109.81	458.88
77.000	55.00	.00	.00	1282.79	44.00	1285.48	1283.15	1285.48	.01	.05	982.74	380.36
77.000	55.00	.00	.00	1282.79	137.00	1285.84	1283.31	1285.84	.06	.12	1266.61	565.71
77.000	55.00	.00	.00	1282.79	205.00	1286.15	1283.40	1286.15	.07	.14	1514.58	755.62
77.000	55.00	.00	.00	1282.79	228.00	1286.24	1283.43	1286.24	.08	.15	1591.86	819.80
77.000	55.00	.00	.00	1282.79	297.00	1286.50	1283.50	1286.50	.09	.16	1798.55	1002.60
77.000	55.00	.00	.00	1282.79	320.00	1286.58	1283.53	1286.59	.09	.17	1866.64	1066.27
77.000	55.00	.00	.00	1282.79	342.00	1286.66	1283.55	1286.66	.09	.17	1930.12	1127.13
78.000	53.00	.00	.00	1282.76	19.00	1285.72	1283.15	1285.72	.00	.02	1135.38	487.14
78.000	53.00	.00	.00	1282.76	25.00	1285.69	1283.17	1285.69	.00	.02	1111.22	471.08
78.000	53.00	.00	.00	1282.76	32.00	1285.66	1283.18	1285.66	.00	.03	1088.23	456.06
78.000	53.00	.00	.00	1282.76	37.00	1285.64	1283.20	1285.64	.01	.04	1072.19	445.71
78.000	53.00	.00	.00	1282.76	44.00	1285.48	1283.22	1285.48	.01	.05	945.32	368.12
78.000	53.00	.00	.00	1282.76	137.00	1285.84	1283.39	1285.84	.06	.12	1229.19	551.92
78.000	53.00	.00	.00	1282.76	205.00	1286.15	1283.48	1286.15	.08	.14	1477.26	741.20
78.000	53.00	.00	.00	1282.76	228.00	1286.24	1283.51	1286.24	.08	.15	1554.54	805.27
78.000	53.00	.00	.00	1282.76	297.00	1286.50	1283.59	1286.50	.09	.17	1761.23	987.98
78.000	53.00	.00	.00	1282.76	320.00	1286.59	1283.61	1286.59	.09	.17	1829.22	1051.58
78.000	53.00	.00	.00	1282.76	342.00	1286.66	1283.63	1286.66	.09	.17	1892.80	1112.60

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
79.000	126.00	.00	.00	1282.89	19.00	1285.72	1283.17	1285.72	.00	.02	1194.81	495.47
79.000	126.00	.00	.00	1282.89	25.00	1285.69	1283.20	1285.69	.00	.02	1168.92	478.64
79.000	126.00	.00	.00	1282.89	32.00	1285.66	1283.23	1285.66	.00	.03	1144.40	462.96
79.000	126.00	.00	.00	1282.89	37.00	1285.64	1283.24	1285.64	.01	.04	1127.22	452.12
79.000	126.00	.00	.00	1282.89	44.00	1285.48	1283.26	1285.48	.01	.05	991.41	370.97
79.000	126.00	.00	.00	1282.89	137.00	1285.84	1283.45	1285.84	.06	.11	1296.04	563.91
79.000	126.00	.00	.00	1282.89	205.00	1286.15	1283.55	1286.15	.07	.13	1561.79	762.78
79.000	126.00	.00	.00	1282.89	228.00	1286.24	1283.58	1286.24	.08	.14	1644.78	830.34
79.000	126.00	.00	.00	1282.89	297.00	1286.50	1283.66	1286.50	.08	.16	1866.20	1022.66
79.000	126.00	.00	.00	1282.89	320.00	1286.59	1283.68	1286.59	.09	.16	1939.14	1089.74
79.000	126.00	.00	.00	1282.89	342.00	1286.67	1283.71	1286.67	.09	.16	2007.15	1153.93

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SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	294.00	1272.00	.00	.00	.00	144.08	.00
	1.000	370.00	1272.00	.00	.00	.00	144.08	.00
	1.000	472.00	1272.00	.00	.00	.00	144.08	.00
	1.000	550.00	1272.00	.00	.00	.00	144.08	.00
*	1.000	646.00	1272.08	.08	.00	.08	152.87	.00
*	1.000	688.00	1272.14	.06	.00	.14	156.29	.00
*	1.000	854.00	1272.32	.18	.00	.32	159.70	.00
*	1.000	937.00	1272.40	.08	.00	.40	161.26	.00
*	1.000	1076.00	1272.52	.12	.00	.52	163.28	.00
*	1.000	1187.00	1272.62	.10	.00	.62	164.76	.00
*	1.000	1325.00	1272.73	.12	.00	.73	166.69	.00
*	2.000	279.00	1273.28	.00	1.28	.00	158.85	181.00
*	2.000	352.00	1273.49	.22	1.49	.00	162.25	181.00
*	2.000	448.00	1273.75	.25	1.75	.00	166.33	181.00
*	2.000	522.00	1273.94	.19	1.94	.00	170.92	181.00
*	2.000	612.00	1274.12	.19	2.04	.00	174.28	181.00
*	2.000	688.00	1274.21	.09	2.07	.00	175.68	181.00
*	2.000	854.00	1274.45	.24	2.13	.00	179.15	181.00
*	2.000	937.00	1274.56	.11	2.15	.00	180.74	181.00
*	2.000	1076.00	1274.75	.19	2.23	.00	183.31	181.00
*	2.000	1187.00	1274.87	.13	2.26	.00	185.26	181.00
*	2.000	1325.00	1275.02	.15	2.29	.00	187.46	181.00
*	3.000	279.00	1273.62	.00	.34	.00	183.39	181.00
*	3.000	352.00	1273.85	.23	.35	.00	188.76	181.00
*	3.000	448.00	1274.11 R	.26	.37	.00	193.89	181.00
*	3.000	522.00	1274.30	.19	.37	.00	196.44	181.00
*	3.000	612.00	1274.51	.20	.39	.00	199.10	181.00
*	3.000	688.00	1274.63	.12	.42	.00	200.53	181.00
*	3.000	854.00	1274.91	.28	.46	.00	204.00	181.00
*	3.000	937.00	1275.04	.13	.48	.00	205.52	181.00
*	3.000	1076.00	1275.26	.21	.51	.00	207.63	181.00
*	3.000	1187.00	1275.41	.15	.53	.00	208.91	181.00
*	3.000	1325.00	1275.58	.18	.56	.00	210.48	181.00
	4.000	279.00	1273.48	.00	-.14	.00	31.21	88.00
	4.000	352.00	1273.62	.15	-.23	.00	31.21	88.00
	4.000	448.00	1273.75 R	.12	-.36	.00	31.21	88.00
*	4.000	522.00	1273.81	.06	-.50	.00	31.21	88.00
*	4.000	612.00	1273.73	-.08	-.78	.00	31.21	88.00
*	4.000	688.00	1273.81	.08	-.82	.00	31.21	88.00
*	4.000	854.00	1274.19	.38	-.72	.00	31.21	88.00
*	4.000	937.00	1274.37	.18	-.67	.00	31.21	88.00
*	4.000	1076.00	1274.67	.30	-.59	.00	31.21	88.00
*	4.000	1187.00	1274.89	.22	-.52	.00	31.21	88.00
*	4.000	1325.00	1275.16	.27	-.43	.00	31.21	88.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.000	279.00	1273.36	.00	-.11	.00	30.90	50.00
*	5.000	352.00	1273.59	.23	-.03	.00	30.90	50.00
*	5.000	448.00	1273.87	.27	.12	.00	30.90	50.00
*	5.000	522.00	1274.06	.20	.26	.00	30.90	50.00
*	5.000	612.00	1274.30	.23	.57	.00	30.90	50.00
*	5.000	688.00	1274.48	.18	.67	.00	30.90	50.00
*	5.000	854.00	1274.87	.38	.68	.00	30.91	50.00
*	5.000	937.00	1275.06	.20	.69	.00	30.91	50.00
*	5.000	1076.00	1275.43	.37	.76	.00	30.91	50.00
*	5.000	1187.00	1275.63	.20	.74	.00	30.91	50.00
*	5.000	1325.00	1275.85	.22	.70	.00	30.91	50.00
*	6.000	279.00	1274.09	.00	.72	.00	155.79	125.00
*	6.000	352.00	1274.43	.34	.84	.00	168.38	125.00
*	6.000	448.00	1274.85	.42	.98	.00	183.96	125.00
*	6.000	522.00	1275.15	.30	1.09	.00	197.74	125.00
*	6.000	612.00	1275.50	.35	1.20	.00	219.35	125.00
*	6.000	688.00	1275.78	.28	1.30	.00	238.39	125.00
*	6.000	854.00	1276.37	.58	1.50	.00	271.98	125.00

*	6.000	937.00	1276.64	.28	1.58	.00	273.27	125.00
*	6.000	1076.00	1277.09	.45	1.65	.00	275.37	125.00
*	6.000	1187.00	1277.43	.34	1.80	.00	276.98	125.00
*	6.000	1325.00	1277.84	.41	1.99	.00	279.01	125.00
*	7.000	279.00	1274.11	.00	.02	.00	135.32	150.00
*	7.000	352.00	1274.45	.34	.02	.00	140.59	150.00
*	7.000	448.00	1274.87	.42	.02	.00	146.98	150.00
*	7.000	522.00	1275.17	.30	.02	.00	151.40	150.00
*	7.000	613.00	1275.52	.35	.01	.00	156.33	150.00
*	7.000	480.00	1275.81	.29	.03	.00	160.82	150.00
*	7.000	636.00	1276.39	.58	.02	.00	186.36	150.00
*	7.000	719.00	1276.66	.27	.02	.00	210.42	150.00
*	7.000	858.00	1277.11	.44	.02	.00	300.63	150.00
*	7.000	987.00	1277.45	.34	.02	.00	308.33	150.00
*	7.000	1129.00	1277.86	.41	.02	.00	317.97	150.00
*	8.000	234.00	1275.47	.00	1.37	.00	201.83	656.00
*	8.000	293.00	1275.74	.27	1.29	.00	207.07	656.00
*	8.000	373.00	1276.07	.33	1.21	.00	213.69	656.00
*	8.000	433.00	1276.31	.24	1.14	.00	218.72	656.00
*	8.000	507.00	1276.59	.28	1.08	.00	224.78	656.00
	8.000	470.00	1276.52	-.08	.71	.00	222.94	656.00
	8.000	636.00	1277.07	.56	.69	.00	237.64	656.00
	8.000	719.00	1277.34	.26	.67	.00	259.77	656.00
	8.000	858.00	1277.75	.41	.64	.00	312.80	656.00
	8.000	968.00	1278.07	.32	.62	.00	356.60	656.00
	8.000	1107.00	1278.44	.37	.58	.00	364.52	656.00

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28DEC98 07:34:16

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	9.000	234.00	1276.00	.00	.53	.00	195.76	495.00
	9.000	293.00	1276.27	.26	.53	.00	209.34	495.00
	9.000	373.00	1276.59	.32	.52	.00	220.08	495.00
	9.000	433.00	1276.82	.23	.50	.00	227.40	495.00
	9.000	507.00	1277.08	.26	.49	.00	235.83	495.00
	9.000	470.00	1276.98	-.10	.47	.00	233.02	495.00
	9.000	636.00	1277.53	.54	.45	.00	250.99	495.00
	9.000	719.00	1277.78	.25	.44	.00	258.50	495.00
	9.000	858.00	1278.17	.39	.42	.00	277.89	495.00
	9.000	968.00	1278.47	.30	.40	.00	282.50	495.00
	9.000	1107.00	1278.82	.35	.38	.00	313.51	495.00
*	10.000	234.00	1275.87	.00	-.13	.00	22.25	64.00
*	10.000	293.00	1276.04	.18	-.22	.00	22.25	64.00
*	10.000	373.00	1276.22	.17	-.37	.00	22.25	64.00
*	10.000	433.00	1276.32	.10	-.50	.00	22.25	64.00
*	10.000	507.00	1276.38	.06	-.70	.00	22.25	64.00
*	10.000	470.00	1276.41	.03	-.57	.00	22.25	64.00
*	10.000	636.00	1276.35	-.07	-1.18	.00	22.25	64.00
*	10.000	719.00	1276.92	.58	-.85	.00	44.68	64.00
*	10.000	858.00	1277.26	.33	-.91	.00	54.99	64.00
*	10.000	968.00	1278.19	.93	-.28	.00	141.77	64.00
*	10.000	1107.00	1278.40	.21	-.42	.00	142.23	64.00
	11.000	234.00	1277.23	.00	1.37	.00	92.96	40.00
	11.000	294.00	1277.35	.11	1.30	.00	95.51	40.00
	11.000	373.00	1277.51	.16	1.29	.00	99.17	40.00
	11.000	433.00	1277.60	.09	1.28	.00	101.23	40.00
*	11.000	507.00	1277.72	.12	1.34	.00	103.94	40.00
	11.000	461.00	1277.65	-.07	1.24	.00	102.39	40.00
*	11.000	624.00	1277.88	.23	1.53	.00	107.58	40.00
*	11.000	705.00	1278.02	.14	1.09	.00	110.66	40.00
*	11.000	841.00	1278.29	.27	1.03	.00	116.13	40.00
*	11.000	949.00	1278.59	.31	.40	.00	171.02	40.00
*	11.000	1085.00	1278.77	.18	.37	.00	172.49	40.00
*	12.000	234.00	1277.38	.00	.14	.00	336.45	146.00
*	12.000	294.00	1277.53	.15	.18	.00	339.53	146.00
*	12.000	373.00	1277.73	.20	.22	.00	343.62	146.00
*	12.000	433.00	1277.85	.13	.25	.00	364.07	146.00
*	12.000	507.00	1278.01	.16	.29	.00	398.05	146.00
*	12.000	461.00	1277.92	-.09	.26	.00	376.44	146.00
*	12.000	624.00	1278.23	.31	.35	.00	421.80	146.00

* 12.000	705.00	1278.39	.15	.37	.00	433.96	146.00
* 12.000	841.00	1278.67	.28	.38	.00	448.10	146.00
* 12.000	949.00	1278.93	.26	.33	.00	465.91	146.00
* 12.000	1085.00	1279.12	.19	.34	.00	484.56	146.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
13.000	234.00	1277.38	.00	.00	.00	399.14	145.00
13.000	294.00	1277.53	.15	.00	.00	407.12	145.00
13.000	373.00	1277.73	.20	.00	.00	413.57	145.00
13.000	433.00	1277.86	.13	.00	.00	417.63	145.00
13.000	507.00	1278.01	.16	.01	.00	422.62	145.00
13.000	461.00	1277.92	-.09	.01	.00	419.66	145.00
13.000	624.00	1278.23	.31	.01	.00	429.29	145.00
13.000	705.00	1278.39	.16	.01	.00	434.16	145.00
13.000	841.00	1278.68	.28	.01	.00	444.20	145.00
13.000	949.00	1278.94	.26	.01	.00	465.59	145.00
13.000	1085.00	1279.13	.19	.01	.00	481.49	145.00
14.000	234.00	1277.38	.00	.00	.00	399.54	5.00
14.000	294.00	1277.53	.15	.00	.00	405.08	5.00
14.000	373.00	1277.73	.20	.00	.00	412.38	5.00
14.000	433.00	1277.86	.13	.00	.00	417.82	5.00
14.000	507.00	1278.01	.16	.00	.00	422.79	5.00
14.000	461.00	1277.92	-.09	.00	.00	419.85	5.00
14.000	624.00	1278.23	.31	.00	.00	429.32	5.00
14.000	705.00	1278.39	.16	.00	.00	434.11	5.00
14.000	841.00	1278.68	.28	.00	.00	442.57	5.00
14.000	949.00	1278.94	.26	.00	.00	463.36	5.00
14.000	1085.00	1279.13	.19	.00	.00	479.04	5.00
* 15.000	234.00	1277.37	.00	-.01	.00	221.06	71.00
* 15.000	294.00	1277.52	.15	-.01	.00	222.48	71.00
* 15.000	373.00	1277.72	.20	-.01	.00	224.37	71.00
* 15.000	433.00	1277.85	.13	-.01	.00	225.56	71.00
* 15.000	507.00	1278.00	.16	-.01	.00	226.97	71.00
* 15.000	461.00	1277.91	-.09	-.01	.00	226.15	71.00
* 15.000	624.00	1278.22	.31	-.01	.00	229.02	71.00
* 15.000	705.00	1278.38	.16	-.01	.00	230.52	71.00
* 15.000	841.00	1278.67	.28	-.01	.00	233.18	71.00
* 15.000	949.00	1278.92	.26	-.01	.00	235.60	71.00
* 15.000	1085.00	1279.11	.19	-.01	.00	237.38	71.00
* 16.000	234.00	1277.39	.00	.01	.00	447.57	20.00
* 16.000	294.00	1277.54	.15	.02	.00	451.86	20.00
* 16.000	373.00	1277.74	.20	.02	.00	457.53	20.00
* 16.000	433.00	1277.87	.13	.02	.00	461.11	20.00
* 16.000	507.00	1278.03	.16	.02	.00	463.68	20.00
* 16.000	461.00	1277.94	-.09	.02	.00	462.31	20.00
* 16.000	624.00	1278.25	.32	.03	.00	466.85	20.00
* 16.000	705.00	1278.41	.16	.03	.00	469.20	20.00
* 16.000	841.00	1278.70	.29	.03	.00	473.36	20.00
* 16.000	949.00	1278.96	.26	.03	.00	477.12	20.00
* 16.000	1085.00	1279.15	.19	.04	.00	479.94	20.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
* 17.000	234.00	1277.40	.00	.02	.00	331.27	331.00
* 17.000	294.00	1277.56	.16	.02	.00	337.31	331.00
* 17.000	373.00	1277.76	.20	.02	.00	345.23	331.00
* 17.000	433.00	1277.89	.13	.02	.00	350.19	331.00
* 17.000	507.00	1278.05	.16	.02	.00	356.56	331.00
* 17.000	461.00	1277.95	-.09	.02	.00	352.65	331.00
* 17.000	624.00	1278.27	.32	.02	.00	366.38	331.00
17.000	705.00	1278.43	.16	.02	.00	373.45	331.00
17.000	841.00	1278.72	.28	.02	.00	385.93	331.00
17.000	949.00	1278.98	.26	.02	.00	397.65	331.00
17.000	1085.00	1279.17	.19	.02	.00	412.87	331.00
18.000	234.00	1277.40	.00	.00	.00	294.50	103.00

18.000	294.00	1277.56	.15	.00	.00	294.50	103.00
18.000	373.00	1277.76	.20	.00	.00	294.50	103.00
18.000	433.00	1277.89	.13	.00	.00	294.50	103.00
18.000	507.00	1278.05	.16	.00	.00	294.50	103.00
18.000	461.00	1277.96	-.09	.00	.00	294.50	103.00
18.000	624.00	1278.27	.32	.00	.00	294.50	103.00
18.000	705.00	1278.44	.16	.00	.00	294.50	103.00
18.000	841.00	1278.72	.28	.00	.00	294.50	103.00
18.000	949.00	1278.98	.26	.00	.00	294.50	103.00
18.000	1085.00	1279.17	.19	.00	.00	294.50	103.00
* 19.000	234.00	1277.40	.00	.00	.00	225.25	66.00
* 19.000	294.00	1277.55	.15	.00	.00	228.32	66.00
* 19.000	373.00	1277.76	.20	-.01	.00	232.34	66.00
* 19.000	433.00	1277.89	.13	-.01	.00	234.89	66.00
* 19.000	507.00	1278.04	.16	-.01	.00	238.01	66.00
* 19.000	461.00	1277.95	-.09	-.01	.00	236.15	66.00
* 19.000	624.00	1278.27	.32	-.01	.00	242.32	66.00
* 19.000	705.00	1278.43	.16	-.01	.00	245.49	66.00
* 19.000	841.00	1278.71	.28	-.01	.00	265.68	66.00
* 19.000	949.00	1278.97	.26	-.01	.00	265.68	66.00
* 19.000	1085.00	1279.16	.19	-.01	.00	265.68	66.00
20.000	234.00	1277.40	.00	.00	.00	221.45	53.00
20.000	294.00	1277.55	.15	.00	.00	226.62	53.00
20.000	373.00	1277.75	.20	.00	.00	233.41	53.00
20.000	433.00	1277.88	.13	.00	.00	237.34	53.00
20.000	507.00	1278.04	.16	-.01	.00	242.55	53.00
20.000	461.00	1277.95	-.09	.00	.00	239.44	53.00
20.000	624.00	1278.26	.32	-.01	.00	249.90	53.00
20.000	705.00	1278.42	.16	-.01	.00	255.21	53.00
20.000	841.00	1278.71	.28	-.01	.00	264.61	53.00
20.000	949.00	1278.96	.26	-.01	.00	273.12	53.00
20.000	1085.00	1279.15	.19	-.01	.00	277.69	53.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
21.000	234.00	1277.43	.00	.03	.00	395.43	140.00
21.000	294.00	1277.59	.16	.04	.00	400.40	140.00
21.000	373.00	1277.80	.21	.04	.00	412.63	140.00
21.000	433.00	1277.93	.13	.05	.00	414.45	140.00
21.000	507.00	1278.09	.16	.05	.00	416.05	140.00
21.000	461.00	1277.99	-.10	.05	.00	414.68	140.00
21.000	624.00	1278.32	.33	.06	.00	420.57	140.00
21.000	705.00	1278.48	.16	.06	.00	423.49	140.00
21.000	841.00	1278.77	.29	.07	.00	428.61	140.00
21.000	949.00	1279.03	.26	.06	.00	434.56	140.00
21.000	1085.00	1279.23	.20	.07	.00	436.26	140.00
22.000	234.00	1277.43	.00	.01	.00	349.61	102.00
22.000	294.00	1277.60	.16	.01	.00	350.49	102.00
22.000	373.00	1277.81	.21	.01	.00	351.64	102.00
22.000	433.00	1277.94	.13	.01	.00	352.37	102.00
22.000	507.00	1278.10	.16	.01	.00	353.26	102.00
22.000	461.00	1278.01	-.10	.01	.00	352.73	102.00
22.000	624.00	1278.33	.33	.01	.00	354.52	102.00
22.000	705.00	1278.50	.16	.01	.00	355.55	102.00
22.000	841.00	1278.79	.29	.01	.00	358.02	102.00
22.000	949.00	1279.04	.26	.01	.00	361.00	102.00
22.000	1085.00	1279.24	.20	.02	.00	366.34	102.00
* 23.000	234.00	1277.44	.00	.01	.00	539.14	102.00
* 23.000	294.00	1277.60	.16	.01	.00	540.03	102.00
23.000	373.00	1277.82	.21	.01	.00	541.18	102.00
23.000	433.00	1277.95	.14	.01	.00	541.93	102.00
23.000	507.00	1278.12	.17	.01	.00	543.27	102.00
* 23.000	461.00	1278.02	-.10	.01	.00	542.37	102.00
23.000	624.00	1278.35	.33	.02	.00	545.52	102.00
23.000	705.00	1278.52	.17	.02	.00	547.38	102.00
23.000	841.00	1278.81	.29	.02	.00	553.67	102.00
* 23.000	949.00	1279.06	.26	.02	.00	561.11	102.00
* 23.000	1085.00	1279.27	.20	.03	.00	568.38	102.00
24.000	234.00	1277.44	.00	.00	.00	235.05	127.00

24.000	294.00	1277.61	.16	.00	.00	238.19	127.00
24.000	373.00	1277.82	.21	.00	.00	242.27	127.00
24.000	433.00	1277.96	.14	.00	.00	244.79	127.00
24.000	507.00	1278.12	.17	.00	.00	247.91	127.00
24.000	461.00	1278.02	-.10	.00	.00	246.08	127.00
24.000	624.00	1278.36	.33	.00	.00	251.65	127.00
24.000	705.00	1278.52	.17	.00	.00	254.68	127.00
24.000	841.00	1278.81	.29	.00	.00	259.95	127.00
24.000	949.00	1279.07	.26	.00	.00	264.97	127.00
24.000	1085.00	1279.27	.20	.00	.00	269.37	127.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	25.000	234.00	1277.44	.00	.00	.00	79.13	392.00
*	25.000	294.00	1277.60	.16	.00	.00	84.39	392.00
*	25.000	373.00	1277.81	.21	.00	.00	90.97	392.00
*	25.000	433.00	1277.96	.14	.00	.00	127.20	392.00
*	25.000	507.00	1278.12	.17	.00	.00	162.18	392.00
*	25.000	461.00	1278.02	-.10	.00	.00	135.09	392.00
*	25.000	624.00	1278.36	.34	.00	.00	253.75	392.00
*	25.000	705.00	1278.53	.17	.00	.00	273.93	392.00
*	25.000	841.00	1278.82	.30	.01	.00	285.06	392.00
*	25.000	949.00	1279.08	.26	.02	.00	299.15	392.00
*	25.000	1085.00	1279.29	.21	.02	.00	313.74	392.00
*	26.000	234.00	1278.45	.00	1.01	.00	151.16	22.00
*	26.000	294.00	1278.52	.06	.91	.00	155.27	22.00
*	26.000	373.00	1278.52	.01	.71	.00	155.65	22.00
*	26.000	433.00	1278.61	.08	.65	.00	161.13	22.00
*	26.000	507.00	1278.67	.07	.55	.00	165.49	22.00
*	26.000	461.00	1278.64	-.03	.62	.00	163.50	22.00
*	26.000	624.00	1278.81	.17	.45	.00	174.61	22.00
*	26.000	705.00	1278.89	.08	.36	.00	179.85	22.00
*	26.000	841.00	1279.00	.10	.17	.00	186.73	22.00
*	26.000	949.00	1279.10	.11	.02	.00	193.71	22.00
*	26.000	1085.00	1279.19	.09	-.10	.00	199.56	22.00
	27.000	234.00	1278.47	.00	.01	.00	135.79	17.00
	27.000	294.00	1278.54	.07	.02	.00	139.78	17.00
	27.000	373.00	1278.65	.12	.13	.00	146.34	17.00
	27.000	433.00	1278.67	.02	.07	.00	147.33	17.00
	27.000	507.00	1278.75	.07	.08	.00	151.50	17.00
	27.000	461.00	1278.69	-.06	.05	.00	148.28	17.00
*	27.000	624.00	1278.89	.20	.07	.00	158.76	17.00
*	27.000	705.00	1278.93	.05	.04	.00	161.31	17.00
*	27.000	841.00	1279.06	.13	.06	.00	168.23	17.00
*	27.000	949.00	1279.14	.08	.04	.00	172.63	17.00
*	27.000	1085.00	1279.24	.11	.05	.00	178.48	17.00
*	28.000	234.00	1278.72	.00	.25	.00	206.20	62.00
*	28.000	294.00	1278.84	.13	.31	.00	212.74	62.00
*	28.000	373.00	1279.00	.15	.34	.00	220.73	62.00
*	28.000	433.00	1279.11	.12	.44	.00	226.06	62.00
*	28.000	507.00	1279.24	.13	.49	.00	226.75	62.00
*	28.000	461.00	1279.16	-.07	.47	.00	226.34	62.00
*	28.000	624.00	1279.42	.26	.54	.00	249.14	62.00
*	28.000	705.00	1279.55	.13	.62	.00	253.10	62.00
*	28.000	841.00	1279.73	.18	.67	.00	258.75	62.00
*	28.000	949.00	1279.87	.14	.73	.00	263.08	62.00
*	28.000	1085.00	1280.03	.16	.78	.00	268.04	62.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	29.000	234.00	1278.72	.00	.00	.00	172.85	62.00
*	29.000	294.00	1278.85	.13	.00	.00	177.39	62.00
*	29.000	373.00	1279.00	.15	.01	.00	182.56	62.00
*	29.000	433.00	1279.12	.12	.01	.00	186.48	62.00
*	29.000	507.00	1279.25	.13	.01	.00	190.58	62.00
*	29.000	461.00	1279.17	-.08	.01	.00	188.17	62.00
*	29.000	624.00	1279.43	.26	.01	.00	204.36	62.00

*	29.000	705.00	1279.56	.13	.01	.00	226.64	62.00
*	29.000	841.00	1279.74	.18	.01	.00	262.02	62.00
*	29.000	949.00	1279.88	.14	.01	.00	285.93	62.00
*	29.000	1085.00	1280.04	.16	.02	.00	292.95	62.00
	30.000	234.00	1278.76	.00	.04	.00	388.74	164.00
	30.000	294.00	1278.90	.14	.05	.00	403.06	164.00
	30.000	373.00	1279.07	.17	.07	.00	421.45	164.00
*	30.000	433.00	1279.20	.13	.08	.00	438.07	164.00
*	30.000	507.00	1279.34	.14	.10	.00	448.58	164.00
*	30.000	461.00	1279.26	-.08	.09	.00	442.40	164.00
*	30.000	624.00	1279.55	.29	.12	.00	463.35	164.00
*	30.000	705.00	1279.69	.14	.13	.00	474.47	164.00
*	30.000	841.00	1279.89	.20	.15	.00	510.23	164.00
*	30.000	949.00	1280.05	.15	.17	.00	525.83	164.00
*	30.000	1085.00	1280.23	.18	.18	.00	525.83	164.00
	31.000	117.00	1278.78	.00	.02	.00	374.74	164.00
	31.000	147.00	1278.92	.15	.02	.00	378.01	164.00
	31.000	187.00	1279.10	.18	.03	.00	390.72	164.00
	31.000	218.00	1279.23	.13	.03	.00	424.34	164.00
	31.000	255.00	1279.38	.15	.03	.00	455.75	164.00
	31.000	193.00	1279.29	-.09	.03	.00	436.75	164.00
	31.000	254.00	1279.59	.30	.04	.00	477.81	164.00
	31.000	317.00	1279.73	.14	.04	.00	498.11	164.00
	31.000	353.00	1279.94	.21	.05	.00	535.51	164.00
	31.000	400.00	1280.10	.16	.05	.00	595.46	164.00
	31.000	468.00	1280.28	.18	.05	.00	609.76	164.00
*	32.000	117.00	1278.79	.00	.02	.00	149.69	219.00
*	32.000	147.00	1278.94	.15	.02	.00	158.32	219.00
*	32.000	187.00	1279.11	.17	.01	.00	377.27	219.00
*	32.000	218.00	1279.25	.13	.02	.00	387.82	219.00
*	32.000	255.00	1279.40	.15	.02	.00	399.37	219.00
*	32.000	193.00	1279.30	-.10	.01	.00	391.83	219.00
*	32.000	254.00	1279.60	.30	.01	.00	408.51	219.00
*	32.000	317.00	1279.75	.15	.02	.00	415.12	219.00
	32.000	353.00	1279.96	.21	.02	.00	424.33	219.00
	32.000	400.00	1280.12	.16	.02	.00	431.65	219.00
	32.000	468.00	1280.30	.19	.02	.00	431.65	219.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	33.000	117.00	1278.86	.00	.06	.00	216.39	180.00
	33.000	147.00	1279.02	.16	.08	.00	230.34	180.00
*	33.000	187.00	1279.15	.13	.04	.00	243.24	180.00
*	33.000	218.00	1279.29	.14	.04	.00	255.80	180.00
*	33.000	255.00	1279.44	.15	.05	.00	269.53	180.00
*	33.000	193.00	1279.33	-.11	.03	.00	258.55	180.00
*	33.000	254.00	1279.63	.30	.03	.00	369.04	180.00
*	33.000	317.00	1279.79	.16	.04	.00	376.02	180.00
*	33.000	353.00	1280.00	.21	.04	.00	384.07	180.00
*	33.000	400.00	1280.16	.16	.04	.00	392.60	180.00
*	33.000	468.00	1280.35	.19	.05	.00	436.52	180.00
	34.000	117.00	1278.87	.00	.01	.00	151.53	45.00
	34.000	147.00	1279.04	.17	.02	.00	160.15	45.00
	34.000	187.00	1279.17	.14	.02	.00	166.99	45.00
	34.000	218.00	1279.31	.14	.02	.00	174.21	45.00
	34.000	255.00	1279.47	.15	.02	.00	182.11	45.00
	34.000	193.00	1279.35	-.12	.02	.00	175.83	45.00
	34.000	254.00	1279.65	.30	.02	.00	312.20	45.00
	34.000	317.00	1279.81	.16	.02	.00	376.29	45.00
	34.000	353.00	1280.02	.20	.02	.00	376.29	45.00
	34.000	400.00	1280.18	.16	.02	.00	376.29	45.00
	34.000	468.00	1280.37	.19	.02	.00	376.29	45.00
*	35.000	117.00	1278.88	.00	.01	.00	67.05	46.00
*	35.000	147.00	1279.05	.17	.01	.00	74.01	46.00
*	35.000	187.00	1279.19	.14	.02	.00	79.95	46.00
*	35.000	218.00	1279.34	.14	.02	.00	85.79	46.00
*	35.000	255.00	1279.49	.16	.03	.00	92.17	46.00
*	35.000	193.00	1279.36	-.13	.02	.00	86.89	46.00
*	35.000	254.00	1279.66	.30	.01	.00	99.35	46.00

*	35.000	317.00	1279.82	.16	.01	.00	105.89	46.00
*	35.000	353.00	1280.02	.20	.01	.00	114.09	46.00
*	35.000	400.00	1280.18	.16	.01	.00	120.69	46.00
*	35.000	468.00	1280.37	.19	.01	.00	133.29	46.00
*	36.000	117.00	1278.97	.00	.10	.00	94.29	24.00
*	36.000	147.00	1279.16	.18	.11	.00	97.96	24.00
*	36.000	187.00	1279.33	.17	.14	.00	103.56	24.00
*	36.000	218.00	1279.48	.15	.14	.00	119.10	24.00
*	36.000	255.00	1279.64	.16	.15	.00	153.33	24.00
*	36.000	193.00	1279.47	-.17	.11	.00	117.87	24.00
*	36.000	254.00	1279.78	.30	.12	.00	180.38	24.00
*	36.000	317.00	1279.96	.19	.14	.00	219.38	24.00
*	36.000	353.00	1280.15	.19	.13	.00	286.83	24.00
*	36.000	400.00	1280.31	.16	.13	.00	320.33	24.00
*	36.000	468.00	1280.51	.19	.14	.00	327.98	24.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	37.000	117.00	1279.03	.00	.06	.00	116.54	100.00
	37.000	147.00	1279.23	.20	.07	.00	128.27	100.00
	37.000	187.00	1279.43	.19	.10	.00	138.34	100.00
	37.000	218.00	1279.59	.16	.11	.00	146.43	100.00
	37.000	255.00	1279.76	.18	.12	.00	155.36	100.00
	37.000	193.00	1279.56	-.20	.09	.00	144.91	100.00
	37.000	254.00	1279.88	.32	.10	.00	163.64	100.00
	37.000	317.00	1280.09	.21	.13	.00	187.81	100.00
	37.000	353.00	1280.27	.18	.12	.00	205.99	100.00
	37.000	400.00	1280.44	.16	.12	.00	279.68	100.00
	37.000	468.00	1280.63	.20	.12	.00	351.18	100.00
*	38.000	117.00	1279.43	.00	.40	.00	56.11	553.00
*	38.000	147.00	1279.66	.23	.43	.00	59.41	553.00
	38.000	187.00	1279.84	.18	.42	.00	161.71	553.00
	38.000	218.00	1280.00	.16	.42	.00	201.96	553.00
	38.000	255.00	1280.17	.17	.41	.00	261.86	553.00
	38.000	193.00	1279.93	-.25	.37	.00	177.73	553.00
	38.000	254.00	1280.24	.31	.35	.00	263.37	553.00
*	38.000	317.00	1280.46	.23	.37	.00	268.78	553.00
*	38.000	353.00	1280.61	.15	.34	.00	272.41	553.00
*	38.000	400.00	1280.76	.15	.33	.00	276.01	553.00
*	38.000	468.00	1280.95	.19	.32	.00	277.00	553.00
*	39.000	117.00	1279.44	.00	.00	.00	27.73	24.00
	39.000	147.00	1279.70	.27	.05	.00	127.13	24.00
	39.000	187.00	1279.86	.16	.02	.00	157.12	24.00
	39.000	218.00	1280.02	.16	.02	.00	230.46	24.00
	39.000	255.00	1280.19	.17	.02	.00	262.49	24.00
	39.000	193.00	1279.94	-.25	.02	.00	179.91	24.00
	39.000	254.00	1280.25	.31	.01	.00	263.91	24.00
	39.000	317.00	1280.48	.23	.01	.00	269.49	24.00
	39.000	353.00	1280.63	.15	.01	.00	273.06	24.00
	39.000	400.00	1280.78	.15	.01	.00	276.65	24.00
	39.000	468.00	1280.96	.19	.01	.00	277.00	24.00
	40.000	117.00	1279.57	.00	.13	.00	28.05	10.00
*	40.000	147.00	1279.95	.39	.25	.00	185.45	10.00
*	40.000	187.00	1280.20	.25	.34	.00	262.75	10.00
*	40.000	218.00	1280.41	.21	.39	.00	267.82	10.00
*	40.000	255.00	1280.63	.21	.44	.00	272.97	10.00
*	40.000	193.00	1280.28	-.35	.33	.00	264.57	10.00
*	40.000	254.00	1280.66	.38	.41	.00	273.70	10.00
*	40.000	317.00	1280.99	.33	.51	.00	277.00	10.00
*	40.000	353.00	1281.18	.19	.55	.00	277.00	10.00
*	40.000	400.00	1281.39	.21	.61	.00	277.00	10.00
*	40.000	468.00	1281.68	.29	.72	.00	277.00	10.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	41.000	117.00	1279.67	.00	.11	.00	161.68	52.00

*	41.000	147.00	1279.98	.30	.02	.00	168.39	52.00
*	41.000	187.00	1280.22	.24	.02	.00	226.11	52.00
*	41.000	218.00	1280.43	.21	.02	.00	266.92	52.00
*	41.000	255.00	1280.64	.21	.01	.00	266.92	52.00
*	41.000	193.00	1280.30	-.35	.02	.00	245.00	52.00
*	41.000	254.00	1280.67	.38	.01	.00	266.92	52.00
	41.000	317.00	1281.00	.33	.01	.00	266.92	52.00
	41.000	353.00	1281.18	.19	.01	.00	266.92	52.00
	41.000	400.00	1281.39	.21	.01	.00	266.92	52.00
	41.000	468.00	1281.69	.29	.01	.00	266.92	52.00
	42.000	117.00	1279.70	.00	.03	.00	174.26	124.00
	42.000	147.00	1280.00	.30	.02	.00	185.28	124.00
	42.000	187.00	1280.24	.24	.02	.00	208.23	124.00
	42.000	218.00	1280.45	.21	.02	.00	227.12	124.00
	42.000	255.00	1280.66	.21	.02	.00	245.25	124.00
	42.000	193.00	1280.31	-.34	.02	.00	214.84	124.00
	42.000	254.00	1280.69	.37	.02	.00	248.34	124.00
	42.000	317.00	1281.01	.33	.02	.00	291.59	124.00
	42.000	353.00	1281.20	.19	.01	.00	328.42	124.00
	42.000	400.00	1281.41	.21	.01	.00	356.79	124.00
	42.000	468.00	1281.70	.29	.01	.00	377.59	124.00
*	43.000	117.00	1279.67	.00	-.03	.00	126.94	48.00
*	43.000	147.00	1280.00	.33	.00	.00	142.49	48.00
*	43.000	187.00	1280.24	.25	.00	.00	153.97	48.00
*	43.000	218.00	1280.45	.21	.00	.00	172.71	48.00
*	43.000	255.00	1280.66	.21	.00	.00	208.03	48.00
*	43.000	193.00	1280.32	-.35	.00	.00	157.30	48.00
*	43.000	254.00	1280.69	.37	.00	.00	212.77	48.00
*	43.000	317.00	1281.02	.33	.00	.00	287.02	48.00
*	43.000	353.00	1281.20	.19	.00	.00	326.65	48.00
*	43.000	400.00	1281.41	.21	.00	.00	326.65	48.00
*	43.000	468.00	1281.70	.29	.00	.00	326.65	48.00
*	44.000	117.00	1280.28	.00	.61	.00	150.59	11.00
*	44.000	147.00	1280.47	.19	.47	.00	159.45	11.00
*	44.000	187.00	1280.68	.22	.44	.00	194.33	11.00
*	44.000	218.00	1280.87	.18	.42	.00	224.82	11.00
*	44.000	255.00	1281.04	.18	.38	.00	264.85	11.00
*	44.000	193.00	1280.73	-.31	.41	.00	201.56	11.00
*	44.000	254.00	1281.05	.32	.36	.00	267.33	11.00
	44.000	317.00	1281.35	.30	.33	.00	326.65	11.00
	44.000	353.00	1281.54	.19	.34	.00	326.65	11.00
	44.000	400.00	1281.74	.20	.33	.00	326.65	11.00
	44.000	468.00	1282.05	.31	.34	.00	326.65	11.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	45.000	117.00	1280.30	.00	.02	.00	211.92	76.00
*	45.000	147.00	1280.49	.19	.02	.00	222.89	76.00
*	45.000	187.00	1280.70	.22	.02	.00	235.07	76.00
*	45.000	218.00	1280.88	.18	.02	.00	236.52	76.00
*	45.000	255.00	1281.06	.17	.02	.00	237.94	76.00
*	45.000	193.00	1280.75	-.31	.02	.00	235.41	76.00
*	45.000	254.00	1281.07	.32	.01	.00	238.01	76.00
*	45.000	317.00	1281.36	.29	.01	.00	273.31	76.00
*	45.000	353.00	1281.55	.19	.01	.00	273.31	76.00
*	45.000	400.00	1281.75	.20	.01	.00	273.31	76.00
*	45.000	468.00	1282.05	.30	.01	.00	273.31	76.00
	46.000	117.00	1280.30	.00	.00	.00	201.88	133.00
	46.000	147.00	1280.49	.19	.00	.00	222.42	133.00
	46.000	187.00	1280.71	.22	.00	.00	248.52	133.00
	46.000	218.00	1280.89	.18	.00	.00	260.74	133.00
	46.000	255.00	1281.06	.17	.00	.00	272.63	133.00
	46.000	193.00	1280.75	-.31	.00	.00	251.41	133.00
	46.000	254.00	1281.07	.32	.00	.00	273.19	133.00
	46.000	317.00	1281.36	.29	.00	.00	278.70	133.00
	46.000	353.00	1281.56	.19	.00	.00	278.70	133.00
	46.000	400.00	1281.75	.20	.00	.00	278.70	133.00
	46.000	468.00	1282.06	.30	.00	.00	278.70	133.00
*	47.000	117.00	1280.30	.00	.00	.00	187.03	133.00

*	47.000	147.00	1280.50	.19	.01	.00	232.99	133.00
*	47.000	187.00	1280.71	.22	.01	.00	321.16	133.00
*	47.000	218.00	1280.89	.18	.01	.00	357.19	133.00
*	47.000	255.00	1281.07	.18	.01	.00	371.19	133.00
*	47.000	193.00	1280.75	-.31	.01	.00	335.30	133.00
*	47.000	254.00	1281.08	.32	.01	.00	372.09	133.00
*	47.000	317.00	1281.37	.30	.01	.00	373.98	133.00
*	47.000	353.00	1281.57	.19	.01	.00	373.98	133.00
*	47.000	400.00	1281.76	.20	.01	.00	373.98	133.00
*	47.000	468.00	1282.07	.31	.01	.00	373.98	133.00
	48.000	117.00	1280.33	.00	.02	.00	262.06	194.00
	48.000	147.00	1280.52	.19	.02	.00	307.58	194.00
	48.000	187.00	1280.74	.22	.02	.00	348.21	194.00
	48.000	218.00	1280.92	.18	.02	.00	380.41	194.00
	48.000	255.00	1281.09	.17	.02	.00	403.37	194.00
	48.000	193.00	1280.78	-.31	.02	.00	356.78	194.00
	48.000	254.00	1281.10	.32	.02	.00	404.77	194.00
	48.000	317.00	1281.39	.29	.02	.00	415.22	194.00
	48.000	353.00	1281.58	.19	.02	.00	415.22	194.00
	48.000	400.00	1281.78	.20	.02	.00	415.22	194.00
	48.000	468.00	1282.08	.30	.01	.00	415.22	194.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	49.000	117.00	1280.33	.00	.00	.00	169.12	38.00
*	49.000	147.00	1280.52	.19	.00	.00	177.90	38.00
*	49.000	187.00	1280.74	.22	.00	.00	186.71	38.00
*	49.000	218.00	1280.92	.18	.00	.00	190.42	38.00
*	49.000	255.00	1281.09	.17	.00	.00	224.78	38.00
*	49.000	193.00	1280.78	-.31	.00	.00	187.58	38.00
*	49.000	254.00	1281.10	.32	.00	.00	226.60	38.00
*	49.000	317.00	1281.39	.29	.00	.00	240.04	38.00
*	49.000	353.00	1281.58	.19	.00	.00	240.04	38.00
*	49.000	400.00	1281.78	.20	.00	.00	240.04	38.00
*	49.000	468.00	1282.08	.30	.00	.00	240.04	38.00
	50.000	117.00	1280.36	.00	.03	.00	170.77	8.00
	50.000	147.00	1280.56	.20	.04	.00	180.02	8.00
	50.000	187.00	1280.80	.23	.06	.00	188.04	8.00
	50.000	218.00	1280.99	.19	.07	.00	201.63	8.00
	50.000	255.00	1281.18	.19	.08	.00	240.04	8.00
	50.000	193.00	1280.84	-.34	.06	.00	188.94	8.00
	50.000	254.00	1281.18	.34	.08	.00	240.04	8.00
	50.000	317.00	1281.50	.32	.11	.00	240.04	8.00
	50.000	353.00	1281.70	.20	.12	.00	240.04	8.00
	50.000	400.00	1281.92	.22	.14	.00	240.04	8.00
	50.000	468.00	1282.24	.33	.16	.00	240.04	8.00
*	51.000	117.00	1280.43	.00	.07	.00	176.03	172.00
*	51.000	147.00	1280.63	.20	.07	.00	187.46	172.00
*	51.000	187.00	1280.86	.23	.06	.00	221.68	172.00
*	51.000	218.00	1281.05	.18	.06	.00	252.48	172.00
*	51.000	255.00	1281.23	.19	.06	.00	259.91	172.00
*	51.000	193.00	1280.90	-.33	.06	.00	236.93	172.00
*	51.000	254.00	1281.24	.33	.05	.00	260.13	172.00
*	51.000	317.00	1281.55	.31	.05	.00	348.62	172.00
*	51.000	353.00	1281.75	.20	.04	.00	348.62	172.00
*	51.000	400.00	1281.96	.21	.04	.00	348.62	172.00
*	51.000	468.00	1282.28	.32	.04	.00	348.62	172.00
	52.000	117.00	1280.61	.00	.18	.00	137.59	162.00
	52.000	147.00	1280.79	.19	.16	.00	148.80	162.00
	52.000	187.00	1281.01	.22	.15	.00	162.49	162.00
	52.000	218.00	1281.18	.17	.14	.00	178.87	162.00
	52.000	255.00	1281.36	.18	.13	.00	188.01	162.00
	52.000	193.00	1281.05	-.31	.15	.00	166.25	162.00
	52.000	254.00	1281.36	.31	.12	.00	188.22	162.00
	52.000	317.00	1281.65	.29	.10	.00	245.71	162.00
	52.000	353.00	1281.84	.18	.09	.00	245.71	162.00
	52.000	400.00	1282.04	.20	.08	.00	245.71	162.00
	52.000	468.00	1282.35	.31	.06	.00	245.71	162.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	53.000	117.00	1280.75	.00	.15	.00	254.42	161.00
*	53.000	147.00	1280.93	.18	.14	.00	255.95	161.00
*	53.000	187.00	1281.14	.21	.13	.00	257.84	161.00
*	53.000	218.00	1281.31	.16	.12	.00	259.31	161.00
*	53.000	255.00	1281.48	.17	.12	.00	260.88	161.00
*	53.000	193.00	1281.18	-.30	.13	.00	258.17	161.00
*	53.000	254.00	1281.48	.30	.12	.00	260.89	161.00
*	53.000	317.00	1281.76	.28	.11	.00	263.39	161.00
*	53.000	353.00	1281.93	.17	.10	.00	264.91	161.00
*	53.000	400.00	1282.13	.20	.09	.00	267.27	161.00
	53.000	468.00	1282.43	.30	.08	.00	267.27	161.00
*	54.000	117.00	1280.71	.00	-.05	.00	14.00	57.00
*	54.000	147.00	1280.85	.14	-.09	.00	14.00	57.00
*	54.000	187.00	1281.00	.15	-.15	.00	14.00	57.00
*	54.000	218.00	1281.10	.11	-.20	.00	14.00	57.00
*	54.000	255.00	1281.20	.10	-.27	.00	14.00	57.00
*	54.000	193.00	1281.02	-.18	-.16	.00	14.00	57.00
*	54.000	254.00	1281.21	.18	-.27	.00	14.00	57.00
*	54.000	317.00	1281.35	.14	-.41	.00	14.00	57.00
*	54.000	353.00	1281.43	.09	-.50	.00	14.00	57.00
*	54.000	400.00	1281.50	.06	-.63	.00	14.00	57.00
*	54.000	468.00	1281.57	.08	-.85	.00	14.00	57.00
*	55.000	107.00	1281.73	.00	1.02	.00	14.00	51.00
*	55.000	134.00	1282.35	.62	1.50	.00	275.89	51.00
*	55.000	170.00	1282.66	.32	1.67	.00	310.24	51.00
*	55.000	197.00	1282.85	.19	1.74	.00	437.38	51.00
*	55.000	230.00	1283.03	.19	1.83	.00	498.84	51.00
*	55.000	152.00	1283.50	.47	2.48	.00	627.07	51.00
*	55.000	203.00	1282.88	-.62	1.68	.00	448.12	51.00
*	55.000	253.00	1283.16	.28	1.81	.00	541.95	51.00
*	55.000	285.00	1283.33	.17	1.89	.00	586.17	51.00
*	55.000	317.00	1283.48	.15	1.98	.00	621.92	51.00
*	55.000	380.00	1283.74	.26	2.16	.00	675.36	51.00
*	56.000	107.00	1281.82	.00	.09	.00	167.69	98.00
*	56.000	134.00	1282.37	.55	.02	.00	170.18	98.00
*	56.000	170.00	1282.68	.31	.02	.00	170.18	98.00
*	56.000	197.00	1282.86	.18	.01	.00	170.18	98.00
*	56.000	230.00	1283.04	.18	.01	.00	170.18	98.00
	56.000	152.00	1283.50	.46	.00	.00	170.18	98.00
*	56.000	203.00	1282.89	-.61	.01	.00	170.18	98.00
*	56.000	253.00	1283.17	.28	.01	.00	170.18	98.00
	56.000	285.00	1283.34	.17	.01	.00	170.18	98.00
	56.000	317.00	1283.48	.15	.01	.00	170.18	98.00
	56.000	380.00	1283.74	.26	.00	.00	170.18	98.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
57.000	107.00	1281.83	.00	.02	.00	231.95	206.00
57.000	134.00	1282.38	.55	.01	.00	235.85	206.00
57.000	170.00	1282.69	.31	.01	.00	235.85	206.00
57.000	197.00	1282.87	.18	.01	.00	235.85	206.00
57.000	230.00	1283.06	.18	.01	.00	235.85	206.00
57.000	152.00	1283.51	.45	.00	.00	235.85	206.00
57.000	203.00	1282.91	-.60	.01	.00	235.85	206.00
57.000	253.00	1283.19	.28	.01	.00	235.85	206.00
57.000	285.00	1283.35	.17	.01	.00	235.85	206.00
57.000	317.00	1283.50	.15	.02	.00	235.85	206.00
57.000	380.00	1283.76	.26	.02	.00	235.85	206.00
58.000	107.00	1281.86	.00	.03	.00	293.04	251.00
58.000	134.00	1282.39	.53	.01	.00	302.46	251.00
58.000	170.00	1282.70	.31	.01	.00	310.43	251.00
58.000	197.00	1282.89	.18	.01	.00	310.43	251.00
58.000	230.00	1283.07	.19	.01	.00	310.43	251.00
58.000	152.00	1283.51	.44	.00	.00	310.43	251.00
58.000	203.00	1282.92	-.59	.01	.00	310.43	251.00

58.000	253.00	1283.20	.28	.01	.00	310.43	251.00
58.000	285.00	1283.37	.17	.01	.00	310.43	251.00
58.000	317.00	1283.52	.15	.02	.00	310.43	251.00
58.000	380.00	1283.78	.26	.02	.00	310.43	251.00
* 59.000	107.00	1281.90	.00	.05	.00	196.48	250.00
* 59.000	134.00	1282.41	.51	.02	.00	217.35	250.00
* 59.000	170.00	1282.72	.31	.02	.00	217.35	250.00
* 59.000	197.00	1282.90	.18	.02	.00	217.35	250.00
* 59.000	230.00	1283.09	.19	.02	.00	217.35	250.00
* 59.000	152.00	1283.52	.43	.00	.00	217.35	250.00
* 59.000	203.00	1282.94	-.58	.02	.00	217.35	250.00
* 59.000	253.00	1283.22	.28	.02	.00	217.35	250.00
* 59.000	285.00	1283.38	.17	.02	.00	217.35	250.00
* 59.000	317.00	1283.53	.15	.02	.00	217.35	250.00
* 59.000	380.00	1283.79	.26	.02	.00	217.35	250.00
60.000	107.00	1282.03	.00	.12	.00	253.62	405.00
60.000	134.00	1282.47	.44	.06	.00	253.62	405.00
60.000	170.00	1282.77	.30	.05	.00	253.62	405.00
60.000	197.00	1282.95	.18	.05	.00	253.62	405.00
60.000	230.00	1283.13	.19	.05	.00	253.62	405.00
60.000	152.00	1283.53	.39	.01	.00	253.62	405.00
60.000	203.00	1282.98	-.54	.05	.00	253.62	405.00
60.000	253.00	1283.26	.28	.05	.00	253.62	405.00
60.000	285.00	1283.43	.17	.05	.00	253.62	405.00
60.000	317.00	1283.58	.15	.05	.00	253.62	405.00
60.000	380.00	1283.84	.26	.05	.00	253.62	405.00

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28DEC98 07:34:16

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
61.000	107.00	1282.15	.00	.12	.00	287.90	525.00
61.000	134.00	1282.53	.38	.06	.00	287.90	525.00
61.000	170.00	1282.82	.29	.05	.00	287.90	525.00
61.000	197.00	1283.00	.18	.05	.00	287.90	525.00
61.000	230.00	1283.18	.19	.05	.00	287.90	525.00
61.000	152.00	1283.54	.36	.01	.00	287.90	525.00
61.000	203.00	1283.03	-.51	.05	.00	287.90	525.00
61.000	253.00	1283.31	.28	.05	.00	287.90	525.00
61.000	285.00	1283.48	.17	.05	.00	287.90	525.00
61.000	317.00	1283.63	.15	.05	.00	287.90	525.00
61.000	380.00	1283.89	.26	.05	.00	287.90	525.00
* 62.000	107.00	1282.30	.00	.16	.00	223.88	538.00
* 62.000	134.00	1282.61	.31	.09	.00	240.25	538.00
* 62.000	170.00	1282.89	.27	.07	.00	240.25	538.00
* 62.000	197.00	1283.06	.17	.07	.00	240.25	538.00
* 62.000	230.00	1283.25	.18	.06	.00	240.25	538.00
* 62.000	152.00	1283.55	.31	.02	.00	240.25	538.00
* 62.000	203.00	1283.10	-.46	.07	.00	240.25	538.00
* 62.000	253.00	1283.37	.28	.06	.00	240.25	538.00
* 62.000	285.00	1283.54	.16	.06	.00	240.25	538.00
* 62.000	317.00	1283.69	.15	.06	.00	240.25	538.00
62.000	380.00	1283.95	.26	.06	.00	240.25	538.00
63.000	107.00	1282.58	.00	.27	.00	261.61	513.00
63.000	134.00	1282.79	.21	.17	.00	317.33	513.00
63.000	170.00	1283.02	.23	.13	.00	382.92	513.00
63.000	197.00	1283.18	.16	.11	.00	382.92	513.00
63.000	230.00	1283.35	.17	.10	.00	382.92	513.00
63.000	152.00	1283.58	.23	.03	.00	382.92	513.00
63.000	203.00	1283.21	-.37	.11	.00	382.92	513.00
63.000	253.00	1283.47	.26	.10	.00	382.92	513.00
63.000	285.00	1283.63	.16	.09	.00	382.92	513.00
63.000	317.00	1283.77	.15	.08	.00	382.92	513.00
63.000	380.00	1284.03	.26	.08	.00	382.92	513.00
64.000	107.00	1282.74	.00	.16	.00	320.27	234.00
64.000	134.00	1282.90	.16	.11	.00	320.27	234.00
64.000	170.00	1283.10	.20	.08	.00	320.27	234.00
64.000	197.00	1283.25	.14	.07	.00	320.27	234.00
64.000	230.00	1283.41	.16	.06	.00	320.27	234.00
64.000	152.00	1283.60	.19	.01	.00	320.27	234.00
64.000	203.00	1283.27	-.32	.07	.00	320.27	234.00

64.000	253.00	1283.52	.25	.05	.00	320.27	234.00
64.000	285.00	1283.67	.15	.04	.00	320.27	234.00
64.000	317.00	1283.81	.14	.04	.00	320.27	234.00
64.000	380.00	1284.07	.25	.04	.00	320.27	234.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
65.000	19.00	1282.77	.00	.03	.00	313.49	84.00
65.000	25.00	1282.93	.15	.03	.00	317.58	84.00
65.000	32.00	1283.12	.20	.02	.00	322.96	84.00
65.000	37.00	1283.27	.14	.02	.00	326.66	84.00
65.000	44.00	1283.43	.16	.02	.00	344.51	84.00
65.000	137.00	1283.60	.18	.01	.00	366.33	84.00
65.000	205.00	1283.31	-.29	.04	.00	328.02	84.00
65.000	228.00	1283.55	.24	.03	.00	358.72	84.00
65.000	297.00	1283.70	.15	.03	.00	369.86	84.00
65.000	320.00	1283.84	.14	.02	.00	369.86	84.00
65.000	342.00	1284.09	.25	.02	.00	369.86	84.00
* 66.000	19.00	1282.77	.00	.00	.00	369.91	100.00
* 66.000	25.00	1282.93	.15	.00	.00	379.65	100.00
* 66.000	32.00	1283.12	.20	.00	.00	395.35	100.00
66.000	37.00	1283.27	.14	.00	.00	407.38	100.00
66.000	44.00	1283.43	.16	.00	.00	418.03	100.00
66.000	137.00	1283.61	.18	.01	.00	418.03	100.00
66.000	205.00	1283.34	-.27	.03	.00	418.03	100.00
66.000	228.00	1283.57	.23	.02	.00	418.03	100.00
66.000	297.00	1283.72	.15	.02	.00	418.03	100.00
66.000	320.00	1283.86	.14	.02	.00	418.03	100.00
66.000	342.00	1284.10	.25	.01	.00	418.03	100.00
* 67.000	19.00	1282.85	.00	.07	.00	92.78	554.00
* 67.000	25.00	1283.00	.15	.07	.00	161.42	554.00
* 67.000	32.00	1283.17	.17	.04	.00	214.71	554.00
* 67.000	37.00	1283.30	.13	.03	.00	246.94	554.00
* 67.000	44.00	1283.45	.15	.03	.00	337.92	554.00
* 67.000	137.00	1283.73	.28	.12	.00	541.66	554.00
* 67.000	205.00	1283.79	.06	.45	.00	547.47	554.00
* 67.000	228.00	1283.87	.08	.30	.00	555.00	554.00
* 67.000	297.00	1284.03	.16	.31	.00	580.87	554.00
* 67.000	320.00	1284.12	.09	.26	.00	621.69	554.00
* 67.000	342.00	1284.28	.16	.17	.00	697.42	554.00
* 68.000	19.00	1283.16	.00	.31	.00	117.73	207.00
* 68.000	25.00	1283.25	.09	.26	.00	163.40	207.00
* 68.000	32.00	1283.35	.10	.18	.00	295.80	207.00
* 68.000	37.00	1283.43	.08	.13	.00	349.94	207.00
* 68.000	44.00	1283.54	.11	.08	.00	378.96	207.00
* 68.000	137.00	1283.87	.34	.14	.00	421.90	207.00
* 68.000	205.00	1283.99	.12	.20	.00	435.48	207.00
* 68.000	228.00	1284.05	.06	.18	.00	438.26	207.00
* 68.000	297.00	1284.20	.15	.17	.00	489.19	207.00
68.000	320.00	1284.27	.07	.15	.00	489.19	207.00
68.000	342.00	1284.38	.12	.11	.00	489.19	207.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
69.000	19.00	1283.28	.00	.12	.00	119.61	329.00
69.000	25.00	1283.39	.11	.14	.00	135.59	329.00
69.000	32.00	1283.49	.10	.14	.00	142.98	329.00
69.000	37.00	1283.56	.07	.13	.00	147.95	329.00
* 69.000	44.00	1283.64	.08	.10	.00	157.47	329.00
* 69.000	137.00	1284.08	.44	.21	.00	189.53	329.00
* 69.000	205.00	1284.26	.18	.27	.00	223.95	329.00
* 69.000	228.00	1284.32	.06	.26	.00	223.95	329.00
* 69.000	297.00	1284.48	.17	.28	.00	223.95	329.00
* 69.000	320.00	1284.54	.06	.27	.00	223.95	329.00
* 69.000	342.00	1284.61	.07	.23	.00	223.95	329.00
70.000	19.00	1283.30	.00	.02	.00	108.48	50.00

	70.000	25.00	1283.41	.11	.02	.00	111.32	50.00
	70.000	32.00	1283.51	.10	.02	.00	113.78	50.00
	70.000	37.00	1283.58	.07	.02	.00	115.57	50.00
	70.000	44.00	1283.66	.08	.02	.00	117.58	50.00
	70.000	137.00	1284.14	.47	.06	.00	171.61	50.00
	70.000	205.00	1284.34	.20	.08	.00	196.21	50.00
	70.000	228.00	1284.40	.06	.08	.00	197.20	50.00
	70.000	297.00	1284.58	.18	.10	.00	199.88	50.00
	70.000	320.00	1284.64	.06	.10	.00	200.74	50.00
	70.000	342.00	1284.71	.07	.10	.00	201.93	50.00
*	71.000	19.00	1283.31	.00	.01	.00	83.06	51.00
*	71.000	25.00	1283.42	.11	.01	.00	85.48	51.00
*	71.000	32.00	1283.52	.10	.01	.00	87.63	51.00
*	71.000	37.00	1283.59	.07	.01	.00	89.09	51.00
*	71.000	44.00	1283.67	.09	.01	.00	90.93	51.00
*	71.000	137.00	1284.17	.49	.03	.00	101.26	51.00
*	71.000	205.00	1284.37	.21	.04	.00	105.72	51.00
*	71.000	228.00	1284.44	.07	.04	.00	107.14	51.00
*	71.000	297.00	1284.62	.18	.04	.00	228.71	51.00
*	71.000	320.00	1284.68	.06	.04	.00	228.94	51.00
*	71.000	342.00	1284.75	.07	.04	.00	229.20	51.00
*	72.000	19.00	1285.72	.00	2.41	.00	334.28	29.00
*	72.000	25.00	1285.69	-.03	2.27	.00	319.58	29.00
*	72.000	32.00	1285.66	-.03	2.14	.00	305.71	29.00
*	72.000	37.00	1285.64	-.02	2.05	.00	295.89	29.00
*	72.000	44.00	1285.48	-.16	1.81	.00	273.35	29.00
*	72.000	137.00	1285.83	.35	1.66	.00	374.20	29.00
*	72.000	205.00	1286.13	.31	1.76	.00	422.36	29.00
*	72.000	228.00	1286.23	.10	1.79	.00	425.01	29.00
*	72.000	297.00	1286.48	.25	1.86	.00	432.10	29.00
*	72.000	320.00	1286.56	.08	1.88	.00	434.43	29.00
*	72.000	342.00	1286.64	.08	1.89	.00	436.61	29.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
73.000	19.00	1285.72	.00	.00	.00	318.30	128.00
73.000	25.00	1285.69	-.03	.00	.00	318.13	128.00
73.000	32.00	1285.66	-.03	.00	.00	317.97	128.00
73.000	37.00	1285.64	-.02	.00	.00	317.86	128.00
73.000	44.00	1285.48	-.16	.00	.00	316.99	128.00
73.000	137.00	1285.83	.35	.00	.00	318.92	128.00
73.000	205.00	1286.13	.31	.00	.00	336.89	128.00
73.000	228.00	1286.23	.10	.00	.00	336.89	128.00
73.000	297.00	1286.49	.26	.00	.00	336.89	128.00
73.000	320.00	1286.57	.08	.01	.00	336.89	128.00
73.000	342.00	1286.65	.08	.01	.00	336.89	128.00
74.000	19.00	1285.72	.00	.00	.00	388.32	137.00
74.000	25.00	1285.69	-.03	.00	.00	388.32	137.00
74.000	32.00	1285.66	-.03	.00	.00	388.32	137.00
74.000	37.00	1285.64	-.02	.00	.00	388.32	137.00
74.000	44.00	1285.48	-.16	.00	.00	364.90	137.00
74.000	137.00	1285.83	.35	.00	.00	388.32	137.00
74.000	205.00	1286.14	.31	.00	.00	388.32	137.00
74.000	228.00	1286.23	.10	.00	.00	388.32	137.00
74.000	297.00	1286.49	.26	.00	.00	388.32	137.00
74.000	320.00	1286.57	.08	.00	.00	388.32	137.00
74.000	342.00	1286.65	.08	.00	.00	388.32	137.00
75.000	19.00	1285.72	.00	.00	.00	536.78	253.00
75.000	25.00	1285.69	-.03	.00	.00	536.78	253.00
75.000	32.00	1285.66	-.03	.00	.00	536.78	253.00
75.000	37.00	1285.64	-.02	.00	.00	536.78	253.00
75.000	44.00	1285.48	-.16	.00	.00	520.49	253.00
75.000	137.00	1285.83	.35	.00	.00	536.78	253.00
75.000	205.00	1286.14	.31	.00	.00	536.78	253.00
75.000	228.00	1286.24	.10	.00	.00	536.78	253.00
75.000	297.00	1286.50	.26	.01	.00	536.78	253.00
75.000	320.00	1286.58	.08	.01	.00	536.78	253.00
75.000	342.00	1286.66	.08	.01	.00	536.78	253.00
76.000	19.00	1285.72	.00	.00	.00	801.34	234.00

76.000	25.00	1285.69	-.03	.00	.00	801.34	234.00
76.000	32.00	1285.66	-.03	.00	.00	801.34	234.00
76.000	37.00	1285.64	-.02	.00	.00	801.34	234.00
76.000	44.00	1285.48	-.16	.00	.00	801.34	234.00
76.000	137.00	1285.84	.35	.00	.00	801.34	234.00
76.000	205.00	1286.15	.31	.00	.00	801.34	234.00
* 76.000	228.00	1286.24	.10	.00	.00	801.34	234.00
* 76.000	297.00	1286.50	.26	.00	.00	801.34	234.00
* 76.000	320.00	1286.58	.08	.00	.00	801.34	234.00
* 76.000	342.00	1286.66	.08	.00	.00	801.34	234.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
77.000	19.00	1285.72	.00	.00	.00	801.34	55.00
77.000	25.00	1285.69	-.03	.00	.00	801.34	55.00
77.000	32.00	1285.66	-.03	.00	.00	801.34	55.00
77.000	37.00	1285.64	-.02	.00	.00	801.34	55.00
77.000	44.00	1285.48	-.16	.00	.00	801.34	55.00
77.000	137.00	1285.84	.35	.00	.00	801.34	55.00
77.000	205.00	1286.15	.31	.00	.00	801.34	55.00
77.000	228.00	1286.24	.10	.00	.00	801.34	55.00
77.000	297.00	1286.50	.26	.00	.00	801.34	55.00
77.000	320.00	1286.58	.08	.00	.00	801.34	55.00
77.000	342.00	1286.66	.08	.00	.00	801.34	55.00
78.000	19.00	1285.72	.00	.00	.00	801.34	53.00
78.000	25.00	1285.69	-.03	.00	.00	801.34	53.00
78.000	32.00	1285.66	-.03	.00	.00	801.34	53.00
78.000	37.00	1285.64	-.02	.00	.00	801.34	53.00
78.000	44.00	1285.48	-.16	.00	.00	801.34	53.00
78.000	137.00	1285.84	.35	.00	.00	801.34	53.00
78.000	205.00	1286.15	.31	.00	.00	801.34	53.00
78.000	228.00	1286.24	.10	.00	.00	801.34	53.00
78.000	297.00	1286.50	.26	.00	.00	801.34	53.00
78.000	320.00	1286.59	.08	.00	.00	801.34	53.00
78.000	342.00	1286.66	.08	.00	.00	801.34	53.00
79.000	19.00	1285.72	.00	.00	.00	858.45	126.00
79.000	25.00	1285.69	-.03	.00	.00	858.45	126.00
79.000	32.00	1285.66	-.03	.00	.00	858.45	126.00
79.000	37.00	1285.64	-.02	.00	.00	858.45	126.00
79.000	44.00	1285.48	-.16	.00	.00	858.45	126.00
79.000	137.00	1285.84	.35	.00	.00	858.45	126.00
79.000	205.00	1286.15	.31	.00	.00	858.45	126.00
79.000	228.00	1286.24	.10	.00	.00	858.45	126.00
79.000	297.00	1286.50	.26	.00	.00	858.45	126.00
79.000	320.00	1286.59	.08	.00	.00	858.45	126.00
79.000	342.00	1286.67	.08	.00	.00	858.45	126.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 5 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 6 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 7 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 8 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 9 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 10 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 11 CRITICAL DEPTH ASSUMED

WARNING SECNO= 2.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 4 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 5 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 6 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 7 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 8 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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 WARNING SECNO=      2.000  PROFILE=  9  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      2.000  PROFILE= 10  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      2.000  PROFILE= 11  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      3.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  7  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  8  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE=  9  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE= 10  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      3.000  PROFILE= 11  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      4.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 CAUTION SECNO=      4.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      4.000  PROFILE=  6  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      4.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      4.000  PROFILE=  7  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      4.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      4.000  PROFILE=  8  MINIMUM SPECIFIC ENERGY
```

February 25, 1999

BOX 398 • MITCHELL, S. DAK. 57301 • PHONE (605) 996-7761 • FAX (605) 996-0015



Mark Rath
SD DENR - Water Rights Division
523 Capitol Avenue
Joe Foss Building
Pierre, SD 57501-2217

RE: Stony Run Creek Flood Permit Application
SPN # 9083

SCHMUCKER, PAUL, NOHR & ASSOCIATES ENGINEERS SURVEYORS

Dear Mr. Rath:

Please find enclosed two (2) copies of the HEC-1 and HEC-2 analysis of the Stony Run Creek watershed that is upstream from the dam on Stony Run Creek. This analysis contains the added area south of the 21st Street bridge that you requested on February 11, 1999.

Also enclosed is a table of the constructed water surface elevations for various cross-sections for both the existing and proposed conditions of Stony Run Creek.

If you have any questions, please do not hesitate to contact me.

Sincerely,

SCHMUCKER, PAUL, NOHR & ASSOCIATES

Nick E. Hoffman, E.I.T.

NEH:tkl

Enclosures

TABLE OF HEC-2 CONSTRUCTION WATER SURFACE ELEVATIONS

STONY RUN CREEK EXISTING HEC2 RESULTS

Cross-section Number	Adjusted Cross-section Number	Description of Cross-section	Existing 5 year CWSEL	Existing 10 year CWSEL	Existing 25 year CWSEL	Existing 50 year CWSEL	Existing 100 year CWSEL
-	1	DS of Spillway	1237.00	1237.00	1237.00	1237.00	1237.00
-	3	US face of Spillway	1254.28	1254.44	1254.54	1255.51	1256.07
-	10	US face of SD Highway 37 Bridge	1258.24	1258.75	1259.37	1259.79	1260.29
-	12	XC at section line between sections 13 & 24	1259.16	1259.75	1260.43	1260.90	1261.42
-	14	XC "C"	1271.27	1271.72	1272.25	1272.60	1272.98
1	17	500 feet DS of 21st Street Bridge End of study	1273.29	1273.67	1274.12	1274.44	1274.80
5	21	US face of 21st Street Bridge	1273.36	1273.59	1273.87	1274.06	1274.30
11	27	Misc. XC (±12+30)	1277.23	1277.35	1277.51	1277.60	1277.72
18	34	66 feet DS of 16th Street Culverts (±26+90)	1277.40	1277.56	1277.76	1277.89	1278.05
23	39	Misc. XC (±33+50)	1277.44	1277.60	1277.82	1277.95	1278.12
37	53	100 feet US of 13th Street Dam (±49+00)	1279.03	1279.23	1279.43	1279.59	1279.76
55	71	US face of 9th Street Culvert	1281.73	1282.35	1282.66	1282.85	1283.03
63	79	30 feet DS of Y at 6th Street (±84+25)	1282.58	1282.79	1283.02	1283.18	1283.35
67	83	968 feet US of Y at 6th Street (±98+50)	1282.85	1283.00	1283.17	1283.30	1283.45
71	87	DS face of 3rd Street Culverts	1283.31	1283.42	1283.52	1283.59	1283.67

STONY RUN CREEK PROPOSED HEC2 RESULTS

Cross-section Number	Adjusted Cross-section Number		Proposed 5 year CWSEL	Proposed 10 year CWSEL	Proposed 25 year CWSEL	Proposed 50 year CWSEL	Proposed 100 year CWSEL
-	1	DS of Spillway	1237.00	1237.00	1237.00	1237.00	1237.00
-	3	US face of Spillway	1255.80	1256.11	1256.46	1256.70	1256.98
-	10	US face of SD Highway 37 Bridge	1258.34	1258.90	1259.54	1259.97	1260.45
-	12	XC at section line between sections 13 & 24	1259.31	1259.93	1260.63	1261.10	1261.62
-	14	XC "C"	1271.41	1271.88	1272.41	1272.76	1273.13
1	17	500 feet DS of 21st Street Bridge End of study	1272.97	1273.40	1273.89	1274.22	1274.59
5	21	US face of 21st Street Bridge	1273.55	1273.80	1274.10	1274.32	1274.57
8	24	Misc. XC, STATION 12+50	1274.38	1274.77	1275.23	1275.55	1275.93
14	30	Special Section near 16th Street, STATION 27+50	1274.72	1275.00	1275.38	1275.67	1276.03
17	33	Misc. XC, STATION 33+00	1275.06	1275.26	1275.56	1275.82	1276.14
21	37	Special Section, STATION 49+00	1276.94	1277.11	1277.31	1277.44	1277.60
28	44	US face of 9th Street Culvert	1280.71	1281.19	1281.78	1282.21	1282.76
33	49	Y at 6th Street (Detention basin), STATION 84+00	1280.73	1281.21	1281.79	1282.22	1282.77
36	52	STATION 98+00 (900 feet US of Y at 6th Street)	1280.73	1281.21	1281.79	1282.22	1282.77
39	55	DS face of 3rd Street Culverts, STATION 109+00	1281.69	1281.74	1281.90	1282.25	1282.78

Cross-section number = Number of section as shown in submittal dated February 9, 1999.

Adjusted Cross-section = Number of section as shown in the attached HEC-1 and HEC-2 program printout.

EXISTING HEC-1 OUTPUT

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            MAY  1991                  *
*          VERSION 4.0.1E               *
*    Lahey F77L-EM/32 version 5.01      *
*      Dodson & Associates, Inc.        *
*  RUN DATE  02/23/99  TIME  10:58:58   *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```


```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX  XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1       ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
  2       ID        NICK HOFFMAN, EIT E-7577
  3       ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
  4       ID       5 YEAR STORM EVENT WITH WETLAND INFLUENCE
  5       ID        ADDED AREA SOUTH OF 21st STREET BRIDGE
          *
  6       IT      30  1DEC98    0000     300
  7       IO       5       1
          *

  8       KK     101         COMPUTE RUNOFF HYDROGRAPH
  9       PH       0             0.24    0.77    1.34     2.1    2.25    2.51    2.92    3.32
 10       BA     0.4
 11       LS    0.55      87    3.39
 12       UC   18.72   15.13
          *

 13       KK    JAJB         ROUTE HYDROGRAPH
 14       RD    6700 0.00075    0.05             TRAP      10     0.3
          *

 15       KK     102         COMPUTE RUNOFF HYDROGRAPH
 16       BA       1
 17       LS    0.66      84    6.43
 18       UC   40.12    32.1
          *

 19       KK     100         COMPUTE RUNOFF HYDROGRAPH
 20       BA       1
 21       LS    0.62      85    4.57
 22       UC   29.01   23.21
          *

 23       KK      JB         COMBINE HYDROGRAPHS
 24       HC       3

 25       KK    JBJC         ROUTE HYDROGRAPH
 26       RD    8200 0.00061    0.05             TRAP      10     0.3
          *

 27       KK     104         COMPUTE RUNOFF HYDROGRAPH
 28       BA    0.51
 29       LS    0.68      83   12.83
 30       UC   35.34   28.27
          *

 31       KK     103         COMPUTE RUNOFF HYDROGRAPH
 32       BA    0.48
 33       LS    0.66      84   18.23
 34       UC   20.71   16.57
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  35      KK    JDJC        ROUTE HYDROGRAPH
  36      RD   11000 0.00164    0.06            TRAP      10     0.3
          *

  37      KK     105        COMPUTE RUNOFF HYDROGRAPH
  38      BA    1.03
  39      LS    0.51      85    3.58
  40      UC   34.13   27.31
          *

  41      KK      JC        COMBINE HYDROGRAPHS
  42      HC       4

  43      KK    JCJE        ROUTE HYDROGRAPH
  44      RD   11000 0.00118    0.07            TRAP      10     0.3
          *

  45      KK     108        COMPUTE RUNOFF HYDROGRAPH
  46      BA    0.53
  47      LS    0.65      82   13.58
  48      UC   36.18   28.94
          *

  49      KK     124        COMPUTE RUNOFF HYDROGRAPH
  50      BA    0.27
  51      LS    0.49      80    8.28
  52      UC   17.42   13.94
          *

  53      KK    JLJM        ROUTE HYDROGRAPH
  54      RD
  55      RC    0.06    0.06    0.06    3200  .00094
  56      RX       0      25      44      80     100     121     165     292
  57      RY  1284.8  1284.4    1284 1282.85 1282.84 1283.19  1283.1    1284
          *

  58      KK     125        COMPUTE RUNOFF HYDROGRAPH
  59      BA    0.22
  60      LS    0.72      80   11.12
  61      UC    18.5    14.8
          *

  62      KK      JM        COMBINE HYDROGRAPHS
  63      HC       2

  64      KK    JMJN        ROUTE HYDROGRAPH
  65      RD
  66      RC    0.06    0.06    0.06    1500 0.00133
  67      RX       0       5      23      77      80     131     155     218
  68      RY  1283.8    1283  1283.4  1281.6  1281.6  1283.1  1283.2  1283.5
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  69      KK     120        COMPUTE RUNOFF HYDROGRAPH
  70      BA    0.82
  71      LS    0.49      88     9.41
  72      UC    33.2   26.56
          *

  73      KK    JHJI        ROUTE HYDROGRAPH
  74      RD    3300 0.00182     0.05            TRAP      10      0.3
          *

  75      KK     121        COMPUTE RUNOFF HYDROGRAPH
  76      BA    0.82
  77      LS    0.51      85     7.12
  78      UC   18.05   14.44
          *

  79      KK      JI        COMBINE HYDROGRAPHS
  80      HC       2

  81      KK    JIJJ        ROUTE HYDROGRAPH
  82      RD    6300 0.00095     0.05            TRAP      10      0.3
          *

  83      KK     122        COMPUTE RUNOFF HYDROGRAPH
  84      BA    1.00
  85      LS    0.48      84     3.43
  86      UC   32.63   26.11
          *

  87      KK      JJ        COMBINE HYDROGRAPHS
  88      HC       2

  89      KK    JJJK        ROUTE HYDROGRAPH
  90      RD    6000  0.0005     0.06            TRAP      10      0.3
          *

  91      KK     123        COMPUTE RUNOFF HYDROGRAPH
  92      BA    0.76
  93      LS    0.54      85     1.87
  94      UC   31.11   24.89
          *

  95      KK      JK        COMBINE HYDROGRAPHS
  96      HC       2

  97      KK    JKJN        ROUTE HYDROGRAPH
  98      RD    1000   0.003     0.06            TRAP      10      0.3
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  99      KK      JN        COMBINE HYDROGRAPHS
 100      HC       2
 101      KK    JNJZ        ROUTE HYDROGRAPH
 102      RD
 103      RC    0.06    0.06    0.06    1000  0.0008
 104      RX       0      43      72     104   104.1     143     150     232
 105      RY    1282  1281.8  1281.6  1280.1  1280.1  1281.8  1281.8  1281.7
 106      KK    JZJO        ROUTE HYDROGRAPH
 107      RD
 108      RC    0.07    0.06    0.08    1500  0.0008
 109      RX       0      31      71      99    99.1     124     159     224
 110      RY  1281.3    1281  1280.6  1277.8  1277.8  1279.4  1279.4  1280.6
          *
 111      KK     127        COMPUTE RUNOFF HYDROGRAPH
 112      BA    0.46
 113      LS    0.66      77    2.45
 114      UC   26.47   21.18
          *
 115      KK      JO        COMBINE HYDROGRAPHS
 116      HC       2
 117      KK    JOJE        ROUTE HYDROGRAPH
 118      RD
 119      RC   0.045    0.06    0.08    2700 0.00185
 120      RX       0      20      50      88     135     156     172     250
 121      RY  1281.2    1281  1280.7  1277.7  1276.4  1277.4  1276.9    1280
          *
 122      KK      JE        COMBINE HYDROGRAPHS
 123      HC       3
 124      KK    JEJY        ROUTE HYDROGRAPH
 125      RD
 126      RC    0.13    0.12    0.16    1200 0.00083
 127      RX       0      60     221     284     309     365     377     397
 128      RY    1281    1277    1276    1274  1273.7  1274.6    1278  1281.2
          *
 129      KK     131        COMPUTE RUNOFF HYDROGRAPH
 130      BA     0.1
 131      LS    0.65      85       0
 132      UC    1.32    1.05
          *
 133      KK      JY        COMBINE HYDROGRAPHS
 134      HC       2
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  135     KK    JYJR        ROUTE HYDROGRAPH
  136     RD
  137     RC    0.04   0.035    0.04     400 0.00083
  138     RX       0      46      90     228   228.1     271     310     390
  139     RY    1281    1279    1276  1274.2  1274.2  1274.5    1277  1280.4
          *

  140     KK     106        COMPUTE RUNOFF HYDROGRAPH
  141     BA     1.3
  142     LS    0.65      84    11.2
  143     UC   17.95   14.36
          *

  144     KK    JQJR        ROUTE HYDROGRAPH
  145     RD    4000  0.0075    0.06            TRAP      10      0.3
          *

  146     KK     107        COMPUTE RUNOFF HYDROGRAPH
  147     BA     0.3
  148     LS    0.51      80    3.81
  149     UC   15.42   12.34
          *

  150     KK      JR        COMBINE HYDROGRAPHS
  151     HC       3

  152     KK    JRJX        ROUTE HYDROGRAPH
  153     RD
  154     RC     0.1     0.1     0.1     800 0.00830
  155     RX       0      55     152     302     365     382     399     430
  156     RY    1280    1279    1278  1273.7    1275    1277  1277.2    1281
          *

  157     KK     130        COMPUTE RUNOFF HYDROGRAPH
  158     BA    0.05
  159     LS    0.65      90       0
  160     UC    1.10    0.88
          *

  161     KK      JX        COMBINE HYDROGRAPHS
  162     HC       2

  163     KK    JXJS        ROUTE HYDROGRAPH
  164     RD
  165     RC     0.1     0.1     0.1     400 0.00830
  166     RX       0      55     152     302     365     382     399     430
  167     RY    1280    1279    1278  1273.7    1275    1277  1277.2    1281
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  168     KK     109        COMPUTE RUNOFF HYDROGRAPH
  169     BA    0.55
  170     LS    0.61      87     2.0
  171     UC   12.56   10.05
          *

  172     KK      JS        COMBINE HYDROGRAPHS
  173     HC       2

  174     KK   JSJ65
  175     RD    7000  0.0023    0.04            TRAP      30      10
          *

  176     KK     200        COMPUTE RUNOFF HYDROGRAPH
  177     BA    1.03
  178     LS     0.8      84     4.6
  179     UC   17.67   14.14
          *

  180     KK     202        COMPUTE RUNOFF HYDROGRAPH
  181     BA    0.36
  182     LS     0.9      82    6.88
  183     UC   16.21   12.97
          *

  184     KK      J1        COMBINE HYDROGRAPHS
  185     HC       2

  186     KK    J1J5
  187     RD    5280  0.0013   0.027            TRAP       7       3
          *

  188     KK     201        COMPUTE RUNOFF HYDROGRAPH
  189     BA     0.4
  190     LS     0.9      73    9.23
  191     UC   24.47   17.78
          *

  192     KK     204        COMPUTE RUNOFF HYDROGRAPH
  193     BA    1.08
  194     LS     0.8      85   17.16
  195     UC   39.32   31.46
          *

  196     KK      J5        COMBINE HYDROGRAPHS
  197     HC       3

  198     KK    J5J7
  199     RD    2700  0.0022   0.027            TRAP       7       3
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  200     KK     205        COMPUTE RUNOFF HYDROGRAPH
  201     BA    1.72
  202     LS     0.8      84     4.8
  203     UC   17.67   14.14
          *

  204     KK      J7        COMBINE HYDROGRAPHS
  205     HC       2

  206     KK   J7J10
  207     RD    7100  0.0006   0.033            TRAP      10       1
          *

  208     KK     208        COMPUTE RUNOFF HYDROGRAPH
  209     BA    0.54
  210     LS     0.9      83     1.1
  211     UC    19.1   15.28
          *

  212     KK     209        COMPUTE RUNOFF HYDROGRAPH
  213     BA    0.79
  214     LS     0.9      83    18.4
  215     UC   12.76   10.21
          *

  216     KK     210        COMPUTE RUNOFF HYDROGRAPH
  217     BA    0.57
  218     LS       1      81   13.36
  219     UC   14.33   11.47
          *

  220     KK     J20        COMBINE HYDROGRAPHS
  221     HC       3

  222     KK   J20J10
  223     RD    9800  0.0004   0.038            TRAP      10       1
          *

  224     KK     206        COMPUTE RUNOFF HYDROGRAPH
  225     BA       1
  226     LS     0.8      85   10.87
  227     UC   28.18   22.54
          *

  228     KK     211        COMPUTE RUNOFF HYDROGRAPH
  229     BA    0.59
  230     LS       1      81    4.12
  231     UC   17.68   14.14
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  232     KK     207        COMPUTE RUNOFF HYDROGRAPH
  233     BA       1
  234     LS     0.8       85   12.41
  235     UC   38.65    30.92
          *
  236     KK     J10        COMBINE HYDROGRAPHS
  237     HC       5
  238     KK  J10J21
  239     RD    5300  0.0004   0.033            TRAP      10       1
          *
  240     KK     212        COMPUTE RUNOFF HYDROGRAPH
  241     BA       1
  242     LS     0.9       81    8.23
  243     UC   29.41    23.53
          *
  244     KK     J21        COMBINE HYDROGRAPHS
  245     HC       2
  246     KK  J21J30
  247     RD    5200  0.0008   0.038            TRAP      10       1
          *
  248     KK     220        COMPUTE RUNOFF HYDROGRAPH
  249     BA    0.33
  250     LS     0.8       85   28.23
  251     UC    8.48     6.78
          *
  252     KK  J31J35
  253     RD    5000   0.001   0.038            TRAP       5       2
          *
  254     KK     217        COMPUTE RUNOFF HYDROGRAPH
  255     BA    0.64
  256     LS     0.8       84   20.32
  257     UC    5.73     4.58
          *
  258     KK     J35        COMBINE HYDROGRAPHS
  259     HC       2
  260     KK  J35J33
  261     RD    5300   0.001   0.033            TRAP      10       1
          *
```

```
LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  262 KK     216        COMPUTE RUNOFF HYDROGRAPH
  263 BA    1.11
  264 LS     0.8      85    6.43
  265 UC   27.98   22.38
      *
  266 KK     J33        COMBINE HYDROGRAPHS
  267 HC       2
  268 KK  J33J30
  269 RD     800  0.0009   0.033            TRAP      10       1
      *
  270 KK     J30        COMBINE HYDROGRAPHS
  271 HC       2
  272 KK  J30J40
  273 RD    3700  0.0011   0.033            TRAP      10       1
      *
  274 KK     213        COMPUTE RUNOFF HYDROGRAPH
  275 BA       1
  276 LS     0.8      85   11.97
  277 UC   43.67   34.94
      *
  278 KK     J40        COMBINE HYDROGRAPHS
  279 HC       2
  280 KK  J40J45
  281 RD    5300   0.003   0.033            TRAP      10       1
      *
  282 KK     223        COMPUTE RUNOFF HYDROGRAPH
  283 BA       1
  284 LS     0.8      85    3.18
  285 UC   36.56   29.25
      *
  286 KK     J45        COMBINE HYDROGRAPHS
  287 HC       2
  288 KK  J45J50
  289 RD    5800  0.0003   0.033            TRAP      10       1
      *
  290 KK     225        COMPUTE RUNOFF HYDROGRAPH
  291 BA    0.32
  292 LS     0.8      84    1.55
  293 UC   11.61    9.29
      *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

294       KK  J51J50
295       RD    8000  0.0016   0.030            TRAP       7       2
          *
296       KK     230        COMPUTE RUNOFF HYDROGRAPH
297       BA       1
298       LS     0.9      83    5.37
299       UC   25.03   20.02
          *
300       KK     231        COMPUTE RUNOFF HYDROGRAPH
301       BA    0.69
302       LS     0.9      83    1.31
303       UC   40.44   32.35
          *
304       KK     J50        COMBINE HYDROGRAPHS
305       HC       4
306       KK  J50J55
307       RD    5200  0.0017   0.038            TRAP      12       1
          *
308       KK     236        COMPUTE RUNOFF HYDROGRAPH
309       BA    0.15
310       LS     0.9      82    1.27
311       UC   11.04    8.83
          *
312       KK  J52J54
313       RD    5280  0.0027   0.027            TRAP       7       3
          *
314       KK     235        COMPUTE RUNOFF HYDROGRAPH
315       BA    0.71
316       LS     0.9      82    4.19
317       UC   18.04   14.43
          *
318       KK     J54        COMBINE HYDROGRAPHS
319       HC       2
320       KK  J54J56
321       RD    1100  0.0014   0.027            TRAP       7       3
          *
322       KK     242        COMPUTE RUNOFF HYDROGRAPH
323       BA    0.71
324       LS     0.8      84    8.69
325       UC   16.52   13.21
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  326     KK     237        COMPUTE RUNOFF HYDROGRAPH
  327     BA    0.27
  328     LS     0.8      85   10.37
  329     UC   15.49   12.39
          *

  330     KK     J56        COMBINE HYDROGRAPHS
  331     HC       4

  332     KK  J56J60
  333     RD    5500  0.0005   0.033            TRAP      10       1
          *

  334     KK     243        COMPUTE RUNOFF HYDROGRAPH
  335     BA    0.28
  336     LS     0.7      87    1.71
  337     UC   18.63   14.91
          *

  338     KK     245        COMPUTE RUNOFF HYDROGRAPH
  339     BA    0.29
  340     LS     0.8      84    1.13
  341     UC   18.88   15.11
          *

  342     KK     J60        COMBINE HYDROGRAPHS
  343     HC       3

  344     KK  J60J65
  345     RD    3000  0.0043   0.033            TRAP      15       7
          *

  346     KK     247        COMPUTE RUNOFF HYDROGRAPH
  347     BA       1
  348     LS     0.8      82    2.76
  349     UC    12.5      10
          *

  350     KK     J65        COMBINE HYDROGRAPHS
  351     HC       3

  352     KK  J65J70
  353     RD    4800   0.001    0.04            TRAP      30      10
          *

  354     KK     240        COMPUTE RUNOFF HYDROGRAPH
  355     BA       1
  356     LS     0.8      85    0.76
  357     UC   19.83   15.86
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  358     KK     J70        COMBINE HYDROGRAPHS
  359     HC       2
          *
  360     KK  J70J71
  361     RD    2200  0.0046    0.04            TRAP      45       3
          *
  362     KK     250        COMPUTE RUNOFF HYDROGRAPH
  363     BA    0.45
  364     LS     0.9      82    3.62
  365     UC   28.18   22.55
          *
  366     KK  J72J71
  367     RD    2000    0.02   0.033            TRAP       5      10
          *
  368     KK     251        COMPUTE RUNOFF HYDROGRAPH
  369     BA    0.44
  370     LS     0.9      82    1.39
  371     UC   10.62     8.5
          *
  372     KK     J71        COMBINE HYDROGRAPHS
  373     HC       3
          *
  374     KK     255        COMPUTE RUNOFF HYDROGRAPH
  375     BA       1
  376     LS     0.9      82    1.52
  377     UC   32.24    25.8
          *
  378     KK     J75        COMBINE HYDROGRAPHS
  379     HC       2
          *
  380     ZZ
```

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            MAY  1991                  *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  02/23/99  TIME  10:58:58   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```

STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
5 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	1DEC98	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	7DEC98	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

****** WARNING ****** THE FLOW RATE THAT YOU ARE ROUTING IS GREATER THAN
AT CAN BE CALCULATE FROM THE 8 POINT CROSS SECTION YOU ENTERED ON RC, RX,
AND RY RECORDS. THE PROGRAM HAD TO EXTRAPOLATE BEYOND THE MAXIMUM STORAGE-
DISCHARGE VALUE CALCULATED. INCREASE ELMAX ON THE RC RECORD OR MAKE THE CROSS
CTION LARGER.

EXISTING FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	18.	29.50	17.	14.	7.	0.40		
ROUTED TO	JAJB	18.	31.00	17.	14.	7.	0.40		
HYDROGRAPH AT	102	19.	48.50	19.	18.	12.	1.00		
HYDROGRAPH AT	100	27.	39.00	27.	24.	14.	1.00		
3 COMBINED AT	JB	57.	38.00	56.	52.	33.	2.40		
ROUTED TO	JBJC	56.	39.50	56.	51.	33.	2.40		
HYDROGRAPH AT	104	12.	44.50	11.	10.	7.	0.51		
HYDROGRAPH AT	103	19.	31.50	19.	15.	8.	0.48		
ROUTED TO	JDJC	19.	33.00	19.	15.	8.	0.48		
HYDROGRAPH AT	105	25.	43.50	25.	22.	14.	1.03		
4 COMBINED AT	JC	107.	39.00	107.	98.	62.	4.42		
ROUTED TO	JCJE	107.	40.50	107.	98.	61.	4.42		
HYDROGRAPH AT	108	12.	45.00	12.	11.	7.	0.53		
HYDROGRAPH AT	124	11.	28.50	11.	9.	4.	0.27		
ROUTED TO	JLJM	11.	30.50	11.	8.	4.	0.27		
HYDROGRAPH AT	125	8.	29.50	8.	6.	3.	0.22		
2 COMBINED AT	JM	19.	30.00	19.	15.	7.	0.49		
ROUTED TO	JMJN	19.	30.50	19.	15.	7.	0.49		
HYDROGRAPH AT	120	23.	42.50	23.	21.	13.	0.82		
ROUTED TO	JHJI	23.	43.00	23.	21.	13.	0.82		
HYDROGRAPH AT	121	37.	29.00	36.	28.	13.	0.82		
2 COMBINED AT	JI	52.	30.50	51.	45.	26.	1.64		
ROUTED TO	JIJJ	52.	31.00	51.	45.	26.	1.64		
HYDROGRAPH AT	122	25.	42.00	25.	22.	14.	1.00		
2 COMBINED AT	JJ	72.	34.50	72.	66.	40.	2.64		
ROUTED TO	JJJK	72.	36.00	72.	66.	40.	2.64		
HYDROGRAPH AT	123	20.	41.00	19.	17.	11.	0.76		
2 COMBINED AT	JK	91.	37.50	91.	83.	51.	3.40		
ROUTED TO	JKJN	91.	37.50	91.	83.	51.	3.40		
2 COMBINED AT	JN	107.	35.00	106.	97.	58.	3.89		
ROUTED TO	JNJZ	107.	35.00	106.	97.	58.	3.89		
ROUTED TO	JZJO	107.	35.50	106.	97.	58.	3.89		
HYDROGRAPH AT	127	10.	37.00	10.	9.	5.	0.46		
2 COMBINED AT	JO	117.	36.00	116.	106.	63.	4.35		
ROUTED TO	JOJE	117.	36.50	116.	106.	63.	4.35		

EXISTING FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	JE	234.	38.50	233.	213.	131.	9.30
ROUTED TO	JEJY	234.	39.00	232.	213.	131.	9.30
HYDROGRAPH AT	131	32.	13.50	14.	4.	1.	0.10
2 COMBINED AT	JY	234.	39.00	232.	213.	131.	9.40
ROUTED TO	JYJR	234.	39.00	232.	213.	131.	9.40
HYDROGRAPH AT	106	56.	29.00	55.	43.	20.	1.30
ROUTED TO	JQJR	56.	29.50	55.	43.	20.	1.30
HYDROGRAPH AT	107	13.	27.00	13.	9.	4.	0.30
3 COMBINED AT	JR	279.	36.00	277.	253.	154.	11.00
ROUTED TO	JRJX	279.	36.00	277.	253.	154.	11.00
HYDROGRAPH AT	130	22.	13.50	9.	3.	1.	0.05
2 COMBINED AT	JX	279.	36.00	277.	253.	154.	11.05
ROUTED TO	JXJS	279.	36.00	277.	253.	154.	11.05
HYDROGRAPH AT	109	33.	24.00	31.	22.	9.	0.55
2 COMBINED AT	JS	294.	35.00	291.	265.	162.	11.60
ROUTED TO	JSJ65	294.	36.00	291.	265.	162.	11.60
HYDROGRAPH AT	200	39.	29.00	38.	30.	14.	1.03
HYDROGRAPH AT	202	14.	27.50	13.	10.	4.	0.36
2 COMBINED AT	J1	53.	28.50	51.	40.	18.	1.39
ROUTED TO	J1J5	53.	29.00	51.	40.	18.	1.39
HYDROGRAPH AT	201	9.	34.50	9.	8.	4.	0.40
HYDROGRAPH AT	204	23.	48.00	23.	21.	14.	1.08
3 COMBINED AT	J5	73.	30.00	72.	62.	36.	2.87
ROUTED TO	J5J7	73.	30.50	72.	62.	36.	2.87
HYDROGRAPH AT	205	66.	29.00	64.	49.	23.	1.72
2 COMBINED AT	J7	138.	29.50	135.	111.	59.	4.59
ROUTED TO	J7J10	138.	30.00	134.	111.	59.	4.59
HYDROGRAPH AT	208	17.	30.50	16.	13.	6.	0.54
HYDROGRAPH AT	209	43.	24.00	41.	29.	12.	0.79
HYDROGRAPH AT	210	24.	26.00	23.	17.	7.	0.57
3 COMBINED AT	J20	81.	25.00	78.	58.	25.	1.90
ROUTED TO	J20J10	80.	26.50	77.	58.	25.	1.90
HYDROGRAPH AT	206	27.	38.00	27.	24.	14.	1.00
HYDROGRAPH AT	211	18.	29.00	18.	14.	6.	0.59
HYDROGRAPH AT	207	21.	47.50	20.	19.	13.	1.00
5 COMBINED AT	J10	262.	30.00	258.	216.	117.	9.08
ROUTED TO	J10J21	262.	30.00	257.	216.	117.	9.08
HYDROGRAPH AT	212	22.	39.50	22.	19.	11.	1.00

EXISTING FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	J21	279.	30.50	274.	234.	129.	10.08
ROUTED TO	J21J30	279.	31.00	274.	234.	129.	10.08
HYDROGRAPH AT	220	30.	20.00	28.	16.	6.	0.33
ROUTED TO	J31J35	30.	20.50	28.	16.	6.	0.33
HYDROGRAPH AT	217	73.	17.50	62.	30.	10.	0.64
2 COMBINED AT	J35	95.	18.00	86.	46.	16.	0.97
ROUTED TO	J35J33	95.	18.50	86.	46.	16.	0.97
HYDROGRAPH AT	216	29.	38.00	29.	25.	15.	1.11
2 COMBINED AT	J33	101.	18.50	93.	63.	31.	2.08
ROUTED TO	J33J30	100.	18.50	93.	62.	31.	2.08
2 COMBINED AT	J30	328.	30.00	324.	280.	159.	12.16
ROUTED TO	J30J40	328.	30.00	323.	280.	159.	12.16
HYDROGRAPH AT	213	18.	51.50	18.	17.	12.	1.00
2 COMBINED AT	J40	337.	30.50	332.	291.	170.	13.16
ROUTED TO	J40J45	337.	30.50	332.	291.	170.	13.16
HYDROGRAPH AT	223	20.	46.00	19.	18.	12.	1.00
2 COMBINED AT	J45	349.	31.00	345.	305.	182.	14.16
ROUTED TO	J45J50	348.	31.50	344.	304.	181.	14.16
HYDROGRAPH AT	225	17.	23.50	16.	11.	4.	0.32
ROUTED TO	J51J50	17.	24.50	16.	11.	4.	0.32
HYDROGRAPH AT	230	26.	35.50	25.	22.	12.	1.00
HYDROGRAPH AT	231	11.	49.50	11.	10.	7.	0.69
4 COMBINED AT	J50	389.	31.50	385.	342.	204.	16.17
ROUTED TO	J50J55	389.	31.50	385.	342.	204.	16.17
HYDROGRAPH AT	236	7.	23.00	7.	5.	2.	0.15
ROUTED TO	J52J54	7.	23.50	7.	5.	2.	0.15
HYDROGRAPH AT	235	24.	29.50	23.	18.	8.	0.71
2 COMBINED AT	J54	29.	28.50	28.	22.	10.	0.86
ROUTED TO	J54J56	29.	28.50	28.	22.	10.	0.86
HYDROGRAPH AT	242	30.	28.00	29.	22.	10.	0.71
HYDROGRAPH AT	237	13.	27.00	12.	9.	4.	0.27
4 COMBINED AT	J56	453.	31.00	448.	392.	228.	18.01
ROUTED TO	J56J60	453.	31.00	448.	392.	228.	18.01
HYDROGRAPH AT	243	11.	30.00	11.	9.	4.	0.28
HYDROGRAPH AT	245	10.	30.00	10.	8.	4.	0.29
3 COMBINED AT	J60	474.	31.00	468.	408.	236.	18.58
ROUTED TO	J60J65	474.	31.00	468.	408.	236.	18.58
HYDROGRAPH AT	247	47.	24.00	45.	31.	12.	1.00
3 COMBINED AT	J65	782.	32.50	774.	688.	409.	31.18

EXISTING FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

ROUTED TO	J65J70	782.	32.50	774.	688.	409.	31.18
HYDROGRAPH AT	240	34.	31.00	33.	27.	13.	1.00
2 COMBINED AT	J70	815.	32.50	806.	714.	422.	32.18
ROUTED TO	J70J71	815.	32.50	806.	714.	422.	32.18
HYDROGRAPH AT	250	10.	38.50	10.	9.	5.	0.45
ROUTED TO	J72J71	10.	38.50	10.	9.	5.	0.45
HYDROGRAPH AT	251	22.	22.50	21.	13.	5.	0.44
3 COMBINED AT	J71	833.	32.50	825.	730.	432.	33.07
HYDROGRAPH AT	255	19.	42.00	19.	17.	10.	1.00
2 COMBINED AT	J75	848.	32.50	840.	746.	442.	34.07

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	17.58	1860.00	1.84	30.00	17.58	1860.00	1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3926E+02 EXCESS=0.0000E+00 OUTFLOW=0.3924E+02 BASIN STORAGE=0.2165E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	56.44	2370.00	1.68	30.00	56.44	2370.00	1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2158E+03 EXCESS=0.0000E+00 OUTFLOW=0.2154E+03 BASIN STORAGE=0.6581E+00 PERCENT ERROR= -0.2

JDJC	MANE	30.00	19.44	1980.00	1.86	30.00	19.44	1980.00	1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4766E+02 EXCESS=0.0000E+00 OUTFLOW=0.4765E+02 BASIN STORAGE=0.2876E-01 PERCENT ERROR= -0.1

JCJE	MANE	30.00	107.21	2430.00	1.72	30.00	107.21	2430.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4056E+03 EXCESS=0.0000E+00 OUTFLOW=0.4049E+03 BASIN STORAGE=0.1336E+01 PERCENT ERROR= -0.2

JLJM	MANE	30.00	11.30	1830.00	1.64	30.00	11.30	1830.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2367E+02 EXCESS=0.0000E+00 OUTFLOW=0.2369E+02 BASIN STORAGE=0.5912E-02 PERCENT ERROR= -0.1

JMJN	MANE	30.00	19.39	1830.00	1.60	30.00	19.39	1830.00	1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4174E+02 EXCESS=0.0000E+00 OUTFLOW=0.4174E+02 BASIN STORAGE=0.2511E-02 PERCENT ERROR= 0.0

JHJI	MANE	30.00	23.42	2580.00	2.01	30.00	23.42	2580.00	2.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8815E+02 EXCESS=0.0000E+00 OUTFLOW=0.8810E+02 BASIN STORAGE=0.9712E-01 PERCENT ERROR= -0.1

JIJJ	MANE	30.00	52.24	1860.00	1.92	30.00	52.24	1860.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1680E+03 EXCESS=0.0000E+00 OUTFLOW=0.1679E+03 BASIN STORAGE=0.2397E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	72.15	2160.00	1.85	30.00	72.15	2160.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2603E+03 EXCESS=0.0000E+00 OUTFLOW=0.2600E+03 BASIN STORAGE=0.5090E+00 PERCENT ERROR= -0.1

JKJN	MANE	6.18	90.91	2256.83	1.82	30.00	90.90	2250.00	1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3294E+03 EXCESS=0.0000E+00 OUTFLOW=0.3294E+03 BASIN STORAGE=0.5581E-01 PERCENT ERROR= 0.0

JNJZ	MANE	30.00	106.82	2100.00	1.79	30.00	106.82	2100.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3712E+03 EXCESS=0.0000E+00 OUTFLOW=0.3711E+03 BASIN STORAGE=0.1174E+00 PERCENT ERROR= 0.0

JZJO	MANE	30.00	106.79	2130.00	1.79	30.00	106.79	2130.00	1.79

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3711E+03 EXCESS=0.0000E+00 OUTFLOW=0.3710E+03 BASIN STORAGE=0.1560E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	117.13	2190.00	1.73	30.00	117.13	2190.00	1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4028E+03 EXCESS=0.0000E+00 OUTFLOW=0.4025E+03 BASIN STORAGE=0.2456E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.97	233.62	2337.99	1.72	30.00	233.61	2340.00	1.72

NTINUITY SUMMARY (AC-FT) - INFLOW=0.8550E+03 EXCESS=0.0000E+00 OUTFLOW=0.8546E+03 BASIN STORAGE=0.6643E+00 PERCENT ERROR= 0.0

JYJR	MANE	5.33	233.60	2345.85	1.72	30.00	233.59	2340.00	1.72

NTINUITY SUMMARY (AC-FT) - INFLOW=0.8631E+03 EXCESS=0.0000E+00 OUTFLOW=0.8631E+03 BASIN STORAGE=0.1017E+00 PERCENT ERROR= 0.0

JQJR	MANE	21.36	56.24	1751.59	1.74	30.00	56.20	1770.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1208E+03 EXCESS=0.0000E+00 OUTFLOW=0.1208E+03 BASIN STORAGE=0.6865E-02 PERCENT ERROR= 0.0

JRJX	MANE	8.24	279.34	2167.35	1.72	30.00	279.30	2160.00	1.72

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1009E+04 EXCESS=0.0000E+00 OUTFLOW=0.1009E+04 BASIN STORAGE=0.1552E+00 PERCENT ERROR= 0.0

JXJS	MANE	4.12	279.30	2167.49	1.72	30.00	279.27	2160.00	1.72

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1014E+04 EXCESS=0.0000E+00 OUTFLOW=0.1013E+04 BASIN STORAGE=0.7804E-01 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	293.56	2160.00	1.72	30.00	293.56	2160.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1065E+04 EXCESS=0.0000E+00 OUTFLOW=0.1065E+04 BASIN STORAGE=0.1113E+01 PERCENT ERROR= 0.0

J1J5	MANE	30.00	52.67	1740.00	1.48	30.00	52.67	1740.00	1.48

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1099E+03 EXCESS=0.0000E+00 OUTFLOW=0.1099E+03 BASIN STORAGE=0.7691E-02 PERCENT ERROR= 0.0

J5J7	MANE	13.49	73.14	1821.81	1.54	30.00	73.12	1830.00	1.54

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2354E+03 EXCESS=0.0000E+00 OUTFLOW=0.2354E+03 BASIN STORAGE=0.7382E-01 PERCENT ERROR= 0.0

J7J10	MANE	30.00	137.75	1800.00	1.53	30.00	137.75	1800.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3741E+03 EXCESS=0.0000E+00 OUTFLOW=0.3739E+03 BASIN STORAGE=0.3891E+00 PERCENT ERROR= -0.1

J20J10	MANE	30.00	79.76	1590.00	1.50	30.00	79.76	1590.00	1.50

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1521E+03 EXCESS=0.0000E+00 OUTFLOW=0.1518E+03 BASIN STORAGE=0.3027E-01 PERCENT ERROR= 0.1

J10J21	MANE	30.00	261.97	1800.00	1.53	30.00	261.97	1800.00	1.53

NTINUITY SUMMARY (AC-FT) - INFLOW=0.7425E+03 EXCESS=0.0000E+00 OUTFLOW=0.7422E+03 BASIN STORAGE=0.5177E+00 PERCENT ERROR= 0.0

J21J30	MANE	26.81	278.82	1849.94	1.52	30.00	278.68	1860.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8162E+03 EXCESS=0.0000E+00 OUTFLOW=0.8161E+03 BASIN STORAGE=0.4900E+00 PERCENT ERROR= 0.0

J31J35	MANE	30.00	30.12	1230.00	1.99	30.00	30.12	1230.00	1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3502E+02 EXCESS=0.0000E+00 OUTFLOW=0.3501E+02 BASIN STORAGE=0.8223E-02 PERCENT ERROR= 0.0

J35J33	MANE	30.00	95.17	1110.00	1.87	30.00	95.17	1110.00	1.87

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9669E+02 EXCESS=0.0000E+00 OUTFLOW=0.9667E+02 BASIN STORAGE=0.1078E-01 PERCENT ERROR= 0.0

J33J30	MANE	5.01	100.42	1117.97	1.72	30.00	100.33	1110.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1907E+03 EXCESS=0.0000E+00 OUTFLOW=0.1907E+03 BASIN STORAGE=0.5274E-02 PERCENT ERROR= 0.0

J30J40	MANE	14.78	328.03	1802.55	1.55	30.00	328.00	1800.00	1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1007E+04 EXCESS=0.0000E+00 OUTFLOW=0.1007E+04 BASIN STORAGE=0.2940E+00 PERCENT ERROR= 0.0

J40J45	MANE	14.95	336.73	1838.79	1.56	30.00	336.72	1830.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1094E+04 EXCESS=0.0000E+00 OUTFLOW=0.1093E+04 BASIN STORAGE=0.3999E+00 PERCENT ERROR= 0.0

J45J50	MANE	30.00	348.08	1890.00	1.55	30.00	348.08	1890.00	1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1174E+04 EXCESS=0.0000E+00 OUTFLOW=0.1173E+04 BASIN STORAGE=0.1087E+01 PERCENT ERROR= 0.0

J51J50	MANE	30.00	16.77	1470.00	1.46	30.00	16.77	1470.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2485E+02 EXCESS=0.0000E+00 OUTFLOW=0.2485E+02 BASIN STORAGE=0.1092E-01 PERCENT ERROR= -0.1

J50J55	MANE	18.88	388.91	1906.98	1.53	30.00	388.81	1890.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1321E+04 EXCESS=0.0000E+00 OUTFLOW=0.1320E+04 BASIN STORAGE=0.6952E+00 PERCENT ERROR= 0.0

J52J54	MANE	30.00	7.21	1410.00	1.29	30.00	7.21	1410.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1031E+02 EXCESS=0.0000E+00 OUTFLOW=0.1031E+02 BASIN STORAGE=0.5093E-02 PERCENT ERROR= -0.1

J54J56	MANE	8.40	28.93	1713.71	1.34	30.00	28.92	1710.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6127E+02 EXCESS=0.0000E+00 OUTFLOW=0.6127E+02 BASIN STORAGE=0.1288E-02 PERCENT ERROR= 0.0

J56J60	MANE	25.82	453.04	1859.31	1.53	30.00	453.04	1860.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1466E+04 EXCESS=0.0000E+00 OUTFLOW=0.1465E+04 BASIN STORAGE=0.9863E+00 PERCENT ERROR= 0.0

J60J65	MANE	10.01	474.14	1872.28	1.53	30.00	474.03	1860.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1513E+04 EXCESS=0.0000E+00 OUTFLOW=0.1513E+04 BASIN STORAGE=0.3176E+00 PERCENT ERROR= 0.0

J65J70	MANE	29.91	781.74	1973.88	1.59	30.00	781.57	1950.00	1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2651E+04 EXCESS=0.0000E+00 OUTFLOW=0.2650E+04 BASIN STORAGE=0.1859E+01 PERCENT ERROR= 0.0

J70J71	MANE	6.49	814.62	1959.70	1.59	30.00	814.53	1950.00	1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2729E+04 EXCESS=0.0000E+00 OUTFLOW=0.2729E+04 BASIN STORAGE=0.5583E+00 PERCENT ERROR= 0.0

J72J71	MANE	10.82	9.87	2326.51	1.33	30.00	9.87	2310.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3203E+02 EXCESS=0.0000E+00 OUTFLOW=0.3203E+02 BASIN STORAGE=0.2098E-02 PERCENT ERROR= 0.0

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*

*** NORMAL END OF HEC-1 ***

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 10:56:44

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 10:56:44

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
10 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	1DEC98	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	7DEC98	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

****** WARNING ****** THE FLOW RATE THAT YOU ARE ROUTING IS GREATER THAN WHAT CAN BE CALCULATE FROM THE 8 POINT CROSS SECTION YOU ENTERED ON RC, RX, AND RY RECORDS. THE PROGRAM HAD TO EXTRAPOLATE BEYOND THE MAXIMUM STORAGE-DISCHARGE VALUE CALCULATED. INCREASE ELMAX ON THE RC RECORD OR MAKE THE CROSS SECTION LARGER.

EXISTING FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	22.	29.50	22.	17.	8.	0.40		
ROUTED TO	JAJB	22.	30.50	22.	17.	8.	0.40		
HYDROGRAPH AT	102	25.	48.50	24.	23.	16.	1.00		
HYDROGRAPH AT	100	34.	39.00	34.	30.	18.	1.00		
3 COMBINED AT	JB	71.	38.00	71.	65.	41.	2.40		
ROUTED TO	JBJC	71.	39.00	71.	65.	41.	2.40		
HYDROGRAPH AT	104	15.	44.00	14.	13.	9.	0.51		
HYDROGRAPH AT	103	24.	31.00	24.	19.	10.	0.48		
ROUTED TO	JDJC	24.	33.00	24.	19.	10.	0.48		
HYDROGRAPH AT	105	31.	43.00	31.	28.	18.	1.03		
4 COMBINED AT	JC	135.	38.50	134.	123.	77.	4.42		
ROUTED TO	JCJE	135.	40.00	134.	123.	77.	4.42		
HYDROGRAPH AT	108	15.	45.00	15.	13.	9.	0.53		
HYDROGRAPH AT	124	14.	28.50	14.	11.	5.	0.27		
ROUTED TO	JLJM	14.	30.50	14.	11.	5.	0.27		
HYDROGRAPH AT	125	10.	29.50	10.	8.	4.	0.22		
2 COMBINED AT	JM	25.	30.00	24.	19.	9.	0.49		
ROUTED TO	JMJN	25.	30.50	24.	19.	9.	0.49		
HYDROGRAPH AT	120	29.	42.50	29.	26.	16.	0.82		
ROUTED TO	JHJI	29.	42.50	29.	26.	16.	0.82		
HYDROGRAPH AT	121	47.	29.00	45.	35.	17.	0.82		
2 COMBINED AT	JI	66.	30.00	64.	57.	33.	1.64		
ROUTED TO	JIJJ	65.	31.00	64.	57.	33.	1.64		
HYDROGRAPH AT	122	31.	42.00	31.	28.	18.	1.00		
2 COMBINED AT	JJ	90.	34.00	90.	83.	50.	2.64		
ROUTED TO	JJJK	90.	35.00	90.	83.	50.	2.64		
HYDROGRAPH AT	123	25.	40.50	25.	22.	13.	0.76		
2 COMBINED AT	JK	114.	37.50	113.	104.	63.	3.40		
ROUTED TO	JKJN	114.	37.50	113.	104.	63.	3.40		
2 COMBINED AT	JN	134.	34.00	133.	121.	72.	3.89		
ROUTED TO	JNJZ	134.	34.50	133.	121.	72.	3.89		
ROUTED TO	JZJO	134.	35.00	133.	121.	72.	3.89		
HYDROGRAPH AT	127	14.	36.50	13.	11.	7.	0.46		
2 COMBINED AT	JO	147.	35.00	146.	133.	79.	4.35		
ROUTED TO	JOJE	147.	35.50	146.	133.	79.	4.35		

EXISTING FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	JE	294.	38.00	292.	268.	165.	9.30
ROUTED TO	JEJY	293.	38.50	292.	268.	165.	9.30
HYDROGRAPH AT	131	46.	13.50	19.	6.	2.	0.10
2 COMBINED AT	JY	293.	38.50	292.	268.	165.	9.40
ROUTED TO	JYJR	293.	38.50	292.	268.	165.	9.40
HYDROGRAPH AT	106	71.	29.00	69.	54.	25.	1.30
ROUTED TO	JQJR	71.	29.00	69.	54.	25.	1.30
HYDROGRAPH AT	107	17.	26.50	16.	12.	5.	0.30
3 COMBINED AT	JR	352.	35.50	350.	319.	193.	11.00
ROUTED TO	JRJX	352.	35.50	350.	319.	193.	11.00
HYDROGRAPH AT	130	29.	13.50	11.	3.	1.	0.05
2 COMBINED AT	JX	352.	35.50	350.	319.	193.	11.05
ROUTED TO	JXJS	352.	35.50	350.	319.	193.	11.05
HYDROGRAPH AT	109	42.	24.00	40.	27.	11.	0.55
2 COMBINED AT	JS	370.	34.50	368.	335.	203.	11.60
ROUTED TO	JSJ65	370.	35.00	368.	334.	203.	11.60
HYDROGRAPH AT	200	51.	28.50	49.	38.	18.	1.03
HYDROGRAPH AT	202	18.	27.50	17.	13.	6.	0.36
2 COMBINED AT	J1	69.	28.50	67.	51.	24.	1.39
ROUTED TO	J1J5	69.	28.50	67.	51.	24.	1.39
HYDROGRAPH AT	201	12.	34.50	12.	10.	5.	0.40
HYDROGRAPH AT	204	29.	47.50	29.	26.	18.	1.08
3 COMBINED AT	J5	95.	30.00	93.	80.	47.	2.87
ROUTED TO	J5J7	95.	30.00	93.	80.	47.	2.87
HYDROGRAPH AT	205	85.	28.50	83.	64.	30.	1.72
2 COMBINED AT	J7	179.	29.50	174.	143.	76.	4.59
ROUTED TO	J7J10	179.	30.00	174.	143.	76.	4.59
HYDROGRAPH AT	208	22.	30.00	22.	17.	8.	0.54
HYDROGRAPH AT	209	56.	24.00	53.	37.	15.	0.79
HYDROGRAPH AT	210	32.	25.50	31.	22.	9.	0.57
3 COMBINED AT	J20	105.	25.00	101.	75.	33.	1.90
ROUTED TO	J20J10	104.	26.00	101.	75.	33.	1.90
HYDROGRAPH AT	206	35.	38.00	34.	30.	18.	1.00
HYDROGRAPH AT	211	24.	29.00	24.	18.	9.	0.59
HYDROGRAPH AT	207	26.	47.00	26.	24.	16.	1.00
5 COMBINED AT	J10	340.	29.50	333.	279.	151.	9.08
ROUTED TO	J10J21	339.	30.00	333.	278.	151.	9.08
HYDROGRAPH AT	212	28.	39.00	28.	25.	15.	1.00

EXISTING FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	J21	361.	30.00	355.	301.	165.	10.08
ROUTED TO	J21J30	361.	30.50	355.	301.	165.	10.08
HYDROGRAPH AT	220	39.	20.00	35.	20.	7.	0.33
ROUTED TO	J31J35	38.	20.50	35.	20.	7.	0.33
HYDROGRAPH AT	217	96.	17.50	81.	38.	13.	0.64
2 COMBINED AT	J35	124.	18.00	110.	57.	20.	0.97
ROUTED TO	J35J33	123.	18.50	110.	57.	20.	0.97
HYDROGRAPH AT	216	37.	38.00	37.	32.	19.	1.11
2 COMBINED AT	J33	130.	18.50	119.	79.	39.	2.08
ROUTED TO	J33J30	130.	18.50	119.	79.	39.	2.08
2 COMBINED AT	J30	423.	29.50	417.	360.	203.	12.16
ROUTED TO	J30J40	423.	30.00	417.	360.	203.	12.16
HYDROGRAPH AT	213	23.	51.50	23.	21.	15.	1.00
2 COMBINED AT	J40	434.	30.00	428.	374.	218.	13.16
ROUTED TO	J40J45	434.	30.00	428.	374.	218.	13.16
HYDROGRAPH AT	223	25.	45.50	25.	23.	15.	1.00
2 COMBINED AT	J45	449.	30.50	444.	391.	232.	14.16
ROUTED TO	J45J50	448.	31.00	443.	391.	232.	14.16
HYDROGRAPH AT	225	22.	23.00	21.	14.	5.	0.32
ROUTED TO	J51J50	22.	24.00	21.	14.	5.	0.32
HYDROGRAPH AT	230	34.	35.50	33.	28.	16.	1.00
HYDROGRAPH AT	231	14.	49.00	14.	13.	9.	0.69
4 COMBINED AT	J50	502.	31.00	496.	440.	262.	16.17
ROUTED TO	J50J55	501.	31.00	496.	440.	262.	16.17
HYDROGRAPH AT	236	10.	22.50	9.	6.	2.	0.15
ROUTED TO	J52J54	10.	23.50	9.	6.	2.	0.15
HYDROGRAPH AT	235	31.	29.00	30.	24.	11.	0.71
2 COMBINED AT	J54	38.	28.00	37.	29.	13.	0.86
ROUTED TO	J54J56	38.	28.00	37.	29.	13.	0.86
HYDROGRAPH AT	242	39.	27.50	38.	28.	13.	0.71
HYDROGRAPH AT	237	16.	26.50	16.	12.	5.	0.27
4 COMBINED AT	J56	586.	30.50	579.	505.	293.	18.01
ROUTED TO	J56J60	585.	30.50	578.	505.	293.	18.01
HYDROGRAPH AT	243	15.	29.50	14.	11.	5.	0.28
HYDROGRAPH AT	245	13.	30.00	13.	10.	5.	0.29
3 COMBINED AT	J60	613.	30.50	605.	526.	303.	18.58
ROUTED TO	J60J65	613.	30.50	605.	526.	303.	18.58
HYDROGRAPH AT	247	62.	24.00	59.	41.	16.	1.00
3 COMBINED AT	J65	1003.	31.50	992.	881.	521.	31.18

EXISTING FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

ROUTED TO	J65J70	1003.	32.00	992.	880.	521.	31.18
HYDROGRAPH AT	240	44.	31.00	43.	34.	17.	1.00
2 COMBINED AT	J70	1046.	32.00	1034.	914.	538.	32.18
ROUTED TO	J70J71	1046.	32.00	1034.	914.	538.	32.18
HYDROGRAPH AT	250	13.	38.00	13.	11.	7.	0.45
ROUTED TO	J72J71	13.	38.50	13.	11.	7.	0.45
HYDROGRAPH AT	251	29.	22.50	28.	18.	7.	0.44
3 COMBINED AT	J71	1071.	32.00	1059.	936.	551.	33.07
HYDROGRAPH AT	255	25.	42.00	24.	22.	14.	1.00
2 COMBINED AT	J75	1090.	32.00	1078.	956.	564.	34.07

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	22.15	1830.00	2.30	30.00	22.15	1830.00	2.30
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4912E-02 EXCESS=0.0000E+00 OUTFLOW=0.4910E+02 BASIN STORAGE=0.1996E-01 PERCENT ERROR= 0.0									
JBJC	MANE	30.00	71.25	2340.00	2.13	30.00	71.25	2340.00	2.13
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2725E-03 EXCESS=0.0000E+00 OUTFLOW=0.2721E+03 BASIN STORAGE=0.7665E+00 PERCENT ERROR= -0.1									
JDJC	MANE	30.00	24.33	1980.00	2.31	30.00	24.33	1980.00	2.31
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5920E-02 EXCESS=0.0000E+00 OUTFLOW=0.5920E+02 BASIN STORAGE=0.3124E-01 PERCENT ERROR= 0.0									
JCJE	MANE	30.00	134.78	2400.00	2.16	30.00	134.78	2400.00	2.16
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5101E-03 EXCESS=0.0000E+00 OUTFLOW=0.5093E+03 BASIN STORAGE=0.1552E+01 PERCENT ERROR= -0.1									
JLJM	MANE	30.00	14.33	1830.00	2.07	30.00	14.33	1830.00	2.07
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2975E-02 EXCESS=0.0000E+00 OUTFLOW=0.2977E+02 BASIN STORAGE=0.5346E-02 PERCENT ERROR= -0.1									
JMJN	MANE	30.00	24.74	1830.00	2.02	30.00	24.74	1830.00	2.02
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5272E-02 EXCESS=0.0000E+00 OUTFLOW=0.5272E+02 BASIN STORAGE=0.2471E-02 PERCENT ERROR= 0.0									
JHJI	MANE	30.00	28.94	2550.00	2.48	30.00	28.94	2550.00	2.48
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1087E-03 EXCESS=0.0000E+00 OUTFLOW=0.1086E+03 BASIN STORAGE=0.1111E+00 PERCENT ERROR= 0.0									
JIJJ	MANE	30.00	65.41	1860.00	2.38	30.00	65.41	1860.00	2.38
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2083E-03 EXCESS=0.0000E+00 OUTFLOW=0.2082E+03 BASIN STORAGE=0.2742E+00 PERCENT ERROR= -0.1									
JJJK	MANE	30.00	90.04	2100.00	2.30	30.00	90.04	2100.00	2.30
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3242E-03 EXCESS=0.0000E+00 OUTFLOW=0.3238E+03 BASIN STORAGE=0.5853E+00 PERCENT ERROR= -0.1									
JKJN	MANE	5.74	113.61	2245.04	2.27	30.00	113.61	2250.00	2.27
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4113E-03 EXCESS=0.0000E+00 OUTFLOW=0.4113E+03 BASIN STORAGE=0.6425E-01 PERCENT ERROR= 0.0									
JNJZ	MANE	26.92	133.91	2072.63	2.24	30.00	133.91	2070.00	2.24
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4640E+03 EXCESS=0.0000E+00 OUTFLOW=0.4640E+03 BASIN STORAGE=0.1378E+00 PERCENT ERROR= 0.0									
JZJO	MANE	30.00	133.87	2100.00	2.24	30.00	133.87	2100.00	2.24

EXISTING FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	22.15	1830.00	2.30	30.00	22.15	1830.00	2.30
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4912E+02 EXCESS=0.0000E+00 OUTFLOW=0.4910E+02 BASIN STORAGE=0.1996E-01 PERCENT ERROR= 0.0									
JBJC	MANE	30.00	71.25	2340.00	2.13	30.00	71.25	2340.00	2.13
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2725E+03 EXCESS=0.0000E+00 OUTFLOW=0.2721E+03 BASIN STORAGE=0.7665E+00 PERCENT ERROR= -0.1									
JDJC	MANE	30.00	24.33	1980.00	2.31	30.00	24.33	1980.00	2.31
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5920E+02 EXCESS=0.0000E+00 OUTFLOW=0.5920E+02 BASIN STORAGE=0.3124E-01 PERCENT ERROR= 0.0									
JCJE	MANE	30.00	134.78	2400.00	2.16	30.00	134.78	2400.00	2.16
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5101E+03 EXCESS=0.0000E+00 OUTFLOW=0.5093E+03 BASIN STORAGE=0.1552E+01 PERCENT ERROR= -0.1									
JLJM	MANE	30.00	14.33	1830.00	2.07	30.00	14.33	1830.00	2.07
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2975E+02 EXCESS=0.0000E+00 OUTFLOW=0.2977E+02 BASIN STORAGE=0.5346E-02 PERCENT ERROR= -0.1									
JMJN	MANE	30.00	24.74	1830.00	2.02	30.00	24.74	1830.00	2.02
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5272E+02 EXCESS=0.0000E+00 OUTFLOW=0.5272E+02 BASIN STORAGE=0.2471E-02 PERCENT ERROR= 0.0									
JHJI	MANE	30.00	28.94	2550.00	2.48	30.00	28.94	2550.00	2.48
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1087E+03 EXCESS=0.0000E+00 OUTFLOW=0.1086E+03 BASIN STORAGE=0.1111E+00 PERCENT ERROR= 0.0									
JIJJ	MANE	30.00	65.41	1860.00	2.38	30.00	65.41	1860.00	2.38
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2083E+03 EXCESS=0.0000E+00 OUTFLOW=0.2082E+03 BASIN STORAGE=0.2742E+00 PERCENT ERROR= -0.1									
JJJK	MANE	30.00	90.04	2100.00	2.30	30.00	90.04	2100.00	2.30
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3242E+03 EXCESS=0.0000E+00 OUTFLOW=0.3238E+03 BASIN STORAGE=0.5853E+00 PERCENT ERROR= -0.1									
JKJN	MANE	5.74	113.61	2245.04	2.27	30.00	113.61	2250.00	2.27
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4113E+03 EXCESS=0.0000E+00 OUTFLOW=0.4113E+03 BASIN STORAGE=0.6425E-01 PERCENT ERROR= 0.0									
JNJZ	MANE	26.92	133.91	2072.63	2.24	30.00	133.91	2070.00	2.24
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4640E+03 EXCESS=0.0000E+00 OUTFLOW=0.4640E+03 BASIN STORAGE=0.1378E+00 PERCENT ERROR= 0.0									
JZJO	MANE	30.00	133.87	2100.00	2.24	30.00	133.87	2100.00	2.24

EXISTING FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4640E+03 EXCESS=0.0000E+00 OUTFLOW=0.4638E+03 BASIN STORAGE=0.1823E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	147.28	2130.00	2.18	30.00	147.28	2130.00	2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5051E+03 EXCESS=0.0000E+00 OUTFLOW=0.5049E+03 BASIN STORAGE=0.2888E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.23	293.45	2308.85	2.16	30.00	293.45	2310.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1074E+04 EXCESS=0.0000E+00 OUTFLOW=0.1073E+04 BASIN STORAGE=0.7949E+00 PERCENT ERROR= 0.0

JYJR	MANE	4.96	293.43	2315.71	2.16	30.00	293.42	2310.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1084E+04 EXCESS=0.0000E+00 OUTFLOW=0.1084E+04 BASIN STORAGE=0.1266E+00 PERCENT ERROR= 0.0

JQJR	MANE	19.75	71.23	1757.76	2.19	30.00	71.22	1740.00	2.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1516E+03 EXCESS=0.0000E+00 OUTFLOW=0.1516E+03 BASIN STORAGE=0.7181E-02 PERCENT ERROR= 0.0

JRJX	MANE	7.54	352.06	2140.13	2.16	30.00	352.04	2130.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1267E+04 EXCESS=0.0000E+00 OUTFLOW=0.1267E+04 BASIN STORAGE=0.1805E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.77	352.03	2136.50	2.16	30.00	352.00	2130.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1273E+04 EXCESS=0.0000E+00 OUTFLOW=0.1273E+04 BASIN STORAGE=0.9064E-01 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	370.43	2100.00	2.16	30.00	370.43	2100.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1339E-04 EXCESS=0.0000E+00 OUTFLOW=0.1338E+04 BASIN STORAGE=0.1285E+01 PERCENT ERROR= -0.1

J1J5	MANE	30.00	68.59	1710.00	1.91	30.00	68.59	1710.00	1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1418E+03 EXCESS=0.0000E+00 OUTFLOW=0.1418E+03 BASIN STORAGE=0.6616E-02 PERCENT ERROR= 0.0

J5J7	MANE	12.55	94.56	1807.20	1.96	30.00	94.56	1800.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3005E+03 EXCESS=0.0000E+00 OUTFLOW=0.3005E+03 BASIN STORAGE=0.8637E-01 PERCENT ERROR= 0.0

J7J10	MANE	30.00	178.63	1800.00	1.96	30.00	178.63	1800.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4790E+03 EXCESS=0.0000E+00 OUTFLOW=0.4788E+03 BASIN STORAGE=0.4511E+00 PERCENT ERROR= 0.0

J20J10	MANE	30.00	103.82	1560.00	1.92	30.00	103.82	1560.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1952E+03 EXCESS=0.0000E+00 OUTFLOW=0.1950E+03 BASIN STORAGE=0.2899E-01 PERCENT ERROR= 0.1

J10J21	MANE	29.46	338.99	1797.32	1.96	30.00	338.90	1800.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9505E+03 EXCESS=0.0000E+00 OUTFLOW=0.9502E+03 BASIN STORAGE=0.6024E+00 PERCENT ERROR= 0.0

J21J30 MANE 24.67 360.75 1825.30 1.95 30.00 360.66 1830.00 1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1046E+04 EXCESS=0.0000E+00 OUTFLOW=0.1046E+04 BASIN STORAGE=0.5695E+00 PERCENT ERROR= 0.0

J31J35 MANE 30.00 38.36 1230.00 2.45 30.00 38.36 1230.00 2.45

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4313E+02 EXCESS=0.0000E+00 OUTFLOW=0.4312E+02 BASIN STORAGE=0.8555E-02 PERCENT ERROR= 0.0

J35J33 MANE 29.96 123.27 1108.55 2.32 30.00 123.14 1110.00 2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1201E+03 EXCESS=0.0000E+00 OUTFLOW=0.1201E+03 BASIN STORAGE=0.1212E-01 PERCENT ERROR= 0.0

J33J30 MANE 4.61 130.28 1110.83 2.17 30.00 130.26 1110.00 2.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2403E+03 EXCESS=0.0000E+00 OUTFLOW=0.2403E+03 BASIN STORAGE=0.5319E-02 PERCENT ERROR= 0.0

J30J40 MANE 13.61 422.90 1782.78 1.98 30.00 422.80 1800.00 1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1286E+04 EXCESS=0.0000E+00 OUTFLOW=0.1286E+04 BASIN STORAGE=0.3396E+00 PERCENT ERROR= 0.0

J40J45 MANE 13.77 433.76 1817.93 1.99 30.00 433.69 1800.00 1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1396E+04 EXCESS=0.0000E+00 OUTFLOW=0.1396E+04 BASIN STORAGE=0.4639E+00 PERCENT ERROR= 0.0

J45J50 MANE 30.00 448.34 1860.00 1.98 30.00 448.34 1860.00 1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1500E+04 EXCESS=0.0000E+00 OUTFLOW=0.1499E+04 BASIN STORAGE=0.1268E+01 PERCENT ERROR= 0.0

J51J50 MANE 30.00 22.19 1440.00 1.89 30.00 22.19 1440.00 1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3223E+02 EXCESS=0.0000E+00 OUTFLOW=0.3224E+02 BASIN STORAGE=0.9979E-02 PERCENT ERROR= 0.0

J50J55 MANE 17.36 501.39 1874.37 1.96 30.00 501.22 1890.00 1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1692E+04 EXCESS=0.0000E+00 OUTFLOW=0.1691E+04 BASIN STORAGE=0.8133E+00 PERCENT ERROR= 0.0

J52J54 MANE 30.00 9.72 1410.00 1.70 30.00 9.72 1410.00 1.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1361E+02 EXCESS=0.0000E+00 OUTFLOW=0.1362E+02 BASIN STORAGE=0.4980E-02 PERCENT ERROR= 0.0

J54J56 MANE 7.77 38.12 1686.31 1.75 30.00 38.12 1680.00 1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8033E+02 EXCESS=0.0000E+00 OUTFLOW=0.8033E+02 BASIN STORAGE=0.1312E-02 PERCENT ERROR= 0.0

J56J60 MANE 23.77 585.42 1830.03 1.96 30.00 585.42 1830.00 1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1879E+04 EXCESS=0.0000E+00 OUTFLOW=0.1878E+04 BASIN STORAGE=0.1151E+01 PERCENT ERROR= 0.0

J60J65 MANE 9.31 612.84 1844.11 1.96 30.00 612.71 1830.00 1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1939E+04 EXCESS=0.0000E+00 OUTFLOW=0.1939E+04 BASIN STORAGE=0.3724E+00 PERCENT ERROR= 0.0

J65J70	MANE	27.80	1002.70	1918.41	2.03	30.00	1002.69	1920.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3374E+04 EXCESS=0.0000E+00 OUTFLOW=0.3373E+04 BASIN STORAGE=0.2134E+01 PERCENT ERROR= 0.0

J70J71	MANE	5.94	1046.15	1924.76	2.02	30.00	1046.06	1920.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3475E+04 EXCESS=0.0000E+00 OUTFLOW=0.3475E+04 BASIN STORAGE=0.6311E+00 PERCENT ERROR= 0.0

J72J71	MANE	10.09	12.99	2290.25	1.75	30.00	12.99	2310.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4201E+02 EXCESS=0.0000E+00 OUTFLOW=0.4201E+02 BASIN STORAGE=0.2212E-02 PERCENT ERROR= 0.0

J65J70	MANE	27.80	1002.70	1918.41	2.03	30.00	1002.69	1920.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3374E+04 EXCESS=0.0000E+00 OUTFLOW=0.3373E+04 BASIN STORAGE=0.2134E+01 PERCENT ERROR= 0.0

J70J71	MANE	5.94	1046.15	1924.76	2.02	30.00	1046.06	1920.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3475E+04 EXCESS=0.0000E+00 OUTFLOW=0.3475E+04 BASIN STORAGE=0.6311E+00 PERCENT ERROR= 0.0

J72J71	MANE	10.09	12.99	2290.25	1.75	30.00	12.99	2310.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4201E+02 EXCESS=0.0000E+00 OUTFLOW=0.4201E+02 BASIN STORAGE=0.2212E-02 PERCENT ERROR= 0.0

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*

*** NORMAL END OF HEC-1 ***

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 11:28:33

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 11:28:33

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
25 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	23FEB98	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1MAR98	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

****** WARNING ****** THE FLOW RATE THAT YOU ARE ROUTING IS GREATER THAN WHAT CAN BE CALCULATE FROM THE 8 POINT CROSS SECTION YOU ENTERED ON RC, RX, AND RY RECORDS. THE PROGRAM HAD TO EXTRAPOLATE BEYOND THE MAXIMUM STORAGE-DISCHARGE VALUE CALCULATED. INCREASE ELMAX ON THE RC RECORD OR MAKE THE CROSS SECTION LARGER.

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	28.	29.50	27.	22.	10.	0.40		
ROUTED TO	JAJB	28.	30.50	27.	21.	10.	0.40		
HYDROGRAPH AT	102	31.	48.50	31.	29.	20.	1.00		
HYDROGRAPH AT	100	44.	38.50	44.	38.	23.	1.00		
3 COMBINED AT	JB	91.	38.00	90.	83.	53.	2.40		
ROUTED TO	JBJC	91.	39.00	90.	83.	53.	2.40		
HYDROGRAPH AT	104	19.	44.00	18.	17.	11.	0.51		
HYDROGRAPH AT	103	31.	31.00	30.	24.	12.	0.48		
ROUTED TO	JDJC	31.	32.50	30.	24.	12.	0.48		
HYDROGRAPH AT	105	40.	43.00	40.	36.	23.	1.03		
4 COMBINED AT	JC	171.	38.50	170.	157.	98.	4.42		
ROUTED TO	JCJE	171.	39.50	170.	157.	98.	4.42		
HYDROGRAPH AT	108	19.	45.00	19.	17.	11.	0.53		
HYDROGRAPH AT	124	18.	28.50	18.	14.	6.	0.27		
ROUTED TO	JLJM	18.	30.00	18.	14.	6.	0.27		
HYDROGRAPH AT	125	13.	29.50	13.	10.	5.	0.22		
2 COMBINED AT	JM	32.	30.00	31.	24.	11.	0.49		
ROUTED TO	JMJN	32.	30.50	31.	24.	11.	0.49		
HYDROGRAPH AT	120	36.	42.00	36.	32.	20.	0.82		
ROUTED TO	JHJI	36.	42.50	36.	32.	20.	0.82		
HYDROGRAPH AT	121	59.	29.00	57.	45.	21.	0.82		
2 COMBINED AT	JI	83.	30.00	81.	71.	41.	1.64		
ROUTED TO	JIJJ	82.	31.00	81.	71.	41.	1.64		
HYDROGRAPH AT	122	40.	42.00	40.	35.	22.	1.00		
2 COMBINED AT	JJ	114.	34.00	113.	104.	63.	2.64		
ROUTED TO	JJJK	114.	35.00	113.	104.	63.	2.64		
HYDROGRAPH AT	123	32.	40.50	31.	28.	17.	0.76		
2 COMBINED AT	JK	144.	37.00	143.	132.	80.	3.40		
ROUTED TO	JKJN	144.	37.00	143.	132.	80.	3.40		
2 COMBINED AT	JN	170.	34.00	169.	154.	91.	3.89		
ROUTED TO	JNJZ	170.	34.00	169.	154.	91.	3.89		
ROUTED TO	JZJO	170.	34.50	169.	153.	91.	3.89		
HYDROGRAPH AT	127	18.	36.50	18.	15.	9.	0.46		
2 COMBINED AT	JO	187.	35.00	186.	169.	100.	4.35		
ROUTED TO	JOJE	187.	35.50	186.	169.	100.	4.35		

3 COMBINED AT	JE	373.	38.00	371.	340.	209.	9.30
ROUTED TO	JEJY	373.	38.50	371.	340.	209.	9.30
HYDROGRAPH AT	131	60.	13.50	24.	7.	2.	0.10
2 COMBINED AT	JY	373.	38.50	371.	340.	209.	9.40
ROUTED TO	JYJR	373.	38.50	371.	340.	209.	9.40
HYDROGRAPH AT	106	91.	29.00	88.	68.	32.	1.30
ROUTED TO	JQJR	91.	29.00	88.	68.	32.	1.30
HYDROGRAPH AT	107	22.	26.50	21.	16.	7.	0.30
3 COMBINED AT	JR	448.	35.00	445.	406.	246.	11.00
ROUTED TO	JRJX	448.	35.50	445.	406.	246.	11.00
HYDROGRAPH AT	130	37.	13.50	14.	4.	1.	0.05
2 COMBINED AT	JX	448.	35.50	445.	406.	246.	11.05
ROUTED TO	JXJS	448.	35.50	445.	406.	246.	11.05
HYDROGRAPH AT	109	54.	24.00	51.	35.	14.	0.55
2 COMBINED AT	JS	472.	34.50	469.	426.	259.	11.60
ROUTED TO	JSJ65	472.	35.00	469.	426.	259.	11.60
HYDROGRAPH AT	200	66.	28.50	64.	50.	23.	1.03
HYDROGRAPH AT	202	24.	27.50	23.	17.	8.	0.36
2 COMBINED AT	J1	90.	28.00	87.	67.	31.	1.39
ROUTED TO	J1J5	90.	28.50	87.	67.	31.	1.39
HYDROGRAPH AT	201	16.	34.50	16.	13.	7.	0.40
HYDROGRAPH AT	204	37.	47.50	36.	34.	23.	1.08
3 COMBINED AT	J5	123.	30.00	121.	104.	60.	2.87
ROUTED TO	J5J7	123.	30.00	121.	104.	60.	2.87
HYDROGRAPH AT	205	111.	28.50	108.	83.	39.	1.72
2 COMBINED AT	J7	233.	29.00	227.	185.	99.	4.59
ROUTED TO	J7J10	232.	29.50	226.	185.	99.	4.59
HYDROGRAPH AT	208	30.	30.00	29.	23.	11.	0.54
HYDROGRAPH AT	209	71.	24.00	68.	47.	19.	0.79
HYDROGRAPH AT	210	42.	25.50	40.	29.	12.	0.57
3 COMBINED AT	J20	136.	25.00	131.	98.	42.	1.90
ROUTED TO	J20J10	135.	26.00	131.	97.	42.	1.90
HYDROGRAPH AT	206	45.	38.00	44.	38.	23.	1.00
HYDROGRAPH AT	211	33.	29.00	32.	25.	11.	0.59
HYDROGRAPH AT	207	33.	47.00	33.	30.	21.	1.00
5 COMBINED AT	J10	441.	29.50	433.	361.	195.	9.08
ROUTED TO	J10J21	441.	29.50	432.	361.	195.	9.08
HYDROGRAPH AT	212	37.	39.00	37.	32.	19.	1.00

FLOWS 25 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	J21	469.	30.00	461.	391.	214.	10.08
ROUTED TO	J21J30	469.	30.00	461.	391.	214.	10.08
HYDROGRAPH AT	220	48.	20.00	44.	25.	9.	0.33
ROUTED TO	J31J35	48.	20.50	44.	25.	9.	0.33
HYDROGRAPH AT	217	121.	17.50	102.	48.	16.	0.64
2 COMBINED AT	J35	156.	18.00	139.	72.	25.	0.97
ROUTED TO	J35J33	155.	18.00	139.	72.	25.	0.97
HYDROGRAPH AT	216	48.	38.00	48.	42.	24.	1.11
2 COMBINED AT	J33	165.	18.50	150.	100.	49.	2.08
ROUTED TO	J33J30	165.	18.50	150.	100.	49.	2.08
2 COMBINED AT	J30	548.	29.50	541.	467.	262.	12.16
ROUTED TO	J30J40	548.	29.50	540.	466.	262.	12.16
HYDROGRAPH AT	213	29.	51.50	29.	27.	20.	1.00
2 COMBINED AT	J40	562.	30.00	555.	484.	281.	13.16
ROUTED TO	J40J45	562.	30.00	554.	483.	281.	13.16
HYDROGRAPH AT	223	33.	45.50	33.	30.	20.	1.00
2 COMBINED AT	J45	582.	30.00	575.	507.	300.	14.16
ROUTED TO	J45J50	580.	30.50	573.	506.	300.	14.16
HYDROGRAPH AT	225	29.	23.00	27.	18.	7.	0.32
ROUTED TO	J51J50	29.	24.00	27.	18.	7.	0.32
HYDROGRAPH AT	230	44.	35.50	44.	37.	21.	1.00
HYDROGRAPH AT	231	19.	49.00	19.	17.	12.	0.69
4 COMBINED AT	J50	650.	31.00	643.	570.	339.	16.17
ROUTED TO	J50J55	650.	31.00	642.	570.	339.	16.17
HYDROGRAPH AT	236	13.	22.50	12.	8.	3.	0.15
ROUTED TO	J52J54	13.	23.00	12.	8.	3.	0.15
HYDROGRAPH AT	235	41.	29.00	40.	31.	15.	0.71
2 COMBINED AT	J54	50.	28.00	49.	39.	18.	0.86
ROUTED TO	J54J56	50.	28.00	49.	39.	18.	0.86
HYDROGRAPH AT	242	50.	27.50	48.	37.	17.	0.71
HYDROGRAPH AT	237	21.	26.50	20.	15.	7.	0.27
4 COMBINED AT	J56	761.	30.00	751.	656.	379.	18.01
ROUTED TO	J56J60	760.	30.50	751.	655.	379.	18.01
HYDROGRAPH AT	243	19.	29.50	18.	14.	7.	0.28
HYDROGRAPH AT	245	17.	30.00	17.	13.	6.	0.29
3 COMBINED AT	J60	796.	30.50	785.	682.	392.	18.58
ROUTED TO	J60J65	796.	30.50	785.	682.	392.	18.58
HYDROGRAPH AT	247	82.	24.00	78.	53.	21.	1.00
3 COMBINED AT	J65	1297.	31.50	1283.	1137.	671.	31.18

FLOWS 25 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

ROUTED TO	J65J70	1296.	32.00	1282.	1137.	671.	31.18
HYDROGRAPH AT	240	58.	30.50	56.	45.	22.	1.00
2 COMBINED AT	J70	1354.	31.50	1338.	1181.	693.	32.18
ROUTED TO	J70J71	1353.	31.50	1338.	1180.	693.	32.18
HYDROGRAPH AT	250	17.	38.00	17.	15.	9.	0.45
ROUTED TO	J72J71	17.	38.50	17.	15.	9.	0.45
HYDROGRAPH AT	251	39.	22.00	37.	24.	9.	0.44
3 COMBINED AT	J71	1387.	31.50	1371.	1210.	710.	33.07
HYDROGRAPH AT	255	33.	42.00	33.	29.	18.	1.00
2 COMBINED AT	J75	1412.	32.00	1396.	1237.	728.	34.07

FLOWS 25 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	28.05	1830.00	2.91	30.00	28.05	1830.00	2.91
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6216E+02 EXCESS=0.0000E+00 OUTFLOW=0.6213E+02 BASIN STORAGE=0.2011E-01 PERCENT ERROR= 0.0									
JBJC	MANE	30.00	90.80	2340.00	2.71	30.00	90.80	2340.00	2.71
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3479E+03 EXCESS=0.0000E+00 OUTFLOW=0.3474E+03 BASIN STORAGE=0.9032E+00 PERCENT ERROR= -0.1									
JDJC	MANE	30.00	30.63	1980.00	2.91	30.00	30.63	1980.00	2.91
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7453E+02 EXCESS=0.0000E+00 OUTFLOW=0.7452E+02 BASIN STORAGE=0.3176E-01 PERCENT ERROR= 0.0									
JCJE	MANE	30.00	171.16	2370.00	2.75	30.00	171.16	2370.00	2.75
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6491E+03 EXCESS=0.0000E+00 OUTFLOW=0.6483E+03 BASIN STORAGE=0.1812E+01 PERCENT ERROR= -0.2									
JLJM	MANE	30.00	18.28	1800.00	2.63	30.00	18.28	1800.00	2.63
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3791E+02 EXCESS=0.0000E+00 OUTFLOW=0.3792E+02 BASIN STORAGE=0.5847E-02 PERCENT ERROR= -0.1									
JMJN	MANE	30.00	31.69	1830.00	2.58	30.00	31.69	1830.00	2.58
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6746E+02 EXCESS=0.0000E+00 OUTFLOW=0.6746E+02 BASIN STORAGE=0.2786E-02 PERCENT ERROR= 0.0									
JHJI	MANE	29.00	36.13	2552.29	3.10	30.00	36.13	2550.00	3.10
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1357E+03 EXCESS=0.0000E+00 OUTFLOW=0.1356E+03 BASIN STORAGE=0.1291E+00 PERCENT ERROR= 0.0									
JIJJ	MANE	30.00	82.41	1860.00	2.99	30.00	82.41	1860.00	2.99
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2616E+03 EXCESS=0.0000E+00 OUTFLOW=0.2615E+03 BASIN STORAGE=0.3152E+00 PERCENT ERROR= -0.1									
JJJK	MANE	30.00	113.60	2100.00	2.90	30.00	113.60	2100.00	2.90
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4088E+03 EXCESS=0.0000E+00 OUTFLOW=0.4083E+03 BASIN STORAGE=0.6767E+00 PERCENT ERROR= 0.0									
JKJN	MANE	5.31	143.57	2225.78	2.87	30.00	143.56	2220.00	2.87
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5199E+03 EXCESS=0.0000E+00 OUTFLOW=0.5199E+03 BASIN STORAGE=0.7456E-01 PERCENT ERROR= 0.0									
JNJZ	MANE	23.47	169.55	2042.20	2.83	30.00	169.55	2040.00	2.83
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5874E+03 EXCESS=0.0000E+00 OUTFLOW=0.5873E+03 BASIN STORAGE=0.1622E+00 PERCENT ERROR= 0.0									
JZJO	MANE	30.00	169.52	2070.00	2.83	30.00	169.52	2070.00	2.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5873E+03 EXCESS=0.0000E+00 OUTFLOW=0.5871E+03 BASIN STORAGE=0.2161E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	187.11	2130.00	2.76	30.00	187.11	2130.00	2.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6414E+03 EXCESS=0.0000E+00 OUTFLOW=0.6412E+03 BASIN STORAGE=0.3474E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.20	372.57	2306.80	2.75	30.00	372.55	2310.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1365E+04 EXCESS=0.0000E+00 OUTFLOW=0.1365E+04 BASIN STORAGE=0.9487E+00 PERCENT ERROR= 0.0

JYJR	MANE	4.65	372.54	2308.67	2.75	30.00	372.54	2310.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1379E+04 EXCESS=0.0000E+00 OUTFLOW=0.1379E+04 BASIN STORAGE=0.1417E+00 PERCENT ERROR= 0.0

JQJR	MANE	18.23	90.61	1750.40	2.78	30.00	90.59	1740.00	2.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1927E+03 EXCESS=0.0000E+00 OUTFLOW=0.1927E+03 BASIN STORAGE=0.7524E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.87	448.35	2108.55	2.75	30.00	448.30	2130.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1612E+04 EXCESS=0.0000E+00 OUTFLOW=0.1612E+04 BASIN STORAGE=0.2120E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.43	448.30	2129.23	2.75	30.00	448.29	2130.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1619E+04 EXCESS=0.0000E+00 OUTFLOW=0.1619E+04 BASIN STORAGE=0.1067E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	472.46	2100.00	2.75	30.00	472.46	2100.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1703E+04 EXCESS=0.0000E+00 OUTFLOW=0.1702E+04 BASIN STORAGE=0.1501E+01 PERCENT ERROR= -0.1

J1J5	MANE	30.00	89.52	1710.00	2.49	30.00	89.52	1710.00	2.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1847E+03 EXCESS=0.0000E+00 OUTFLOW=0.1847E+03 BASIN STORAGE=0.7899E-02 PERCENT ERROR= 0.0

J5J7	MANE	11.66	122.90	1795.09	2.53	30.00	122.89	1800.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3878E+03 EXCESS=0.0000E+00 OUTFLOW=0.3878E+03 BASIN STORAGE=0.1022E+00 PERCENT ERROR= 0.0

J7J10	MANE	30.00	232.33	1770.00	2.53	30.00	232.33	1770.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6197E+03 EXCESS=0.0000E+00 OUTFLOW=0.6194E+03 BASIN STORAGE=0.5290E+00 PERCENT ERROR= 0.0

J20J10	MANE	30.00	134.88	1560.00	2.50	30.00	134.88	1560.00	2.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2533E+03 EXCESS=0.0000E+00 OUTFLOW=0.2530E+03 BASIN STORAGE=0.2911E-01 PERCENT ERROR= 0.1

J10J21	MANE	27.07	440.61	1786.46	2.54	30.00	440.51	1770.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1229E+04 EXCESS=0.0000E+00 OUTFLOW=0.1229E+04 BASIN STORAGE=0.7064E+00 PERCENT ERROR= 0.0

J21J30	MANE	22.66	468.76	1812.79	2.52	30.00	468.56	1800.00	2.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1355E+04 EXCESS=0.0000E+00 OUTFLOW=0.1355E+04 BASIN STORAGE=0.6688E+00 PERCENT ERROR= 0.0

J31J35	MANE	30.00	47.96	1230.00	3.06	30.00	47.96	1230.00	3.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5386E+02 EXCESS=0.0000E+00 OUTFLOW=0.5385E+02 BASIN STORAGE=0.7700E-02 PERCENT ERROR= 0.0

J35J33	MANE	27.78	155.79	1083.45	2.92	30.00	155.32	1080.00	2.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1512E+03 EXCESS=0.0000E+00 OUTFLOW=0.1511E+03 BASIN STORAGE=0.1101E-01 PERCENT ERROR= 0.0

J33J30	MANE	4.27	164.54	1111.18	2.76	30.00	164.53	1110.00	2.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3064E+03 EXCESS=0.0000E+00 OUTFLOW=0.3064E+03 BASIN STORAGE=0.6345E-02 PERCENT ERROR= 0.0

J30J40	MANE	12.51	548.30	1776.55	2.56	30.00	548.24	1770.00	2.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1661E+04 EXCESS=0.0000E+00 OUTFLOW=0.1661E+04 BASIN STORAGE=0.3998E+00 PERCENT ERROR= 0.0

J40J45	MANE	12.67	562.02	1798.46	2.57	30.00	562.01	1800.00	2.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1802E+04 EXCESS=0.0000E+00 OUTFLOW=0.1801E+04 BASIN STORAGE=0.5445E+00 PERCENT ERROR= 0.0

J45J50	MANE	29.85	580.61	1850.99	2.56	30.00	580.49	1830.00	2.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1936E+04 EXCESS=0.0000E+00 OUTFLOW=0.1935E+04 BASIN STORAGE=0.1500E+01 PERCENT ERROR= 0.0

J51J50	MANE	30.00	29.09	1440.00	2.47	30.00	29.09	1440.00	2.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4214E+02 EXCESS=0.0000E+00 OUTFLOW=0.4214E+02 BASIN STORAGE=0.9843E-02 PERCENT ERROR= 0.0

J50J55	MANE	15.92	649.99	1863.16	2.54	30.00	649.97	1860.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2188E+04 EXCESS=0.0000E+00 OUTFLOW=0.2188E+04 BASIN STORAGE=0.9552E+00 PERCENT ERROR= 0.0

J52J54	MANE	30.00	12.99	1380.00	2.26	30.00	12.99	1380.00	2.26

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1810E+02 EXCESS=0.0000E+00 OUTFLOW=0.1810E+02 BASIN STORAGE=0.5264E-02 PERCENT ERROR= 0.0

J54J56	MANE	7.18	50.42	1687.71	2.31	30.00	50.41	1680.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1061E+03 EXCESS=0.0000E+00 OUTFLOW=0.1061E+03 BASIN STORAGE=0.1310E-02 PERCENT ERROR= 0.0

J56J60	MANE	21.83	760.42	1834.11	2.53	30.00	760.41	1830.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2432E+04 EXCESS=0.0000E+00 OUTFLOW=0.2431E+04 BASIN STORAGE=0.1361E+01 PERCENT ERROR= 0.0

J60J65	MANE	8.65	796.03	1834.29	2.53	30.00	796.00	1830.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2510E+04 EXCESS=0.0000E+00 OUTFLOW=0.2510E+04 BASIN STORAGE=0.4447E+00 PERCENT ERROR= 0.0

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 11:32:18

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

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X     X  XXXXXXX   XXXXX          X
X     X  X         X     X        XX
X     X  X         X              X
XXXXXXX  XXXX      X        XXXXX X
X     X  X         X              X
X     X  X         X     X        X
X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            MAY  1991                  *
*         VERSION 4.0.1E                *
*    Lahey F77L-EM/32 version 5.01      *
*      Dodson & Associates, Inc.        *
*  RUN DATE  02/23/99  TIME  11:32:18   *
*                                       *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
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STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
50 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	23FEB98	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1MAR98	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

***** WARNING ****** THE FLOW RATE THAT YOU ARE ROUTING IS GREATER THAN
HAT CAN BE CALCULATE FROM THE 8 POINT CROSS SECTION YOU ENTERED ON RC, RX,
AND RY RECORDS. THE PROGRAM HAD TO EXTRAPOLATE BEYOND THE MAXIMUM STORAGE-
DISCHARGE VALUE CALCULATED. INCREASE ELMAX ON THE RC RECORD OR MAKE THE CROSS
ECTION LARGER.

EXISTING FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	33.	29.50	32.	25.	12.	0.40		
ROUTED TO	JAJB	33.	30.50	32.	25.	12.	0.40		
HYDROGRAPH AT	102	37.	48.50	36.	34.	23.	1.00		
HYDROGRAPH AT	100	51.	38.50	51.	44.	26.	1.00		
3 COMBINED AT	JB	106.	37.50	105.	97.	61.	2.40		
ROUTED TO	JBJC	106.	38.50	105.	96.	61.	2.40		
HYDROGRAPH AT	104	22.	44.00	21.	19.	13.	0.51		
HYDROGRAPH AT	103	36.	31.00	35.	28.	14.	0.48		
ROUTED TO	JDJC	36.	32.50	35.	28.	14.	0.48		
HYDROGRAPH AT	105	46.	43.00	46.	41.	27.	1.03		
4 COMBINED AT	JC	199.	38.50	198.	182.	114.	4.42		
ROUTED TO	JCJE	199.	39.50	198.	182.	114.	4.42		
HYDROGRAPH AT	108	22.	45.00	22.	20.	13.	0.53		
HYDROGRAPH AT	124	21.	28.00	21.	16.	7.	0.27		
ROUTED TO	JLJM	21.	30.00	21.	16.	7.	0.27		
HYDROGRAPH AT	125	16.	29.00	15.	12.	6.	0.22		
2 COMBINED AT	JM	37.	29.50	36.	28.	13.	0.49		
ROUTED TO	JMJN	37.	30.00	36.	28.	13.	0.49		
HYDROGRAPH AT	120	42.	42.00	41.	37.	23.	0.82		
ROUTED TO	JHJI	42.	42.50	41.	37.	23.	0.82		
HYDROGRAPH AT	121	69.	29.00	67.	52.	24.	0.82		
2 COMBINED AT	JI	96.	30.00	94.	82.	47.	1.64		
ROUTED TO	JIJJ	96.	30.50	94.	82.	47.	1.64		
HYDROGRAPH AT	122	46.	41.50	46.	41.	26.	1.00		
2 COMBINED AT	JJ	132.	33.50	131.	121.	73.	2.64		
ROUTED TO	JJJK	131.	34.50	131.	121.	73.	2.64		
HYDROGRAPH AT	123	37.	40.50	36.	32.	20.	0.76		
2 COMBINED AT	JK	166.	37.00	166.	152.	93.	3.40		
ROUTED TO	JKJN	166.	37.00	166.	152.	93.	3.40		
2 COMBINED AT	JN	197.	33.50	196.	178.	106.	3.89		
ROUTED TO	JNJZ	197.	33.50	196.	178.	106.	3.89		
ROUTED TO	JZJO	197.	34.00	196.	178.	106.	3.89		
HYDROGRAPH AT	127	21.	36.50	21.	18.	10.	0.46		
2 COMBINED AT	JO	218.	34.50	216.	196.	116.	4.35		
ROUTED TO	JOJE	218.	35.00	216.	196.	116.	4.35		

EXISTING FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	JE	433.	37.50	431.	395.	243.	9.30
ROUTED TO	JEJY	433.	38.00	430.	395.	243.	9.30
HYDROGRAPH AT	131	71.	13.50	29.	8.	3.	0.10
2 COMBINED AT	JY	433.	38.00	430.	395.	243.	9.40
ROUTED TO	JYJR	433.	38.00	430.	395.	243.	9.40
HYDROGRAPH AT	106	106.	28.50	103.	80.	37.	1.30
ROUTED TO	JQJR	106.	29.00	103.	79.	37.	1.30
HYDROGRAPH AT	107	26.	26.50	25.	18.	8.	0.30
3 COMBINED AT	JR	522.	35.00	518.	472.	285.	11.00
ROUTED TO	JRJX	522.	35.00	518.	472.	285.	11.00
HYDROGRAPH AT	130	43.	13.50	17.	5.	2.	0.05
2 COMBINED AT	JX	522.	35.00	518.	472.	285.	11.05
ROUTED TO	JXJS	522.	35.00	518.	472.	285.	11.05
HYDROGRAPH AT	109	63.	24.00	60.	41.	16.	0.55
2 COMBINED AT	JS	550.	34.00	546.	496.	300.	11.60
ROUTED TO	JSJ65	550.	34.50	546.	496.	300.	11.60
HYDROGRAPH AT	200	78.	28.50	76.	59.	27.	1.03
HYDROGRAPH AT	202	28.	27.50	27.	20.	9.	0.36
2 COMBINED AT	J1	106.	28.00	103.	79.	36.	1.39
ROUTED TO	J1J5	106.	28.50	103.	79.	36.	1.39
HYDROGRAPH AT	201	19.	34.50	19.	16.	8.	0.40
HYDROGRAPH AT	204	42.	47.50	42.	39.	27.	1.08
3 COMBINED AT	J5	145.	29.50	142.	122.	70.	2.87
ROUTED TO	J5J7	145.	30.00	142.	122.	70.	2.87
HYDROGRAPH AT	205	131.	28.50	127.	98.	45.	1.72
2 COMBINED AT	J7	275.	29.00	268.	218.	116.	4.59
ROUTED TO	J7J10	275.	29.50	267.	218.	116.	4.59
HYDROGRAPH AT	208	35.	30.00	35.	27.	13.	0.54
HYDROGRAPH AT	209	84.	24.00	80.	55.	22.	0.79
HYDROGRAPH AT	210	50.	25.50	48.	34.	14.	0.57
3 COMBINED AT	J20	162.	25.00	156.	115.	50.	1.90
ROUTED TO	J20J10	160.	26.00	155.	114.	50.	1.90
HYDROGRAPH AT	206	52.	38.00	52.	45.	26.	1.00
HYDROGRAPH AT	211	39.	28.50	38.	29.	14.	0.59
HYDROGRAPH AT	207	39.	47.00	39.	36.	24.	1.00
5 COMBINED AT	J10	521.	29.00	511.	425.	228.	9.08
ROUTED TO	J10J21	520.	29.50	511.	424.	228.	9.08
HYDROGRAPH AT	212	44.	39.00	44.	38.	23.	1.00

EXISTING FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	J21	554.	29.50	544.	460.	251.	10.08
ROUTED TO	J21J30	554.	30.00	544.	460.	251.	10.08
HYDROGRAPH AT	220	57.	20.00	51.	29.	10.	0.33
ROUTED TO	J31J35	56.	20.50	51.	29.	10.	0.33
HYDROGRAPH AT	217	145.	17.50	121.	55.	19.	0.64
2 COMBINED AT	J35	186.	18.00	165.	84.	29.	0.97
ROUTED TO	J35J33	186.	18.00	164.	84.	29.	0.97
HYDROGRAPH AT	216	57.	37.50	56.	49.	28.	1.11
2 COMBINED AT	J33	196.	18.50	178.	117.	57.	2.08
ROUTED TO	J33J30	196.	18.50	178.	116.	57.	2.08
2 COMBINED AT	J30	646.	29.00	636.	548.	307.	12.16
ROUTED TO	J30J40	645.	29.50	636.	548.	307.	12.16
HYDROGRAPH AT	213	34.	51.50	34.	32.	23.	1.00
2 COMBINED AT	J40	662.	29.50	652.	568.	329.	13.16
ROUTED TO	J40J45	661.	30.00	652.	568.	329.	13.16
HYDROGRAPH AT	223	39.	45.50	38.	35.	23.	1.00
2 COMBINED AT	J45	685.	30.00	676.	595.	352.	14.16
ROUTED TO	J45J50	683.	30.50	674.	594.	351.	14.16
HYDROGRAPH AT	225	35.	23.00	33.	22.	8.	0.32
ROUTED TO	J51J50	35.	24.00	33.	22.	8.	0.32
HYDROGRAPH AT	230	53.	35.00	52.	44.	24.	1.00
HYDROGRAPH AT	231	22.	49.00	22.	20.	14.	0.69
4 COMBINED AT	J50	765.	30.50	756.	670.	397.	16.17
ROUTED TO	J50J55	765.	30.50	756.	669.	397.	16.17
HYDROGRAPH AT	236	16.	22.50	15.	9.	4.	0.15
ROUTED TO	J52J54	16.	23.00	15.	9.	4.	0.15
HYDROGRAPH AT	235	49.	29.00	48.	37.	17.	0.71
2 COMBINED AT	J54	60.	27.50	59.	46.	21.	0.86
ROUTED TO	J54J56	60.	28.00	59.	46.	21.	0.86
HYDROGRAPH AT	242	59.	27.50	57.	43.	19.	0.71
HYDROGRAPH AT	237	25.	26.50	24.	17.	8.	0.27
4 COMBINED AT	J56	897.	30.00	885.	771.	445.	18.01
ROUTED TO	J56J60	896.	30.00	885.	770.	444.	18.01
HYDROGRAPH AT	243	22.	29.50	21.	17.	8.	0.28
HYDROGRAPH AT	245	20.	29.50	20.	16.	7.	0.29
3 COMBINED AT	J60	939.	30.00	925.	802.	460.	18.58
ROUTED TO	J60J65	938.	30.00	925.	802.	460.	18.58
HYDROGRAPH AT	247	98.	24.00	93.	63.	25.	1.00
3 COMBINED AT	J65	1525.	31.00	1507.	1332.	784.	31.18

EXISTING FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

ROUTED TO	J65J70	1524.	31.50	1506.	1332.	784.	31.18
HYDROGRAPH AT	240	68.	30.50	67.	53.	26.	1.00
2 COMBINED AT	J70	1592.	31.50	1572.	1384.	810.	32.18
ROUTED TO	J70J71	1592.	31.50	1572.	1384.	810.	32.18
HYDROGRAPH AT	250	20.	38.00	20.	18.	10.	0.45
ROUTED TO	J72J71	20.	38.00	20.	18.	10.	0.45
HYDROGRAPH AT	251	48.	22.00	44.	28.	11.	0.44
3 COMBINED AT	J71	1631.	31.50	1611.	1419.	830.	33.07
HYDROGRAPH AT	255	39.	41.50	39.	35.	22.	1.00
2 COMBINED AT	J75	1661.	31.50	1641.	1451.	852.	34.07

EXISTING FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	32.64	1830.00	3.37	30.00	32.64	1830.00	3.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7187E+02 EXCESS=0.0000E+00 OUTFLOW=0.7184E+02 BASIN STORAGE=0.2251E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	105.57	2310.00	3.16	30.00	105.57	2310.00	3.16

NTINUITY SUMMARY (AC-FT) - INFLOW=0.4043E+03 EXCESS=0.0000E+00 OUTFLOW=0.4039E+03 BASIN STORAGE=0.9880E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	35.58	1950.00	3.36	30.00	35.58	1950.00	3.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8597E+02 EXCESS=0.0000E+00 OUTFLOW=0.8596E+02 BASIN STORAGE=0.2942E-01 PERCENT ERROR= 0.0

JCJE	MANE	30.00	198.70	2370.00	3.19	30.00	198.70	2370.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7532E+03 EXCESS=0.0000E+00 OUTFLOW=0.7523E+03 BASIN STORAGE=0.1977E+01 PERCENT ERROR= -0.1

JLJM	MANE	30.00	21.41	1800.00	3.06	30.00	21.41	1800.00	3.06

NTINUITY SUMMARY (AC-FT) - INFLOW=0.4405E+02 EXCESS=0.0000E+00 OUTFLOW=0.4406E+02 BASIN STORAGE=0.5826E-02 PERCENT ERROR= 0.0

JMJN	MANE	30.00	37.23	1800.00	3.01	30.00	37.23	1800.00	3.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7857E+02 EXCESS=0.0000E+00 OUTFLOW=0.7857E+02 BASIN STORAGE=0.2783E-02 PERCENT ERROR= 0.0

JHJI	MANE	27.69	41.56	2547.05	3.56	30.00	41.56	2550.00	3.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1557E+03 EXCESS=0.0000E+00 OUTFLOW=0.1556E+03 BASIN STORAGE=0.1418E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	95.62	1830.00	3.44	30.00	95.62	1830.00	3.44

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3012E+03 EXCESS=0.0000E+00 OUTFLOW=0.3011E+03 BASIN STORAGE=0.3443E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	131.49	2070.00	3.35	30.00	131.49	2070.00	3.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4719E+03 EXCESS=0.0000E+00 OUTFLOW=0.4713E+03 BASIN STORAGE=0.7409E+00 PERCENT ERROR= 0.0

JKJN	MANE	5.06	166.15	2221.54	3.31	30.00	166.15	2220.00	3.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6009E+03 EXCESS=0.0000E+00 OUTFLOW=0.6008E+03 BASIN STORAGE=0.8172E-01 PERCENT ERROR= 0.0

JNJZ	MANE	21.38	196.90	2009.35	3.27	30.00	196.90	2010.00	3.27

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6794E+03 EXCESS=0.0000E+00 OUTFLOW=0.6793E+03 BASIN STORAGE=0.1809E+00 PERCENT ERROR= 0.0

JZJO	MANE	29.80	196.81	2056.26	3.27	30.00	196.80	2040.00	3.27

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6793E+03 EXCESS=0.0000E+00 OUTFLOW=0.6791E+03 BASIN STORAGE=0.2437E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	217.57	2100.00	3.20	30.00	217.57	2100.00	3.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7433E+03 EXCESS=0.0000E+00 OUTFLOW=0.7431E+03 BASIN STORAGE=0.3915E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.89	432.55	2271.48	3.19	30.00	432.53	2280.00	3.19

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1583E+04 EXCESS=0.0000E+00 OUTFLOW=0.1583E+04 BASIN STORAGE=0.1063E+01 PERCENT ERROR= 0.0

JYJR	MANE	4.46	432.51	2283.78	3.19	30.00	432.51	2280.00	3.19

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1599E+04 EXCESS=0.0000E+00 OUTFLOW=0.1599E+04 BASIN STORAGE=0.1527E+00 PERCENT ERROR= 0.0

JQJR	MANE	17.31	105.85	1731.50	3.22	30.00	105.84	1740.00	3.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2234E+03 EXCESS=0.0000E+00 OUTFLOW=0.2234E+03 BASIN STORAGE=0.7442E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.58	521.91	2097.88	3.19	30.00	521.90	2100.00	3.19

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1870E+04 EXCESS=0.0000E+00 OUTFLOW=0.1869E+04 BASIN STORAGE=0.2356E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.29	521.89	2101.19	3.19	30.00	521.89	2100.00	3.19

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1879E+04 EXCESS=0.0000E+00 OUTFLOW=0.1878E+04 BASIN STORAGE=0.1185E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	550.47	2070.00	3.19	30.00	550.47	2070.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1975E+04 EXCESS=0.0000E+00 OUTFLOW=0.1974E+04 BASIN STORAGE=0.1648E+01 PERCENT ERROR= 0.0

J1J5	MANE	28.70	105.96	1721.86	2.93	30.00	105.95	1710.00	2.93

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2169E+03 EXCESS=0.0000E+00 OUTFLOW=0.2169E+03 BASIN STORAGE=0.7384E-02 PERCENT ERROR= 0.0

J5J7	MANE	11.12	145.05	1779.72	2.96	30.00	144.97	1800.00	2.96

NTINUITY SUMMARY (AC-FT) - INFLOW=0.4535E+03 EXCESS=0.0000E+00 OUTFLOW=0.4534E+03 BASIN STORAGE=0.1131E+00 PERCENT ERROR= 0.0

J7J10	MANE	30.00	274.68	1770.00	2.96	30.00	274.68	1770.00	2.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7255E+03 EXCESS=0.0000E+00 OUTFLOW=0.7254E+03 BASIN STORAGE=0.5782E+00 PERCENT ERROR= -0.1

J20J10	MANE	30.00	160.26	1560.00	2.93	30.00	160.26	1560.00	2.93

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2971E+03 EXCESS=0.0000E+00 OUTFLOW=0.2967E+03 BASIN STORAGE=0.2911E-01 PERCENT ERROR= 0.1

J10J21	MANE	25.65	520.49	1769.70	2.97	30.00	520.48	1770.00	2.97

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1439E+04 EXCESS=0.0000E+00 OUTFLOW=0.1439E+04 BASIN STORAGE=0.7727E+00 PERCENT ERROR= 0.0

J21J30 MANE 21.47 553.66 1803.56 2.95 30.00 553.62 1800.00 2.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1587E+04 EXCESS=0.0000E+00 OUTFLOW=0.1587E+04 BASIN STORAGE=0.7309E+00 PERCENT ERROR= 0.0

J31J35 MANE 30.00 56.40 1230.00 3.51 30.00 56.40 1230.00 3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6185E+02 EXCESS=0.0000E+00 OUTFLOW=0.6184E+02 BASIN STORAGE=0.7638E-02 PERCENT ERROR= 0.0

J35J33 MANE 26.25 185.56 1076.45 3.37 30.00 185.53 1080.00 3.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1744E+03 EXCESS=0.0000E+00 OUTFLOW=0.1744E+03 BASIN STORAGE=0.1104E-01 PERCENT ERROR= 0.0

J33J30 MANE 4.04 195.66 1107.47 3.21 30.00 195.59 1110.00 3.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3559E+03 EXCESS=0.0000E+00 OUTFLOW=0.3559E+03 BASIN STORAGE=0.6130E-02 PERCENT ERROR= 0.0

J30J40 MANE 11.87 645.52 1768.29 3.00 30.00 645.49 1770.00 3.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1943E+04 EXCESS=0.0000E+00 OUTFLOW=0.1943E+04 BASIN STORAGE=0.4353E+00 PERCENT ERROR= 0.0

J40J45 MANE 12.01 661.42 1790.08 3.00 30.00 661.20 1800.00 3.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2106E+04 EXCESS=0.0000E+00 OUTFLOW=0.2106E+04 BASIN STORAGE=0.5970E+00 PERCENT ERROR= 0.0

J45J50 MANE 28.32 683.12 1812.55 3.00 30.00 683.06 1830.00 3.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2264E+04 EXCESS=0.0000E+00 OUTFLOW=0.2263E+04 BASIN STORAGE=0.1651E+01 PERCENT ERROR= 0.0

J51J50 MANE 30.00 34.76 1440.00 2.91 30.00 34.76 1440.00 2.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4959E+02 EXCESS=0.0000E+00 OUTFLOW=0.4960E+02 BASIN STORAGE=0.1167E-01 PERCENT ERROR= 0.0

J50J55 MANE 15.09 764.93 1840.53 2.97 30.00 764.71 1830.00 2.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2562E+04 EXCESS=0.0000E+00 OUTFLOW=0.2562E+04 BASIN STORAGE=0.1051E+01 PERCENT ERROR= 0.0

J52J54 MANE 30.00 15.72 1380.00 2.69 30.00 15.72 1380.00 2.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2149E+02 EXCESS=0.0000E+00 OUTFLOW=0.2149E+02 BASIN STORAGE=0.5221E-02 PERCENT ERROR= 0.0

J54J56 MANE 6.84 60.05 1661.22 2.74 30.00 60.04 1680.00 2.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1256E+03 EXCESS=0.0000E+00 OUTFLOW=0.1256E+03 BASIN STORAGE=0.1296E-02 PERCENT ERROR= 0.0

J56J60 MANE 20.70 896.42 1801.24 2.96 30.00 896.38 1800.00 2.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2848E+04 EXCESS=0.0000E+00 OUTFLOW=0.2848E+04 BASIN STORAGE=0.1486E+01 PERCENT ERROR= 0.0

J60J65 MANE 8.26 938.56 1808.92 2.97 30.00 938.31 1800.00 2.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2940E+04 EXCESS=0.0000E+00 OUTFLOW=0.2940E+04 BASIN STORAGE=0.4904E+00 PERCENT ERROR= 0.0

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*                                    *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1) *
*           MAY  1991                *
*         VERSION 4.0.1E             *
*   Lahey F77L-EM/32 version 5.01    *
*      Dodson & Associates, Inc.     *
* RUN DATE 02/23/99  TIME 11:43:04   *
*                                    *
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*                                    *
*  U.S. ARMY CORPS OF ENGINEERS      *
*  HYDROLOGIC ENGINEERING CENTER     *
*       609 SECOND STREET            *
*     DAVIS, CALIFORNIA 95616        *
*       (916) 551-1748               *
*                                    *
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX  XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*           MAY  1991                   *
*        VERSION 4.0.1E                 *
*    Lahey F77L-EM/32 version 5.01      *
*      Dodson & Associates, Inc.        *
*  RUN DATE 02/23/99  TIME 11:43:04     *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            MAY  1991                  *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  02/23/99  TIME  11:43:04   *
*                                       *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748              *
*                                       *
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STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
100 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	1DEC98	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	7DEC98	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

****** WARNING ****** THE FLOW RATE THAT YOU ARE ROUTING IS GREATER THAN
AT CAN BE CALCULATE FROM THE 8 POINT CROSS SECTION YOU ENTERED ON RC, RX,
AND RY RECORDS. THE PROGRAM HAD TO EXTRAPOLATE BEYOND THE MAXIMUM STORAGE-
DISCHARGE VALUE CALCULATED. INCREASE ELMAX ON THE RC RECORD OR MAKE THE CROSS
CTION LARGER.

EXISTING FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	38.	29.50	37.	29.	14.	0.40		
ROUTED TO	JAJB	38.	30.50	37.	29.	14.	0.40		
HYDROGRAPH AT	102	43.	48.50	43.	40.	27.	1.00		
HYDROGRAPH AT	100	60.	38.50	60.	52.	31.	1.00		
3 COMBINED AT	JB	124.	37.50	123.	113.	72.	2.40		
ROUTED TO	JBJC	124.	38.50	123.	113.	72.	2.40		
HYDROGRAPH AT	104	25.	44.00	25.	23.	15.	0.51		
HYDROGRAPH AT	103	42.	31.00	41.	33.	16.	0.48		
ROUTED TO	JDJC	42.	32.50	41.	33.	16.	0.48		
HYDROGRAPH AT	105	54.	43.00	54.	48.	31.	1.03		
4 COMBINED AT	JC	233.	38.50	232.	213.	134.	4.42		
ROUTED TO	JCJE	233.	39.50	232.	213.	134.	4.42		
HYDROGRAPH AT	108	25.	45.00	25.	23.	15.	0.53		
HYDROGRAPH AT	124	25.	28.00	24.	19.	9.	0.27		
ROUTED TO	JLJM	25.	30.00	24.	19.	9.	0.27		
HYDROGRAPH AT	125	19.	29.00	18.	14.	7.	0.22		
2 COMBINED AT	JM	44.	29.50	43.	33.	15.	0.49		
ROUTED TO	JMJN	44.	30.00	43.	33.	15.	0.49		
HYDROGRAPH AT	120	48.	42.00	48.	43.	27.	0.82		
ROUTED TO	JHJI	48.	42.50	48.	43.	27.	0.82		
HYDROGRAPH AT	121	80.	28.50	78.	60.	28.	0.82		
2 COMBINED AT	JI	112.	30.00	110.	96.	55.	1.64		
ROUTED TO	JIJJ	112.	30.50	109.	96.	55.	1.64		
HYDROGRAPH AT	122	54.	41.50	54.	48.	30.	1.00		
2 COMBINED AT	JJ	154.	33.50	153.	141.	85.	2.64		
ROUTED TO	JJJK	153.	34.50	153.	141.	85.	2.64		
HYDROGRAPH AT	123	43.	40.50	43.	38.	23.	0.76		
2 COMBINED AT	JK	194.	36.50	193.	178.	108.	3.40		
ROUTED TO	JKJN	194.	36.50	193.	178.	108.	3.40		
2 COMBINED AT	JN	230.	33.50	229.	208.	123.	3.89		
ROUTED TO	JNJZ	230.	33.50	229.	208.	123.	3.89		
ROUTED TO	JZJO	230.	34.00	229.	208.	123.	3.89		
HYDROGRAPH AT	127	25.	36.50	25.	21.	12.	0.46		
2 COMBINED AT	JO	255.	34.50	254.	229.	135.	4.35		
ROUTED TO	JOJE	255.	35.00	254.	229.	135.	4.35		

EXISTING FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	38.	29.50	37.	29.	14.	0.40		
ROUTED TO	JAJB	38.	30.50	37.	29.	14.	0.40		
HYDROGRAPH AT	102	43.	48.50	43.	40.	27.	1.00		
HYDROGRAPH AT	100	60.	38.50	60.	52.	31.	1.00		
3 COMBINED AT	JB	124.	37.50	123.	113.	72.	2.40		
ROUTED TO	JBJC	124.	38.50	123.	113.	72.	2.40		
HYDROGRAPH AT	104	25.	44.00	25.	23.	15.	0.51		
HYDROGRAPH AT	103	42.	31.00	41.	33.	16.	0.48		
ROUTED TO	JDJC	42.	32.50	41.	33.	16.	0.48		
HYDROGRAPH AT	105	54.	43.00	54.	48.	31.	1.03		
4 COMBINED AT	JC	233.	38.50	232.	213.	134.	4.42		
ROUTED TO	JCJE	233.	39.50	232.	213.	134.	4.42		
HYDROGRAPH AT	108	25.	45.00	25.	23.	15.	0.53		
HYDROGRAPH AT	124	25.	28.00	24.	19.	9.	0.27		
ROUTED TO	JLJM	25.	30.00	24.	19.	9.	0.27		
HYDROGRAPH AT	125	19.	29.00	18.	14.	7.	0.22		
2 COMBINED AT	JM	44.	29.50	43.	33.	15.	0.49		
ROUTED TO	JMJN	44.	30.00	43.	33.	15.	0.49		
HYDROGRAPH AT	120	48.	42.00	48.	43.	27.	0.82		
ROUTED TO	JHJI	48.	42.50	48.	43.	27.	0.82		
HYDROGRAPH AT	121	80.	28.50	78.	60.	28.	0.82		
2 COMBINED AT	JI	112.	30.00	110.	96.	55.	1.64		
ROUTED TO	JIJJ	112.	30.50	109.	96.	55.	1.64		
HYDROGRAPH AT	122	54.	41.50	54.	48.	30.	1.00		
2 COMBINED AT	JJ	154.	33.50	153.	141.	85.	2.64		
ROUTED TO	JJJK	153.	34.50	153.	141.	85.	2.64		
HYDROGRAPH AT	123	43.	40.50	43.	38.	23.	0.76		
2 COMBINED AT	JK	194.	36.50	193.	178.	108.	3.40		
ROUTED TO	JKJN	194.	36.50	193.	178.	108.	3.40		
2 COMBINED AT	JN	230.	33.50	229.	208.	123.	3.89		
ROUTED TO	JNJZ	230.	33.50	229.	208.	123.	3.89		
ROUTED TO	JZJO	230.	34.00	229.	208.	123.	3.89		
HYDROGRAPH AT	127	25.	36.50	25.	21.	12.	0.46		
2 COMBINED AT	JO	255.	34.50	254.	229.	135.	4.35		
ROUTED TO	JOJE	255.	35.00	254.	229.	135.	4.35		

EXISTING FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	JE	507.	37.50	504.	463.	284.	9.30
ROUTED TO	JEJY	507.	38.00	504.	462.	284.	9.30
HYDROGRAPH AT	131	83.	13.50	34.	10.	3.	0.10
2 COMBINED AT	JY	507.	38.00	504.	462.	284.	9.40
ROUTED TO	JYJR	507.	38.00	504.	462.	284.	9.40
HYDROGRAPH AT	106	124.	28.50	121.	93.	44.	1.30
ROUTED TO	JQJR	124.	29.00	121.	93.	44.	1.30
HYDROGRAPH AT	107	30.	26.50	29.	21.	9.	0.30
3 COMBINED AT	JR	613.	34.50	608.	553.	334.	11.00
ROUTED TO	JRJX	612.	34.50	608.	553.	334.	11.00
HYDROGRAPH AT	130	50.	13.50	19.	5.	2.	0.05
2 COMBINED AT	JX	612.	34.50	608.	553.	334.	11.05
ROUTED TO	JXJS	612.	34.50	608.	553.	334.	11.05
HYDROGRAPH AT	109	74.	24.00	71.	48.	19.	0.55
2 COMBINED AT	JS	646.	33.50	641.	582.	352.	11.60
ROUTED TO	JSJ65	646.	34.00	641.	582.	352.	11.60
HYDROGRAPH AT	200	93.	28.50	90.	69.	32.	1.03
HYDROGRAPH AT	202	33.	27.50	32.	24.	11.	0.36
2 COMBINED AT	J1	126.	28.00	122.	93.	43.	1.39
ROUTED TO	J1J5	126.	28.50	122.	93.	43.	1.39
HYDROGRAPH AT	201	23.	34.50	23.	19.	10.	0.40
HYDROGRAPH AT	204	50.	47.50	49.	46.	31.	1.08
3 COMBINED AT	J5	172.	29.50	169.	144.	83.	2.87
ROUTED TO	J5J7	172.	29.50	169.	144.	83.	2.87
HYDROGRAPH AT	205	155.	28.50	151.	116.	54.	1.72
2 COMBINED AT	J7	326.	29.00	318.	258.	137.	4.59
ROUTED TO	J7J10	326.	29.50	317.	258.	137.	4.59
HYDROGRAPH AT	208	42.	30.00	41.	33.	16.	0.54
HYDROGRAPH AT	209	99.	24.00	94.	65.	26.	0.79
HYDROGRAPH AT	210	59.	25.50	57.	41.	17.	0.57
3 COMBINED AT	J20	192.	25.00	185.	136.	59.	1.90
ROUTED TO	J20J10	190.	26.00	184.	136.	59.	1.90
HYDROGRAPH AT	206	61.	38.00	61.	53.	31.	1.00
HYDROGRAPH AT	211	47.	28.50	46.	35.	16.	0.59
HYDROGRAPH AT	207	46.	47.00	45.	42.	28.	1.00
5 COMBINED AT	J10	619.	29.00	607.	503.	270.	9.08
ROUTED TO	J10J21	617.	29.50	606.	503.	270.	9.08
HYDROGRAPH AT	212	53.	39.00	52.	46.	27.	1.00

EXISTING FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	J21	658.	29.50	646.	545.	297.	10.08
ROUTED TO	J21J30	657.	30.00	645.	545.	297.	10.08
HYDROGRAPH AT	220	65.	20.00	59.	34.	12.	0.33
ROUTED TO	J31J35	65.	20.50	59.	34.	12.	0.33
HYDROGRAPH AT	217	168.	17.50	141.	65.	22.	0.64
2 COMBINED AT	J35	215.	18.00	192.	98.	34.	0.97
ROUTED TO	J35J33	215.	18.00	191.	98.	34.	0.97
HYDROGRAPH AT	216	67.	37.50	66.	58.	34.	1.11
2 COMBINED AT	J33	227.	18.00	207.	136.	67.	2.08
ROUTED TO	J33J30	226.	18.50	207.	136.	67.	2.08
2 COMBINED AT	J30	764.	29.00	754.	648.	363.	12.16
ROUTED TO	J30J40	764.	29.50	753.	648.	363.	12.16
HYDROGRAPH AT	213	40.	51.50	40.	38.	27.	1.00
2 COMBINED AT	J40	783.	29.50	772.	671.	388.	13.16
ROUTED TO	J40J45	783.	29.50	772.	671.	388.	13.16
HYDROGRAPH AT	223	46.	45.50	45.	41.	27.	1.00
2 COMBINED AT	J45	810.	30.00	800.	703.	415.	14.16
ROUTED TO	J45J50	809.	30.50	798.	702.	415.	14.16
HYDROGRAPH AT	225	41.	23.00	39.	26.	10.	0.32
ROUTED TO	J51J50	41.	23.50	39.	26.	10.	0.32
HYDROGRAPH AT	230	63.	35.00	62.	52.	29.	1.00
HYDROGRAPH AT	231	26.	49.00	26.	24.	17.	0.69
4 COMBINED AT	J50	906.	30.50	896.	792.	470.	16.17
ROUTED TO	J50J55	906.	30.50	895.	792.	470.	16.17
HYDROGRAPH AT	236	19.	22.50	18.	11.	4.	0.15
ROUTED TO	J52J54	19.	23.00	18.	11.	4.	0.15
HYDROGRAPH AT	235	59.	29.00	57.	44.	21.	0.71
2 COMBINED AT	J54	72.	27.50	71.	55.	25.	0.86
ROUTED TO	J54J56	72.	28.00	71.	55.	25.	0.86
HYDROGRAPH AT	242	70.	27.50	68.	51.	23.	0.71
HYDROGRAPH AT	237	29.	26.50	28.	21.	9.	0.27
4 COMBINED AT	J56	1064.	29.50	1050.	913.	526.	18.01
ROUTED TO	J56J60	1063.	30.00	1049.	912.	526.	18.01
HYDROGRAPH AT	243	26.	29.50	25.	20.	9.	0.28
HYDROGRAPH AT	245	24.	29.50	24.	18.	9.	0.29
3 COMBINED AT	J60	1113.	30.00	1097.	950.	544.	18.58
ROUTED TO	J60J65	1113.	30.00	1097.	950.	544.	18.58
HYDROGRAPH AT	247	117.	24.00	111.	75.	30.	1.00
3 COMBINED AT	J65	1805.	31.00	1783.	1574.	924.	31.18

EXISTING FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

ROUTED TO	J65J70	1803.	31.50	1782.	1574.	924.	31.18
HYDROGRAPH AT	240	81.	30.50	79.	63.	31.	1.00
2 COMBINED AT	J70	1884.	31.00	1861.	1636.	955.	32.18
ROUTED TO	J70J71	1884.	31.50	1861.	1636.	955.	32.18
HYDROGRAPH AT	250	24.	38.00	24.	21.	12.	0.45
ROUTED TO	J72J71	24.	38.00	24.	21.	12.	0.45
HYDROGRAPH AT	251	57.	22.00	53.	34.	13.	0.44
3 COMBINED AT	J71	1932.	31.00	1908.	1678.	979.	33.07
HYDROGRAPH AT	255	47.	41.50	46.	41.	26.	1.00
2 COMBINED AT	J75	1967.	31.50	1944.	1716.	1005.	34.07

EXISTING FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	38.13	1830.00	3.93	30.00	38.13	1830.00	3.93
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8389E+02 EXCESS=0.0000E+00 OUTFLOW=0.8386E+02 BASIN STORAGE=0.2308E-01 PERCENT ERROR= 0.0									
JBJC	MANE	30.00	123.82	2310.00	3.70	30.00	123.82	2310.00	3.70
NTINUITY SUMMARY (AC-FT) - INFLOW=0.4745E+03 EXCESS=0.0000E+00 OUTFLOW=0.4739E+03 BASIN STORAGE=0.1100E+01 PERCENT ERROR= -0.1									
JDJC	MANE	30.00	41.51	1950.00	3.91	30.00	41.51	1950.00	3.91
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1002E+03 EXCESS=0.0000E+00 OUTFLOW=0.1002E+03 BASIN STORAGE=0.2980E-01 PERCENT ERROR= 0.0									
JCJE	MANE	30.00	232.66	2370.00	3.74	30.00	232.66	2370.00	3.74
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8824E+03 EXCESS=0.0000E+00 OUTFLOW=0.8813E+03 BASIN STORAGE=0.2198E+01 PERCENT ERROR= -0.1									
JLJM	MANE	30.00	25.16	1800.00	3.59	30.00	25.16	1800.00	3.59
NTINUITY SUMMARY (AC-FT) - INFLOW=0.5172E+02 EXCESS=0.0000E+00 OUTFLOW=0.5173E+02 BASIN STORAGE=0.5927E-02 PERCENT ERROR= 0.0									
JMJN	MANE	30.00	43.89	1800.00	3.54	30.00	43.89	1800.00	3.54
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9247E+02 EXCESS=0.0000E+00 OUTFLOW=0.9247E+02 BASIN STORAGE=0.2456E-02 PERCENT ERROR= 0.0									
JHJI	MANE	26.36	48.17	2556.74	4.12	30.00	48.17	2550.00	4.13
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1805E+03 EXCESS=0.0000E+00 OUTFLOW=0.1804E+03 BASIN STORAGE=0.1552E+00 PERCENT ERROR= 0.0									
JIJJ	MANE	30.00	111.54	1830.00	4.00	30.00	111.54	1830.00	4.00
NTINUITY SUMMARY (AC-FT) - INFLOW=0.3503E+03 EXCESS=0.0000E+00 OUTFLOW=0.3501E+03 BASIN STORAGE=0.3787E+00 PERCENT ERROR= -0.1									
JJJK	MANE	30.00	153.50	2070.00	3.90	30.00	153.50	2070.00	3.90
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5501E+03 EXCESS=0.0000E+00 OUTFLOW=0.5494E+03 BASIN STORAGE=0.8193E+00 PERCENT ERROR= 0.0									
JKJN	MANE	4.81	194.07	2196.32	3.87	30.00	194.06	2220.00	3.87
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7014E+03 EXCESS=0.0000E+00 OUTFLOW=0.7013E+03 BASIN STORAGE=0.9046E-01 PERCENT ERROR= 0.0									
JNJZ	MANE	19.27	230.34	2004.07	3.83	30.00	230.34	2010.00	3.83
NTINUITY SUMMARY (AC-FT) - INFLOW=0.7938E+03 EXCESS=0.0000E+00 OUTFLOW=0.7937E+03 BASIN STORAGE=0.2018E+00 PERCENT ERROR= 0.0									
JZJO	MANE	28.71	230.28	2038.58	3.82	30.00	230.27	2040.00	3.82

EXISTING FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7937E+03 EXCESS=0.0000E+00 OUTFLOW=0.7935E+03 BASIN STORAGE=0.2695E+00 PERCENT ERROR= 0.0

JOJE	MANE	30.00	255.06	2100.00	3.75	30.00	255.06	2100.00	3.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8702E+03 EXCESS=0.0000E+00 OUTFLOW=0.8699E+03 BASIN STORAGE=0.4461E+00 PERCENT ERROR= 0.0

JEJY	MANE	29.80	506.67	2264.49	3.74	30.00	506.62	2280.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1854E+04 EXCESS=0.0000E+00 OUTFLOW=0.1854E+04 BASIN STORAGE=0.1167E+01 PERCENT ERROR= 0.0

JYJR	MANE	4.25	506.60	2278.89	3.74	30.00	506.60	2280.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1873E+04 EXCESS=0.0000E+00 OUTFLOW=0.1873E+04 BASIN STORAGE=0.1675E+00 PERCENT ERROR= 0.0

JQJR	MANE	16.42	124.14	1740.76	3.77	30.00	124.14	1740.00	3.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2616E+03 EXCESS=0.0000E+00 OUTFLOW=0.2617E+03 BASIN STORAGE=0.6940E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.25	612.55	2074.70	3.73	30.00	612.49	2070.00	3.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2190E+04 EXCESS=0.0000E+00 OUTFLOW=0.2190E+04 BASIN STORAGE=0.2664E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.12	612.48	2074.81	3.73	30.00	612.43	2070.00	3.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2201E+04 EXCESS=0.0000E+00 OUTFLOW=0.2200E+04 BASIN STORAGE=0.1340E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	646.40	2040.00	3.74	30.00	646.40	2040.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2314E+04 EXCESS=0.0000E+00 OUTFLOW=0.2313E+04 BASIN STORAGE=0.1838E+01 PERCENT ERROR= 0.0

J1J5	MANE	27.34	125.90	1694.79	3.47	30.00	125.88	1710.00	3.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2572E+03 EXCESS=0.0000E+00 OUTFLOW=0.2572E+03 BASIN STORAGE=0.7690E-02 PERCENT ERROR= 0.0

J5J7	MANE	10.60	172.13	1780.66	3.50	30.00	172.02	1770.00	3.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5355E+03 EXCESS=0.0000E+00 OUTFLOW=0.5354E+03 BASIN STORAGE=0.1265E+00 PERCENT ERROR= 0.0

J7J10	MANE	30.00	325.94	1770.00	3.50	30.00	325.94	1770.00	3.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8575E+03 EXCESS=0.0000E+00 OUTFLOW=0.8573E+03 BASIN STORAGE=0.6422E+00 PERCENT ERROR= -0.1

J20J10	MANE	30.00	190.04	1560.00	3.47	30.00	190.04	1560.00	3.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3518E+03 EXCESS=0.0000E+00 OUTFLOW=0.3514E+03 BASIN STORAGE=0.3294E-01 PERCENT ERROR= 0.1

J10J21	MANE	24.27	617.49	1771.37	3.51	30.00	617.49	1770.00	3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1701E+04 EXCESS=0.0000E+00 OUTFLOW=0.1700E+04 BASIN STORAGE=0.8580E+00 PERCENT ERROR= 0.0

J21J30	MANE	20.31	657.05	1787.55	3.49	30.00	656.86	1800.00	3.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1877E+04 EXCESS=0.0000E+00 OUTFLOW=0.1877E+04 BASIN STORAGE=0.8102E+00 PERCENT ERROR= 0.0

J31J35	MANE	30.00	65.22	1230.00	4.08	30.00	65.22	1230.00	4.08

NTINUITY SUMMARY (AC-FT) - INFLOW=0.7176E+02 EXCESS=0.0000E+00 OUTFLOW=0.7174E+02 BASIN STORAGE=0.7682E-02 PERCENT ERROR= 0.0

J35J33	MANE	25.05	214.83	1077.00	3.93	30.00	214.77	1080.00	3.93

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2033E+03 EXCESS=0.0000E+00 OUTFLOW=0.2032E+03 BASIN STORAGE=0.1041E-01 PERCENT ERROR= 0.0

J33J30	MANE	3.85	226.51	1098.39	3.76	30.00	226.47	1110.00	3.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4174E+03 EXCESS=0.0000E+00 OUTFLOW=0.4174E+03 BASIN STORAGE=0.7277E-02 PERCENT ERROR= 0.0

J30J40	MANE	11.24	764.35	1764.00	3.54	30.00	764.26	1770.00	3.54

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2294E+04 EXCESS=0.0000E+00 OUTFLOW=0.2294E+04 BASIN STORAGE=0.4822E+00 PERCENT ERROR= 0.0

J40J45	MANE	11.38	782.98	1785.90	3.54	30.00	782.81	1770.00	3.54

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2486E+04 EXCESS=0.0000E+00 OUTFLOW=0.2486E+04 BASIN STORAGE=0.6627E+00 PERCENT ERROR= 0.0

J45J50	MANE	26.82	808.84	1823.54	3.54	30.00	808.57	1830.00	3.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2673E+04 EXCESS=0.0000E+00 OUTFLOW=0.2672E+04 BASIN STORAGE=0.1829E+01 PERCENT ERROR= 0.0

J51J50	MANE	30.00	41.36	1410.00	3.45	30.00	41.36	1410.00	3.45

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.5889E+02 EXCESS=0.0000E+00 OUTFLOW=0.5889E+02 BASIN STORAGE=0.1180E-01 PERCENT ERROR= 0.0

J50J55	MANE	14.26	906.14	1839.84	3.51	30.00	906.06	1830.00	3.51

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3028E+04 EXCESS=0.0000E+00 OUTFLOW=0.3028E+04 BASIN STORAGE=0.1164E+01 PERCENT ERROR= 0.0

J52J54	MANE	30.00	18.88	1380.00	3.22	30.00	18.88	1380.00	3.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2574E+02 EXCESS=0.0000E+00 OUTFLOW=0.2574E+02 BASIN STORAGE=0.5316E-02 PERCENT ERROR= 0.0

J54J56	MANE	6.50	71.92	1656.67	3.27	30.00	71.91	1680.00	3.27

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1501E+03 EXCESS=0.0000E+00 OUTFLOW=0.1501E+03 BASIN STORAGE=0.1298E-02 PERCENT ERROR= 0.0

J56J60	MANE	19.59	1063.26	1802.37	3.51	30.00	1063.22	1800.00	3.51

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3368E+04 EXCESS=0.0000E+00 OUTFLOW=0.3367E+04 BASIN STORAGE=0.1650E+01 PERCENT ERROR= 0.0

J60J65	MANE	7.87	1113.05	1802.75	3.51	30.00	1112.95	1800.00	3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3477E+04 EXCESS=0.0000E+00 OUTFLOW=0.3476E+04 BASIN STORAGE=0.5449E+00 PERCENT ERROR= 0.0

J65J70	MANE	23.40	1803.93	1872.11	3.59	30.00	1803.32	1890.00	3.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5967E+04 EXCESS=0.0000E+00 OUTFLOW=0.5966E+04 BASIN STORAGE=0.3062E+01 PERCENT ERROR= 0.0

J70J71	MANE	4.83	1884.18	1867.88	3.58	30.00	1883.83	1890.00	3.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6152E+04 EXCESS=0.0000E+00 OUTFLOW=0.6152E+04 BASIN STORAGE=0.8778E+00 PERCENT ERROR= 0.0

J72J71	MANE	8.59	24.40	2284.82	3.27	30.00	24.39	2280.00	3.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7850E+02 EXCESS=0.0000E+00 OUTFLOW=0.7850E+02 BASIN STORAGE=0.3073E-02 PERCENT ERROR= 0.0

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*

*** NORMAL END OF HEC-1 ***

PROPOSED HEC-1 OUTPUT

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 15:41:10

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1     ID        STONEY RUN EXISTING CONDITIONS SPN # 9083
    2     ID        NICK HOFFMAN, EIT E-7577
    3     ID        SCHMUCHER PAUL NOHR AND ASSOCIATES
    4     ID       5 YEAR STORM EVENT WITH WETLAND INFLUENCE
    5     ID        ADDED AREA SOUTH OF 21st STREET BRIDGE
          *
    6     IT      30  1DEC98    0000     300
    7     IO       5       1
          *

    8     KK     101         COMPUTE RUNOFF HYDROGRAPH
    9     PH       0             0.24    0.77    1.34     2.1    2.25    2.51    2.92    3.32
   10     BA     0.4
   11     LS    0.55       87    3.39
   12     UC   18.72    15.13
          *

   13     KK    JAJB         ROUTE HYDROGRAPH
   14     RD    6700 0.00075    0.05             TRAP      10     0.3
          *

   15     KK     102         COMPUTE RUNOFF HYDROGRAPH
   16     BA       1
   17     LS    0.66       84    6.43
   18     UC   40.12     32.1
          *

   19     KK     100         COMPUTE RUNOFF HYDROGRAPH
   20     BA       1
   21     LS    0.62       85    4.57
   22     UC   29.01    23.21
          *

   23     KK      JB         COMBINE HYDROGRAPHS
   24     HC       3

   25     KK    JBJC         ROUTE HYDROGRAPH
   26     RD    8200 0.00061    0.05             TRAP      10     0.3
          *

   27     KK     104         COMPUTE RUNOFF HYDROGRAPH
   28     BA    0.51
   29     LS    0.68       83   12.83
   30     UC   35.34    28.27
          *

   31     KK     103         COMPUTE RUNOFF HYDROGRAPH
   32     BA    0.48
   33     LS    0.66       84   18.23
   34     UC   20.71    16.57
          *
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  35      KK    JDJC        ROUTE HYDROGRAPH
  36      RD   11000 0.00164    0.06            TRAP      10     0.3
          *

  37      KK     105        COMPUTE RUNOFF HYDROGRAPH
  38      BA    1.03
  39      LS    0.51      85    3.58
  40      UC   34.13   27.31
          *

  41      KK      JC        COMBINE HYDROGRAPHS
  42      HC       4

  43      KK    JCJF        ROUTE HYDROGRAPH
  44      RD    4000 0.00325    0.07            TRAP      10     0.3
          *

  45      KK     108        COMPUTE RUNOFF HYDROGRAPH
  46      BA    0.42
  47      LS    0.75      90   14.13
  48      UC   15.69   12.55
          *

  49      KK      JF
  50      HC       2

  51      KK    JFJE
  52      RD    7000 0.00071    0.06            TRAP      10     0.3
          *

  53      KK     110
  54      BA    0.69
  55      LS    0.75      90    8.79
  56      UC   39.49    31.6
          *

  57      KK     4TH
  58      QI       0       0      14      14      14      14      14      14      14      14
  59      QI      14      14      14      14      14      14      14      14      14      14
  60      QI      14      14      14      14      14      14      14      14      14      14
  61      QI      14      14      14      14      14      14      14      14      14      14
  62      QI      13      12      11      10       9       8       7       6       5       4
          *

  63      KK    JWJU
  64      RD    2600   0.001    0.03            TRAP      30      4
          *

  65      KK     124
  66      BA    0.27
  67      LS    0.49      80    8.28
  68      UC   17.42   13.94
          *
```

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   69     KK    JLJM
   70     RD
   71     RC    0.06    0.06    0.06    3200 0.00094
   72     RX       0      25      44      80     100     121     165     292
   73     RY  1284.8  1284.4    1284 1282.85 1282.84 1283.19  1283.1    1284
          *

   74     KK     125
   75     BA    0.22
   76     LS     0.6      83   11.12
   77     UC    18.5    14.8
          *

   78     KK      JM
   79     HC       2

   80     KK    JMJU
   81     RD     860 0.00094    0.03            TRAP      75       4
          *

   82     KK      JU
   83     HC       2
   84     RS       1    ELEV 1278.85
   85     SA   20.66   21.11   21.56   22.02   22.47
   86     SE  1277.9    1279    1280    1281    1282
   87     SS  1278.9     116    0.95     1.5
          *

   88     KK     120
   89     BA    0.82
   90     LS    0.49      88    9.41
   91     UC    33.2   26.56
          *

   92     KK    JHJI
   93     RD    3300 0.00182    0.05            TRAP      10     0.3
          *

   94     KK     121        COMPUTE RUNOFF HYDROGRAPH
   95     BA    0.82
   96     LS    0.51      85    7.12
   97     UC   18.05   14.44
          *

   98     KK      JI        COMBINE HYDROGRAPHS
   99     HC       2

  100     KK    JIJJ        ROUTE HYDROGRAPH
  101     RD    6300 0.00095    0.05            TRAP      10     0.3
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  102     KK     122        COMPUTE RUNOFF HYDROGRAPH
  103     BA    1.00
  104     LS    0.48      84    3.43
  105     UC   32.63   26.11
          *
  106     KK      JJ        COMBINE HYDROGRAPHS
  107     HC       2
  108     KK    JJJK        ROUTE HYDROGRAPH
  109     RD    6000  0.0005    0.06            TRAP      10     0.3
          *
  110     KK     123        COMPUTE RUNOFF HYDROGRAPH
  111     BA    0.76
  112     LS     0.7      91    1.87
  113     UC   31.11   24.89
          *
  114     KK      JK        COMBINE HYDROGRAPHS
  115     HC       2
  116     KK    JKJT        ROUTE HYDROGRAPH
  117     RD    1600   0.003    0.06            TRAP      10     0.3
          *
  118     KK      JT        COMBINE HYDROGRAPHS
  119     HC       2
  120     KK    JTJZ        ROUTE HYDROGRAPH
  121     RD     500 0.00094    0.03            TRAP     100       4
  122     KK    JZJO        ROUTE HYDROGRAPH
  123     RD    1500 0.00094    0.03            TRAP     100       4
          *
  124     KK     127        COMPUTE RUNOFF HYDROGRAPH
  125     BA    0.43
  126     LS     0.7      91    2.65
  127     UC   26.35   21.08
          *
  128     KK     126        COMPUTE RUNOFF HYDROGRAPH
  129     BA    0.53
  130     LS    0.55      90    2.92
  131     UC   11.95    6.32
          *
  132     KK    JPJO        ROUTE HYDROGRAPH
  133     RD    2900   0.001   0.012            CIRC       4
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  134     KK      JO        COMBINE HYDROGRAPHS
  135     HC       3
  136     KK    JOJE        ROUTE HYDROGRAPH
  137     RD    2700 0.00094    0.03            TRAP     150       4
          *
  138     KK      JE        COMBINE HYDROGRAPHS
  139     HC       4
  140     KK    JEJY        ROUTE HYDROGRAPH
  141     RD    1200 0.00094    0.03            TRAP     150       4
          *
  142     KK     131        COMPUTE RUNOFF HYDROGRAPH
  143     BA     0.1
  144     LS    0.65      85       0
  145     UC    1.32    1.05
          *
  146     KK      JY        COMBINE HYDROGRAPHS
  147     HC       2
  148     KK    JYJR        ROUTE HYDROGRAPH
  149     RD     400 0.00094    0.03            TRAP     200       4
          *
  150     KK     106        COMPUTE RUNOFF HYDROGRAPH
  151     BA    1.23
  152     LS    0.75      90   11.78
  153     UC   17.93   14.34
          *
  154     KK    JQJR        ROUTE HYDROGRAPH
  155     RD    4000  0.0075    0.06            TRAP      10      0.3
          *
  156     KK     107        COMPUTE RUNOFF HYDROGRAPH
  157     BA     0.3
  158     LS    0.51      80    3.81
  159     UC   15.42   12.34
          *
  160     KK      JR        COMBINE HYDROGRAPHS
  161     HC       3
  162     KK    JRJX        ROUTE HYDROGRAPH
  163     RD     800 0.00094    0.03            TRAP     200       4
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  164     KK      130        COMPUTE RUNOFF HYDROGRAPH
  165     BA     0.05
  166     LS     0.65       90        0
  167     UC     1.10     0.88
          *

  168     KK       JX        COMBINE HYDROGRAPHS
  169     HC        2

  170     KK     JXJS        ROUTE HYDROGRAPH
  171     RD      400  0.00094     0.03             TRAP     200        4
          *

  172     KK      109        COMPUTE RUNOFF HYDROGRAPH
  173     BA     0.55
  174     LS     0.61       87      2.0
  175     UC    12.56    10.05
          *

  176     KK       JS        COMBINE HYDROGRAPHS
  177     HC        2

  178     KK    JSJ65
  179     RD     7000   0.0023     0.04             TRAP      30       10
          *

  180     KK      200        COMPUTE RUNOFF HYDROGRAPH
  181     BA     1.03
  182     LS      0.8       84      4.6
  183     UC    17.67    14.14
          *

  184     KK      202        COMPUTE RUNOFF HYDROGRAPH
  185     BA     0.36
  186     LS      0.9       82     6.88
  187     UC    16.21    12.97
          *

  188     KK       J1        COMBINE HYDROGRAPHS
  189     HC        2

  190     KK     J1J5
  191     RD     5280   0.0013    0.027             TRAP       7        3
          *

  192     KK      201        COMPUTE RUNOFF HYDROGRAPH
  193     BA      0.4
  194     LS      0.9       73     9.23
  195     UC    24.47    17.78
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  196     KK     204        COMPUTE RUNOFF HYDROGRAPH
  197     BA    1.08
  198     LS     0.8      85   17.16
  199     UC   39.32   31.46
          *

  200     KK      J5        COMBINE HYDROGRAPHS
  201     HC       3

  202     KK    J5J7
  203     RD    2700  0.0022   0.027            TRAP       7       3
          *

  204     KK     205        COMPUTE RUNOFF HYDROGRAPH
  205     BA    1.72
  206     LS     0.8      84     4.8
  207     UC   17.67   14.14
          *

  208     KK      J7        COMBINE HYDROGRAPHS
  209     HC       2

  210     KK    J7J10
  211     RD    7100  0.0006   0.033            TRAP      10       1
          *

  212     KK     208        COMPUTE RUNOFF HYDROGRAPH
  213     BA    0.54
  214     LS     0.9      83     1.1
  215     UC    19.1   15.28
          *

  216     KK     209        COMPUTE RUNOFF HYDROGRAPH
  217     BA    0.79
  218     LS     0.9      83    18.4
  219     UC   12.76   10.21
          *

  220     KK     210        COMPUTE RUNOFF HYDROGRAPH
  221     BA    0.57
  222     LS       1      81   13.36
  223     UC   14.33   11.47
          *

  224     KK     J20        COMBINE HYDROGRAPHS
  225     HC       3

  226     KK   J20J10
  227     RD    9800  0.0004   0.038            TRAP      10       1
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  228     KK     206        COMPUTE RUNOFF HYDROGRAPH
  229     BA       1
  230     LS     0.8      85   10.87
  231     UC   28.18   22.54
          *

  232     KK     211        COMPUTE RUNOFF HYDROGRAPH
  233     BA    0.59
  234     LS       1      81    4.12
  235     UC   17.68   14.14
          *

  236     KK     207        COMPUTE RUNOFF HYDROGRAPH
  237     BA       1
  238     LS     0.8      85   12.41
  239     UC   38.65   30.92
          *

  240     KK     J10        COMBINE HYDROGRAPHS
  241     HC       5

  242     KK  J10J21
  243     RD    5300  0.0004   0.033            TRAP      10       1
          *

  244     KK     212        COMPUTE RUNOFF HYDROGRAPH
  245     BA       1
  246     LS     0.9      81    8.23
  247     UC   29.41   23.53
          *

  248     KK     J21        COMBINE HYDROGRAPHS
  249     HC       2

  250     KK  J21J30
  251     RD    5200  0.0008   0.038            TRAP      10       1
          *

  252     KK     220        COMPUTE RUNOFF HYDROGRAPH
  253     BA    0.33
  254     LS     0.8      85   28.23
  255     UC    8.48    6.78
          *

  256     KK  J31J35
  257     RD    5000   0.001   0.038            TRAP       5       2
          *

  258     KK     217        COMPUTE RUNOFF HYDROGRAPH
  259     BA    0.64
  260     LS     0.8      84   20.32
  261     UC    5.73    4.58
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  262     KK     J35        COMBINE HYDROGRAPHS
  263     HC       2
  264     KK  J35J33
  265     RD    5300   0.001   0.033            TRAP      10       1
          *
  266     KK     216        COMPUTE RUNOFF HYDROGRAPH
  267     BA    1.11
  268     LS     0.8      85    6.43
  269     UC   27.98   22.38
          *
  270     KK     J33        COMBINE HYDROGRAPHS
  271     HC       2
  272     KK  J33J30
  273     RD     800  0.0009   0.033            TRAP      10       1
          *
  274     KK     J30        COMBINE HYDROGRAPHS
  275     HC       2
  276     KK  J30J40
  277     RD    3700  0.0011   0.033            TRAP      10       1
          *
  278     KK     213        COMPUTE RUNOFF HYDROGRAPH
  279     BA       1
  280     LS     0.8      85   11.97
  281     UC   43.67   34.94
          *
  282     KK     J40        COMBINE HYDROGRAPHS
  283     HC       2
  284     KK  J40J45
  285     RD    5300   0.003   0.033            TRAP      10       1
          *
  286     KK     223        COMPUTE RUNOFF HYDROGRAPH
  287     BA       1
  288     LS     0.8      85    3.18
  289     UC   36.56   29.25
          *
  290     KK     J45        COMBINE HYDROGRAPHS
  291     HC       2
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

292       KK  J45J50
293       RD    5800  0.0003   0.033            TRAP      10       1
          *
294       KK     225        COMPUTE RUNOFF HYDROGRAPH
295       BA    0.32
296       LS     0.8      84    1.55
297       UC   11.61    9.29
          *
298       KK  J51J50
299       RD    8000  0.0016   0.030            TRAP       7       2
          *
300       KK     230        COMPUTE RUNOFF HYDROGRAPH
301       BA       1
302       LS     0.9      83    5.37
303       UC   25.03   20.02
          *
304       KK     231        COMPUTE RUNOFF HYDROGRAPH
305       BA    0.69
306       LS     0.9      83    1.31
307       UC   40.44   32.35
          *
308       KK     J50        COMBINE HYDROGRAPHS
309       HC       4
          *
310       KK  J50J55
311       RD    5200  0.0017   0.038            TRAP      12       1
          *
312       KK     236        COMPUTE RUNOFF HYDROGRAPH
313       BA    0.15
314       LS     0.9      82    1.27
315       UC   11.04    8.83
          *
316       KK  J52J54
317       RD    5280  0.0027   0.027            TRAP       7       3
          *
318       KK     235        COMPUTE RUNOFF HYDROGRAPH
319       BA    0.71
320       LS     0.9      82    4.19
321       UC   18.04   14.43
          *
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```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

322       KK     J54        COMBINE HYDROGRAPHS
323       HC       2
324       KK  J54J56
325       RD    1100  0.0014   0.027            TRAP       7       3
          *
326       KK     242        COMPUTE RUNOFF HYDROGRAPH
327       BA    0.71
328       LS     0.8       84    8.69
329       UC   16.52   13.21
          *
330       KK     237        COMPUTE RUNOFF HYDROGRAPH
331       BA    0.27
332       LS     0.8       85   10.37
333       UC   15.49   12.39
          *
334       KK     J56        COMBINE HYDROGRAPHS
335       HC       4
336       KK  J56J60
337       RD    5500  0.0005   0.033            TRAP      10       1
          *
338       KK     243        COMPUTE RUNOFF HYDROGRAPH
339       BA    0.28
340       LS     0.7       87    1.71
341       UC   18.63   14.91
          *
342       KK     245        COMPUTE RUNOFF HYDROGRAPH
343       BA    0.29
344       LS     0.8       84    1.13
345       UC   18.88   15.11
          *
346       KK     J60        COMBINE HYDROGRAPHS
347       HC       3
348       KK  J60J65
349       RD    3000  0.0043   0.033            TRAP      15       7
          *
350       KK     247        COMPUTE RUNOFF HYDROGRAPH
351       BA       1
352       LS     0.8       82    2.76
353       UC    12.5       10
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  354     KK     J65        COMBINE HYDROGRAPHS
  355     HC       3
  356     KK  J65J70
  357     RD    4800   0.001    0.04            TRAP      30      10
          *
  358     KK     240        COMPUTE RUNOFF HYDROGRAPH
  359     BA       1
  360     LS     0.8       85    0.76
  361     UC   19.83    15.86
          *
  362     KK     J70        COMBINE HYDROGRAPHS
  363     HC       2
  364     KK  J70J71
  365     RD    2200  0.0046    0.04            TRAP      45       3
          *
  366     KK     250        COMPUTE RUNOFF HYDROGRAPH
  367     BA    0.45
  368     LS     0.9       82    3.62
  369     UC   28.18    22.55
          *
  370     KK  J72J71
  371     RD    2000    0.02   0.033            TRAP       5      10
          *
  372     KK     251        COMPUTE RUNOFF HYDROGRAPH
  373     BA    0.44
  374     LS     0.9       82    1.39
  375     UC   10.62      8.5
          *
  376     KK     J71        COMBINE HYDROGRAPHS
  377     HC       3
          *
  378     KK     255        COMPUTE RUNOFF HYDROGRAPH
  379     BA       1
  380     LS     0.9       82    1.52
  381     UC   32.24     25.8
          *
  382     KK     J75        COMBINE HYDROGRAPHS
  383     HC       2
          *
  384     ZZ
```

```
**************************************
*                                    *
* FLOOD HYDROGRAPH PACKAGE (HEC-1)   *
*           MAY 1991                 *
*         VERSION 4.0.1E             *
*   Lahey F77L-EM/32 version 5.01    *
*     Dodson & Associates, Inc.      *
* RUN DATE 02/23/99 TIME 15:41:10    *
**************************************
```


```
**************************************
*                                    *
*   U.S. ARMY CORPS OF ENGINEERS     *
*   HYDROLOGIC ENGINEERING CENTER    *
*         609 SECOND STREET          *
*       DAVIS, CALIFORNIA 95616      *
*           (916) 551-1748           *
*                                    *
**************************************
```


STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
5 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	1DEC98	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	7DEC98	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

PROPOSED FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	18.	29.50	17.	14.	7.	0.40		
ROUTED TO	JAJB	18.	31.00	17.	14.	7.	0.40		
HYDROGRAPH AT	102	19.	48.50	19.	18.	12.	1.00		
HYDROGRAPH AT	100	27.	39.00	27.	24.	14.	1.00		
3 COMBINED AT	JB	57.	38.00	56.	52.	33.	2.40		
ROUTED TO	JBJC	56.	39.50	56.	51.	33.	2.40		
HYDROGRAPH AT	104	12.	44.50	11.	10.	7.	0.51		
HYDROGRAPH AT	103	19.	31.50	19.	15.	8.	0.48		
ROUTED TO	JDJC	19.	33.00	19.	15.	8.	0.48		
HYDROGRAPH AT	105	25.	43.50	25.	22.	14.	1.03		
4 COMBINED AT	JC	107.	39.00	107.	98.	62.	4.42		
ROUTED TO	JCJF	107.	39.50	107.	98.	62.	4.42		
HYDROGRAPH AT	108	24.	27.00	23.	17.	7.	0.42		
2 COMBINED AT	JF	120.	36.50	119.	110.	68.	4.84		
ROUTED TO	JFJE	120.	37.50	119.	109.	68.	4.84		
HYDROGRAPH AT	110	16.	48.00	16.	14.	10.	0.69		
HYDROGRAPH AT	4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	11.	28.50	11.	9.	4.	0.27		
ROUTED TO	JLJM	11.	30.50	11.	8.	4.	0.27		
HYDROGRAPH AT	125	9.	29.50	9.	7.	3.	0.22		
2 COMBINED AT	JM	20.	30.00	20.	16.	7.	0.49		
ROUTED TO	JMJU	20.	30.50	20.	16.	7.	0.49		
ROUTED TO	JU	19.	33.00	19.	15.	7.	0.49	1279.21	33.00
HYDROGRAPH AT	120	23.	42.50	23.	21.	13.	0.82		
ROUTED TO	JHJI	23.	43.00	23.	21.	13.	0.82		
HYDROGRAPH AT	121	37.	29.00	36.	28.	13.	0.82		
2 COMBINED AT	JI	52.	30.50	51.	45.	26.	1.64		
ROUTED TO	JIJJ	52.	31.00	51.	45.	26.	1.64		
HYDROGRAPH AT	122	25.	42.00	25.	22.	14.	1.00		
2 COMBINED AT	JJ	72.	34.50	72.	66.	40.	2.64		
ROUTED TO	JJJK	72.	36.00	72.	66.	40.	2.64		
HYDROGRAPH AT	123	22.	41.00	22.	19.	12.	0.76		
2 COMBINED AT	JK	93.	38.00	93.	85.	52.	3.40		
ROUTED TO	JKJT	93.	38.00	93.	85.	52.	3.40		

PROPOSED FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	JT	111.	36.00	110.	100.	59.	3.89
ROUTED TO	JTJZ	111.	36.00	110.	100.	59.	3.89
ROUTED TO	JZJO	111.	36.00	110.	100.	59.	3.89
HYDROGRAPH AT	127	15.	36.50	14.	12.	7.	0.43
HYDROGRAPH AT	126	47.	23.00	44.	27.	10.	0.53
ROUTED TO	JPJO	47.	23.00	44.	27.	10.	0.53
3 COMBINED AT	JO	138.	33.00	137.	124.	75.	4.85
ROUTED TO	JOJE	138.	33.50	137.	124.	75.	4.85
4 COMBINED AT	JE	272.	36.00	270.	249.	157.	11.07
ROUTED TO	JEJY	272.	36.00	270.	249.	157.	11.07
HYDROGRAPH AT	131	32.	13.50	14.	4.	1.	0.10
2 COMBINED AT	JY	272.	36.00	270.	249.	157.	11.17
ROUTED TO	JYJR	272.	36.00	270.	249.	157.	11.17
HYDROGRAPH AT	106	60.	29.00	58.	45.	21.	1.23
ROUTED TO	JQJR	60.	29.00	58.	45.	21.	1.23
HYDROGRAPH AT	107	13.	27.00	13.	9.	4.	0.30
3 COMBINED AT	JR	329.	33.50	326.	297.	183.	12.70
ROUTED TO	JRJX	328.	33.50	326.	297.	183.	12.70
HYDROGRAPH AT	130	22.	13.50	9.	3.	1.	0.05
2 COMBINED AT	JX	328.	33.50	326.	297.	183.	12.75
ROUTED TO	JXJS	328.	33.50	326.	297.	183.	12.75
HYDROGRAPH AT	109	33.	24.00	31.	22.	9.	0.55
2 COMBINED AT	JS	346.	33.00	344.	312.	192.	13.30
ROUTED TO	JSJ65	346.	33.50	344.	312.	192.	13.30
HYDROGRAPH AT	200	39.	29.00	38.	30.	14.	1.03
HYDROGRAPH AT	202	14.	27.50	13.	10.	4.	0.36
2 COMBINED AT	J1	53.	28.50	51.	40.	18.	1.39
ROUTED TO	J1J5	53.	29.00	51.	40.	18.	1.39
HYDROGRAPH AT	201	9.	34.50	9.	8.	4.	0.40
HYDROGRAPH AT	204	23.	48.00	23.	21.	14.	1.08
3 COMBINED AT	J5	73.	30.00	72.	62.	36.	2.87
ROUTED TO	J5J7	73.	30.50	72.	62.	36.	2.87
HYDROGRAPH AT	205	66.	29.00	64.	49.	23.	1.72
2 COMBINED AT	J7	138.	29.50	135.	111.	59.	4.59
ROUTED TO	J7J10	138.	30.00	134.	111.	59.	4.59
HYDROGRAPH AT	208	17.	30.50	16.	13.	6.	0.54
HYDROGRAPH AT	209	43.	24.00	41.	29.	12.	0.79
HYDROGRAPH AT	210	24.	26.00	23.	17.	7.	0.57

PROPOSED FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	J20	81.	25.00	78.	58.	25.	1.90
ROUTED TO	J20J10	80.	26.50	77.	58.	25.	1.90
HYDROGRAPH AT	206	27.	38.00	27.	24.	14.	1.00
HYDROGRAPH AT	211	18.	29.00	18.	14.	6.	0.59
HYDROGRAPH AT	207	21.	47.50	20.	19.	13.	1.00
5 COMBINED AT	J10	262.	30.00	258.	216.	117.	9.08
ROUTED TO	J10J21	262.	30.00	257.	216.	117.	9.08
HYDROGRAPH AT	212	22.	39.50	22.	19.	11.	1.00
2 COMBINED AT	J21	279.	30.50	274.	234.	129.	10.08
ROUTED TO	J21J30	279.	31.00	274.	234.	129.	10.08
HYDROGRAPH AT	220	30.	20.00	28.	16.	6.	0.33
ROUTED TO	J31J35	30.	20.50	28.	16.	6.	0.33
HYDROGRAPH AT	217	73.	17.50	62.	30.	10.	0.64
2 COMBINED AT	J35	95.	18.00	86.	46.	16.	0.97
ROUTED TO	J35J33	95.	18.50	86.	46.	16.	0.97
HYDROGRAPH AT	216	29.	38.00	29.	25.	15.	1.11
2 COMBINED AT	J33	101.	18.50	93.	63.	31.	2.08
ROUTED TO	J33J30	100.	18.50	93.	62.	31.	2.08
2 COMBINED AT	J30	328.	30.00	324.	280.	159.	12.16
ROUTED TO	J30J40	328.	30.00	323.	280.	159.	12.16
HYDROGRAPH AT	213	18.	51.50	18.	17.	12.	1.00
2 COMBINED AT	J40	337.	30.50	332.	291.	170.	13.16
ROUTED TO	J40J45	337.	30.50	332.	291.	170.	13.16
HYDROGRAPH AT	223	20.	46.00	19.	18.	12.	1.00
2 COMBINED AT	J45	349.	31.00	345.	305.	182.	14.16
ROUTED TO	J45J50	348.	31.50	344.	304.	181.	14.16
HYDROGRAPH AT	225	17.	23.50	16.	11.	4.	0.32
ROUTED TO	J51J50	17.	24.50	16.	11.	4.	0.32
HYDROGRAPH AT	230	26.	35.50	25.	22.	12.	1.00
HYDROGRAPH AT	231	11.	49.50	11.	10.	7.	0.69
4 COMBINED AT	J50	389.	31.50	385.	342.	204.	16.17
ROUTED TO	J50J55	389.	31.50	385.	342.	204.	16.17
HYDROGRAPH AT	236	7.	23.00	7.	5.	2.	0.15
ROUTED TO	J52J54	7.	23.50	7.	5.	2.	0.15
HYDROGRAPH AT	235	24.	29.50	23.	18.	8.	0.71
2 COMBINED AT	J54	29.	28.50	28.	22.	10.	0.86
ROUTED TO	J54J56	29.	28.50	28.	22.	10.	0.86
HYDROGRAPH AT	242	30.	28.00	29.	22.	10.	0.71
HYDROGRAPH AT	237	13.	27.00	12.	9.	4.	0.27

PROPOSED FLOWS 5 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

4 COMBINED AT	J56	453.	31.00	448.	392.	228.	18.01
ROUTED TO	J56J60	453.	31.00	448.	392.	228.	18.01
HYDROGRAPH AT	243	11.	30.00	11.	9.	4.	0.28
HYDROGRAPH AT	245	10.	30.00	10.	8.	4.	0.29
3 COMBINED AT	J60	474.	31.00	468.	408.	236.	18.58
ROUTED TO	J60J65	474.	31.00	468.	408.	236.	18.58
HYDROGRAPH AT	247	47.	24.00	45.	31.	12.	1.00
3 COMBINED AT	J65	847.	31.50	838.	742.	439.	32.88
ROUTED TO	J65J70	847.	32.00	837.	742.	439.	32.88
HYDROGRAPH AT	240	34.	31.00	33.	27.	13.	1.00
2 COMBINED AT	J70	880.	32.00	870.	768.	452.	33.88
ROUTED TO	J70J71	880.	32.00	870.	768.	452.	33.88
HYDROGRAPH AT	250	10.	38.50	10.	9.	5.	0.45
ROUTED TO	J72J71	10.	38.50	10.	9.	5.	0.45
HYDROGRAPH AT	251	22.	22.50	21.	13.	5.	0.44
3 COMBINED AT	J71	899.	32.00	889.	785.	462.	34.77
HYDROGRAPH AT	255	19.	42.00	19.	17.	10.	1.00
2 COMBINED AT	J75	914.	32.00	903.	800.	472.	35.77

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	17.58	1860.00	1.84	30.00	17.58	1860.00	1.84

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.3926E+02 EXCESS=0.0000E+00 OUTFLOW=0.3924E+02 BASIN STORAGE=0.2165E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	56.44	2370.00	1.68	30.00	56.44	2370.00	1.68

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2158E+03 EXCESS=0.0000E+00 OUTFLOW=0.2154E+03 BASIN STORAGE=0.6581E+00 PERCENT ERROR= -0.2

JDJC	MANE	30.00	19.44	1980.00	1.86	30.00	19.44	1980.00	1.86

TINUITY SUMMARY (AC-FT) - INFLOW=0.4766E+02 EXCESS=0.0000E+00 OUTFLOW=0.4765E+02 BASIN STORAGE=0.2876E-01 PERCENT ERROR= -0.1

JCJF	MANE	25.26	107.27	2349.33	1.72	30.00	107.27	2370.00	1.72

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.4056E+03 EXCESS=0.0000E+00 OUTFLOW=0.4054E+03 BASIN STORAGE=0.3390E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	119.58	2250.00	1.74	30.00	119.58	2250.00	1.74

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.4501E+03 EXCESS=0.0000E+00 OUTFLOW=0.4497E+03 BASIN STORAGE=0.9160E+00 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	11.30	1830.00	1.64	30.00	11.30	1830.00	1.64

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2367E+02 EXCESS=0.0000E+00 OUTFLOW=0.2369E+02 BASIN STORAGE=0.5912E-02 PERCENT ERROR= -0.1

JMJU	MANE	15.34	20.48	1810.70	1.69	30.00	20.47	1830.00	1.69

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.4409E+02 EXCESS=0.0000E+00 OUTFLOW=0.4409E+02 BASIN STORAGE=0.4040E-02 PERCENT ERROR= 0.0

JHJI	MANE	30.00	23.42	2580.00	2.01	30.00	23.42	2580.00	2.01

NTINUITY SUMMARY (AC-FT) - INFLOW=0.8815E+02 EXCESS=0.0000E+00 OUTFLOW=0.8810E+02 BASIN STORAGE=0.9712E-01 PERCENT ERROR= -0.1

JIJJ	MANE	30.00	52.24	1860.00	1.92	30.00	52.24	1860.00	1.92

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1680E+03 EXCESS=0.0000E+00 OUTFLOW=0.1679E+03 BASIN STORAGE=0.2397E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	72.15	2160.00	1.85	30.00	72.15	2160.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2603E+03 EXCESS=0.0000E+00 OUTFLOW=0.2600E+03 BASIN STORAGE=0.5090E+00 PERCENT ERROR= -0.1

JKJT	MANE	9.82	93.10	2277.10	1.86	30.00	93.10	2280.00	1.86

TINUITY SUMMARY (AC-FT) - INFLOW=0.3374E+03 EXCESS=0.0000E+00 OUTFLOW=0.3373E+03 BASIN STORAGE=0.9126E-01 PERCENT ERROR= 0.0

JTJZ	MANE	5.28	110.71	2161.52	1.83	30.00	110.71	2160.00	1.83

TINUITY SUMMARY (AC-FT) - INFLOW=0.3803E+03 EXCESS=0.0000E+00 OUTFLOW=0.3803E+03 BASIN STORAGE=0.6358E-01 PERCENT ERROR= 0.0

JZJO	MANE	15.86	110.69	2172.13	1.83	30.00	110.68	2160.00	1.83

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.3803E+03 EXCESS=0.0000E+00 OUTFLOW=0.3802E+03 BASIN STORAGE=0.1933E+00 PERCENT ERROR= 0.0

JPJO	MANE	9.39	46.51	1380.96	2.00	30.00	46.51	1380.00	2.00

TINUITY SUMMARY (AC-FT) - INFLOW=0.5666E+02 EXCESS=0.0000E+00 OUTFLOW=0.5666E+02 BASIN STORAGE=0.7755E-03 PERCENT ERROR= 0.0

JOJE	MANE	29.97	138.00	2008.27	1.86	30.00	137.99	2010.00	1.86

TINUITY SUMMARY (AC-FT) - INFLOW=0.4811E+03 EXCESS=0.0000E+00 OUTFLOW=0.4810E+03 BASIN STORAGE=0.4270E+00 PERCENT ERROR= -0.1

JEJY	MANE	10.32	271.57	2166.29	1.81	30.00	271.57	2160.00	1.81

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1066E+04 EXCESS=0.0000E+00 OUTFLOW=0.1066E+04 BASIN STORAGE=0.5625E+00 PERCENT ERROR= 0.0

JYJR	MANE	3.79	271.56	2161.93	1.80	30.00	271.55	2160.00	1.80

TINUITY SUMMARY (AC-FT) - INFLOW=0.1074E+04 EXCESS=0.0000E+00 OUTFLOW=0.1074E+04 BASIN STORAGE=0.2113E+00 PERCENT ERROR= 0.0

JQJR	MANE	20.90	60.07	1755.62	1.96	30.00	60.03	1740.00	1.96

TINUITY SUMMARY (AC-FT) - INFLOW=0.1285E+03 EXCESS=0.0000E+00 OUTFLOW=0.1285E+03 BASIN STORAGE=0.6470E-02 PERCENT ERROR= 0.0

JRJX	MANE	7.04	328.51	2020.54	1.81	30.00	328.47	2010.00	1.81

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1228E+04 EXCESS=0.0000E+00 OUTFLOW=0.1227E+04 BASIN STORAGE=0.4234E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.52	328.46	2017.16	1.81	30.00	328.43	2010.00	1.81

TINUITY SUMMARY (AC-FT) - INFLOW=0.1232E+04 EXCESS=0.0000E+00 OUTFLOW=0.1232E+04 BASIN STORAGE=0.2119E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	346.41	2010.00	1.81	30.00	346.41	2010.00	1.81

TINUITY SUMMARY (AC-FT) - INFLOW=0.1284E+04 EXCESS=0.0000E+00 OUTFLOW=0.1283E+04 BASIN STORAGE=0.1721E+01 PERCENT ERROR= 0.0

J1J5	MANE	30.00	52.67	1740.00	1.48	30.00	52.67	1740.00	1.48

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1099E+03 EXCESS=0.0000E+00 OUTFLOW=0.1099E+03 BASIN STORAGE=0.7691E-02 PERCENT ERROR= 0.0

J5J7	MANE	13.49	73.14	1821.81	1.54	30.00	73.12	1830.00	1.54

TINUITY SUMMARY (AC-FT) - INFLOW=0.2354E+03 EXCESS=0.0000E+00 OUTFLOW=0.2354E+03 BASIN STORAGE=0.7382E-01 PERCENT ERROR= 0.0

J7J10	MANE	30.00	137.75	1800.00	1.53	30.00	137.75	1800.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3741E+03 EXCESS=0.0000E+00 OUTFLOW=0.3739E+03 BASIN STORAGE=0.3891E+00 PERCENT ERROR= -0.1

J20J10	MANE	30.00	79.76	1590.00	1.50	30.00	79.76	1590.00	1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1521E+03 EXCESS=0.0000E+00 OUTFLOW=0.1518E+03 BASIN STORAGE=0.3027E-01 PERCENT ERROR= 0.1

J10J21	MANE	30.00	261.97	1800.00	1.53	30.00	261.97	1800.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7425E+03 EXCESS=0.0000E+00 OUTFLOW=0.7422E+03 BASIN STORAGE=0.5177E+00 PERCENT ERROR= 0.0

J21J30	MANE	26.81	278.82	1849.94	1.52	30.00	278.68	1860.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8162E+03 EXCESS=0.0000E+00 OUTFLOW=0.8161E+03 BASIN STORAGE=0.4900E+00 PERCENT ERROR= 0.0

J31J35	MANE	30.00	30.12	1230.00	1.99	30.00	30.12	1230.00	1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3502E+02 EXCESS=0.0000E+00 OUTFLOW=0.3501E+02 BASIN STORAGE=0.8223E-02 PERCENT ERROR= 0.0

J35J33	MANE	30.00	95.17	1110.00	1.87	30.00	95.17	1110.00	1.87

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9669E+02 EXCESS=0.0000E+00 OUTFLOW=0.9667E+02 BASIN STORAGE=0.1078E-01 PERCENT ERROR= 0.0

J33J30	MANE	5.01	100.42	1117.97	1.72	30.00	100.33	1110.00	1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1907E+03 EXCESS=0.0000E+00 OUTFLOW=0.1907E+03 BASIN STORAGE=0.5274E-02 PERCENT ERROR= 0.0

J30J40	MANE	14.78	328.03	1802.55	1.55	30.00	328.00	1800.00	1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1007E+04 EXCESS=0.0000E+00 OUTFLOW=0.1007E+04 BASIN STORAGE=0.2940E+00 PERCENT ERROR= 0.0

J40J45	MANE	14.95	336.73	1838.79	1.56	30.00	336.72	1830.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1094E+04 EXCESS=0.0000E+00 OUTFLOW=0.1093E+04 BASIN STORAGE=0.3999E+00 PERCENT ERROR= 0.0

J45J50	MANE	30.00	348.08	1890.00	1.55	30.00	348.08	1890.00	1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1174E+04 EXCESS=0.0000E+00 OUTFLOW=0.1173E+04 BASIN STORAGE=0.1087E+01 PERCENT ERROR= 0.0

J51J50	MANE	30.00	16.77	1470.00	1.46	30.00	16.77	1470.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2485E+02 EXCESS=0.0000E+00 OUTFLOW=0.2485E+02 BASIN STORAGE=0.1092E-01 PERCENT ERROR= -0.1

J50J55	MANE	18.88	388.91	1906.98	1.53	30.00	388.81	1890.00	1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1321E+04 EXCESS=0.0000E+00 OUTFLOW=0.1320E+04 BASIN STORAGE=0.6952E+00 PERCENT ERROR= 0.0

J52J54	MANE	30.00	7.21	1410.00	1.29	30.00	7.21	1410.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1031E+02 EXCESS=0.0000E+00 OUTFLOW=0.1031E+02 BASIN STORAGE=0.5093E-02 PERCENT ERROR= -0.1

J54J56	MANE	8.40	28.93	1713.71	1.34	30.00	28.92	1710.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6127E+02 EXCESS=0.0000E+00 OUTFLOW=0.6127E+02 BASIN STORAGE=0.1288E-02 PERCENT ERROR= 0.0

J56J60	MANE	25.82	453.04	1859.31	1.53	30.00	453.04	1860.00	1.53

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1466E+04 EXCESS=0.0000E+00 OUTFLOW=0.1465E+04 BASIN STORAGE=0.9863E+00 PERCENT ERROR= 0.0

J60J65	MANE	10.01	474.14	1872.28	1.53	30.00	474.03	1860.00	1.53

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1513E+04 EXCESS=0.0000E+00 OUTFLOW=0.1513E+04 BASIN STORAGE=0.3176E+00 PERCENT ERROR= 0.0

J65J70	MANE	29.21	846.56	1928.10	1.64	30.00	846.54	1920.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2870E+04 EXCESS=0.0000E+00 OUTFLOW=0.2868E+04 BASIN STORAGE=0.2301E+01 PERCENT ERROR= 0.0

J70J71	MANE	6.31	880.07	1919.60	1.63	30.00	880.07	1920.00	1.63

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.2947E+04 EXCESS=0.0000E+00 OUTFLOW=0.2947E+04 BASIN STORAGE=0.6781E+00 PERCENT ERROR= 0.0

J72J71	MANE	10.82	9.87	2326.51	1.33	30.00	9.87	2310.00	1.33

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.3203E+02 EXCESS=0.0000E+00 OUTFLOW=0.3203E+02 BASIN STORAGE=0.2098E-02 PERCENT ERROR= 0.0

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*

*** NORMAL END OF HEC-1 ***

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 15:48:21

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX  XXXXX            XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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*                                            *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)         *
*            MAY  1991                       *
*          VERSION 4.0.1E                    *
*     Lahey F77L-EM/32 version 5.01          *
*       Dodson & Associates, Inc.            *
*  RUN DATE  02/23/99  TIME  15:48:21        *
*                                            *
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*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET         *
*       DAVIS, CALIFORNIA 95616      *
*            (916) 551-1748          *
*                                    *
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STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
10 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	23FEB99	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1MAR99	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

PROPOSED FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	22.	29.50	22.	17.	8.	0.40		
ROUTED TO	JAJB	22.	30.50	22.	17.	8.	0.40		
HYDROGRAPH AT	102	25.	48.50	24.	23.	16.	1.00		
HYDROGRAPH AT	100	34.	39.00	34.	30.	18.	1.00		
3 COMBINED AT	JB	71.	38.00	71.	65.	41.	2.40		
ROUTED TO	JBJC	71.	39.00	71.	65.	41.	2.40		
HYDROGRAPH AT	104	15.	44.00	14.	13.	9.	0.51		
HYDROGRAPH AT	103	24.	31.00	24.	19.	10.	0.48		
ROUTED TO	JDJC	24.	33.00	24.	19.	10.	0.48		
HYDROGRAPH AT	105	31.	43.00	31.	28.	18.	1.03		
4 COMBINED AT	JC	135.	38.50	134.	123.	77.	4.42		
ROUTED TO	JCJF	135.	39.00	134.	123.	77.	4.42		
HYDROGRAPH AT	108	29.	26.50	28.	21.	9.	0.42		
2 COMBINED AT	JF	150.	36.00	150.	138.	86.	4.84		
ROUTED TO	JFJE	150.	37.00	150.	138.	86.	4.84		
HYDROGRAPH AT	110	20.	48.00	20.	18.	12.	0.69		
HYDROGRAPH AT	4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	14.	28.50	14.	11.	5.	0.27		
ROUTED TO	JLJM	14.	30.50	14.	11.	5.	0.27		
HYDROGRAPH AT	125	12.	29.50	11.	9.	4.	0.22		
2 COMBINED AT	JM	26.	30.00	25.	20.	9.	0.49		
ROUTED TO	JMJU	26.	30.00	25.	20.	9.	0.49		
ROUTED TO	JU	24.	32.50	24.	19.	9.	0.49	1279.26	32.50
HYDROGRAPH AT	120	29.	42.50	29.	26.	16.	0.82		
ROUTED TO	JHJI	29.	42.50	29.	26.	16.	0.82		
HYDROGRAPH AT	121	47.	29.00	45.	35.	17.	0.82		
2 COMBINED AT	JI	66.	30.00	64.	57.	33.	1.64		
ROUTED TO	JIJJ	65.	31.00	64.	57.	33.	1.64		
HYDROGRAPH AT	122	31.	42.00	31.	28.	18.	1.00		
2 COMBINED AT	JJ	90.	34.00	90.	83.	50.	2.64		
ROUTED TO	JJJK	90.	35.00	90.	83.	50.	2.64		
HYDROGRAPH AT	123	27.	40.50	27.	24.	15.	0.76		
2 COMBINED AT	JK	116.	37.50	116.	106.	65.	3.40		
ROUTED TO	JKJT	116.	37.50	116.	106.	65.	3.40		

2 COMBINED AT	JT	138.	35.00	138.	125.	74.	3.89
ROUTED TO	JTJZ	138.	35.50	138.	125.	74.	3.89
ROUTED TO	JZJO	138.	35.50	138.	125.	74.	3.89
HYDROGRAPH AT	127	18.	36.50	18.	15.	9.	0.43
HYDROGRAPH AT	126	59.	22.50	55.	33.	12.	0.53
ROUTED TO	JPJO	59.	23.00	55.	33.	12.	0.53
3 COMBINED AT	JO	173.	32.50	172.	156.	93.	4.85
ROUTED TO	JOJE	173.	33.00	172.	156.	93.	4.85
4 COMBINED AT	JE	340.	35.50	338.	311.	196.	11.07
ROUTED TO	JEJY	340.	35.50	338.	311.	196.	11.07
HYDROGRAPH AT	131	46.	13.50	19.	6.	2.	0.10
2 COMBINED AT	JY	340.	35.50	338.	311.	196.	11.17
ROUTED TO	JYJR	340.	35.50	338.	311.	196.	11.17
HYDROGRAPH AT	106	75.	29.00	73.	57.	27.	1.23
ROUTED TO	JQJR	75.	29.00	73.	57.	27.	1.23
HYDROGRAPH AT	107	17.	26.50	16.	12.	5.	0.30
3 COMBINED AT	JR	412.	33.00	409.	371.	228.	12.70
ROUTED TO	JRJX	412.	33.00	409.	371.	228.	12.70
HYDROGRAPH AT	130	29.	13.50	11.	3.	1.	0.05
2 COMBINED AT	JX	412.	33.00	409.	371.	228.	12.75
ROUTED TO	JXJS	412.	33.00	409.	371.	228.	12.75
HYDROGRAPH AT	109	42.	24.00	40.	27.	11.	0.55
2 COMBINED AT	JS	435.	32.50	431.	391.	239.	13.30
ROUTED TO	JSJ65	435.	33.00	431.	391.	239.	13.30
HYDROGRAPH AT	200	51.	28.50	49.	38.	18.	1.03
HYDROGRAPH AT	202	18.	27.50	17.	13.	6.	0.36
2 COMBINED AT	J1	69.	28.50	67.	51.	24.	1.39
ROUTED TO	J1J5	69.	28.50	67.	51.	24.	1.39
HYDROGRAPH AT	201	12.	34.50	12.	10.	5.	0.40
HYDROGRAPH AT	204	29.	47.50	29.	26.	18.	1.08
3 COMBINED AT	J5	95.	30.00	93.	80.	47.	2.87
ROUTED TO	J5J7	95.	30.00	93.	80.	47.	2.87
HYDROGRAPH AT	205	85.	28.50	83.	64.	30.	1.72
2 COMBINED AT	J7	179.	29.50	174.	143.	76.	4.59
ROUTED TO	J7J10	179.	30.00	174.	143.	76.	4.59
HYDROGRAPH AT	208	22.	30.00	22.	17.	8.	0.54
HYDROGRAPH AT	209	56.	24.00	53.	37.	15.	0.79
HYDROGRAPH AT	210	32.	25.50	31.	22.	9.	0.57

PROPOSED FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	J20	105.	25.00	101.	75.	33.	1.90
ROUTED TO	J20J10	104.	26.00	101.	75.	33.	1.90
HYDROGRAPH AT	206	35.	38.00	34.	30.	18.	1.00
HYDROGRAPH AT	211	24.	29.00	24.	18.	9.	0.59
HYDROGRAPH AT	207	26.	47.00	26.	24.	16.	1.00
5 COMBINED AT	J10	340.	29.50	333.	279.	151.	9.08
ROUTED TO	J10J21	339.	30.00	333.	278.	151.	9.08
HYDROGRAPH AT	212	28.	39.00	28.	25.	15.	1.00
2 COMBINED AT	J21	361.	30.00	355.	301.	165.	10.08
ROUTED TO	J21J30	361.	30.50	355.	301.	165.	10.08
HYDROGRAPH AT	220	39.	20.00	35.	20.	7.	0.33
ROUTED TO	J31J35	38.	20.50	35.	20.	7.	0.33
HYDROGRAPH AT	217	96.	17.50	81.	38.	13.	0.64
2 COMBINED AT	J35	124.	18.00	110.	57.	20.	0.97
ROUTED TO	J35J33	123.	18.50	110.	57.	20.	0.97
HYDROGRAPH AT	216	37.	38.00	37.	32.	19.	1.11
2 COMBINED AT	J33	130.	18.50	119.	79.	39.	2.08
ROUTED TO	J33J30	130.	18.50	119.	79.	39.	2.08
2 COMBINED AT	J30	423.	29.50	417.	360.	203.	12.16
ROUTED TO	J30J40	423.	30.00	417.	360.	203.	12.16
HYDROGRAPH AT	213	23.	51.50	23.	21.	15.	1.00
2 COMBINED AT	J40	434.	30.00	428.	374.	218.	13.16
ROUTED TO	J40J45	434.	30.00	428.	374.	218.	13.16
HYDROGRAPH AT	223	25.	45.50	25.	23.	15.	1.00
2 COMBINED AT	J45	449.	30.50	444.	391.	232.	14.16
ROUTED TO	J45J50	448.	31.00	443.	391.	232.	14.16
HYDROGRAPH AT	225	22.	23.00	21.	14.	5.	0.32
ROUTED TO	J51J50	22.	24.00	21.	14.	5.	0.32
HYDROGRAPH AT	230	34.	35.50	33.	28.	16.	1.00
HYDROGRAPH AT	231	14.	49.00	14.	13.	9.	0.69
4 COMBINED AT	J50	502.	31.00	496.	440.	262.	16.17
ROUTED TO	J50J55	501.	31.00	496.	440.	262.	16.17
HYDROGRAPH AT	236	10.	22.50	9.	6.	2.	0.15
ROUTED TO	J52J54	10.	23.50	9.	6.	2.	0.15
HYDROGRAPH AT	235	31.	29.00	30.	24.	11.	0.71
2 COMBINED AT	J54	38.	28.00	37.	29.	13.	0.86
ROUTED TO	J54J56	38.	28.00	37.	29.	13.	0.86
HYDROGRAPH AT	242	39.	27.50	38.	28.	13.	0.71
HYDROGRAPH AT	237	16.	26.50	16.	12.	5.	0.27

PROPOSED FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

4 COMBINED AT	J56	586.	30.50	579.	505.	293.	18.01
ROUTED TO	J56J60	585.	30.50	578.	505.	293.	18.01
HYDROGRAPH AT	243	15.	29.50	14.	11.	5.	0.28
HYDROGRAPH AT	245	13.	30.00	13.	10.	5.	0.29
3 COMBINED AT	J60	613.	30.50	605.	526.	303.	18.58
ROUTED TO	J60J65	613.	30.50	605.	526.	303.	18.58
HYDROGRAPH AT	247	62.	24.00	59.	41.	16.	1.00
3 COMBINED AT	J65	1083.	31.00	1071.	947.	557.	32.88
ROUTED TO	J65J70	1082.	31.50	1070.	946.	557.	32.88
HYDROGRAPH AT	240	44.	31.00	43.	34.	17.	1.00
2 COMBINED AT	J70	1126.	31.50	1113.	980.	573.	33.88
ROUTED TO	J70J71	1126.	31.50	1113.	980.	573.	33.88
HYDROGRAPH AT	250	13.	38.00	13.	11.	7.	0.45
ROUTED TO	J72J71	13.	38.50	13.	11.	7.	0.45
HYDROGRAPH AT	251	29.	22.50	28.	18.	7.	0.44
3 COMBINED AT	J71	1152.	31.50	1138.	1003.	586.	34.77
HYDROGRAPH AT	255	25.	42.00	24.	22.	14.	1.00
2 COMBINED AT	J75	1171.	31.50	1157.	1023.	600.	35.77

PROPOSED FLOWS 10 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	22.15	1830.00	2.30	30.00	22.15	1830.00	2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4912E+02 EXCESS=0.0000E+00 OUTFLOW=0.4910E+02 BASIN STORAGE=0.1996E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	71.25	2340.00	2.13	30.00	71.25	2340.00	2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2725E+03 EXCESS=0.0000E+00 OUTFLOW=0.2721E+03 BASIN STORAGE=0.7665E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	24.33	1980.00	2.31	30.00	24.33	1980.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5920E+02 EXCESS=0.0000E+00 OUTFLOW=0.5920E+02 BASIN STORAGE=0.3124E-01 PERCENT ERROR= 0.0

JCJF	MANE	23.41	134.85	2341.31	2.16	30.00	134.85	2340.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5101E+03 EXCESS=0.0000E+00 OUTFLOW=0.5099E+03 BASIN STORAGE=0.3935E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	150.30	2220.00	2.19	30.00	150.30	2220.00	2.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5654E+03 EXCESS=0.0000E+00 OUTFLOW=0.5649E+03 BASIN STORAGE=0.1063E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	14.33	1830.00	2.07	30.00	14.33	1830.00	2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2975E+02 EXCESS=0.0000E+00 OUTFLOW=0.2977E+02 BASIN STORAGE=0.5346E-02 PERCENT ERROR= -0.1

JMJU	MANE	14.09	25.96	1803.19	2.12	30.00	25.96	1800.00	2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5534E+02 EXCESS=0.0000E+00 OUTFLOW=0.5534E+02 BASIN STORAGE=0.4330E-02 PERCENT ERROR= 0.0

JHJI	MANE	30.00	28.94	2550.00	2.48	30.00	28.94	2550.00	2.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1087E+03 EXCESS=0.0000E+00 OUTFLOW=0.1086E+03 BASIN STORAGE=0.1111E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	65.41	1860.00	2.38	30.00	65.41	1860.00	2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2083E+03 EXCESS=0.0000E+00 OUTFLOW=0.2082E+03 BASIN STORAGE=0.2742E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	90.04	2100.00	2.30	30.00	90.04	2100.00	2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3242E+03 EXCESS=0.0000E+00 OUTFLOW=0.3238E+03 BASIN STORAGE=0.5853E+00 PERCENT ERROR= -0.1

JKJT	MANE	9.12	116.21	2252.13	2.32	30.00	116.21	2250.00	2.32

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.4207E+03 EXCESS=0.0000E+00 OUTFLOW=0.4206E+03 BASIN STORAGE=0.1047E+00 PERCENT ERROR= 0.0

JTJZ	MANE	4.87	138.49	2111.89	2.29	30.00	138.48	2130.00	2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4749E+03 EXCESS=0.0000E+00 OUTFLOW=0.4749E+03 BASIN STORAGE=0.7225E-01 PERCENT ERROR= 0.0

JZJO	MANE	14.60	138.48	2131.43	2.29	30.00	138.48	2130.00	2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4749E+03 EXCESS=0.0000E+00 OUTFLOW=0.4748E+03 BASIN STORAGE=0.2192E+00 PERCENT ERROR= 0.0

JPJO	MANE	8.97	58.65	1363.12	2.49	30.00	58.59	1380.00	2.49

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.7025E+02 EXCESS=0.0000E+00 OUTFLOW=0.7025E+02 BASIN STORAGE=0.7640E-03 PERCENT ERROR= 0.0

JOJE	MANE	27.50	173.27	1980.33	2.32	30.00	173.27	1980.00	2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6004E+03 EXCESS=0.0000E+00 OUTFLOW=0.6002E+03 BASIN STORAGE=0.4823E+00 PERCENT ERROR= -0.1

JEJY	MANE	9.48	339.56	2133.19	2.23	30.00	339.56	2130.00	2.23

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1318E+04 EXCESS=0.0000E+00 OUTFLOW=0.1317E+04 BASIN STORAGE=0.6060E+00 PERCENT ERROR= 0.0

JYJR	MANE	3.48	339.54	2130.73	2.23	30.00	339.54	2130.00	2.23

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1328E+04 EXCESS=0.0000E+00 OUTFLOW=0.1328E+04 BASIN STORAGE=0.2276E+00 PERCENT ERROR= 0.0

JQJR	MANE	19.38	75.42	1744.15	2.44	30.00	75.41	1740.00	2.44

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1600E+03 EXCESS=0.0000E+00 OUTFLOW=0.1600E+03 BASIN STORAGE=0.6271E-02 PERCENT ERROR= 0.0

JRJX	MANE	6.46	411.97	1988.41	2.24	30.00	411.93	1980.00	2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1520E+04 EXCESS=0.0000E+00 OUTFLOW=0.1520E+04 BASIN STORAGE=0.4562E+00 PERCENT ERROR= 0.0

JXJS	MANE	3.23	411.91	1985.31	2.24	30.00	411.88	1980.00	2.24

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1526E+04 EXCESS=0.0000E+00 OUTFLOW=0.1526E+04 BASIN STORAGE=0.2285E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	434.96	1980.00	2.24	30.00	434.96	1980.00	2.24

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1591E+04 EXCESS=0.0000E+00 OUTFLOW=0.1590E+04 BASIN STORAGE=0.1871E+01 PERCENT ERROR= -0.1

J1J5	MANE	30.00	68.59	1710.00	1.91	30.00	68.59	1710.00	1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1418E+03 EXCESS=0.0000E+00 OUTFLOW=0.1418E+03 BASIN STORAGE=0.6616E-02 PERCENT ERROR= 0.0

J5J7	MANE	12.55	94.56	1807.20	1.96	30.00	94.56	1800.00	1.96

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.3005E+03 EXCESS=0.0000E+00 OUTFLOW=0.3005E+03 BASIN STORAGE=0.8637E-01 PERCENT ERROR= 0.0

J7J10 MANE 30.00 178.63 1800.00 1.96 30.00 178.63 1800.00 1.96

NTINUITY SUMMARY (AC-FT) - INFLOW=0.4790E+03 EXCESS=0.0000E+00 OUTFLOW=0.4788E+03 BASIN STORAGE=0.4511E+00 PERCENT ERROR= 0.0

J20J10 MANE 30.00 103.82 1560.00 1.92 30.00 103.82 1560.00 1.92

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1952E+03 EXCESS=0.0000E+00 OUTFLOW=0.1950E+03 BASIN STORAGE=0.2899E-01 PERCENT ERROR= 0.1

J10J21 MANE 29.46 338.99 1797.32 1.96 30.00 338.90 1800.00 1.96

NTINUITY SUMMARY (AC-FT) - INFLOW=0.9505E+03 EXCESS=0.0000E+00 OUTFLOW=0.9502E+03 BASIN STORAGE=0.6024E+00 PERCENT ERROR= 0.0

J21J30 MANE 24.67 360.75 1825.30 1.95 30.00 360.66 1830.00 1.95

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1046E+04 EXCESS=0.0000E+00 OUTFLOW=0.1046E+04 BASIN STORAGE=0.5695E+00 PERCENT ERROR= 0.0

J31J35 MANE 30.00 38.36 1230.00 2.45 30.00 38.36 1230.00 2.45

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.4313E+02 EXCESS=0.0000E+00 OUTFLOW=0.4312E+02 BASIN STORAGE=0.8555E-02 PERCENT ERROR= 0.0

J35J33 MANE 29.96 123.27 1108.55 2.32 30.00 123.14 1110.00 2.32

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1201E+03 EXCESS=0.0000E+00 OUTFLOW=0.1201E+03 BASIN STORAGE=0.1212E-01 PERCENT ERROR= 0.0

J33J30 MANE 4.61 130.28 1110.83 2.17 30.00 130.26 1110.00 2.17

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2403E+03 EXCESS=0.0000E+00 OUTFLOW=0.2403E+03 BASIN STORAGE=0.5319E-02 PERCENT ERROR= 0.0

J30J40 MANE 13.61 422.90 1782.78 1.98 30.00 422.80 1800.00 1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1286E+04 EXCESS=0.0000E+00 OUTFLOW=0.1286E+04 BASIN STORAGE=0.3396E+00 PERCENT ERROR= 0.0

J40J45 MANE 13.77 433.76 1817.93 1.99 30.00 433.69 1800.00 1.99

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1396E+04 EXCESS=0.0000E+00 OUTFLOW=0.1396E+04 BASIN STORAGE=0.4639E+00 PERCENT ERROR= 0.0

J45J50 MANE 30.00 448.34 1860.00 1.98 30.00 448.34 1860.00 1.98

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1500E+04 EXCESS=0.0000E+00 OUTFLOW=0.1499E+04 BASIN STORAGE=0.1268E+01 PERCENT ERROR= 0.0

J51J50 MANE 30.00 22.19 1440.00 1.89 30.00 22.19 1440.00 1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3223E+02 EXCESS=0.0000E+00 OUTFLOW=0.3224E+02 BASIN STORAGE=0.9979E-02 PERCENT ERROR= 0.0

J50J55 MANE 17.36 501.39 1874.37 1.96 30.00 501.22 1890.00 1.96

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1692E+04 EXCESS=0.0000E+00 OUTFLOW=0.1691E+04 BASIN STORAGE=0.8133E+00 PERCENT ERROR= 0.0

J52J54 MANE 30.00 9.72 1410.00 1.70 30.00 9.72 1410.00 1.70

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1361E+02 EXCESS=0.0000E+00 OUTFLOW=0.1362E+02 BASIN STORAGE=0.4980E-02 PERCENT ERROR= 0.0

J54J56	MANE	7.77	38.12	1686.31	1.75	30.00	38.12	1680.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8033E+02 EXCESS=0.0000E+00 OUTFLOW=0.8033E+02 BASIN STORAGE=0.1312E-02 PERCENT ERROR= 0.0

J56J60	MANE	23.77	585.42	1830.03	1.96	30.00	585.42	1830.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1879E+04 EXCESS=0.0000E+00 OUTFLOW=0.1878E+04 BASIN STORAGE=0.1151E+01 PERCENT ERROR= 0.0

J60J65	MANE	9.31	612.84	1844.11	1.96	30.00	612.71	1830.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1939E+04 EXCESS=0.0000E+00 OUTFLOW=0.1939E+04 BASIN STORAGE=0.3724E+00 PERCENT ERROR= 0.0

J65J70	MANE	27.18	1082.59	1875.52	2.07	30.00	1082.33	1890.00	2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3626E+04 EXCESS=0.0000E+00 OUTFLOW=0.3625E+04 BASIN STORAGE=0.2561E+01 PERCENT ERROR= 0.0

J70J71	MANE	5.79	1126.26	1892.64	2.06	30.00	1126.25	1890.00	2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3728E+04 EXCESS=0.0000E+00 OUTFLOW=0.3727E+04 BASIN STORAGE=0.7456E+00 PERCENT ERROR= 0.0

J72J71	MANE	10.09	12.99	2290.25	1.75	30.00	12.99	2310.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4201E+02 EXCESS=0.0000E+00 OUTFLOW=0.4201E+02 BASIN STORAGE=0.2212E-02 PERCENT ERROR= 0.0

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*

** NORMAL END OF HEC-1 ***

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 15:51:05

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX  XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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**********************************************
*                                            *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)         *
*            MAY  1991                       *
*          VERSION 4.0.1E                    *
*    Lahey F77L-EM/32 version 5.01           *
*      Dodson & Associates, Inc.             *
*  RUN DATE  02/23/99  TIME  15:51:05        *
**********************************************
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*                                    *
*  U.S. ARMY CORPS OF ENGINEERS      *
*  HYDROLOGIC ENGINEERING CENTER     *
*        609 SECOND STREET           *
*      DAVIS, CALIFORNIA 95616       *
*        (916) 551-1748              *
*                                    *
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STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
25 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	23FEB99	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1MAR99	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

PROPOSED FLOWS 25 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	28.	29.50	27.	22.	10.	0.40		
ROUTED TO	JAJB	28.	30.50	27.	21.	10.	0.40		
HYDROGRAPH AT	102	31.	48.50	31.	29.	20.	1.00		
HYDROGRAPH AT	100	44.	38.50	44.	38.	23.	1.00		
3 COMBINED AT	JB	91.	38.00	90.	83.	53.	2.40		
ROUTED TO	JBJC	91.	39.00	90.	83.	53.	2.40		
HYDROGRAPH AT	104	19.	44.00	18.	17.	11.	0.51		
HYDROGRAPH AT	103	31.	31.00	30.	24.	12.	0.48		
ROUTED TO	JDJC	31.	32.50	30.	24.	12.	0.48		
HYDROGRAPH AT	105	40.	43.00	40.	36.	23.	1.03		
4 COMBINED AT	JC	171.	38.50	170.	157.	98.	4.42		
ROUTED TO	JCJF	171.	39.00	170.	157.	98.	4.42		
HYDROGRAPH AT	108	37.	26.50	36.	27.	12.	0.42		
2 COMBINED AT	JF	191.	36.00	190.	175.	109.	4.84		
ROUTED TO	JFJE	191.	36.50	190.	175.	109.	4.84		
HYDROGRAPH AT	110	25.	48.00	25.	23.	16.	0.69		
HYDROGRAPH AT	4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	18.	28.50	18.	14.	6.	0.27		
ROUTED TO	JLJM	18.	30.00	18.	14.	6.	0.27		
HYDROGRAPH AT	125	15.	29.50	14.	11.	5.	0.22		
2 COMBINED AT	JM	33.	30.00	32.	25.	12.	0.49		
ROUTED TO	JMJU	33.	30.00	32.	25.	12.	0.49		
ROUTED TO	JU	31.	32.00	30.	24.	11.	0.49	1279.33	32.00
HYDROGRAPH AT	120	36.	42.00	36.	32.	20.	0.82		
ROUTED TO	JHJI	36.	42.50	36.	32.	20.	0.82		
HYDROGRAPH AT	121	59.	29.00	57.	45.	21.	0.82		
2 COMBINED AT	JI	83.	30.00	81.	71.	41.	1.64		
ROUTED TO	JIJJ	82.	31.00	81.	71.	41.	1.64		
HYDROGRAPH AT	122	40.	42.00	40.	35.	22.	1.00		
2 COMBINED AT	JJ	114.	34.00	113.	104.	63.	2.64		
ROUTED TO	JJJK	114.	35.00	113.	104.	63.	2.64		
HYDROGRAPH AT	123	35.	40.50	34.	30.	19.	0.76		
2 COMBINED AT	JK	147.	37.50	146.	134.	82.	3.40		
ROUTED TO	JKJT	147.	37.50	146.	134.	82.	3.40		

2 COMBINED AT	JT	175.	35.00	174.	158.	93.	3.89
ROUTED TO	JTJZ	175.	35.00	174.	158.	93.	3.89
ROUTED TO	JZJO	175.	35.00	174.	158.	93.	3.89
HYDROGRAPH AT	127	23.	36.50	23.	20.	11.	0.43
HYDROGRAPH AT	126	74.	22.50	69.	41.	15.	0.53
ROUTED TO	JPJO	73.	22.50	69.	41.	15.	0.53
3 COMBINED AT	JO	219.	32.50	217.	197.	118.	4.85
ROUTED TO	JOJE	219.	32.50	217.	197.	118.	4.85
4 COMBINED AT	JE	429.	35.00	426.	393.	247.	11.07
ROUTED TO	JEJY	429.	35.00	426.	393.	247.	11.07
HYDROGRAPH AT	131	60.	13.50	24.	7.	2.	0.10
2 COMBINED AT	JY	429.	35.00	426.	393.	247.	11.17
ROUTED TO	JYJR	429.	35.50	426.	393.	247.	11.17
HYDROGRAPH AT	106	95.	29.00	92.	72.	33.	1.23
ROUTED TO	JQJR	95.	29.00	92.	72.	33.	1.23
HYDROGRAPH AT	107	22.	26.50	21.	16.	7.	0.30
3 COMBINED AT	JR	521.	33.00	517.	470.	287.	12.70
ROUTED TO	JRJX	521.	33.00	517.	470.	287.	12.70
HYDROGRAPH AT	130	37.	13.50	14.	4.	1.	0.05
2 COMBINED AT	JX	521.	33.00	517.	470.	287.	12.75
ROUTED TO	JXJS	521.	33.00	517.	470.	287.	12.75
HYDROGRAPH AT	109	54.	24.00	51.	35.	14.	0.55
2 COMBINED AT	JS	551.	32.00	547.	495.	301.	13.30
ROUTED TO	JSJ65	551.	32.50	547.	495.	301.	13.30
HYDROGRAPH AT	200	66.	28.50	64.	50.	23.	1.03
HYDROGRAPH AT	202	24.	27.50	23.	17.	8.	0.36
2 COMBINED AT	J1	90.	28.00	87.	67.	31.	1.39
ROUTED TO	J1J5	90.	28.50	87.	67.	31.	1.39
HYDROGRAPH AT	201	16.	34.50	16.	13.	7.	0.40
HYDROGRAPH AT	204	37.	47.50	36.	34.	23.	1.08
3 COMBINED AT	J5	123.	30.00	121.	104.	60.	2.87
ROUTED TO	J5J7	123.	30.00	121.	104.	60.	2.87
HYDROGRAPH AT	205	111.	28.50	108.	83.	39.	1.72
2 COMBINED AT	J7	233.	29.00	227.	185.	99.	4.59
ROUTED TO	J7J10	232.	29.50	226.	185.	99.	4.59
HYDROGRAPH AT	208	30.	30.00	29.	23.	11.	0.54
HYDROGRAPH AT	209	71.	24.00	68.	47.	19.	0.79
HYDROGRAPH AT	210	42.	25.50	40.	29.	12.	0.57

PROPOSED FLOWS 25 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	J20	136.	25.00	131.	98.	42.	1.90
ROUTED TO	J20J10	135.	26.00	131.	97.	42.	1.90
HYDROGRAPH AT	206	45.	38.00	44.	38.	23.	1.00
HYDROGRAPH AT	211	33.	29.00	32.	25.	11.	0.59
HYDROGRAPH AT	207	33.	47.00	33.	30.	21.	1.00
5 COMBINED AT	J10	441.	29.50	433.	361.	195.	9.08
ROUTED TO	J10J21	441.	29.50	432.	361.	195.	9.08
HYDROGRAPH AT	212	37.	39.00	37.	32.	19.	1.00
2 COMBINED AT	J21	469.	30.00	461.	391.	214.	10.08
ROUTED TO	J21J30	469.	30.00	461.	391.	214.	10.08
HYDROGRAPH AT	220	48.	20.00	44.	25.	9.	0.33
ROUTED TO	J31J35	48.	20.50	44.	25.	9.	0.33
HYDROGRAPH AT	217	121.	17.50	102.	48.	16.	0.64
2 COMBINED AT	J35	156.	18.00	139.	72.	25.	0.97
ROUTED TO	J35J33	155.	18.00	139.	72.	25.	0.97
HYDROGRAPH AT	216	48.	38.00	48.	42.	24.	1.11
2 COMBINED AT	J33	165.	18.50	150.	100.	49.	2.08
ROUTED TO	J33J30	165.	18.50	150.	100.	49.	2.08
2 COMBINED AT	J30	548.	29.50	541.	467.	262.	12.16
ROUTED TO	J30J40	548.	29.50	540.	466.	262.	12.16
HYDROGRAPH AT	213	29.	51.50	29.	27.	20.	1.00
2 COMBINED AT	J40	562.	30.00	555.	484.	281.	13.16
ROUTED TO	J40J45	562.	30.00	554.	483.	281.	13.16
HYDROGRAPH AT	223	33.	45.50	33.	30.	20.	1.00
2 COMBINED AT	J45	582.	30.00	575.	507.	300.	14.16
ROUTED TO	J45J50	580.	30.50	573.	506.	300.	14.16
HYDROGRAPH AT	225	29.	23.00	27.	18.	7.	0.32
ROUTED TO	J51J50	29.	24.00	27.	18.	7.	0.32
HYDROGRAPH AT	230	44.	35.50	44.	37.	21.	1.00
HYDROGRAPH AT	231	19.	49.00	19.	17.	12.	0.69
4 COMBINED AT	J50	650.	31.00	643.	570.	339.	16.17
ROUTED TO	J50J55	650.	31.00	642.	570.	339.	16.17
HYDROGRAPH AT	236	13.	22.50	12.	8.	3.	0.15
ROUTED TO	J52J54	13.	23.00	12.	8.	3.	0.15
HYDROGRAPH AT	235	41.	29.00	40.	31.	15.	0.71
2 COMBINED AT	J54	50.	28.00	49.	39.	18.	0.86
ROUTED TO	J54J56	50.	28.00	49.	39.	18.	0.86
HYDROGRAPH AT	242	50.	27.50	48.	37.	17.	0.71
HYDROGRAPH AT	237	21.	26.50	20.	15.	7.	0.27

PROPOSED FLOWS 25 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

4 COMBINED AT	J56	761.	30.00	751.	656.	379.	18.01
ROUTED TO	J56J60	760.	30.50	751.	655.	379.	18.01
HYDROGRAPH AT	243	19.	29.50	18.	14.	7.	0.28
HYDROGRAPH AT	245	17.	30.00	17.	13.	6.	0.29
3 COMBINED AT	J60	796.	30.50	785.	682.	392.	18.58
ROUTED TO	J60J65	796.	30.50	785.	682.	392.	18.58
HYDROGRAPH AT	247	82.	24.00	78.	53.	21.	1.00
3 COMBINED AT	J65	1395.	30.50	1379.	1217.	713.	32.88
ROUTED TO	J65J70	1395.	31.00	1378.	1217.	713.	32.88
HYDROGRAPH AT	240	58.	30.50	56.	45.	22.	1.00
2 COMBINED AT	J70	1452.	31.00	1434.	1261.	735.	33.88
ROUTED TO	J70J71	1452.	31.00	1434.	1261.	735.	33.88
HYDROGRAPH AT	250	17.	38.00	17.	15.	9.	0.45
ROUTED TO	J72J71	17.	38.50	17.	15.	9.	0.45
HYDROGRAPH AT	251	39.	22.00	37.	24.	9.	0.44
3 COMBINED AT	J71	1486.	31.00	1468.	1292.	752.	34.77
HYDROGRAPH AT	255	33.	42.00	33.	29.	18.	1.00
2 COMBINED AT	J75	1511.	31.00	1493.	1318.	770.	35.77

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	28.05	1830.00	2.91	30.00	28.05	1830.00	2.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6216E+02 EXCESS=0.0000E+00 OUTFLOW=0.6213E+02 BASIN STORAGE=0.2011E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	90.80	2340.00	2.71	30.00	90.80	2340.00	2.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3479E+03 EXCESS=0.0000E+00 OUTFLOW=0.3474E+03 BASIN STORAGE=0.9032E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	30.63	1980.00	2.91	30.00	30.63	1980.00	2.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7453E+02 EXCESS=0.0000E+00 OUTFLOW=0.7452E+02 BASIN STORAGE=0.3176E-01 PERCENT ERROR= 0.0

JCJF	MANE	21.63	171.26	2335.57	2.75	30.00	171.25	2340.00	2.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6490E+03 EXCESS=0.0000E+00 OUTFLOW=0.6487E+03 BASIN STORAGE=0.4643E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	190.68	2190.00	2.78	30.00	190.68	2190.00	2.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7185E+03 EXCESS=0.0000E+00 OUTFLOW=0.7178E+03 BASIN STORAGE=0.1249E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	18.28	1800.00	2.63	30.00	18.28	1800.00	2.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3791E+02 EXCESS=0.0000E+00 OUTFLOW=0.3792E+02 BASIN STORAGE=0.5847E-02 PERCENT ERROR= -0.1

JMJU	MANE	12.91	33.07	1794.66	2.69	30.00	33.07	1800.00	2.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7039E+02 EXCESS=0.0000E+00 OUTFLOW=0.7039E+02 BASIN STORAGE=0.4088E-02 PERCENT ERROR= 0.0

JHJI	MANE	29.00	36.13	2552.29	3.10	30.00	36.13	2550.00	3.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1357E+03 EXCESS=0.0000E+00 OUTFLOW=0.1356E+03 BASIN STORAGE=0.1291E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	82.41	1860.00	2.99	30.00	82.41	1860.00	2.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2616E+03 EXCESS=0.0000E+00 OUTFLOW=0.2615E+03 BASIN STORAGE=0.3152E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	113.60	2100.00	2.90	30.00	113.60	2100.00	2.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4088E+03 EXCESS=0.0000E+00 OUTFLOW=0.4083E+03 BASIN STORAGE=0.6767E+00 PERCENT ERROR= 0.0

JKJT	MANE	8.44	146.59	2245.28	2.93	30.00	146.59	2250.00	2.93

TINUITY SUMMARY (AC-FT) - INFLOW=0.5308E+03 EXCESS=0.0000E+00 OUTFLOW=0.5307E+03 BASIN STORAGE=0.1212E+00 PERCENT ERROR= 0.0

JTJZ	MANE	4.46	175.10	2101.97	2.89	30.00	175.10	2100.00	2.89

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6001E+03 EXCESS=0.0000E+00 OUTFLOW=0.6000E+03 BASIN STORAGE=0.8300E-01 PERCENT ERROR= 0.0

JZJO	MANE	13.39	175.08	2115.42	2.89	30.00	175.06	2100.00	2.89

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.6000E+03 EXCESS=0.0000E+00 OUTFLOW=0.5999E+03 BASIN STORAGE=0.2521E+00 PERCENT ERROR= 0.0

JPJO	MANE	8.57	73.53	1362.80	3.12	30.00	73.46	1350.00	3.12

TINUITY SUMMARY (AC-FT) - INFLOW=0.8808E+02 EXCESS=0.0000E+00 OUTFLOW=0.8807E+02 BASIN STORAGE=0.8497E-03 PERCENT ERROR= 0.0

JOJE	MANE	25.16	219.41	1962.20	2.93	30.00	219.35	1950.00	2.93

NTINUITY SUMMARY (AC-FT) - INFLOW=0.7579E+03 EXCESS=0.0000E+00 OUTFLOW=0.7577E+03 BASIN STORAGE=0.5537E+00 PERCENT ERROR= 0.0

JEJY	MANE	8.68	428.86	2109.33	2.80	30.00	428.82	2100.00	2.80

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1651E+04 EXCESS=0.0000E+00 OUTFLOW=0.1650E+04 BASIN STORAGE=0.6630E+00 PERCENT ERROR= 0.0

JYJR	MANE	3.18	428.81	2107.61	2.79	30.00	428.79	2130.00	2.79

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1665E+04 EXCESS=0.0000E+00 OUTFLOW=0.1664E+04 BASIN STORAGE=0.2488E+00 PERCENT ERROR= 0.0

JQJR	MANE	17.95	95.00	1741.15	3.07	30.00	94.99	1740.00	3.07

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2014E+03 EXCESS=0.0000E+00 OUTFLOW=0.2014E+03 BASIN STORAGE=0.7086E-02 PERCENT ERROR= 0.0

JRJX	MANE	5.90	521.39	1976.29	2.81	30.00	521.39	1980.00	2.81

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1906E+04 EXCESS=0.0000E+00 OUTFLOW=0.1906E+04 BASIN STORAGE=0.4987E+00 PERCENT ERROR= 0.0

JXJS	MANE	2.95	521.37	1979.28	2.81	30.00	521.36	1980.00	2.81

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1914E+04 EXCESS=0.0000E+00 OUTFLOW=0.1914E+04 BASIN STORAGE=0.2498E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	551.42	1950.00	2.81	30.00	551.42	1950.00	2.81

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1997E+04 EXCESS=0.0000E+00 OUTFLOW=0.1996E+04 BASIN STORAGE=0.2073E+01 PERCENT ERROR= 0.0

J1J5	MANE	30.00	89.52	1710.00	2.49	30.00	89.52	1710.00	2.49

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1847E+03 EXCESS=0.0000E+00 OUTFLOW=0.1847E+03 BASIN STORAGE=0.7899E-02 PERCENT ERROR= 0.0

J5J7	MANE	11.66	122.90	1795.09	2.53	30.00	122.89	1800.00	2.53

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3878E+03 EXCESS=0.0000E+00 OUTFLOW=0.3878E+03 BASIN STORAGE=0.1022E+00 PERCENT ERROR= 0.0

J7J10	MANE	30.00	232.33	1770.00	2.53	30.00	232.33	1770.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6197E+03 EXCESS=0.0000E+00 OUTFLOW=0.6194E+03 BASIN STORAGE=0.5290E+00 PERCENT ERROR= 0.0

J20J10	MANE	30.00	134.88	1560.00	2.50	30.00	134.88	1560.00	2.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2533E+03 EXCESS=0.0000E+00 OUTFLOW=0.2530E+03 BASIN STORAGE=0.2911E-01 PERCENT ERROR= 0.1

J10J21	MANE	27.07	440.61	1786.46	2.54	30.00	440.51	1770.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1229E+04 EXCESS=0.0000E+00 OUTFLOW=0.1229E+04 BASIN STORAGE=0.7064E+00 PERCENT ERROR= 0.0

J21J30	MANE	22.66	468.76	1812.79	2.52	30.00	468.56	1800.00	2.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1355E+04 EXCESS=0.0000E+00 OUTFLOW=0.1355E+04 BASIN STORAGE=0.6688E+00 PERCENT ERROR= 0.0

J31J35	MANE	30.00	47.96	1230.00	3.06	30.00	47.96	1230.00	3.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5386E+02 EXCESS=0.0000E+00 OUTFLOW=0.5385E+02 BASIN STORAGE=0.7700E-02 PERCENT ERROR= 0.0

J35J33	MANE	27.78	155.79	1083.45	2.92	30.00	155.32	1080.00	2.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1512E+03 EXCESS=0.0000E+00 OUTFLOW=0.1511E+03 BASIN STORAGE=0.1101E-01 PERCENT ERROR= 0.0

J33J30	MANE	4.27	164.54	1111.18	2.76	30.00	164.53	1110.00	2.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3064E+03 EXCESS=0.0000E+00 OUTFLOW=0.3064E+03 BASIN STORAGE=0.6345E-02 PERCENT ERROR= 0.0

J30J40	MANE	12.51	548.30	1776.55	2.56	30.00	548.24	1770.00	2.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1661E+04 EXCESS=0.0000E+00 OUTFLOW=0.1661E+04 BASIN STORAGE=0.3998E+00 PERCENT ERROR= 0.0

J40J45	MANE	12.67	562.02	1798.46	2.57	30.00	562.01	1800.00	2.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1802E+04 EXCESS=0.0000E+00 OUTFLOW=0.1801E+04 BASIN STORAGE=0.5445E+00 PERCENT ERROR= 0.0

J45J50	MANE	29.85	580.61	1850.99	2.56	30.00	580.49	1830.00	2.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1936E+04 EXCESS=0.0000E+00 OUTFLOW=0.1935E+04 BASIN STORAGE=0.1500E+01 PERCENT ERROR= 0.0

J51J50	MANE	30.00	29.09	1440.00	2.47	30.00	29.09	1440.00	2.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4214E+02 EXCESS=0.0000E+00 OUTFLOW=0.4214E+02 BASIN STORAGE=0.9843E-02 PERCENT ERROR= 0.0

J50J55	MANE	15.92	649.99	1863.16	2.54	30.00	649.97	1860.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2188E+04 EXCESS=0.0000E+00 OUTFLOW=0.2188E+04 BASIN STORAGE=0.9552E+00 PERCENT ERROR= 0.0

J52J54	MANE	30.00	12.99	1380.00	2.26	30.00	12.99	1380.00	2.26

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1810E+02 EXCESS=0.0000E+00 OUTFLOW=0.1810E+02 BASIN STORAGE=0.5264E-02 PERCENT ERROR= 0.0

J54J56	MANE	7.18	50.42	1687.71	2.31	30.00	50.41	1680.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1061E+03 EXCESS=0.0000E+00 OUTFLOW=0.1061E+03 BASIN STORAGE=0.1310E-02 PERCENT ERROR= 0.0

J56J60	MANE	21.83	760.42	1834.11	2.53	30.00	760.41	1830.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2432E+04 EXCESS=0.0000E+00 OUTFLOW=0.2431E+04 BASIN STORAGE=0.1361E+01 PERCENT ERROR= 0.0

J60J65	MANE	8.65	796.03	1834.29	2.53	30.00	796.00	1830.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2510E+04 EXCESS=0.0000E+00 OUTFLOW=0.2510E+04 BASIN STORAGE=0.4447E+00 PERCENT ERROR= 0.0

J65J70	MANE	25.24	1394.84	1867.51	2.64	30.00	1394.58	1860.00	2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4633E+04 EXCESS=0.0000E+00 OUTFLOW=0.4632E+04 BASIN STORAGE=0.2934E+01 PERCENT ERROR= 0.0

J70J71	MANE	5.29	1452.20	1867.77	2.64	30.00	1452.01	1860.00	2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4766E+04 EXCESS=0.0000E+00 OUTFLOW=0.4765E+04 BASIN STORAGE=0.8428E+00 PERCENT ERROR= 0.0

J72J71	MANE	9.39	17.18	2292.29	2.31	30.00	17.17	2310.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5551E+02 EXCESS=0.0000E+00 OUTFLOW=0.5550E+02 BASIN STORAGE=0.2699E-02 PERCENT ERROR= 0.0

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*

*** NORMAL END OF HEC-1 ***

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*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            MAY  1991                  *
*         VERSION 4.0.1E                *
*   Lahey F77L-EM/32 version 5.01       *
*     Dodson & Associates, Inc.         *
*  RUN DATE  02/23/99  TIME  15:53:07   *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (916) 551-1748               *
*                                       *
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 15:53:07

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
50 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	23FEB99	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1MAR99	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

PROPOSED FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	33.	29.50	32.	25.	12.	0.40		
ROUTED TO	JAJB	33.	30.50	32.	25.	12.	0.40		
HYDROGRAPH AT	102	37.	48.50	36.	34.	23.	1.00		
HYDROGRAPH AT	100	51.	38.50	51.	44.	26.	1.00		
3 COMBINED AT	JB	106.	37.50	105.	97.	61.	2.40		
ROUTED TO	JBJC	106.	38.50	105.	96.	61.	2.40		
HYDROGRAPH AT	104	22.	44.00	21.	19.	13.	0.51		
HYDROGRAPH AT	103	36.	31.00	35.	28.	14.	0.48		
ROUTED TO	JDJC	36.	32.50	35.	28.	14.	0.48		
HYDROGRAPH AT	105	46.	43.00	46.	41.	27.	1.03		
4 COMBINED AT	JC	199.	38.50	198.	182.	114.	4.42		
ROUTED TO	JCJF	199.	38.50	198.	182.	114.	4.42		
HYDROGRAPH AT	108	43.	26.50	42.	31.	13.	0.42		
2 COMBINED AT	JF	222.	35.50	220.	203.	127.	4.84		
ROUTED TO	JFJE	221.	36.50	220.	203.	127.	4.84		
HYDROGRAPH AT	110	29.	47.50	29.	26.	18.	0.69		
HYDROGRAPH AT	4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	21.	28.00	21.	16.	7.	0.27		
ROUTED TO	JLJM	21.	30.00	21.	16.	7.	0.27		
HYDROGRAPH AT	125	17.	29.00	17.	13.	6.	0.22		
2 COMBINED AT	JM	39.	29.50	38.	29.	14.	0.49		
ROUTED TO	JMJU	39.	29.50	38.	29.	14.	0.49		
ROUTED TO	JU	37.	32.00	36.	28.	13.	0.49	1279.38	32.00
HYDROGRAPH AT	120	42.	42.00	41.	37.	23.	0.82		
ROUTED TO	JHJI	42.	42.50	41.	37.	23.	0.82		
HYDROGRAPH AT	121	69.	29.00	67.	52.	24.	0.82		
2 COMBINED AT	JI	96.	30.00	94.	82.	47.	1.64		
ROUTED TO	JIJJ	96.	30.50	94.	82.	47.	1.64		
HYDROGRAPH AT	122	46.	41.50	46.	41.	26.	1.00		
2 COMBINED AT	JJ	132.	33.50	131.	121.	73.	2.64		
ROUTED TO	JJJK	131.	34.50	131.	121.	73.	2.64		
HYDROGRAPH AT	123	40.	40.50	40.	35.	22.	0.76		
2 COMBINED AT	JK	169.	37.00	169.	155.	95.	3.40		
ROUTED TO	JKJT	169.	37.00	169.	155.	94.	3.40		

PROPOSED FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	JT	203.	34.50	202.	183.	108.	3.89
ROUTED TO	JTJZ	203.	34.50	202.	183.	108.	3.89
ROUTED TO	JZJO	203.	35.00	202.	183.	108.	3.89
HYDROGRAPH AT	127	27.	36.00	26.	23.	13.	0.43
HYDROGRAPH AT	126	86.	22.50	81.	48.	17.	0.53
ROUTED TO	JPJO	86.	22.50	81.	48.	17.	0.53
3 COMBINED AT	JO	255.	32.00	252.	229.	136.	4.85
ROUTED TO	JOJE	254.	32.50	252.	229.	136.	4.85
4 COMBINED AT	JE	496.	35.00	494.	455.	285.	11.07
ROUTED TO	JEJY	496.	35.00	494.	455.	285.	11.07
HYDROGRAPH AT	131	71.	13.50	29.	8.	3.	0.10
2 COMBINED AT	JY	496.	35.00	494.	455.	285.	11.17
ROUTED TO	JYJR	496.	35.00	494.	455.	285.	11.17
HYDROGRAPH AT	106	110.	28.50	107.	83.	39.	1.23
ROUTED TO	JQJR	110.	29.00	107.	83.	39.	1.23
HYDROGRAPH AT	107	26.	26.50	25.	18.	8.	0.30
3 COMBINED AT	JR	605.	32.50	600.	544.	331.	12.70
ROUTED TO	JRJX	605.	32.50	600.	544.	331.	12.70
HYDROGRAPH AT	130	43.	13.50	17.	5.	2.	0.05
2 COMBINED AT	JX	605.	32.50	600.	544.	332.	12.75
ROUTED TO	JXJS	605.	32.50	600.	544.	332.	12.75
HYDROGRAPH AT	109	63.	24.00	60.	41.	16.	0.55
2 COMBINED AT	JS	640.	31.50	635.	574.	348.	13.30
ROUTED TO	JSJ65	640.	32.00	635.	574.	348.	13.30
HYDROGRAPH AT	200	78.	28.50	76.	59.	27.	1.03
HYDROGRAPH AT	202	28.	27.50	27.	20.	9.	0.36
2 COMBINED AT	J1	106.	28.00	103.	79.	36.	1.39
ROUTED TO	J1J5	106.	28.50	103.	79.	36.	1.39
HYDROGRAPH AT	201	19.	34.50	19.	16.	8.	0.40
HYDROGRAPH AT	204	42.	47.50	42.	39.	27.	1.08
3 COMBINED AT	J5	145.	29.50	142.	122.	70.	2.87
ROUTED TO	J5J7	145.	30.00	142.	122.	70.	2.87
HYDROGRAPH AT	205	131.	28.50	127.	98.	45.	1.72
2 COMBINED AT	J7	275.	29.00	268.	218.	116.	4.59
ROUTED TO	J7J10	275.	29.50	267.	218.	116.	4.59
HYDROGRAPH AT	208	35.	30.00	35.	27.	13.	0.54
HYDROGRAPH AT	209	84.	24.00	80.	55.	22.	0.79
HYDROGRAPH AT	210	50.	25.50	48.	34.	14.	0.57

PROPOSED FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	J20	162.	25.00	156.	115.	50.	1.90
ROUTED TO	J20J10	160.	26.00	155.	114.	50.	1.90
HYDROGRAPH AT	206	52.	38.00	52.	45.	26.	1.00
HYDROGRAPH AT	211	39.	28.50	38.	29.	14.	0.59
HYDROGRAPH AT	207	39.	47.00	39.	36.	24.	1.00
5 COMBINED AT	J10	521.	29.00	511.	425.	228.	9.08
ROUTED TO	J10J21	520.	29.50	511.	424.	228.	9.08
HYDROGRAPH AT	212	44.	39.00	44.	38.	23.	1.00
2 COMBINED AT	J21	554.	29.50	544.	460.	251.	10.08
ROUTED TO	J21J30	554.	30.00	544.	460.	251.	10.08
HYDROGRAPH AT	220	57.	20.00	51.	29.	10.	0.33
ROUTED TO	J31J35	56.	20.50	51.	29.	10.	0.33
HYDROGRAPH AT	217	145.	17.50	121.	55.	19.	0.64
2 COMBINED AT	J35	186.	18.00	165.	84.	29.	0.97
ROUTED TO	J35J33	186.	18.00	164.	84.	29.	0.97
HYDROGRAPH AT	216	57.	37.50	56.	49.	28.	1.11
2 COMBINED AT	J33	196.	18.50	178.	117.	57.	2.08
ROUTED TO	J33J30	196.	18.50	178.	116.	57.	2.08
2 COMBINED AT	J30	646.	29.00	636.	548.	307.	12.16
ROUTED TO	J30J40	645.	29.50	636.	548.	307.	12.16
HYDROGRAPH AT	213	34.	51.50	34.	32.	23.	1.00
2 COMBINED AT	J40	662.	29.50	652.	568.	329.	13.16
ROUTED TO	J40J45	661.	30.00	652.	568.	329.	13.16
HYDROGRAPH AT	223	39.	45.50	38.	35.	23.	1.00
2 COMBINED AT	J45	685.	30.00	676.	595.	352.	14.16
ROUTED TO	J45J50	683.	30.50	674.	594.	351.	14.16
HYDROGRAPH AT	225	35.	23.00	33.	22.	8.	0.32
ROUTED TO	J51J50	35.	24.00	33.	22.	8.	0.32
HYDROGRAPH AT	230	53.	35.00	52.	44.	24.	1.00
HYDROGRAPH AT	231	22.	49.00	22.	20.	14.	0.69
4 COMBINED AT	J50	765.	30.50	756.	670.	397.	16.17
ROUTED TO	J50J55	765.	30.50	756.	669.	397.	16.17
HYDROGRAPH AT	236	16.	22.50	15.	9.	4.	0.15
ROUTED TO	J52J54	16.	23.00	15.	9.	4.	0.15
HYDROGRAPH AT	235	49.	29.00	48.	37.	17.	0.71
2 COMBINED AT	J54	60.	27.50	59.	46.	21.	0.86
ROUTED TO	J54J56	60.	28.00	59.	46.	21.	0.86
HYDROGRAPH AT	242	59.	27.50	57.	43.	19.	0.71
HYDROGRAPH AT	237	25.	26.50	24.	17.	8.	0.27

PROPOSED FLOWS 50 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

4 COMBINED AT	J56	897.	30.00	885.	771.	445.	18.01
ROUTED TO	J56J60	896.	30.00	885.	770.	444.	18.01
HYDROGRAPH AT	243	22.	29.50	21.	17.	8.	0.28
HYDROGRAPH AT	245	20.	29.50	20.	16.	7.	0.29
3 COMBINED AT	J60	939.	30.00	925.	802.	460.	18.58
ROUTED TO	J60J65	938.	30.00	925.	802.	460.	18.58
HYDROGRAPH AT	247	98.	24.00	93.	63.	25.	1.00
3 COMBINED AT	J65	1636.	30.50	1616.	1424.	831.	32.88
ROUTED TO	J65J70	1635.	31.00	1616.	1423.	831.	32.88
HYDROGRAPH AT	240	68.	30.50	67.	53.	26.	1.00
2 COMBINED AT	J70	1703.	30.50	1682.	1476.	857.	33.88
ROUTED TO	J70J71	1703.	31.00	1682.	1476.	857.	33.88
HYDROGRAPH AT	250	20.	38.00	20.	18.	10.	0.45
ROUTED TO	J72J71	20.	38.00	20.	18.	10.	0.45
HYDROGRAPH AT	251	48.	22.00	44.	28.	11.	0.44
3 COMBINED AT	J71	1744.	30.50	1722.	1512.	877.	34.77
HYDROGRAPH AT	255	39.	41.50	39.	35.	22.	1.00
2 COMBINED AT	J75	1773.	31.00	1752.	1543.	899.	35.77

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	32.64	1830.00	3.37	30.00	32.64	1830.00	3.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7187E+02 EXCESS=0.0000E+00 OUTFLOW=0.7184E+02 BASIN STORAGE=0.2251E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	105.57	2310.00	3.16	30.00	105.57	2310.00	3.16

NTINUITY SUMMARY (AC-FT) - INFLOW=0.4043E+03 EXCESS=0.0000E+00 OUTFLOW=0.4039E+03 BASIN STORAGE=0.9880E+00 PERCENT ERROR= -0.1

JDJC	MANE	30.00	35.58	1950.00	3.36	30.00	35.58	1950.00	3.36

NTINUITY SUMMARY (AC-FT) - INFLOW=0.8597E+02 EXCESS=0.0000E+00 OUTFLOW=0.8596E+02 BASIN STORAGE=0.2942E-01 PERCENT ERROR= 0.0

JCJF	MANE	20.58	198.79	2325.61	3.19	30.00	198.78	2310.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7531E+03 EXCESS=0.0000E+00 OUTFLOW=0.7528E+03 BASIN STORAGE=0.5064E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	221.37	2190.00	3.22	30.00	221.37	2190.00	3.22

NTINUITY SUMMARY (AC-FT) - INFLOW=0.8331E+03 EXCESS=0.0000E+00 OUTFLOW=0.8323E+03 BASIN STORAGE=0.1362E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	21.41	1800.00	3.06	30.00	21.41	1800.00	3.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4405E+02 EXCESS=0.0000E+00 OUTFLOW=0.4406E+02 BASIN STORAGE=0.5826E-02 PERCENT ERROR= 0.0

JMJU	MANE	12.20	38.69	1780.97	3.13	30.00	38.67	1770.00	3.13

NTINUITY SUMMARY (AC-FT) - INFLOW=0.8169E+02 EXCESS=0.0000E+00 OUTFLOW=0.8169E+02 BASIN STORAGE=0.4297E-02 PERCENT ERROR= 0.0

JHJI	MANE	27.69	41.56	2547.05	3.56	30.00	41.56	2550.00	3.56

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1557E+03 EXCESS=0.0000E+00 OUTFLOW=0.1556E+03 BASIN STORAGE=0.1418E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	95.62	1830.00	3.44	30.00	95.62	1830.00	3.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3012E+03 EXCESS=0.0000E+00 OUTFLOW=0.3011E+03 BASIN STORAGE=0.3443E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	131.49	2070.00	3.35	30.00	131.49	2070.00	3.35

NTINUITY SUMMARY (AC-FT) - INFLOW=0.4719E+03 EXCESS=0.0000E+00 OUTFLOW=0.4713E+03 BASIN STORAGE=0.7409E+00 PERCENT ERROR= 0.0

JKJT	MANE	8.04	169.44	2228.23	3.38	30.00	169.43	2220.00	3.38

TINUITY SUMMARY (AC-FT) - INFLOW=0.6127E+03 EXCESS=0.0000E+00 OUTFLOW=0.6127E+03 BASIN STORAGE=0.1326E+00 PERCENT ERROR= 0.0

JTJZ	MANE	4.23	202.89	2075.37	3.34	30.00	202.88	2070.00	3.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6933E+03 EXCESS=0.0000E+00 OUTFLOW=0.6933E+03 BASIN STORAGE=0.9019E-01 PERCENT ERROR= 0.0

JZJO	MANE	12.68	202.87	2079.66	3.34	30.00	202.85	2100.00	3.34

TINUITY SUMMARY (AC-FT) - INFLOW=0.6933E+03 EXCESS=0.0000E+00 OUTFLOW=0.6932E+03 BASIN STORAGE=0.2727E+00 PERCENT ERROR= 0.0

JPJO	MANE	8.31	85.73	1354.84	3.58	30.00	85.69	1350.00	3.58

TINUITY SUMMARY (AC-FT) - INFLOW=0.1013E+03 EXCESS=0.0000E+00 OUTFLOW=0.1013E+03 BASIN STORAGE=0.8219E-03 PERCENT ERROR= 0.0

JOJE	MANE	23.79	254.50	1950.40	3.38	30.00	254.50	1950.00	3.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8751E+03 EXCESS=0.0000E+00 OUTFLOW=0.8749E+03 BASIN STORAGE=0.5955E+00 PERCENT ERROR= 0.0

JEJY	MANE	6.21	496.44	2094.49	3.22	30.00	496.44	2100.00	3.22

NTINUITY SUMMARY (AC-FT) - INFLOW=0.1899E+04 EXCESS=0.0000E+00 OUTFLOW=0.1899E+04 BASIN STORAGE=0.6984E+00 PERCENT ERROR= 0.0

JYJR	MANE	3.01	496.42	2100.94	3.21	30.00	496.42	2100.00	3.21

TTINUITY SUMMARY (AC-FT) - INFLOW=0.1915E+04 EXCESS=0.0000E+00 OUTFLOW=0.1915E+04 BASIN STORAGE=0.2620E+00 PERCENT ERROR= 0.0

JQJR	MANE	17.08	110.25	1725.30	3.54	30.00	110.23	1740.00	3.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2320E+03 EXCESS=0.0000E+00 OUTFLOW=0.2320E+03 BASIN STORAGE=0.6218E-02 PERCENT ERROR= 0.0

JRJX	MANE	5.57	604.87	1950.67	3.24	30.00	604.86	1950.00	3.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2194E+04 EXCESS=0.0000E+00 OUTFLOW=0.2194E+04 BASIN STORAGE=0.5252E+00 PERCENT ERROR= 0.0

JXJS	MANE	2.79	604.82	1950.77	3.24	30.00	604.81	1950.00	3.24

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2203E+04 EXCESS=0.0000E+00 OUTFLOW=0.2203E+04 BASIN STORAGE=0.2631E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	640.10	1920.00	3.24	30.00	640.10	1920.00	3.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2300E+04 EXCESS=0.0000E+00 OUTFLOW=0.2299E+04 BASIN STORAGE=0.2202E+01 PERCENT ERROR= 0.0

J1J5	MANE	28.70	105.96	1721.86	2.93	30.00	105.95	1710.00	2.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2169E+03 EXCESS=0.0000E+00 OUTFLOW=0.2169E+03 BASIN STORAGE=0.7384E-02 PERCENT ERROR= 0.0

J5J7	MANE	11.12	145.05	1779.72	2.96	30.00	144.97	1800.00	2.96

NTINUITY SUMMARY (AC-FT) - INFLOW=0.4535E+03 EXCESS=0.0000E+00 OUTFLOW=0.4534E+03 BASIN STORAGE=0.1131E+00 PERCENT ERROR= 0.0

J7J10 MANE 30.00 274.68 1770.00 2.96 30.00 274.68 1770.00 2.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7255E+03 EXCESS=0.0000E+00 OUTFLOW=0.7254E+03 BASIN STORAGE=0.5782E+00 PERCENT ERROR= -0.1

J20J10 MANE 30.00 160.26 1560.00 2.93 30.00 160.26 1560.00 2.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2971E+03 EXCESS=0.0000E+00 OUTFLOW=0.2967E+03 BASIN STORAGE=0.2911E-01 PERCENT ERROR= 0.1

J10J21 MANE 25.65 520.49 1769.70 2.97 30.00 520.48 1770.00 2.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1439E+04 EXCESS=0.0000E+00 OUTFLOW=0.1439E+04 BASIN STORAGE=0.7727E+00 PERCENT ERROR= 0.0

J21J30 MANE 21.47 553.66 1803.56 2.95 30.00 553.62 1800.00 2.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1587E+04 EXCESS=0.0000E+00 OUTFLOW=0.1587E+04 BASIN STORAGE=0.7309E+00 PERCENT ERROR= 0.0

J31J35 MANE 30.00 56.40 1230.00 3.51 30.00 56.40 1230.00 3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6185E+02 EXCESS=0.0000E+00 OUTFLOW=0.6184E+02 BASIN STORAGE=0.7638E-02 PERCENT ERROR= 0.0

J35J33 MANE 26.25 185.56 1076.45 3.37 30.00 185.53 1080.00 3.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1744E+03 EXCESS=0.0000E+00 OUTFLOW=0.1744E+03 BASIN STORAGE=0.1104E-01 PERCENT ERROR= 0.0

J33J30 MANE 4.04 195.66 1107.47 3.21 30.00 195.59 1110.00 3.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3559E+03 EXCESS=0.0000E+00 OUTFLOW=0.3559E+03 BASIN STORAGE=0.6130E-02 PERCENT ERROR= 0.0

J30J40 MANE 11.87 645.52 1768.29 3.00 30.00 645.49 1770.00 3.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1943E+04 EXCESS=0.0000E+00 OUTFLOW=0.1943E+04 BASIN STORAGE=0.4353E+00 PERCENT ERROR= 0.0

J40J45 MANE 12.01 661.42 1790.08 3.00 30.00 661.20 1800.00 3.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2106E+04 EXCESS=0.0000E+00 OUTFLOW=0.2106E+04 BASIN STORAGE=0.5970E+00 PERCENT ERROR= 0.0

J45J50 MANE 28.32 683.12 1812.55 3.00 30.00 683.06 1830.00 3.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2264E+04 EXCESS=0.0000E+00 OUTFLOW=0.2263E+04 BASIN STORAGE=0.1651E+01 PERCENT ERROR= 0.0

J51J50 MANE 30.00 34.76 1440.00 2.91 30.00 34.76 1440.00 2.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4959E+02 EXCESS=0.0000E+00 OUTFLOW=0.4960E+02 BASIN STORAGE=0.1167E-01 PERCENT ERROR= 0.0

J50J55 MANE 15.09 764.93 1840.53 2.97 30.00 764.71 1830.00 2.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2562E+04 EXCESS=0.0000E+00 OUTFLOW=0.2562E+04 BASIN STORAGE=0.1051E+01 PERCENT ERROR= 0.0

J52J54 MANE 30.00 15.72 1380.00 2.69 30.00 15.72 1380.00 2.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2149E+02 EXCESS=0.0000E+00 OUTFLOW=0.2149E+02 BASIN STORAGE=0.5221E-02 PERCENT ERROR= 0.0

J54J56	MANE	6.84	60.05	1661.22	2.74	30.00	60.04	1680.00	2.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1256E+03 EXCESS=0.0000E+00 OUTFLOW=0.1256E+03 BASIN STORAGE=0.1296E-02 PERCENT ERROR= 0.0

J56J60	MANE	20.70	896.42	1801.24	2.96	30.00	896.38	1800.00	2.96

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2848E+04 EXCESS=0.0000E+00 OUTFLOW=0.2848E+04 BASIN STORAGE=0.1486E+01 PERCENT ERROR= 0.0

J60J65	MANE	8.26	938.56	1808.92	2.97	30.00	938.31	1800.00	2.97

NTINUITY SUMMARY (AC-FT) - INFLOW=0.2940E+04 EXCESS=0.0000E+00 OUTFLOW=0.2940E+04 BASIN STORAGE=0.4904E+00 PERCENT ERROR= 0.0

J65J70	MANE	24.09	1635.34	1854.58	3.07	30.00	1634.88	1860.00	3.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5388E+04 EXCESS=0.0000E+00 OUTFLOW=0.5387E+04 BASIN STORAGE=0.3170E+01 PERCENT ERROR= 0.0

J70J71	MANE	5.00	1703.22	1840.63	3.07	30.00	1703.10	1860.00	3.07

NTINUITY SUMMARY (AC-FT) - INFLOW=0.5545E+04 EXCESS=0.0000E+00 OUTFLOW=0.5544E+04 BASIN STORAGE=0.9048E+00 PERCENT ERROR= 0.0

J72J71	MANE	8.99	20.40	2292.60	2.74	30.00	20.40	2280.00	2.74

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6571E+02 EXCESS=0.0000E+00 OUTFLOW=0.6571E+02 BASIN STORAGE=0.2690E-02 PERCENT ERROR= 0.0

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*

** NORMAL END OF HEC-1 ***

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 15:55:34

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 551-1748

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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

FLOOD HYDROGRAPH PACKAGE (HEC-1)
MAY 1991
VERSION 4.0.1E
Lahey F77L-EM/32 version 5.01
Dodson & Associates, Inc.
RUN DATE 02/23/99 TIME 15:55:34

U.S. ARMY CORPS OF ENGINEERS
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STONEY RUN EXISTING CONDITIONS SPN # 9083
NICK HOFFMAN, EIT E-7577
SCHMUCHER PAUL NOHR AND ASSOCIATES
100 YEAR STORM EVENT WITH WETLAND INFLUENCE
ADDED AREA SOUTH OF 21st STREET BRIDGE

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	30	MINUTES IN COMPUTATION INTERVAL
IDATE	23FEB99	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1MAR99	ENDING DATE
NDTIME	0530	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.50 HOURS
TOTAL TIME BASE 149.50 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

PROPOSED FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	101	38.	29.50	37.	29.	14.	0.40		
ROUTED TO	JAJB	38.	30.50	37.	29.	14.	0.40		
HYDROGRAPH AT	102	43.	48.50	43.	40.	27.	1.00		
HYDROGRAPH AT	100	60.	38.50	60.	52.	31.	1.00		
3 COMBINED AT	JB	124.	37.50	123.	113.	72.	2.40		
ROUTED TO	JBJC	124.	38.50	123.	113.	72.	2.40		
HYDROGRAPH AT	104	25.	44.00	25.	23.	15.	0.51		
HYDROGRAPH AT	103	42.	31.00	41.	33.	16.	0.48		
ROUTED TO	JDJC	42.	32.50	41.	33.	16.	0.48		
HYDROGRAPH AT	105	54.	43.00	54.	48.	31.	1.03		
4 COMBINED AT	JC	233.	38.50	232.	213.	134.	4.42		
ROUTED TO	JCJF	233.	38.50	232.	213.	134.	4.42		
HYDROGRAPH AT	108	50.	26.50	48.	36.	16.	0.42		
2 COMBINED AT	JF	259.	35.50	258.	238.	149.	4.84		
ROUTED TO	JFJE	259.	36.50	258.	238.	148.	4.84		
HYDROGRAPH AT	110	33.	47.50	33.	31.	21.	0.69		
HYDROGRAPH AT	4TH	14.	1.00	14.	13.	7.	0.69		
ROUTED TO	JWJU	14.	2.50	14.	13.	7.	0.69		
HYDROGRAPH AT	124	25.	28.00	24.	19.	9.	0.27		
ROUTED TO	JLJM	25.	30.00	24.	19.	9.	0.27		
HYDROGRAPH AT	125	20.	29.00	20.	15.	7.	0.22		
2 COMBINED AT	JM	45.	29.50	44.	34.	16.	0.49		
ROUTED TO	JMJU	45.	29.50	44.	34.	16.	0.49		
ROUTED TO	JU	44.	31.50	42.	33.	16.	0.49	1279.44	31.50
HYDROGRAPH AT	120	48.	42.00	48.	43.	27.	0.82		
ROUTED TO	JHJI	48.	42.50	48.	43.	27.	0.82		
HYDROGRAPH AT	121	80.	28.50	78.	60.	28.	0.82		
2 COMBINED AT	JI	112.	30.00	110.	96.	55.	1.64		
ROUTED TO	JIJJ	112.	30.50	109.	96.	55.	1.64		
HYDROGRAPH AT	122	54.	41.50	54.	48.	30.	1.00		
2 COMBINED AT	JJ	154.	33.50	153.	141.	85.	2.64		
ROUTED TO	JJJK	153.	34.50	153.	141.	85.	2.64		
HYDROGRAPH AT	123	47.	40.50	46.	41.	25.	0.76		
2 COMBINED AT	JK	198.	37.00	197.	181.	110.	3.40		
ROUTED TO	JKJT	198.	37.00	197.	181.	110.	3.40		

PROPOSED FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

2 COMBINED AT	JT	237.	34.50	236.	213.	126.	3.89
ROUTED TO	JTJZ	237.	34.50	236.	213.	126.	3.89
ROUTED TO	JZJO	237.	34.50	236.	213.	126.	3.89
HYDROGRAPH AT	127	31.	36.00	31.	26.	15.	0.43
HYDROGRAPH AT	126	100.	22.50	94.	55.	20.	0.53
ROUTED TO	JPJO	99.	22.50	94.	55.	20.	0.53
3 COMBINED AT	JO	298.	32.00	295.	267.	159.	4.85
ROUTED TO	JOJE	297.	32.00	295.	267.	159.	4.85
4 COMBINED AT	JE	579.	34.50	576.	531.	332.	11.07
ROUTED TO	JEJY	579.	34.50	576.	531.	332.	11.07
HYDROGRAPH AT	131	83.	13.50	34.	10.	3.	0.10
2 COMBINED AT	JY	579.	34.50	576.	531.	333.	11.17
ROUTED TO	JYJR	579.	35.00	576.	531.	333.	11.17
HYDROGRAPH AT	106	128.	28.50	125.	96.	45.	1.23
ROUTED TO	JQJR	128.	29.00	125.	96.	45.	1.23
HYDROGRAPH AT	107	30.	26.50	29.	21.	9.	0.30
3 COMBINED AT	JR	707.	32.50	701.	636.	386.	12.70
ROUTED TO	JRJX	707.	32.50	701.	636.	386.	12.70
HYDROGRAPH AT	130	50.	13.50	19.	5.	2.	0.05
2 COMBINED AT	JX	707.	32.50	701.	636.	387.	12.75
ROUTED TO	JXJS	707.	32.50	701.	636.	387.	12.75
HYDROGRAPH AT	109	74.	24.00	71.	48.	19.	0.55
2 COMBINED AT	JS	749.	31.50	742.	671.	406.	13.30
ROUTED TO	JSJ65	749.	32.00	742.	671.	406.	13.30
HYDROGRAPH AT	200	93.	28.50	90.	69.	32.	1.03
HYDROGRAPH AT	202	33.	27.50	32.	24.	11.	0.36
2 COMBINED AT	J1	126.	28.00	122.	93.	43.	1.39
ROUTED TO	J1J5	126.	28.50	122.	93.	43.	1.39
HYDROGRAPH AT	201	23.	34.50	23.	19.	10.	0.40
HYDROGRAPH AT	204	50.	47.50	49.	46.	31.	1.08
3 COMBINED AT	J5	172.	29.50	169.	144.	83.	2.87
ROUTED TO	J5J7	172.	29.50	169.	144.	83.	2.87
HYDROGRAPH AT	205	155.	28.50	151.	116.	54.	1.72
2 COMBINED AT	J7	326.	29.00	318.	258.	137.	4.59
ROUTED TO	J7J10	326.	29.50	317.	258.	137.	4.59
HYDROGRAPH AT	208	42.	30.00	41.	33.	16.	0.54
HYDROGRAPH AT	209	99.	24.00	94.	65.	26.	0.79
HYDROGRAPH AT	210	59.	25.50	57.	41.	17.	0.57

PROPOSED FLOWS 100 YEAR STORM STONY RUN 3RD ST TO SPILLWAY 2/23/99

3 COMBINED AT	J20	192.	25.00	185.	136.	59.	1.90
ROUTED TO	J20J10	190.	26.00	184.	136.	59.	1.90
HYDROGRAPH AT	206	61.	38.00	61.	53.	31.	1.00
HYDROGRAPH AT	211	47.	28.50	46.	35.	16.	0.59
HYDROGRAPH AT	207	46.	47.00	45.	42.	28.	1.00
5 COMBINED AT	J10	619.	29.00	607.	503.	270.	9.08
ROUTED TO	J10J21	617.	29.50	606.	503.	270.	9.08
HYDROGRAPH AT	212	53.	39.00	52.	46.	27.	1.00
2 COMBINED AT	J21	658.	29.50	646.	545.	297.	10.08
ROUTED TO	J21J30	657.	30.00	645.	545.	297.	10.08
HYDROGRAPH AT	220	65.	20.00	59.	34.	12.	0.33
ROUTED TO	J31J35	65.	20.50	59.	34.	12.	0.33
HYDROGRAPH AT	217	168.	17.50	141.	65.	22.	0.64
2 COMBINED AT	J35	215.	18.00	192.	98.	34.	0.97
ROUTED TO	J35J33	215.	18.00	191.	98.	34.	0.97
HYDROGRAPH AT	216	67.	37.50	66.	58.	34.	1.11
2 COMBINED AT	J33	227.	18.00	207.	136.	67.	2.08
ROUTED TO	J33J30	226.	18.50	207.	136.	67.	2.08
2 COMBINED AT	J30	764.	29.00	754.	648.	363.	12.16
ROUTED TO	J30J40	764.	29.50	753.	648.	363.	12.16
HYDROGRAPH AT	213	40.	51.50	40.	38.	27.	1.00
2 COMBINED AT	J40	783.	29.50	772.	671.	388.	13.16
ROUTED TO	J40J45	783.	29.50	772.	671.	388.	13.16
HYDROGRAPH AT	223	46.	45.50	45.	41.	27.	1.00
2 COMBINED AT	J45	810.	30.00	800.	703.	415.	14.16
ROUTED TO	J45J50	809.	30.50	798.	702.	415.	14.16
HYDROGRAPH AT	225	41.	23.00	39.	26.	10.	0.32
ROUTED TO	J51J50	41.	23.50	39.	26.	10.	0.32
HYDROGRAPH AT	230	63.	35.00	62.	52.	29.	1.00
HYDROGRAPH AT	231	26.	49.00	26.	24.	17.	0.69
4 COMBINED AT	J50	906.	30.50	896.	792.	470.	16.17
ROUTED TO	J50J55	906.	30.50	895.	792.	470.	16.17
HYDROGRAPH AT	236	19.	22.50	18.	11.	4.	0.15
ROUTED TO	J52J54	19.	23.00	18.	11.	4.	0.15
HYDROGRAPH AT	235	59.	29.00	57.	44.	21.	0.71
2 COMBINED AT	J54	72.	27.50	71.	55.	25.	0.86
ROUTED TO	J54J56	72.	28.00	71.	55.	25.	0.86
HYDROGRAPH AT	242	70.	27.50	68.	51.	23.	0.71
HYDROGRAPH AT	237	29.	26.50	28.	21.	9.	0.27

4 COMBINED AT	J56	1064.	29.50	1050.	913.	526.	18.01
ROUTED TO	J56J60	1063.	30.00	1049.	912.	526.	18.01
HYDROGRAPH AT	243	26.	29.50	25.	20.	9.	0.28
HYDROGRAPH AT	245	24.	29.50	24.	18.	9.	0.29
3 COMBINED AT	J60	1113.	30.00	1097.	950.	544.	18.58
ROUTED TO	J60J65	1113.	30.00	1097.	950.	544.	18.58
HYDROGRAPH AT	247	117.	24.00	111.	75.	30.	1.00
3 COMBINED AT	J65	1932.	30.50	1908.	1678.	978.	32.88
ROUTED TO	J65J70	1931.	30.50	1907.	1677.	978.	32.88
HYDROGRAPH AT	240	81.	30.50	79.	63.	31.	1.00
2 COMBINED AT	J70	2012.	30.50	1986.	1740.	1008.	33.88
ROUTED TO	J70J71	2012.	30.50	1986.	1740.	1008.	33.88
HYDROGRAPH AT	250	24.	38.00	24.	21.	12.	0.45
ROUTED TO	J72J71	24.	38.00	24.	21.	12.	0.45
HYDROGRAPH AT	251	57.	22.00	53.	34.	13.	0.44
3 COMBINED AT	J71	2061.	30.50	2035.	1784.	1033.	34.77
HYDROGRAPH AT	255	47.	41.50	46.	41.	26.	1.00
2 COMBINED AT	J75	2095.	30.50	2069.	1820.	1058.	35.77

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
JAJB	MANE	30.00	38.13	1830.00	3.93	30.00	38.13	1830.00	3.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8389E+02 EXCESS=0.0000E+00 OUTFLOW=0.8386E+02 BASIN STORAGE=0.2308E-01 PERCENT ERROR= 0.0

JBJC	MANE	30.00	123.82	2310.00	3.70	30.00	123.82	2310.00	3.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4745E+03 EXCESS=0.0000E+00 OUTFLOW=0.4739E+03 BASIN STORAGE=0.1100E+01 PERCENT ERROR= -0.1

JDJC	MANE	30.00	41.51	1950.00	3.91	30.00	41.51	1950.00	3.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1002E+03 EXCESS=0.0000E+00 OUTFLOW=0.1002E+03 BASIN STORAGE=0.2980E-01 PERCENT ERROR= 0.0

JCJF	MANE	19.53	232.78	2323.97	3.74	30.00	232.77	2310.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8823E+03 EXCESS=0.0000E+00 OUTFLOW=0.8820E+03 BASIN STORAGE=0.5607E+00 PERCENT ERROR= 0.0

JFJE	MANE	30.00	259.01	2190.00	3.77	30.00	259.01	2190.00	3.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9751E+03 EXCESS=0.0000E+00 OUTFLOW=0.9742E+03 BASIN STORAGE=0.1512E+01 PERCENT ERROR= -0.1

JWJU	MANE	1.50	14.00	163.50	1.80	30.00	14.00	180.00	1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6674E+02 EXCESS=0.0000E+00 OUTFLOW=0.6635E+02 BASIN STORAGE=0.3900E+00 PERCENT ERROR= 0.0

JLJM	MANE	30.00	25.16	1800.00	3.59	30.00	25.16	1800.00	3.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5172E+02 EXCESS=0.0000E+00 OUTFLOW=0.5173E+02 BASIN STORAGE=0.5927E-02 PERCENT ERROR= 0.0

JMJU	MANE	11.51	45.44	1784.12	3.67	30.00	45.42	1770.00	3.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9579E+02 EXCESS=0.0000E+00 OUTFLOW=0.9579E+02 BASIN STORAGE=0.4219E-02 PERCENT ERROR= 0.0

JHJI	MANE	26.36	48.17	2556.74	4.12	30.00	48.17	2550.00	4.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1805E+03 EXCESS=0.0000E+00 OUTFLOW=0.1804E+03 BASIN STORAGE=0.1552E+00 PERCENT ERROR= 0.0

JIJJ	MANE	30.00	111.54	1830.00	4.00	30.00	111.54	1830.00	4.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3503E+03 EXCESS=0.0000E+00 OUTFLOW=0.3501E+03 BASIN STORAGE=0.3787E+00 PERCENT ERROR= -0.1

JJJK	MANE	30.00	153.50	2070.00	3.90	30.00	153.50	2070.00	3.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5501E+03 EXCESS=0.0000E+00 OUTFLOW=0.5494E+03 BASIN STORAGE=0.8193E+00 PERCENT ERROR= 0.0

JKJT	MANE	7.64	197.63	2216.53	3.94	30.00	197.63	2220.00	3.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7142E+03 EXCESS=0.0000E+00 OUTFLOW=0.7141E+03 BASIN STORAGE=0.1468E+00 PERCENT ERROR= 0.0

JTJZ	MANE	3.99	237.02	2067.53	3.90	30.00	237.01	2070.00	3.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8089E+03 EXCESS=0.0000E+00 OUTFLOW=0.8088E+03 BASIN STORAGE=0.9932E-01 PERCENT ERROR= 0.0

JZJO	MANE	11.97	237.00	2071.54	3.90	30.00	237.00	2070.00	3.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8089E+03 EXCESS=0.0000E+00 OUTFLOW=0.8088E+03 BASIN STORAGE=0.2998E+00 PERCENT ERROR= 0.0

JPJO	MANE	8.07	99.46	1355.51	4.16	30.00	99.42	1350.00	4.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1175E+03 EXCESS=0.0000E+00 OUTFLOW=0.1175E+03 BASIN STORAGE=0.8061E-03 PERCENT ERROR= 0.0

JOJE	MANE	22.42	297.43	1928.53	3.94	30.00	297.36	1920.00	3.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1020E+04 EXCESS=0.0000E+00 OUTFLOW=0.1020E+04 BASIN STORAGE=0.6524E+00 PERCENT ERROR= 0.0

JEJY	MANE	7.75	579.40	2076.41	3.74	30.00	579.34	2070.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2207E+04 EXCESS=0.0000E+00 OUTFLOW=0.2207E+04 BASIN STORAGE=0.7468E+00 PERCENT ERROR= 0.0

JYJR	MANE	2.83	579.33	2079.55	3.74	30.00	579.31	2100.00	3.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2226E+04 EXCESS=0.0000E+00 OUTFLOW=0.2226E+04 BASIN STORAGE=0.2800E+00 PERCENT ERROR= 0.0

JQJR	MANE	16.24	128.36	1737.66	4.11	30.00	128.33	1740.00	4.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2697E+03 EXCESS=0.0000E+00 OUTFLOW=0.2697E+03 BASIN STORAGE=0.7322E-02 PERCENT ERROR= 0.0

JRJX	MANE	5.25	707.03	1947.86	3.77	30.00	707.02	1950.00	3.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2551E+04 EXCESS=0.0000E+00 OUTFLOW=0.2551E+04 BASIN STORAGE=0.5612E+00 PERCENT ERROR= 0.0

JXJS	MANE	2.63	707.00	1950.54	3.77	30.00	707.00	1950.00	3.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2562E+04 EXCESS=0.0000E+00 OUTFLOW=0.2562E+04 BASIN STORAGE=0.2811E+00 PERCENT ERROR= 0.0

JSJ65	MANE	30.00	749.02	1920.00	3.77	30.00	749.02	1920.00	3.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2675E+04 EXCESS=0.0000E+00 OUTFLOW=0.2674E+04 BASIN STORAGE=0.2376E+01 PERCENT ERROR= 0.0

J1J5	MANE	27.34	125.90	1694.79	3.47	30.00	125.88	1710.00	3.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2572E+03 EXCESS=0.0000E+00 OUTFLOW=0.2572E+03 BASIN STORAGE=0.7690E-02 PERCENT ERROR= 0.0

J5J7	MANE	10.60	172.13	1780.66	3.50	30.00	172.02	1770.00	3.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5355E+03 EXCESS=0.0000E+00 OUTFLOW=0.5354E+03 BASIN STORAGE=0.1265E+00 PERCENT ERROR= 0.0

J7J10	MANE	30.00	325.94	1770.00	3.50	30.00	325.94	1770.00	3.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8575E+03 EXCESS=0.0000E+00 OUTFLOW=0.8573E+03 BASIN STORAGE=0.6422E+00 PERCENT ERROR= -0.1

J20J10	MANE	30.00	190.04	1560.00	3.47	30.00	190.04	1560.00	3.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3518E+03 EXCESS=0.0000E+00 OUTFLOW=0.3514E+03 BASIN STORAGE=0.3294E-01 PERCENT ERROR= 0.1

J10J21	MANE	24.27	617.49	1771.37	3.51	30.00	617.49	1770.00	3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1701E+04 EXCESS=0.0000E+00 OUTFLOW=0.1700E+04 BASIN STORAGE=0.8580E+00 PERCENT ERROR= 0.0

J21J30	MANE	20.31	657.05	1787.55	3.49	30.00	656.86	1800.00	3.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1877E+04 EXCESS=0.0000E+00 OUTFLOW=0.1877E+04 BASIN STORAGE=0.8102E+00 PERCENT ERROR= 0.0

J31J35	MANE	30.00	65.22	1230.00	4.08	30.00	65.22	1230.00	4.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7176E+02 EXCESS=0.0000E+00 OUTFLOW=0.7174E+02 BASIN STORAGE=0.7682E-02 PERCENT ERROR= 0.0

J35J33	MANE	25.05	214.83	1077.00	3.93	30.00	214.77	1080.00	3.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2033E+03 EXCESS=0.0000E+00 OUTFLOW=0.2032E+03 BASIN STORAGE=0.1041E-01 PERCENT ERROR= 0.0

J33J30	MANE	3.85	226.51	1098.39	3.76	30.00	226.47	1110.00	3.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4174E+03 EXCESS=0.0000E+00 OUTFLOW=0.4174E+03 BASIN STORAGE=0.7277E-02 PERCENT ERROR= 0.0

J30J40	MANE	11.24	764.35	1764.00	3.54	30.00	764.26	1770.00	3.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2294E+04 EXCESS=0.0000E+00 OUTFLOW=0.2294E+04 BASIN STORAGE=0.4822E+00 PERCENT ERROR= 0.0

J40J45	MANE	11.38	782.98	1785.90	3.54	30.00	782.81	1770.00	3.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2486E+04 EXCESS=0.0000E+00 OUTFLOW=0.2486E+04 BASIN STORAGE=0.6627E+00 PERCENT ERROR= 0.0

J45J50	MANE	26.82	808.84	1823.54	3.54	30.00	808.57	1830.00	3.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2673E+04 EXCESS=0.0000E+00 OUTFLOW=0.2672E+04 BASIN STORAGE=0.1829E+01 PERCENT ERROR= 0.0

J51J50	MANE	30.00	41.36	1410.00	3.45	30.00	41.36	1410.00	3.45

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5889E+02 EXCESS=0.0000E+00 OUTFLOW=0.5889E+02 BASIN STORAGE=0.1180E-01 PERCENT ERROR= 0.0

J50J55	MANE	14.26	906.14	1839.84	3.51	30.00	906.06	1830.00	3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3028E+04 EXCESS=0.0000E+00 OUTFLOW=0.3028E+04 BASIN STORAGE=0.1164E+01 PERCENT ERROR= 0.0

J52J54	MANE	30.00	18.88	1380.00	3.22	30.00	18.88	1380.00	3.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2574E+02 EXCESS=0.0000E+00 OUTFLOW=0.2574E+02 BASIN STORAGE=0.5316E-02 PERCENT ERROR= 0.0

J54J56	MANE	6.50	71.92	1656.67	3.27	30.00	71.91	1680.00	3.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1501E+03 EXCESS=0.0000E+00 OUTFLOW=0.1501E+03 BASIN STORAGE=0.1298E-02 PERCENT ERROR= 0.0

J56J60	MANE	19.59	1063.26	1802.37	3.51	30.00	1063.22	1800.00	3.51

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3368E+04 EXCESS=0.0000E+00 OUTFLOW=0.3367E+04 BASIN STORAGE=0.1650E+01 PERCENT ERROR= 0.0

J60J65	MANE	7.87	1113.05	1802.75	3.51	30.00	1112.95	1800.00	3.51

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3477E+04 EXCESS=0.0000E+00 OUTFLOW=0.3476E+04 BASIN STORAGE=0.5449E+00 PERCENT ERROR= 0.0

J65J70	MANE	22.94	1931.10	1835.21	3.61	30.00	1930.81	1830.00	3.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6328E+04 EXCESS=0.0000E+00 OUTFLOW=0.6327E+04 BASIN STORAGE=0.3453E+01 PERCENT ERROR= 0.0

J70J71	MANE	4.72	2011.90	1834.53	3.60	30.00	2011.59	1830.00	3.60

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6513E+04 EXCESS=0.0000E+00 OUTFLOW=0.6513E+04 BASIN STORAGE=0.9784E+00 PERCENT ERROR= 0.0

J72J71	MANE	8.59	24.40	2284.82	3.27	30.00	24.39	2280.00	3.27

NTINUITY SUMMARY (AC-FT) - INFLOW=0.7850E+02 EXCESS=0.0000E+00 OUTFLOW=0.7850E+02 BASIN STORAGE=0.3073E-02 PERCENT ERROR= 0.0

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
              *
```

** NORMAL END OF HEC-1 ***

EXISTING HEC-2 OUTPUT

EXISTING STONY RUN 3rd STREET TO STONY RUN DAM 2/25/99

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    25FEB99    TIME   09:52:16  *
*******************************************
```


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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*           (916) 756-1104              *
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                   X
X     X  X        X     X             X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

THIS RUN EXECUTED 25FEB99 08:52:16

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**********************************
HEC-2 WATER SURFACE PROFILES

Version  4.6.2;  May 1991
**********************************

T1      HURON, SD, STONEY RUN CREEK WATERSHED
T2      3RD STREET TO SPILLWAY AT STONY RUN LAKE
T3      HEC-1 GENERATED  5 YEAR EXISTING FLOWS

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0         2         0         0                   0   0.0000    0.0000      1237         0
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        1                  -1                                      -1

JS  LPRNT     NUMSEC                    ********REQUESTED SECTION NUMBERS********
      -10       -10
          ********
          FLOWS FROM JUNCTION J75 FROM THE HEC-1 ANALYSIS
QT        5       848      1090      1412      1661      1967
          ********
            DS OF SPILLWAY
NC    0.033     0.033     0.033
X1        1         8         0       800       100       100       100         0         0         0
X3       10
GR     1265         0      1260        80      1250       200      1245       240      1240       300
GR     1235       380      1235       580      1275       800
          ********
          DS FACE SPILLWAY

NC    0.033     0.033     0.015       0.6         1
X1        2        21       684       720        12        12        12         0         0         0
X3       10
GR   1254.6         0      1264      87.6   1255.17    114.03    1254.6    168.44   1255.87    199.87
GR   1260.5    212.41   1259.45    278.53    1258.7    381.02   1258.74    483.98   1258.91    594.69
GR   1259.8    664.53    1258.9    673.49   1253.76       684   1250.89    684.56    1250.7    702.67
GR   1250.8    719.79   1258.85       720   1258.85    730.71   1264.21    741.13   1283.68    763.84
GR   1284.3       768
          ********

SB     1.05       1.6       2.7                 .1                 0.01                1250.7    1250.6
          ********
          US FACE SPILLWAY
```

```
X1       3         0         0         3         5         5         5         0         0         0
X2                           1    1250.6    1250.7
X3      10
BT     -21         0   1264.86              87.6      1264             114.03   1255.17
BT          168.44    1254.6              199.87   1255.87             212.41    1260.5
BT          278.53   1259.45              381.02    1258.7             483.98   1258.74
BT          594.69   1258.91              664.53   1259.79             673.49    1258.9
BT             684   1253.76              684.56   1250.89             702.67    1250.7
BT          719.79   1250.75                 720   1258.85             730.71   1258.85
BT          741.13   1264.21              763.84   1283.68                768   1274.31
        ********
        BASE OF SPILLWAY

NC     0.033     0.033     0.024
X1         4        20     87.92    766.91      2958      3279      3256         0         0         0
X3        10
GR    1272.5         0   1271.31     87.92   1266.99    100.24   1265.95    113.65   1257.12    134.32
GR    1255.7    180.63      1255    249.6    1250.58    259.98   1251.02    284.52   1250.64    391.32
GR    1249.8     495.7   1251.25    601.54   1249.85    633.46   1250.36    640.83   1250.77    644.94
GR    1250.2     681.2   1252.01       709   1253.98    710.23   1272.49    766.91   1277.51    808.35
        ********
        600 FT US OF SPILLWAY

X1         5        18    127.23    923.12       600       600       600         0         0         0
X3        10
GR    1280.5         0   1279.81     61.68   1278.65    127.23   1269.99    176.65   1261.85    210.85
GR    1255.9    235.88   1251.67    243.08   1250.77    247.98      1340    403.47    1250.6    554.95
GR    1253.9    563.84   1261.63    709.36   1266.05    809.41   1274.17    877.45   1262.57    923.12
GR    1286.5     968.7   1287.57    986.49   1288.91   1057.02
        ********
        FLOWS FROM JUNCTION J71 FROM THE HEC-1 ANALYSIS

QT         5       833      1071      1387      1631      1967
        ********
        2383 FT DS OF HIGHWAY 37 BRIDGE
X1         6                                    1565      1812      1665         0         0         0
X3        10
        ********
        FLOWS FROM JUNCTION J70 FROM THE HEC-1 ANALYSIS

QT         5       815      1046      1354      1592      1884
        ********
        118 FEET DS OF HIGHWAY 37 BRIDGE
X1         7        11    460.25    571.8       2300      2300      2273         0         0         0
X3        10
GR    1283.4         0   1270.93    181.75   1267.85    320.82   1266.42    380.13   1263.03    433.27
GR    1258.1    460.25   1251.03    474.16   1249.89    500.54    1249.8    519.39   1251.42    550.82
GR    1258.1     571.8
        ********
        82 FEET DS OF HIGHWAY 37 BRIDGE
```

X1	8	19	244.62	357.13	78	0	36	0	0	0
X3	10									
GR	1274.3	0	1273.87	82.66	1273.28	138.43	1272.96	170.05	1271.82	196.58
GR	1266.7	214.83	1261.68	229.27	1260.07	244.62	1251.54	272.28	1251.09	274.99
GR	1251.1	280.92	1249.87	301.52	1250.33	318.47	1251.57	337.83	1251.4	341.99
GR	1255.6	357.13	1258.09	380.27	1258.92	477.47	1258.97	628.52		

****

DS FACE OF HIGHWAY 37 BRIDGE

X1	9	24	150.88	315.79	82	82	82	0	0	0
X3	10									
GR	1277.9	0	1278.01	112.31	1278.4	147.98	1271.8	149.14	1273.63	150.88
GR	1266.8	166.11	1260.59	191	1259.08	191.4	1256.34	196.67	1253.6	205.34
GR	1251.4	218.47	1249.98	231.07	1250.42	240.2	1251.33	250.73	1252.16	259.73
GR	1253.9	263.16	1253.82	266.14	1253.97	270.34	1260.82	282.14	1266.29	294.6
GR	1272.6	315.79	1274.54	319.49	1276.82	319.6	1278.21	410.87		

****

SB	1.05	1.56	2.6	0	65	4	2535	2.73	1250.19	1249.98

****

US FACE OF HIGHWAY 37 BRIDGE

X1	10	17	82.46	247.74	157	157	157	0	0	0
X2	0	0	1	1274.09	1278.48	0	0		0	0
X3	10									
GR	1277.7	0	1273.93	79.98	1272.31	82.46	1266.57	101.37	1261.01	116.92
GR	1257.2	137.09	1251.67	151.96	1251.28	154.81	1250.19	169.09	1250.53	182.1
GR	1251.5	197.62	1252.31	201.03	1255.03	208.42	1261.19	222.4	1274.26	247.74
GR	1272.1	248.81	1277.98	299.7						

****

100 FEET US OF HIGHWAY 37 BRIDGE

NC	0.04	0.04	0.04							
X1	11	14	73	175	100	100	100	0	0	0
X3	10									
GR	1257.9	0	1256.58	34	1255.39	73	1253.01	96	1251.11	108
GR	1250.2	120	1250.44	129	1251.46	148	1253.73	164	1255.97	175
GR	1257.5	192	1259.31	247	1260.35	314	1261.88	387		

****

FLOWS FROM JUNCTION J65 FROM THE HEC-1 ANALYSIS

QT	5	782	1003	1297	1525	1805				

****

XC AT SECTION LINE BETWEEN SECTIONS 13 & 24

X1	12	15	212.5	262.5	3400	3400	3400	0	0	0
X3	10									
GR	1279.6	0	1279.74	62.33	1279.55	124.23	1274.42	157	1271.62	171
GR	1262	198	1257.33	212.5	1255.63	225.11	1255.16	231	1255.51	242
GR	1256.6	262.5	1257	293.24	1258.94	315.46	1261.1	352.8	1262.43	407.71

****

XC "D"

NC	0.035	0.035	0.048							
X1	13	10	0	207	540	500	516	0	0	0
X3	10									
GR	1274.4	0	1267.27	96	1267.94	108	1267.88	161	1268.43	179
GR	1272.8	207	1276.15	266	1278.21	322	1280.62	377	1283.61	432

****

XC "C"

X1	14	14	222.46	403.96	760	780	770	0	0	0
X3	10									
GR	1279.8	0	1279.7	56.27	1279.23	113.68	1276.53	170.87	1272.35	222.46
GR	1269.5	250.97	1268.62	268.46	1266.26	327.71	1267.79	376.11	1274.5	403.96
GR	1276.1	463.8	1280.09	520.05	1281.03	576.59	1280.86	634.25		

****

XC "B"

X1	15	19	320	429	520	530	522	0	0	0
X3	10									
GR	1281.6	0	1281.02	55	1280.52	81	1279.43	111	1276.78	168
GR	1272.5	224	1274.3	281	1271.77	320	1269.12	344	1267.65	390.14
GR	1268.8	408.05	1268.04	415.65	1267.7	419.28	1268.04	423	1269.11	429
GR	1272	464	1272.6	516	1273.03	571	1281.7	679		

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XC "A"

X1	16	18	357.37	592.11	605	610	607	0	0	0
X3	10									
GR	1281.7	0	1281.1	55.82	1281.3	78.53	1281.26	108.54	1281.11	158.29
GR	1280.7	207.14	1279.43	257.74	1276.99	307.57	1273.31	357.37	1270.77	371.54
GR	1269.9	387.7	1268.81	405.38	1270.21	423.89	1270.29	464.03	1271.27	510.63
GR	1277.6	592.11	1277.21	662.13	1279.07	711.52				

****

FLOWS FROM JUNCTION JS HEC-1

CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT	5	294	370	472	550	646

****

500 FEET DS OF 21st ST BRIDGE

NC	0.035	0.035	0.1							
X1	17	90	166.98	247.3	500	500	500	0	0	0
X3	10									
GR	1279.8	0	1279.43	12.82	1279.32	21.64	1279.3	26.79	1278.52	42.9
GR	1278.9	47.8	1278.8	48.64	1278.67	50.28	1278	60.04	1279	71.61
GR	1279	72.11	1278.83	72.21	1278	72.68	1277.69	73.07	1277	74.37
GR	1276.8	75.43	1276.72	75.78	1276.7	75.9	1276.68	76.05	1276.69	77.17
GR	1276.7	77.23	1276.71	77.43	1276.73	77.63	1277	80.02	1277.12	80.71
GR	1277.3	81.55	1278	86.25	1278.67	93.48	1278.92	95.64	1279	97.06
GR	1279.1	98.74	1279.16	99.85	1279.2	100.58	1279.21	101.49	1279.2	102.35
GR	1279.2	103.57	1279.11	105.34	1279.03	108.11	1279	109	1279.05	112.62
GR	1279	112.83	1278.72	114.5	1278	117.29	1277.43	119.66	1277	121.46
GR	1276.2	124.87	1276	125.65	1275.73	126.77	1275.66	127.07	1275.51	129.2
GR	1275.3	137.15	1275	138.61	1274.97	138.74	1274.46	141.03	1274	143.09

GR	1273	147.94	1273	147.97	1273	148.02	1272.11	154.85	1272.08	157.07
GR	1272	164.72	1271.96	165.71	1271.9	166.98	1271.83	168.41	1270.59	192.92
GR	1270.5	223.2	1271.08	229.93	1271.1	237.39	1271.11	239.81	1271.62	247.3
GR	1271.3	261.06	1271.5	289.61	1271.5	294.09	1270.99	298.33	1271.12	300.03
GR	1271.1	300.39	1271.83	307.84	1272	308.8	1272.19	311.76	1272.28	312.51
GR	1272.5	314.88	1272.54	315.09	1273	319.02	1273.92	326.93	1273.98	327.45
GR	1275	335.89	1275.47	340.55	1276.6	358.86	1277.75	377.73	1278.2	396.76

****

FLOWS FROM JUNCTION JX HEC-1
CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT	5	279	352	448	522	612

****

MISC XC

X1	18	40	81.68	256.64	146	195	181			
X3	10									
GR	1278.7	0	1278.61	9.05	1278.5	16.96	1278.46	20.77	1278.3	31.77
GR	1278	60.04	1277.34	77.06	1277.3	80.02	1277.3	81.68	1277	87.63
GR	1276.3	95.95	1276	99.59	1275.04	109.86	1274.86	111.71	1274.17	118.8
GR	1274	120.78	1273.77	124.29	1273	128.67	1272.29	133.55	1272	135.93
GR	1271.9	181.13	1271.47	218.32	1271.5	218.53	1271.37	220.02	1271	226.34
GR	1271.9	256.64	1272.9	282.11	1274	293.16	1276	301.63	1277	305.29
GR	1278	317.98	1277.22	337.39	1275.6	342.72	1275.7	347.38	1277	358.97
GR	1277.4	363.2	1278	371.14	1278.3	377.45	1278.3	399.05	1278.2	407.72

****

88 FEET SOUTH OF 21st ST BRIDGE

X1	19	57	171.49	313.62	136	205	181	0	0	0
X3	10									
GR	1278.8	0.00	1278.73	9.84	1278.69	11.44	1278.51	28.78	1278.46	32.85
GR	1278.4	39.51	1278.46	39.80	1278.41	44.50	1278.30	47.05	1278.29	50.23
GR	1278.2	50.44	1278.08	73.86	1278.12	90.00	1277.87	108.06	1277.51	117.44
GR	1277.2	131.79	1277.16	132.35	1277.00	138.82	1276.32	143.40	1276.00	145.57
GR	1275.2	151.36	1275.00	153.17	1274.27	161.16	1274.00	163.82	1273.71	166.01
GR	1273.0	171.49	1272.49	178.50	1272.00	185.15	1271.61	200.04	1271.50	204.20
GR	1271.5	205.52	1271.44	206.17	1271.36	208.17	1271.32	211.09	1271.02	242.02
GR	1271.2	255.29	1271.29	262.12	1271.44	272.36	1271.98	306.74	1272.00	313.62
GR	1272.3	323.33	1272.56	328.78	1272.71	333.69	1273.00	339.08	1273.66	350.62
GR	1274.0	356.15	1274.00	356.23	1274.30	357.19	1274.43	357.51	1274.42	357.61
GR	1274.5	357.63	1274.59	357.69	1275.00	358.25	1275.65	359.10	1276.00	359.55
GR	1276.1	362.70	1276.45	370.99						

****

DS FACE OF 21st ST BRIDGE

NC	0.035	0.035	0.02	0.04	0.06					
X1	20	8	75	118.5	138	47	88	0	0	0
X3	10	0	0	81.77	1276.8	112.98	1276.8			
GR	1277.8	0	1275.87	75	1271.96	75.16	1270.98	96.54	1272.04	118.47
GR	1276	118.5	1276.28	132.48	1276.28	213.05				

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SB                1.6        3.0        213         31                144.151
         ********
         US FACE OF 21st ST BRIDGE
X1        21         11      105.19      136.2       50        50        50        0         0         0
X2         0          0           1     1275.63    1276.11
X3        10          0           0      105.2     1276.63     136.1    1276.67
GR    1278.1          0     1277.26       51.1     1276.77     78.65    1276.67   105.19    1272.53    105.2
GR    1271.5      118.2      1272.5      136.1        1276     136.2    1276.55   153.68    1276.29   224.11
GR    1276.7      248.2
         ********
          MISC XC

X1        22         37      80.29      193.99        114      84.7        125
X3        10
GR      1280          0     1279.52      25.37        1279      35.6      1278.2    41.94    1277.74    44.51
GR      1277      47.98     1276.22      51.63     1275.82      54.8     1274.69    63.84       1274    69.55
GR    1273.4      74.08     1272.68      80.29     1272.41     87.31        1272    98.55     1271.6    109.2
GR    1271.4     118.18      1271.4      126.03    1271.71     154.5     1271.84   164.87       1272   175.71
GR    1272.1     181.62     1272.22      190.18     1272.5     193.99        1273   199.34     1273.3   205.12
GR    1273.8     214.93        1274      222.09     1274.43     234.32       1275   250.93     1275.1   255.63
GR    1275.4     268.94     1275.51      277.54     1275.57     281.68     1275.79   293.98     1275.9   299.89
GR      1276     306.54     1276.36      322.93
         ********
         FLOWS FROM JUNCTION JR HEC-1
         CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT         5        279         352         448         522         613
         ********
         275 FEET US OF 21st ST BRIDGE
NC       0.1        0.1         0.1
X1        23         48       79.61      240.82         139         168       150         0         0         0
X3        10
GR    1280.1          0     1280.14        1.19     1280.03       12.34     1280.00   15.29     1279.97    15.99
GR    1279.0      26.03     1278.65       28.92     1278.00       34.32     1277.74   41.06     1277.00    57.62
GR    1276.4      71.68     1276.00       79.61     1275.37       81.98     1275.00   83.40     1274.17    86.71
GR    1274.0      87.40     1273.91       87.80     1273.00       91.77     1272.82   100.77    1272.76   115.16
GR    1272.6     133.40     1272.50      141.78     1272.45      148.14     1272.46   181.66    1272.55   186.53
GR    1272.7     196.33     1272.77      208.50     1273.00      210.84     1273.98   220.91    1274.00   221.15
GR    1274.0     221.32     1274.07      221.84     1274.63      228.21     1275.00   232.41    1275.49   237.45
GR    1275.6     238.69     1275.78      240.82     1276.00      243.19     1276.03   243.43    1276.02   244.20
GR    1276.5     262.49     1276.73      281.33     1276.96      305.95     1276.98   314.52    1277.00   319.03
GR    1277.0     323.35     1277.10      331.30     1277.02      355.84
         ********
         FLOWS FROM JUNCTION JY HEC-1
         CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT         5        234         293         373         433         507
          MISC XC
X1        24         63      115.65      372.53         652         698       656         0         0         0
X3        10
GR    1278.7          0     1278.48        1.69     1278.05        4.73     1278.00   5.11      1277.99    5.40
GR    1278.0       6.15     1278.00        6.71     1278.00        6.89     1278.00   9.48      1277.99    9.66
GR    1277.3      25.12     1277.37       37.08     1277.92       68.40     1277.92   70.40     1277.81   86.29
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GR	1277.3	100.25	1277.00	115.65	1276.08	124.34	1276.00	125.07	1275.89	126.06
GR	1275.0	134.14	1274.44	138.20	1274.00	141.72	1273.86	150.39	1273.11	191.41
GR	1273.2	206.13	1273.16	206.51	1273.17	208.80	1273.51	246.09	1273.44	273.82
GR	1273.9	306.85	1273.98	312.93	1273.95	313.88	1274.00	314.25	1274.05	314.76
GR	1275.0	326.18	1275.23	328.95	1275.36	330.45	1276.00	337.31	1276.70	345.29
GR	1277.0	348.62	1277.14	350.29	1278.00	360.26	1278.86	372.53	1278.86	372.53
GR	1278.9	372.53	1278.86	372.53	1278.86	372.53	1278.86	372.53	1278.86	372.53
GR	1278.9	372.53	1278.86	372.53	1279.00	379.52	1279.25	392.62	1279.46	405.57
GR	1279.6	412.79	1280.00	429.07	1280.03	431.14	1280.23	442.82	1280.30	449.70
GR	1280.4	454.71	1280.76	469.58	1280.78	479.56				

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64 FEET DS OF 18th ST CULVERTS

X1	25	97	264.93	382.47	345	492	495	0	0	0
X3	10									
GR	1279.0	0.00	1278.60	29.37	1280.79	144.17	1280.91	146.05	1280.91	152.04
GR	1280.9	152.70	1280.82	153.63	1280.93	157.06	1280.94	161.55	1280.98	172.32
GR	1281.0	177.76	1281.00	178.48	1281.00	180.02	1280.47	185.34	1280.00	190.01
GR	1279.9	190.76	1279.77	192.36	1279.39	196.11	1279.00	200.01	1278.85	201.50
GR	1278.9	201.50	1278.02	206.68	1278.00	206.82	1277.05	212.79	1277.02	212.93
GR	1277.0	213.08	1276.95	213.40	1276.00	220.44	1275.03	242.16	1275.00	242.70
GR	1275.0	242.92	1274.93	244.75	1274.93	245.17	1275.00	245.22	1275.16	245.32
GR	1276.0	245.89	1276.09	245.96	1276.21	246.04	1276.26	249.30	1276.18	249.86
GR	1276.0	250.73	1276.00	251.04	1275.31	256.52	1275.00	258.84	1274.55	264.93
GR	1274.3	275.73	1274.00	283.32	1273.56	316.05	1273.55	316.62	1273.52	319.81
GR	1273.5	321.70	1273.52	323.88	1273.53	326.23	1273.53	328.77	1273.55	330.23
GR	1273.6	331.23	1274.00	333.52	1274.07	333.90	1274.08	334.48	1274.08	337.10
GR	1274.0	344.06	1274.02	346.03	1274.00	347.15	1273.97	348.75	1273.89	349.99
GR	1273.8	350.73	1273.82	351.22	1273.82	354.68	1273.86	357.63	1273.93	362.50
GR	1274.0	367.72	1274.42	370.28	1275.00	373.92	1275.18	378.75	1275.26	382.47
GR	1275.3	385.90	1275.28	386.15	1275.15	388.54	1275.00	391.28	1274.97	393.56
GR	1274.8	403.01	1274.84	405.54	1274.90	407.10	1275.00	407.86	1275.15	409.07
GR	1275.3	412.48	1276.00	420.83	1276.74	440.13	1277.00	446.65	1277.18	451.03
GR	1277.6	462.87	1277.98	471.18	1278.00	472.03	1278.07	474.85	1278.07	475.04
GR	1278.1	478.39	1278.22	486.48						

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DS FACE OF 18th ST CULVERTS

NC	0.1	0.1	0.03	0.4						
X1	26	12	52	155.47	126	30	64	0	0	0
X3	10	0	0	122	1278	144.25	1276.56			
GR	1281.2	0	1280.29	52	1272.56	56.99	1274.41	72.51	1273.76	96.28
GR	1273.7	124.07	1273.11	126.26	1273.66	132.42	1273.2	143.51	1274.6	152.05
GR	1276.1	155.47	1277.95	198.34						

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SC	4.02	0.5	3	104	1.75	0	40	1.3	1273.55	1273.11

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FLOWS FROM JUNCTION JE HEC-1

CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT	5	234	294	373	433	507

US FACE OF 18th ST CULVERTS

NC	0.035	0.035	0.03		0.6

X1	27	15	63	250.65	40	40	40	0	0	0
X2	0	0	2	0	1276.64					
X3	10	0	0	117	1278.5	142	1276.5			
GR	1281.2	0	1279.68	53.42	1276.61	63	1274.84	73.23	1274.87	91.51
GR	1273.8	98.89	1273.7	118.55	1273.55	120.89	1274.16	128	1373.49	140.6
GR	1275.1	146.15	1275.1	156.71	1275	157.7	1274.76	211.36	1278.27	250.65

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MISC XC

X1	28	39	189.11	419.41	135	145	146			
X3	10									
GR	1278.5	0	1277.75	33.59	1277.98	63.52	1277.92	66.82	1278.2	79.4
GR	1278.7	84.76	1279.38	108.34	1280.2	137.44	1280.54	139.74	1280.4	148.35
GR	1279.7	160.18	1279	164.04	1278	168.66	1277.2	171.9	1276.55	177.51
GR	1276	183.9	1275.2	189.11	1274.19	236.77	1274	248.73	1273.9	262.72
GR	1273.9	270.98	1274.3	318.5	1274.9	375.93	1275	386.4	1275.2	406.41
GR	1275.3	414.55	1275.3	419.41	1276	466.56	1276.8	486.87	1277	501.48
GR	1278	517.85	1278.13	520.52	1278.83	531.92	1279.1	547.66	1279.32	559.03
GR	1279.4	565.8	1279.9	595.32	1280	611.19	1280.39	627.77		

291 FEET US OF 18th ST CULVERTS

NC	0.035	0.035	0.035							
X1	29	76	28.47	441.18	143	145	145	0	0	0
X3	10									
GR	1279.7	0.00	1279.44	11.43	1279.15	20.59	1279.09	22.21	1279.00	24.24
GR	1278.8	28.47	1278.00	47.07	1277.03	69.36	1277.00	70.16	1276.94	71.57
GR	1276.9	74.61	1276.80	76.83	1276.47	89.96	1276.19	101.47	1276.08	105.64
GR	1276.0	108.87	1275.02	148.75	1275.00	149.39	1275.00	149.42	1275.00	150.41
GR	1274.7	238.05	1274.87	248.95	1274.88	251.63	1274.88	254.39	1274.84	257.80
GR	1274.2	337.04	1274.12	341.90	1274.02	352.89	1274.03	353.04	1274.03	353.33
GR	1274.0	353.62	1274.02	353.96	1274.01	357.59	1274.00	360.07	1274.00	360.54
GR	1274.0	365.88	1274.00	367.61	1274.00	368.13	1274.03	370.94	1274.07	374.63
GR	1274.1	378.23	1274.32	393.58	1274.76	424.26	1274.93	440.53	1275.00	441.15
GR	1275.0	441.16	1275.00	441.18	1276.00	448.52	1276.67	452.70	1277.00	454.81
GR	1277.3	458.73	1277.43	461.63	1277.44	461.85	1277.47	464.44	1278.00	469.27
GR	1278.6	473.59	1279.00	476.23	1279.28	478.21	1279.29	478.85	1279.22	479.64
GR	1279.2	480.16	1279.24	480.22	1279.24	480.26	1280.00	481.59	1280.64	490.54
GR	1280.8	492.94	1280.41	493.51	1280.34	493.62	1280.70	509.58	1280.83	515.00
GR	1280.8	515.57	1280.86	516.33	1280.90	518.29	1278.65	540.91	1279.88	594.88
GR	1279.3	708.12								

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71 FEET DS OF 17th ST CULVERTS

X1	30	84	24.47	440.21	5.00	5.00	5.00	0	0	0
X3	10									
GR	1279.7	0.00	1279.39	12.86	1279.37	13.53	1279.24	17.76	1279.22	18.33
GR	1279.2	19.06	1279.00	23.34	1278.95	24.47	1278.51	34.40	1278.34	38.32
GR	1278.0	46.13	1277.59	55.49	1277.00	69.10	1276.96	69.97	1276.62	81.98
GR	1276.4	90.78	1276.00	107.03	1275.87	112.27	1275.66	120.76	1275.00	147.42
GR	1275.0	153.58	1274.65	237.65	1274.87	250.65	1274.89	253.84	1274.89	257.13
GR	1274.8	261.20	1274.23	334.16	1274.18	338.62	1274.09	348.75	1274.10	349.32
GR	1274.1	350.47	1274.10	351.58	1274.07	352.93	1274.06	356.30	1274.06	358.59
GR	1274.0	364.52	1274.00	366.36	1274.06	366.60	1274.06	368.15	1274.06	368.75
GR	1274.1	369.35	1274.06	370.16	1274.07	371.57	1274.07	372.04	1274.08	372.68

GR	1274.1	374.47	1274.15	377.92	1274.18	381.15	1274.21	384.26	1274.37	395.68
GR	1274.5	406.57	1275.00	440.21	1275.19	441.89	1275.80	446.93	1275.89	447.72
GR	1276.0	448.54	1276.07	449.00	1277.00	454.83	1277.81	465.70	1277.85	466.47
GR	1277.8	466.53	1277.86	467.22	1278.00	468.51	1278.17	469.66	1279.00	475.47
GR	1279.6	479.81	1279.62	480.16	1279.58	480.59	1279.59	480.87	1279.58	481.02
GR	1279.6	481.11	1280.00	481.84	1280.35	486.77	1280.79	493.43	1280.54	493.80
GR	1280.3	494.11	1280.56	504.46	1280.77	512.89	1280.79	513.79	1280.82	514.97
GR	1280.9	518.02	1278.69	539.35	1279.89	592.26	1279.31	708.12		

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DS FACE OF 17th ST CULVERTS

NC	0.035	0.035	0.02	0.4	0.6					
X1	31	12	21	240	92	90	71	0	0	0
X3	10	0	0	104	1276.5	113	1276.5			
GR	1279.4	0	1277.16	21	1274.89	40.7	1274.88	49.85	1274.79	69.06
GR	1273.8	107.22	1274.07	111.19	1274.78	130.34	1274.86	169.33	1274.97	197.06
GR	1274.8	206.35	1276.78	240						

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SC	2.012	0.5	3	408	2	0	20	1.3	1274.14	1273.93

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US FACE OF 17th ST CULVERTS

X1	32	12	9.69	511.8	20	20	20	0	0	0
X2	0	0	2	0	1276.45					
X3	10	0	0	70.5	1276.5	79	1276.5			
GR	1277.9	0	1277.17	9.69	1274.8	19.56	1274.46	23.47	1274.31	39.24
GR	1274.1	71.22	1274.22	77.98	1274.49	103.91	1274.5	162.98	1274.98	168.09
GR	1276.9	447.13	1281.35	511.8						

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331 FEET US OF 17th ST CULVERTS

NC	0.03	0.03	0.03	0.1	0.3					
X1	33	75	176.65	609.38	348	348	331	0	0	0
X3	10									
GR	1282.7	0.00	1282.69	28.79	1282.32	39.58	1282.00	48.91	1281.63	57.31
GR	1281.4	61.67	1281.00	68.42	1280.38	78.77	1280.16	82.55	1280.00	85.16
GR	1279.5	94.10	1279.00	101.82	1278.40	111.76	1278.00	118.44	1277.73	122.85
GR	1277.0	135.06	1276.55	142.46	1276.49	144.60	1276.48	145.32	1276.42	149.04
GR	1276.0	176.65	1275.59	203.90	1275.38	217.28	1275.37	217.85	1275.33	220.98
GR	1275.3	223.05	1275.29	224.41	1275.28	225.37	1275.28	225.87	1275.26	226.62
GR	1275.0	254.42	1275.00	259.27	1274.89	273.60	1274.84	277.44	1274.56	294.27
GR	1274.4	306.66	1274.27	312.79	1274.00	331.08	1273.98	332.55	1273.84	340.57
GR	1273.8	343.80	1273.80	348.22	1273.83	352.56	1273.97	362.54	1274.00	364.88
GR	1274.2	381.60	1274.39	390.48	1274.75	418.87	1274.79	419.26	1275.00	421.05
GR	1275.0	421.07	1275.00	421.10	1276.00	429.48	1276.03	429.72	1276.84	447.17
GR	1276.9	448.04	1277.00	450.70	1277.16	454.27	1278.00	472.85	1278.93	498.14
GR	1279.0	500.12	1279.02	500.59	1279.03	501.80	1279.76	551.22	1279.78	553.42
GR	1280.2	579.07	1280.30	583.40	1280.39	589.35	1280.82	607.99	1280.85	609.38
GR	1280.4	651.32	1280.17	664.89	1280.22	673.38	1280.10	673.78	1279.94	707.28

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66 FEET DS OF 16th ST CULVERTS

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X1       34        30      41.87     259.59        27       278       103         0         0         0
X3       10
GR   1277.3      0.00   1277.16      3.52   1277.00      9.43   1276.85     14.68   1276.62     22.80
GR   1276.4     30.31   1276.00     41.87   1275.74     46.16   1275.30     55.62   1275.09     59.89
GR   1275.0     61.97   1274.91     74.95   1274.66     99.95   1274.50    117.86   1274.29    128.71
GR   1274.2    141.53   1274.15    144.08   1274.15    144.88   1274.44    181.25   1274.65    192.25
GR   1275.0    211.90   1275.00    212.35   1275.04    214.64   1275.65    251.20   1275.74    257.22
GR   1275.8    259.59   1275.92    270.62   1276.00    276.12   1276.03    278.28   1276.24    294.50
         **************
         DS FACE OF 16th ST CULVERTS

NC    0.03      0.03      0.02       0.3
X1      35         9      18.3    204.49       126         5        66         0         0         0
X3      10         0         0        88    1276.5     100.5      1276
GR  1278.6         0   1278.53      18.3    1276.5     58.18   1274.68        82    1273.2      88.9
GR  1273.2     99.32   1274.59    161.64   1275.52    204.49   1276.31    265.68
         **************

SC   2.012       0.5         3       164         2         0        53       1.3   1273.57    1273.2
         **************
         US FACE OF 16th ST CULVERTS
NC   0.035     0.035      0.02                0.5
X1      36         9     62.97    226.66        53        53        53         0         0         0
X2                            2              1275.26
X3      10         0         0     109.5    1276.5     121.5      1276
GR  1279.1         0    1277.2     62.97    1275.2     83.43   1273.54    110.69   1273.59     120.3
GR  1274.2     152.8   1274.18    182.78   1275.28    226.66   1276.69    277.69
         **************
         140 FEET US OF 16th ST CULVERTS

NC   0.045     0.055       0.1
X1      37        91    253.33    403.67       130       180       140         0         0         0
X3      10
GR  1279.9      0.00   1280.08     30.37   1280.24     30.90   1280.20     37.38   1280.61     57.55
GR  1281.0     96.18   1281.17    101.26   1281.15    103.73   1281.00    162.10   1280.77    182.42
GR  1280.4    190.67   1280.23    195.79   1280.00    201.63   1279.73    208.32   1279.71    209.07
GR  1279.4    217.16   1279.38    217.42   1279.37    218.83   1279.39    219.84   1279.81    224.99
GR  1279.9    228.06   1279.87    228.81   1279.79    232.08   1279.00    238.86   1278.97    240.31
GR  1278.9    242.27   1278.28    253.33   1278.04    258.16   1278.00    258.49   1277.92    258.77
GR  1277.0    261.82   1276.08    264.86   1276.00    265.14   1275.54    266.76   1275.00    268.58
GR  1274.7    278.90   1274.00    299.38   1273.89    304.43   1273.87    305.40   1273.75    322.14
GR  1273.8    324.81   1273.74    326.09   1273.74    327.53   1273.82    329.59   1274.00    334.68
GR  1274.2    340.69   1274.28    342.28   1274.76    355.67   1274.99    363.57   1275.00    364.14
GR  1275.3    378.24   1275.42    381.97   1275.99    403.22   1276.00    403.67   1276.00    403.85
GR  1276.3    414.94   1276.34    417.35   1276.14    445.58   1276.07    470.86   1276.00    475.97
GR  1276.0    477.43   1275.79    493.30   1275.63    525.25   1275.50    533.22   1275.82    563.08
GR  1275.8    563.27   1275.81    563.58   1275.82    563.77   1275.91    568.75   1276.00    574.65
GR  1276.0    576.48   1276.05    576.73   1276.37    595.18   1276.46    600.60   1276.56    605.77
GR  1276.7    611.80   1276.81    618.40   1276.97    627.81   1276.98    628.36   1277.00    629.89
GR  1277.1    641.82   1277.17    644.11   1277.32    651.94   1277.33    652.06   1277.39    655.10
GR  1277.6    660.61   1277.60    662.26   1277.65    664.41   1277.78    668.76   1277.80    672.80
GR  1277.8    673.19
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MISC XC

NC	0.055	0.07	0.1							
X1	38	32	84.17	236.86	180	2	102			
X3	10									
GR	1279.6	0	1279.35	4.92	1279	14.29	1278.46	18.94	1278	21.46
GR	1277.1	26.37	1276	31.81	1275.9	36.53	1275.54	53.31	1275.39	60.52
GR	1275.3	70	1275.15	82.47	1275	84.17	1274.54	94.07	1274.21	118
GR	1274	126.08	1273.75	171.95	1273.7	182.42	1273.67	185.55	1273.7	190.28
GR	1274	206.44	1274.27	216.83	1274.74	236.86	1275	247.73	1275.58	263.3
GR	1276	277.5	1276.38	293.32	1276.44	299.51	1276.37	304.47	1276	330.39
GR	1275.9	340.85	1275.8	374.14						

MISC XC

NC	0.055	0.07	0.1							
X1	39	100	237.19	518.42	2	200	102	0	0	0
X3	10									
GR	1278.6	0.00	1278.66	0.75	1279.64	16.00	1280.04	97.10	1280.27	97.85
GR	1280.2	101.19	1280.88	130.67	1281.01	142.23	1281.41	155.31	1281.49	156.32
GR	1281.4	157.65	1281.23	164.46	1281.00	172.54	1280.38	195.52	1280.29	199.05
GR	1280.2	202.88	1280.00	211.02	1279.47	219.65	1279.00	229.31	1278.30	237.19
GR	1278.0	239.94	1277.28	243.86	1277.00	245.39	1276.45	248.26	1276.00	250.63
GR	1275.3	283.60	1275.00	297.43	1274.51	312.10	1274.00	328.05	1273.96	332.75
GR	1273.7	367.27	1273.62	383.23	1273.89	413.37	1273.94	421.19	1273.95	423.20
GR	1274.0	429.26	1274.00	432.52	1274.02	435.53	1274.04	439.11	1274.19	469.79
GR	1274.2	470.92	1274.39	484.21	1274.52	486.13	1274.54	486.69	1274.43	494.96
GR	1274.4	495.08	1274.43	495.18	1274.44	495.66	1274.46	496.26	1274.50	498.18
GR	1274.8	506.36	1275.00	511.61	1275.00	511.61	1275.26	517.35	1275.24	518.42
GR	1275.2	518.58	1275.28	537.91	1275.25	540.09	1275.50	546.69	1275.53	550.94
GR	1275.5	554.61	1275.44	555.11	1275.00	564.90	1274.83	579.34	1274.78	584.00
GR	1275.0	591.75	1274.98	598.68	1275.00	599.04	1275.07	600.12	1275.09	601.03
GR	1275.1	604.68	1275.13	611.94	1275.12	614.89	1275.10	617.99	1275.00	625.10
GR	1274.9	635.20	1274.84	635.78	1274.83	637.79	1275.00	639.74	1275.25	642.66
GR	1275.4	643.94	1275.38	644.09	1275.49	646.37	1275.49	646.57	1275.47	649.20
GR	1275.6	650.77	1275.60	651.14	1275.55	658.29	1276.00	666.21	1275.67	677.40
GR	1275.7	677.45	1275.68	678.06	1275.70	678.88	1275.71	679.23	1275.71	680.27
GR	1275.8	688.92	1276.00	694.00	1276.28	700.69	1276.29	701.80	1275.2	782.11

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MISC XC

NC	0.055	0.07	0.03	0.2	0.4					
X1	40	100	268.63	634	124	199	127	0	0	0
X3	10									
GR	1280.3	200.34	1280.28	201.99	1280.86	228.81	1280.92	229.66	1281.00	230.70
GR	1281.4	242.86	1281.57	248.32	1281.62	268.63	1281.54	271.52	1281.41	276.04
GR	1281.2	284.14	1281.00	290.14	1280.38	314.39	1280.33	316.34	1280.00	330.89
GR	1279.4	340.85	1279.00	346.60	1278.27	353.70	1278.00	355.87	1277.37	362.53
GR	1277.0	366.37	1276.22	374.53	1276.10	381.69	1276.07	382.12	1276.06	382.64
GR	1276.0	385.37	1275.79	399.40	1275.74	400.68	1275.74	401.06	1275.58	410.75
GR	1275.5	416.40	1275.58	431.43	1275.57	432.28	1275.62	434.52	1275.55	436.56
GR	1275.0	460.56	1274.96	462.72	1274.95	464.86	1274.94	467.01	1274.92	468.48
GR	1274.7	474.26	1274.60	477.43	1274.51	479.30	1274.38	481.92	1274.31	483.17
GR	1274.3	484.04	1274.12	488.23	1274.00	491.15	1273.93	492.80	1273.82	495.09
GR	1273.8	496.04	1273.75	497.92	1273.74	498.67	1273.75	498.98	1273.80	503.42

GR	1273.8	506.03	1273.84	508.82	1273.94	517.61	1274.00	523.12	1274.36	537.47
GR	1274.4	554.34	1274.44	561.49	1274.97	574.90	1275.00	575.20	1275.08	575.82
GR	1276.0	584.61	1276.51	588.90	1277.00	593.01	1277.32	595.68	1278.00	601.40
GR	1278.1	602.56	1278.37	604.50	1279.00	609.80	1279.60	614.82	1280.00	618.20
GR	1280.2	619.88	1280.38	621.27	1280.67	623.61	1281.00	626.01	1281.33	632.46
GR	1281.3	632.95	1281.36	633.47	1281.37	634.00	1281.37	634.81	1281.37	635.53
GR	1281.3	647.96	1281.33	653.03	1281.34	658.44	1281.28	670.78	1281.29	675.33
GR	1281.2	688.90	1281.22	692.32	1281.12	707.60	1281.10	709.56	1281.08	710.47
GR	1281.0	712.13	1280.89	714.29	1280.85	715.14	1280.80	716.47	1280.68	718.85

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22 FEET DS OF 14th ST CULVERTS

NC	0.045	0.055	0.03							
X1	41	85	119.89	218.55	399	405	392	0	0	0
X3	10									
GR	1279.2	0.00	1279.15	2.64	1279.12	3.18	1279.00	6.63	1278.50	20.15
GR	1278.5	20.23	1278.45	23.47	1278.27	28.77	1278.27	29.53	1278.27	29.60
GR	1278.3	30.50	1278.31	30.97	1278.39	34.11	1278.08	40.40	1278.12	47.43
GR	1278.2	50.01	1278.15	72.50	1278.39	89.85	1278.38	90.94	1278.39	91.86
GR	1278.4	92.49	1278.40	93.09	1278.38	95.21	1278.37	96.25	1278.32	99.95
GR	1278.3	102.33	1278.00	119.89	1277.94	124.54	1277.20	140.19	1277.00	142.03
GR	1276.5	146.07	1276.00	150.23	1275.09	158.20	1275.00	158.94	1274.99	159.03
GR	1274.7	162.69	1274.69	162.81	1274.69	162.97	1274.69	163.19	1274.75	167.02
GR	1274.8	170.03	1274.64	178.70	1274.78	180.77	1275.00	183.98	1275.00	184.01
GR	1275.0	184.02	1275.02	184.27	1275.93	196.97	1275.95	197.25	1276.00	197.79
GR	1276.2	200.36	1277.00	208.99	1277.20	211.74	1277.50	214.60	1277.85	218.55
GR	1277.9	218.65	1277.86	218.75	1278.00	220.20	1278.06	220.87	1278.17	223.77
GR	1278.2	224.31	1278.28	229.84	1278.18	238.26	1278.13	242.92	1278.10	248.85
GR	1278.0	256.58	1278.00	257.16	1277.99	257.31	1277.89	258.29	1277.05	267.31
GR	1277.0	268.68	1276.88	271.43	1276.95	276.00	1277.00	276.76	1277.19	279.24
GR	1278.0	287.80	1278.36	291.57	1279.00	298.37	1279.98	348.66	1279.99	348.83
GR	1280.0	349.13	1279.99	349.28	1280.00	349.47	1280.00	349.72	1280.01	349.94

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DS FACE OF 14th ST CULVERTS

NC	0.045	0.045	0.03	0.4	0.6					
X1	42	9	118.36	176.6	25	25	22	0	0	0
X3	10	0	0	148	1278	152	1278			
GR	1279.8	0	1278	118.36	1275.16	133.02	1272.86	150.18	1275.06	154.9
GR	1274.6	165.16	1276.94	176.6	1277.83	192.02	1278.14	239.66		

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SC	1.012	0.5	3	140	2	0	16.6	1.3	1273.65	1272.86

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US FACE OF 14th ST CULVERTS

X1	43	10	81.21	220.82	17	17	17	0	0	0
X2			2		1277.11					
X3	10	0	0	148.5	1278	151.5	1278			
GR	1279.8	0	1277.11	81.21	1276.34	82.18	1275.25	112.34	1273.61	134.25
GR	1273.6	150.18	1275.17	182.11	1277.47	191.03	1280.94	220.82	1279.99	227.91

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MISC XC

X1	44	30	85.79	227.65	124	20	62			
X3	10									
GR	1279.1	0	1278.5	27.44	1278.33	35.08	1277.43	60.68	1277	69.19
GR	1276.6	78	1276.28	85.79	1276	92.16	1275.01	114.38	1274.99	126.35
GR	1274.9	140.26	1274.9	140.26	1274.71	153.81	1274.55	166.13	1274.73	191.46
GR	1275	200.55	1275.68	204.76	1276	206.78	1276.5	209.91	1277	213
GR	1277.7	217.57	1278.39	221.63	1279	225.42	1279.4	227.65	1280.11	246.31
GR	1280.1	248.19	1279.78	249.77	1279	253.74	1278.64	255.96	1278.8	272.49

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124 FEET US OF 14th ST CULVERTS

NC	0.08	0.08	0.1							
X1	45	59	128.35	296.11	62	58	62	0	0	0
X3	10									
GR	1279.8	0.00	1279.53	16.92	1279.44	23.88	1279.39	27.85	1279.36	30.41
GR	1279.4	31.17	1279.38	31.68	1279.47	33.50	1279.68	38.58	1279.74	40.15
GR	1280.0	48.05	1280.39	58.18	1280.41	58.64	1280.55	61.79	1280.53	62.80
GR	1280.6	64.82	1280.87	69.60	1280.56	84.35	1280.53	86.09	1280.49	87.86
GR	1280.5	89.57	1280.00	108.72	1279.01	113.59	1279.00	113.62	1278.25	117.30
GR	1278.0	118.53	1277.98	119.13	1277.00	123.44	1276.02	128.25	1276.00	128.35
GR	1276.0	128.62	1275.00	134.37	1274.98	135.18	1274.97	135.74	1275.00	165.31
GR	1275.0	165.96	1275.00	166.03	1275.01	166.12	1275.07	169.99	1275.12	177.68
GR	1275.0	187.82	1274.95	192.56	1274.89	197.10	1274.80	214.50	1274.88	215.87
GR	1275.0	218.17	1275.24	222.46	1276.00	235.53	1276.45	241.80	1277.00	249.77
GR	1277.5	257.01	1277.70	259.83	1278.00	265.60	1278.90	293.38	1279.00	296.11
GR	1279.2	301.84	1279.45	308.26	1279.60	320.62	1279.88	351.08		

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MISC XC

X1	46	35	92.51	366.72	114	280	164			
X3	10									
GR	1280	0	1279.76	35.3	1279.88	42.18	1279	63.67	1278.43	78.23
GR	1278.1	92.51	1277.72	121.99	1277	131.25	1276.12	141.88	1275.93	143.97
GR	1275.3	151.91	1275	156.31	1275	170.27	1275.24	179.35	1274.89	192.55
GR	1279.3	199.67	1275.59	224.73	1275.7	236.3	1275.81	254.56	1276	281.71
GR	1276.2	294.59	1277	364.76	1277.9	365	1278.21	366.72	1278	381.59
GR	1278.4	412.29	1278.5	423.51	1278.48	438.56	1278.53	447.84	1279.05	483.41
GR	1279.1	489.66	1279.1	494.2	1279.14	495.45	1279.57	514.46	1279.77	525.83

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FLOWS FROM JUNCTION JO HEC-1

CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT	5	117	147	187	218	255

MISC XC

X1	47	100	179.76	549.17	159	238	164	0	0	0
X3	10									
GR	1280.5	0.00	1280.21	25.34	1279.89	48.36	1280.00	62.15	1280.07	70.91
GR	1280.0	96.20	1280.00	96.89	1279.97	100.07	1279.96	101.11	1279.96	101.20
GR	1279.9	102.57	1279.62	135.15	1279.01	178.72	1279.01	179.68	1279.00	179.76
GR	1278.7	181.78	1278.46	183.93	1278.00	187.58	1277.31	193.07	1277.00	195.50
GR	1276.4	201.28	1276.10	204.47	1276.00	206.33	1276.85	218.48	1276.77	219.76
GR	1276.8	220.66	1276.56	224.09	1276.47	226.00	1276.23	229.93	1276.16	231.00
GR	1276.2	232.82	1276.56	233.62	1276.56	233.62	1276.58	234.55	1276.55	236.14

GR	1276.3	244.58	1276.00	253.58	1275.99	259.57	1276.00	266.82	1276.00	268.11
GR	1276.0	268.68	1276.00	271.89	1276.00	276.30	1276.00	280.98	1275.99	289.73
GR	1276.0	297.03	1275.99	312.00	1275.99	316.23	1275.99	319.22	1276.00	320.46
GR	1276.1	331.61	1276.36	359.28	1276.22	379.81	1276.34	385.20	1276.24	387.56
GR	1276.2	402.06	1276.02	414.33	1276.00	414.49	1275.79	416.41	1275.25	426.17
GR	1275.6	429.95	1275.68	431.30	1276.00	433.47	1276.35	435.85	1276.37	436.02
GR	1276.4	436.08	1276.25	457.93	1276.46	465.49	1276.59	476.42	1276.76	489.52
GR	1276.9	492.13	1276.94	503.95	1276.90	510.06	1277.00	511.03	1277.29	514.62
GR	1277.5	519.10	1277.55	520.96	1277.60	522.34	1277.64	523.45	1277.81	528.76
GR	1278.0	535.72	1278.04	537.35	1278.17	541.73	1278.26	544.59	1278.39	548.77
GR	1278.4	549.17	1278.76	555.73	1278.85	557.28	1279.00	559.42	1279.28	563.24
GR	1279.3	563.25	1279.31	564.77	1279.33	566.77	1279.33	567.25	1279.32	569.39
GR	1279.2	582.04	1279.15	586.09	1279.09	598.57	1279.15	600.40	1279.98	628.88

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MISC XC

NC	0.08	0.08	0.1	0.4	0.8					
X1	48	75	130.01	211	247	158	219	0	0	0
X3	10									
GR	1280.1	0.00	1280.02	4.70	1280.00	5.39	1279.64	21.34	1279.28	37.46
GR	1279.1	44.03	1279.00	49.79	1278.58	69.23	1278.48	73.15	1278.31	80.77
GR	1278.2	86.63	1278.09	90.93	1278.00	95.35	1277.99	95.79	1277.95	97.19
GR	1277.3	118.16	1277.00	130.01	1276.31	147.21	1276.00	155.37	1275.92	156.72
GR	1275.7	160.29	1275.88	178.06	1276.00	180.31	1276.92	189.15	1277.00	189.91
GR	1277.0	190.13	1277.17	191.72	1277.89	199.26	1278.00	200.38	1278.75	208.34
GR	1279.0	211.00	1279.25	213.67	1279.38	218.68	1279.00	219.18	1278.79	219.68
GR	1278.8	219.93	1278.77	221.22	1279.00	222.86	1279.00	225.66	1279.00	230.26
GR	1279.0	231.73	1279.00	235.98	1279.00	251.99	1279.10	254.83	1279.12	256.05
GR	1279.1	257.75	1279.12	258.62	1279.09	270.90	1279.00	285.46	1279.11	289.81
GR	1279.1	296.64	1279.09	297.09	1279.10	305.71	1279.08	309.29	1279.02	311.37
GR	1279.0	311.84	1278.88	313.64	1278.85	314.34	1278.52	320.97	1278.00	330.83
GR	1277.7	336.29	1277.00	345.30	1276.80	346.87	1276.00	353.64	1275.30	366.36
GR	1275.3	367.26	1275.21	370.27	1275.22	370.40	1275.23	370.59	1275.26	371.02
GR	1275.3	372.16	1276.00	380.50	1276.06	381.40	1276.38	407.02	1276.74	431.65

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96 FEET DS OF 13th STREET DAM

X1	49	48	97.18	323.1	113	284	180	0	0	0
X3	10									
GR	1280.3	0.00	1280.35	18.48	1280.26	40.85	1280.00	52.42	1280.00	52.53
GR	1280.0	53.83	1279.95	54.96	1279.47	76.19	1279.06	94.48	1279.01	96.58
GR	1279.0	97.07	1279.00	97.18	1278.91	102.28	1278.25	138.95	1278.19	141.95
GR	1278.1	145.64	1278.18	146.46	1278.08	149.98	1278.00	152.78	1277.63	165.84
GR	1277.4	173.66	1277.31	175.68	1277.22	178.53	1277.06	182.26	1277.04	182.92
GR	1277.0	183.31	1276.92	183.96	1276.00	192.67	1276.00	207.84	1276.00	209.28
GR	1276.3	221.09	1276.33	229.01	1276.81	261.29	1276.94	282.28	1277.00	290.78
GR	1277.0	291.45	1277.07	292.51	1277.52	302.09	1277.93	311.15	1278.00	312.36
GR	1278.2	314.15	1278.92	323.10	1279.00	326.61	1279.09	330.68	1279.46	347.75
GR	1279.6	379.23	1279.61	390.14	1279.61	437.96				

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46 feet DS of 13th Street Dam

```
NC     0.08       0.08       0.1
X1       50         13      69.59     210.99        62         18         45          0          0          0
X3       10
GR   1278.6          0    1278.56      41.13   1279.53      69.59    1275.82      85.08    1275.41      93.75
GR   1275.9     100.49     1276.1      106.6   1277.15     116.86    1276.92      160.2     1277.1     193.96
GR   1278.6     210.99    1279.56     256.71   1279.74     376.29
         **************
         Top 13th Street Dam

NC     0.08       0.08       0.1        0.1        0.3
X1       51          9      27.44         71         53         62         46          0          0          0
X3       10
GR   1280.8          0    1278.56      20.23   1278.87       24.9    1278.06      27.44    1276.39      47.28
GR   1277.9      55.49    1278.47         71   1280.35     131.26    1280.42     144.29
         **************
         24 feet US of 13th Street Dam

X1       52          8      26.47     132.15         24         24         24          0          0          0
X3       10
GR   1280.1          0    1279.97      26.47   1276.24      53.66    1275.67       77.9    1276.27      93.56
GR   1279.3     132.15    1280.35     221.82   1279.48     327.98
         **************
         100 FEET US OF 13th Street Dam

NC     0.08       0.08       0.1
X1       53         44     161.76      343.9        103        132        100          0          0          0
X3       10
GR   1281.0       0.00    1280.50      34.44   1280.55      45.05    1280.56      47.30    1280.55      47.87
GR   1280.5      58.88    1280.74     100.57   1280.26     138.57    1280.01     160.70    1280.00     161.02
GR   1280.0     161.76    1279.98     164.70   1279.97     168.58    1279.89     174.83    1279.85     179.41
GR   1279.3     200.35    1279.00     214.88   1278.49     222.62    1278.31     225.38    1278.00     229.77
GR   1277.2     237.50    1277.00     238.81   1276.51     245.83    1276.00     253.24    1275.93     255.48
GR   1275.9     266.08    1276.00     268.69   1276.06     270.88    1276.62     292.22    1277.00     305.88
GR   1277.7     314.88    1278.00     318.61   1278.17     320.44    1278.95     328.92    1278.99     329.37
GR   1279.0     329.46    1279.03     329.81   1280.00     340.32    1280.19     342.34    1280.23     343.21
GR   1280.3     343.90    1280.19     375.00   1280.14     386.81    1280.04     404.44
         **************
         24 FEET DS OF BIRDGE #1

NC     0.04       0.04      0.045
X1       54         10        110        170        542        435        553          0          0          0
X3       10
GR   1280.8          0     1278.4      57.76   1279.66        110     1277.6     125.35    1277.55        137
GR   1277.6     154.65    1279.74        170       1280     207.72    1280.05        262    1279.91        277
         **************
         DS FACE OF BRIDGE #1

NC     0.04       0.04      0.045        0.1        0.3
X1       55         10     125.31     153.77         43         20         24          0          0          0
X3       10
GR   1280.8          0     1278.4      57.76   1279.66     125.31     1277.6     125.35    1277.55        137
GR   1277.6     148.65    1279.74     153.77       1280     207.72    1280.05        262    1279.91        277
         **************
```

SB	0	1	3	23	28.46	0	31.59	0	1277.55	1277.55
	**********									
	US FACE OF BRIDGE #1									
X1	56	0			10	10	10	0	0	0
X2	0	0	1	1279	1279.66					
X3	10									
	**********									
	52 FEET US OF BRIDGE #1									
NC	0.04	0.04	0.045							
X1	57	44	107.43	140.84	57	49	52	0	0	0
X3	10									
GR	1279.7	0.00	1279.53	5.51	1279.00	21.49	1279.00	21.53	1279.00	21.55
GR	1278.4	70.14	1278.17	84.35	1278.09	94.55	1278.08	105.45	1278.00	107.43
GR	1277.1	123.84	1277.03	125.90	1277.11	126.71	1277.16	127.27	1277.39	129.55
GR	1278.0	135.26	1278.54	140.84	1278.54	140.84	1278.54	140.84	1278.54	140.84
GR	1279.0	149.59	1279.00	149.64	1279.04	150.39	1279.94	167.55	1280.00	168.61
GR	1280.2	219.70	1280.27	234.31	1280.30	240.95	1280.30	242.24	1280.30	242.32
GR	1280.3	243.45	1280.30	244.54	1280.31	244.61	1280.32	248.27	1280.33	250.04
GR	1280.3	253.10	1280.33	253.32	1280.33	253.41	1280.34	253.86	1280.34	254.22
GR	1280.3	254.40	1280.34	255.38	1280.35	256.99	1280.36	266.92		
	**********									
	48 FEET DS OF 18" CULVERT									
X1	58	49	144.97	301.04	126	141	124	0	0	0
X3	10									
GR	1281.0	0.00	1281.03	3.07	1281.04	9.21	1281.02	33.38	1281.00	40.20
GR	1280.8	55.23	1280.68	69.38	1280.58	75.05	1280.19	102.61	1280.16	104.92
GR	1280.0	115.75	1279.12	127.78	1279.00	129.45	1278.01	144.32	1278.00	144.39
GR	1278.0	144.41	1278.00	144.97	1278.00	178.90	1278.16	185.73	1278.22	188.13
GR	1278.3	201.20	1278.42	217.62	1278.42	217.96	1278.42	218.66	1278.42	218.82
GR	1278.4	219.37	1278.44	220.35	1278.46	223.56	1278.52	266.80	1278.53	267.27
GR	1278.5	267.30	1278.56	267.96	1278.75	272.44	1279.00	278.09	1279.55	290.62
GR	1280.0	301.04	1280.84	319.67	1281.00	323.33	1281.09	325.31	1281.11	325.93
GR	1281.2	328.00	1281.30	343.52	1281.32	347.08	1281.35	350.07	1281.36	352.61
GR	1281.4	354.80	1281.45	363.74	1281.46	369.77	1281.50	377.59		
	**********									
	DS FACE OF 18" CULVERT									
NC	0.04	0.04	0.045	0.1	0.4					
X1	59	10	101.5	114.5	58	60	48	0	0	0
X3	10	0	0	106	1279.4	110	1279.4			
GR	1278.5	0	1279.26	16	1279.26	101.5	1277.53	103	1277.48	108
GR	1277.5	113	1279.26	114.5	1280.38	160	1280.85	239.05	1281.16	326.65
	**********									
SC	1.012	0.5	3	33	1.5	0	11	1.3	1277.59	1277.48
	**********									
	US FACE OF 18" CULVERT									

X1	60	0			11	11	11	0	0.11	0
X2			2		1279.26					
X3	10	0	0	106	1279.5	110	1279.5			
	**********									
	76 FEET US OF 18" CULVERT									
NC	0.04	0.04	0.02							
X1	61	60	108.52	211.25	76	77	76	0	0	0
X3	10									
GR	1280.7	0.00	1280.61	4.00	1280.48	10.92	1280.35	17.14	1280.12	28.86
GR	1280.1	30.43	1280.00	34.85	1279.58	55.87	1279.44	62.75	1279.13	81.44
GR	1279.1	83.30	1279.00	89.19	1278.69	107.16	1278.66	108.52	1278.10	122.19
GR	1278.1	122.44	1278.05	125.42	1278.06	126.63	1278.00	136.32	1278.08	146.42
GR	1278.0	150.72	1277.95	151.45	1277.90	151.99	1277.87	152.28	1277.86	152.45
GR	1277.9	152.91	1277.87	153.38	1277.88	153.79	1277.92	154.52	1278.00	156.03
GR	1278.0	157.36	1278.00	163.66	1278.03	198.74	1278.03	198.79	1278.15	201.65
GR	1278.0	203.26	1277.93	204.06	1277.93	204.07	1277.92	205.11	1278.00	206.02
GR	1278.5	211.25	1279.00	216.79	1279.90	226.49	1279.92	226.77	1279.92	226.94
GR	1279.9	227.08	1280.00	227.91	1280.02	228.19	1280.04	229.30	1280.06	229.52
GR	1280.2	230.77	1280.17	230.81	1280.17	230.84	1280.17	230.87	1280.74	235.36
GR	1281.0	237.47	1281.12	238.44	1281.07	253.90	1281.14	267.75	1281.16	273.31
	**********									
	MISC XC									
X1	62	30	101.01	157.36	76	58	133			
X3	10									
GR	1280.7	0	1280.55	11.93	1280.38	29.07	1280.21	45.19	1280.2	62.24
GR	1280	65.58	1279.28	80.51	1279.14	84.1	1279	88.54	1278.73	96.66
GR	1278.6	99.18	1278.6	101.01	1278.39	107.4	1278	118.94	1277.96	123.21
GR	1277.7	129.27	1277.6	132.09	1277.49	135.09	1277.44	138.17	1277.53	140.55
GR	1277.8	148	1278	154.01	1278.19	157.36	1278.2	189.15	1278.22	192.67
GR	1278.3	196.8	1279	227.38	1279.68	233.58	1280.6	241.38	1281.15	278.7
	**********									
	MISC XC									
NC	0.04	0.04	0.045							
X1	63	30	168.64	293.2	141	115	133	0	0	0
X3	10									
GR	1280.8	0.00	1280.41	105.23	1280.47	106.46	1280.53	108.80	1280.62	111.86
GR	1280.7	116.04	1280.62	118.59	1280.64	119.18	1280.35	125.05	1280.37	126.79
GR	1280.3	129.14	1280.00	132.52	1279.63	146.40	1279.00	168.64	1278.61	176.41
GR	1278.0	187.70	1277.98	188.02	1277.90	189.06	1277.89	211.87	1277.95	213.36
GR	1278.0	214.41	1278.69	249.20	1279.00	264.14	1279.39	274.70	1280.00	293.20
GR	1280.6	339.28	1281.00	364.13	1281.00	364.54	1281.08	372.92	1281.09	373.98
	**********									
	38 FEET DS OF BRIDGE #2									
X1	64	63	192.94	232.26	176	215	194	0	0	0
X3	10									
GR	1281.1	0.00	1281.13	3.48	1281.11	7.19	1281.08	12.40	1281.06	15.43
GR	1281.0	22.88	1280.88	31.59	1280.82	35.16	1280.66	45.01	1280.27	69.39
GR	1280.0	85.36	1279.73	94.18	1279.00	114.88	1278.96	115.91	1278.90	117.45
GR	1278.9	118.36	1278.84	119.63	1278.84	120.27	1278.83	123.09	1278.82	125.52
GR	1278.8	126.28	1278.82	131.94	1278.84	142.12	1278.86	143.88	1278.90	146.68

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GR   1279.0     151.41    1279.00     154.22    1279.17     160.15    1279.38     192.94    1279.21     195.21
GR   1279.0     197.15    1278.73     199.81    1278.00     205.25    1277.97     206.03    1277.83     209.30
GR   1277.8     211.32    1277.69     213.74    1277.75     215.33    1277.84     216.30    1277.99     217.87
GR   1278.0     217.99    1278.96     232.26    1279.00     232.85    1279.09     235.77    1279.71     256.36
GR   1280.0     270.29    1280.82     305.22    1280.95     309.90    1280.96     310.21    1280.96     310.66
GR   1280.8     319.52    1280.75     325.58    1280.54     341.78    1280.44     350.35    1280.39     355.56
GR   1280.1     391.63    1280.09     392.60    1280.32     408.65    1280.34     410.05    1280.36     411.60
GR   1280.4     411.87    1280.40     412.86    1280.56     415.22
     **************
     DS FACE OF BRIDGE #2

NC     0.04       0.04       0.045       0.1       0.3
X1       65          9      126.36      156.01        43          36        38          0         0           0
X3       10
GR   1280.7          0    1279.06       40.16    1279.92      126.36      1278      126.4    1277.9      140.04
GR     1278        156    1279.26      156.01    1280.95      191.04   1281.16     240.04
     **************

SB        0          1           3          29      28.46           0     31.59          0    1277.9      1277.9
     **************
     US FACE OF BRIDGE #2
X1       66          0                                  8           8         8          0         0           0
X2        0          0           1    1278.64    1279.26
X3       10
     **************
     172 FEET US OF BRIDGE #2

NC     0.06       0.06       0.08
X1       67         38      47.46       127.8       195         175       172          0         0           0
X3       10
GR   1280.9       0.00    1280.91        3.09    1280.81       47.21   1280.81      47.34   1280.81      47.39
GR   1280.8      47.40    1280.80       47.46    1280.00       67.63   1279.37      82.22   1279.00      90.71
GR   1278.9      93.38    1278.98      120.81    1279.00      121.58   1279.07     122.36   1279.21     124.70
GR   1279.3     127.80    1279.06      136.83    1279.06      137.03   1279.07     140.19   1279.06     140.26
GR   1279.0     142.14    1279.10      147.83    1279.22      154.36   1279.21     182.49   1279.50     202.86
GR   1279.6     206.23    1280.00      219.09    1280.03      220.08   1280.07     221.32   1281.00     251.04
GR   1281.3     262.93    1281.38      267.23    1281.39      272.75   1281.35     331.80   1281.37     333.02
GR   1281.4     333.52    1281.46      334.92    1281.49      348.62
     **************
     MISC XC

X1       68         25      130.62      172.74       139         215       162
X3       10
GR   1281.6          0    1281.53       20.39    1281.48       31.09   1281.64      39.76   1281.35      58.24
GR   1281.3      61.55    1281.24       62.49    1281.19       66.18      1281      84.42   1280.61     107.99
GR   1280.3     119.29    1280.23      123.46    1280.15      128.93      1280     130.62   1279.31     134.71
GR     1279     141.15       1279      159.09    1279.63      167.49      1280     172.74   1279.92     176.06
GR   1279.2     194.51     1279.4      208.43    1279.47      216.45    1279.8      243.3   1279.85     245.71
     **************
     57 FEET DS OF 9th ST CULVERTS
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NC	0.06	0.06	0.08							
X1	69	58	19.43	115.84	157	202	161	0	0	0
X3	10									
GR	1282.1	0.00	1282.00	1.73	1281.67	4.70	1281.00	10.79	1280.02	19.27
GR	1280.0	19.43	1279.75	21.38	1279.63	22.35	1279.56	22.93	1279.53	31.19
GR	1279.6	32.47	1279.83	36.76	1280.00	41.13	1280.00	41.24	1280.09	43.95
GR	1280.1	46.02	1280.06	47.81	1280.00	51.16	1279.15	72.82	1279.15	75.42
GR	1279.2	75.53	1279.00	77.02	1278.80	79.17	1278.00	86.59	1277.89	86.72
GR	1278.0	88.96	1278.00	89.01	1278.02	89.24	1279.00	107.40	1279.70	113.32
GR	1280.0	115.84	1280.05	116.25	1280.05	116.44	1280.05	116.75	1280.05	117.06
GR	1280.0	120.43	1280.14	140.71	1280.03	154.12	1280.01	156.23	1280.02	162.20
GR	1280.0	163.16	1280.03	163.19	1280.03	163.20	1280.03	163.22	1280.11	171.25
GR	1280.1	171.30	1280.15	178.59	1280.17	197.39	1280.16	198.10	1280.16	198.48
GR	1280.1	199.68	1280.17	204.67	1280.21	215.28	1280.27	228.99	1280.30	235.23
GR	1280.4	249.71	1280.41	265.48	1280.42	267.27				

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DS FACE OF 9TH ST. CULVERTS

NC	0.035	0.035	0.032	0.1	0.3					
X1	70	11	231.52	285.05	89	.45	57	0	0	0
X3	10	0	0	246	1282	260	1282			
GR	1283.3	0	1282.76	102.85	1282.34	208.51	1279.01	231.52	1278.82	241.31
GR	1278	248.13	1277.72	260.09	1277.28	263.75	1279.9	285.05	1282.22	393.64
GR	1282.5	493.62								

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SC	2.024	0.5	3	43	4	0	51	2.3	1277.94	1277.72

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FLOWS FROM JUNCTION JZ HEC-1

CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT	5	107	134	170	197	230				

US FACE OF 9TH ST. CULVERTS

X1	71	13	212	632	51	51	51	0	0	0
X2			2		1282.5					
X3	10	0	0	248	1282	262	1282			
GR	1283.7	0	1283.21	106	1282.87	212	1278.03	250	1278.05	258.92
GR	1277.9	260.44	1287.26	295.07	1279.86	393	1279.9	419	1279.89	482
GR	1279.8	631	1282.65	632	1282.86	763				

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98 FEET US OF 9TH ST. CULVERTS

NC	0.045	0.045	0.045							
X1	72	45	31.67	131.32	106	90	98	0	0	0
X3	10									
GR	1281	0	1281	5.38	1281.12	31.67	1281	40.96	1280.9	48.11
GR	1280.8	55.81	1280.43	64.53	1280.33	69.2	1280.28	72.08	1280	79.33
GR	1280.0	79.81	1280	80.01	1279.97	80.18	1279.26	90.15	1279.7	101.47
GR	1279.7	101.51	1279.67	103.13	1279.65	103.61	1279.65	103.62	1279.7	105.1
GR	1279.9	116.73	1279.86	116.92	1279.94	122.48	1279.95	124.3	1279.9	124.58
GR	1279.9	124.59	1279.91	126.34	1280	130.76	1280.07	131.32	1280.2	138.06
GR	1280.0	138.56	1280	138.59	1279.92	138.84	1279	144.03	1279	147.68
GR	1279	149.08	1279.26	153.51	1280	163.47	1280.89	166.69	1280.9	166.77
GR	1281	166.96	1281.09	167.11	1282	167.84	1282.11	169.42	1282.1	170.18

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304 FEET US OF 9TH ST CULVERTS

NC	0.05	0.04	0.08							
X1	73	66	8.33	149.71	176	223	206	0	0	0
X3	10									
GR	1282.2	0.00	1282.00	3.02	1281.31	6.68	1281.00	8.33	1280.79	9.41
GR	1280.0	13.37	1279.99	13.44	1279.96	13.57	1279.98	16.50	1280.00	17.10
GR	1280.0	17.11	1280.00	17.18	1280.00	20.01	1280.00	20.75	1280.00	20.76
GR	1280.0	20.78	1279.77	25.48	1279.63	28.43	1279.61	29.81	1279.62	30.51
GR	1279.7	30.55	1279.83	30.61	1280.00	30.69	1280.01	30.77	1280.04	33.18
GR	1280.0	36.80	1280.00	37.03	1279.99	37.49	1279.69	45.00	1279.53	48.54
GR	1279.5	49.81	1279.41	50.78	1279.36	51.55	1279.45	69.64	1279.47	69.85
GR	1279.6	75.33	1279.71	83.60	1279.95	97.52	1280.00	100.32	1280.04	101.83
GR	1280.3	109.12	1280.38	113.28	1280.45	115.97	1280.47	117.10	1280.47	119.03
GR	1280.5	120.14	1280.40	121.70	1280.31	123.95	1280.16	127.51	1280.00	131.46
GR	1279.9	134.94	1279.82	136.78	1279.83	139.64	1280.00	149.25	1280.01	149.71
GR	1280.0	150.19	1280.03	150.71	1280.29	163.42	1280.32	165.19	1280.54	175.23
GR	1280.7	183.33	1281.00	195.39	1281.08	198.67	1281.01	202.63	1281.03	213.25
GR	1281.0	235.85								

****
MISC XC

NC	0.045	0.045	0.08							
X1	74	58	101.87	156.75	243	275	251	0	0	0
X3	10									
GR	1282.7	0.00	1282.04	17.02	1282.00	17.21	1281.21	18.19	1281.00	18.44
GR	1280.8	19.34	1280.60	19.90	1280.50	20.27	1280.48	20.41	1280.47	20.63
GR	1280.5	20.75	1280.56	21.10	1280.70	21.61	1280.93	22.47	1281.00	22.72
GR	1281.7	43.57	1281.73	44.35	1281.74	44.93	1281.74	45.09	1281.74	45.23
GR	1281.7	45.27	1281.74	45.31	1281.74	45.34	1281.69	101.87	1281.69	101.87
GR	1281.7	101.87	1281.69	101.87	1281.00	110.14	1280.02	120.67	1280.00	120.89
GR	1279.6	121.90	1279.27	129.53	1279.54	140.47	1279.49	142.65	1279.64	147.29
GR	1280.0	153.16	1280.43	156.75	1280.43	156.75	1280.35	173.87	1280.36	175.41
GR	1280.4	176.93	1280.51	186.62	1280.50	190.81	1280.59	197.77	1280.61	225.86
GR	1280.6	230.15	1280.66	232.21	1280.66	234.23	1280.76	245.36	1280.92	267.59
GR	1280.9	272.78	1280.87	274.39	1280.91	279.79	1280.95	286.48	1281.00	298.17
GR	1281.0	307.45	1281.05	308.33	1281.05	310.43				

****
MISC XC

X1	75	16	68.11	136.5	280	243	250			
X3	10									
GR	1281.2	0	1281	9.63	1281.08	35.12	1280.39	68.11	1280	87.93
GR	1279.8	92.1	1279.73	105.87	1279.97	108.01	1280.86	132.41	1281	136.5
GR	1281.5	163.31	1281.7	174.68	1281.73	184.94	1281.7	190.24	1282.08	201.82
GR	1282.3	217.35								

****
MISC XC

X1	76	45	97.82	203.46	399	400	405	0	0	0
X3	10									
GR	1281.6	0.00	1281.38	51.19	1281.35	59.18	1281.34	61.25	1281.34	61.42
GR	1281.3	62.44	1281.32	64.03	1281.31	64.73	1281.30	65.96	1281.27	68.75
GR	1281.3	70.16	1281.22	73.59	1281.17	78.35	1281.00	95.12	1280.94	97.82
GR	1280.2	109.53	1280.08	112.14	1280.00	113.41	1279.65	119.17	1279.65	119.17
GR	1279.7	119.17	1279.65	119.17	1279.65	119.17	1279.65	119.17	1279.65	119.17
GR	1279.7	119.17	1279.65	119.17	1279.65	119.17	1279.65	119.17	1279.65	119.17
GR	1279.6	119.17	1279.65	119.17	1279.65	119.17	1279.65	119.17	1279.65	119.17
GR	1280.1	130.59	1280.74	167.33	1281.00	182.56	1281.13	189.41	1281.23	195.33
GR	1281.3	199.04	1281.35	201.60	1281.38	203.46	1281.15	239.38	1281.19	253.62

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MISC XC

X1	77	51	88.7	196.94	505	502	525	0	0	0
X3	10									
GR	1281.6	0.00	1281.56	13.38	1281.57	14.78	1281.57	16.39	1281.58	18.26
GR	1281.6	19.90	1281.59	21.71	1281.60	23.75	1281.60	24.17	1281.61	26.04
GR	1281.7	52.62	1281.20	79.51	1281.00	88.70	1280.83	113.29	1280.76	124.83
GR	1280.7	127.73	1280.54	135.49	1280.33	141.44	1280.00	149.54	1279.90	153.59
GR	1279.9	153.59	1279.90	153.59	1279.90	153.59	1279.90	153.59	1279.90	153.59
GR	1280.0	154.05	1280.13	155.64	1280.87	167.67	1281.00	171.06	1281.30	179.56
GR	1281.2	189.76	1281.29	196.94	1281.29	212.22	1281.25	213.87	1281.14	217.55
GR	1281.0	222.78	1280.96	224.29	1280.93	225.45	1280.91	225.99	1280.91	226.16
GR	1280.9	226.67	1280.93	227.13	1280.96	228.16	1281.00	229.23	1281.13	233.03
GR	1281.3	237.45	1281.36	239.74	1281.49	252.48	1281.14	265.97	1281.09	284.19
GR	1281.1	287.90								

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MISC XC

X1	78	49	76.31	134.87	551	515	538	0	0	0
X3	10									
GR	1281.3	0.00	1281.66	42.95	1281.79	62.22	1281.70	65.46	1281.59	67.04
GR	1281.5	68.36	1281.25	71.68	1281.00	75.37	1280.92	76.31	1280.92	76.31
GR	1280.9	76.31	1280.92	76.31	1280.92	76.31	1280.22	99.48	1280.19	100.45
GR	1280.2	101.36	1280.15	101.59	1280.53	114.71	1280.61	118.25	1281.00	126.59
GR	1281.6	134.87	1281.64	134.87	1281.64	134.87	1281.64	134.87	1281.64	134.87
GR	1281.6	158.26	1281.65	160.28	1281.65	160.44	1281.65	160.61	1281.66	160.76
GR	1281.7	160.91	1281.66	161.04	1281.97	182.58	1282.00	184.52	1282.40	212.21
GR	1282.4	212.89	1282.42	213.12	1282.42	213.21	1282.42	213.26	1282.42	213.28
GR	1282.4	213.29	1282.42	213.30	1282.42	213.33	1282.42	213.40	1282.42	213.43
GR	1282.4	213.46	1282.42	213.57	1282.41	213.96	1282.05	240.25		

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30 FEET DS OF Y BY 6TH ST

X1	79	23	176.87	222.51	531	504	513	0	0	0
X3	10									
GR	1282.0	0.00	1282.02	8.85	1282.12	49.01	1282.17	70.61	1282.12	149.31
GR	1282.1	151.17	1282.00	153.37	1281.03	176.15	1281.00	176.83	1281.00	176.87
GR	1280.9	179.47	1280.77	201.54	1280.93	203.80	1281.00	204.73	1281.64	222.51
GR	1282.0	233.81	1282.40	253.59	1282.50	258.19	1282.60	262.66	1282.71	295.18
GR	1282.8	321.13	1282.81	348.61	1282.84	382.92				

****

200 FT US OF Y BY 6TH ST

NC	0.045	0.045	0.08	0.4						
X1	80	30	136.6	231.46	222	243	234	0	0	0
X3	10									
GR	1282.2	0.00	1282.16	3.07	1282.20	36.75	1282.20	45.15	1282.19	113.39
GR	1282.2	114.55	1282.21	116.71	1282.22	136.60	1282.13	189.79	1282.09	190.36
GR	1282.0	191.78	1281.44	197.74	1281.33	198.99	1281.09	206.61	1281.07	208.04
GR	1281.1	208.07	1281.84	227.22	1281.99	230.84	1282.00	231.44	1282.00	231.46
GR	1282.4	263.08	1282.45	269.13	1282.52	275.69	1282.53	276.69	1282.54	277.10
GR	1282.6	278.06	1282.56	278.12	1282.54	279.59	1282.35	315.77	1282.41	320.27

****

FLOWS FROM JUNCTION JM HEC-1

CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT	5	19	25	32	37	44

****

MISC XC

X1	81	15	236.39	291.71	128	85	84			
X3	10									
GR	1282.3	0	1282.27	28.17	1282.35	87.06	1282.4	144.88	1282	173.64
GR	1281.9	177.7	1281.66	236.39	1281.2	246.17	1281.86	261.76	1281.9	269.22
GR	1282	291.71	1282.23	299.07	1283	319.53	1283.63	336.16	1283.3	369.86

****

384 FT US OF Y BY 6TH ST

NC	0.045	0.045	0.08							
X1	82	71	95.64	344.05	59	158	100	0	0	0
X3	10									
GR	1282.2	0.00	1282.27	34.39	1282.27	38.98	1282.27	39.06	1282.28	43.56
GR	1282.3	45.62	1282.28	46.81	1282.28	47.57	1282.29	48.11	1282.29	48.51
GR	1282.3	48.82	1282.29	48.90	1282.29	48.93	1282.29	49.06	1282.29	49.17
GR	1282.3	49.44	1282.29	49.70	1282.29	49.96	1282.29	50.20	1282.29	50.44
GR	1282.3	50.67	1282.29	50.89	1282.29	51.11	1282.29	51.32	1282.29	51.52
GR	1282.3	54.37	1282.62	95.64	1282.61	100.18	1282.53	135.10	1282.58	161.68
GR	1282.3	183.52	1282.09	207.69	1282.09	208.52	1282.09	208.93	1282.09	210.59
GR	1282.1	211.83	1282.09	212.25	1282.09	219.38	1282.08	222.92	1282.07	226.13
GR	1282.1	238.26	1282.04	242.73	1282.00	244.34	1281.64	261.97	1281.64	261.97
GR	1281.6	261.97	1281.64	261.97	1281.64	261.97	1281.64	261.97	1281.64	261.97
GR	1281.6	261.97	1281.64	261.97	1281.64	261.97	1281.64	261.97	1281.64	261.97
GR	1281.6	261.97	1282.00	294.11	1282.00	294.92	1282.01	297.34	1282.02	300.30
GR	1282.0	309.74	1282.38	344.05	1282.49	350.91	1282.71	365.79	1282.94	380.40
GR	1283.0	385.07	1283.10	393.38	1283.19	400.70	1283.34	412.37	1283.34	416.15
GR	1283.3	418.03								

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968 FEET US OF 6TH STREET Y

X1	83	29	256.27	518.51	580	590	554	0	0	0
X3	10									
GR	1284.3	0.00	1283.99	147.51	1283.92	149.94	1283.82	158.55	1283.58	183.71
GR	1283.4	255.84	1283.40	256.27	1283.40	257.01	1283.33	273.43	1283.15	294.49
GR	1283.0	317.61	1282.98	320.01	1282.97	322.27	1282.90	332.14	1282.62	388.23
GR	1282.6	388.37	1282.78	415.70	1282.77	418.36	1282.86	438.48	1283.00	479.89
GR	1283.0	487.88	1283.27	518.51	1283.41	545.83	1283.46	557.11	1283.59	618.73

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GR   1283.6     633.71    1283.53    640.19    1283.51    664.43    1283.37    709.27
          **********
          MISC XC

NC    0.045     0.045      0.08                  0.5
X1       84        37    294.18    415.64       275       183       207         0         0         0
X3       10
GR   1284.1      0.00    1284.06     50.83    1283.97     54.60    1283.85     69.11    1283.42    126.29
GR   1283.3    180.31    1283.35    214.24    1283.35    216.17    1283.37    218.50    1283.33    222.12
GR   1283.2    292.97    1283.20    293.95    1283.19    294.18    1283.00    298.60    1282.59    311.03
GR   1282.4    315.79    1282.37    316.96    1282.23    320.56    1282.00    326.08    1281.90    328.60
GR   1281.9    328.60    1281.90    329.60    1282.00    336.95    1282.20    352.65    1282.36    365.16
GR   1282.4    368.26    1282.41    369.66    1282.42    369.97    1282.53    375.97    1282.59    378.68
GR   1283.0    398.50    1283.08    402.53    1283.10    403.48    1283.19    415.64    1283.42    474.30
GR   1283.5    484.40    1283.50    489.19
          **********
          101 FT DS OF 3rd ST CULVERTS

NC    0.045     0.045      0.08
X1       85        27     48.92    193.25       359       296       329         0         0         0
X3       10
GR   1284.0      0.00    1283.94      4.43    1283.60     32.86    1283.55     38.94    1283.52     41.31
GR   1283.4     48.92    1283.18     79.66    1283.00     82.81    1282.73     87.50    1282.40    122.53
GR   1282.4    122.53    1282.40    122.53    1282.40    122.53    1282.59    158.91    1282.87    176.94
GR   1282.9    182.55    1283.00    183.32    1283.93    188.64    1284.00    189.07    1284.17    190.06
GR   1284.2    193.25    1284.17    194.04    1284.13    196.99    1284.00    213.41    1283.06    219.72
GR   1283.0    220.59    1282.80    223.35
          **********
          MISC XC

X1       86        21      54.7    180.62       163        24        50
X3       10
GR   1282.6         0    1282.49      4.95      1283     12.27    1283.3     14.85      1284     20.64
GR   1284.3     47.58      1284      54.7    1282.9     64.95    1282.49     97.73    1282.43    139.86
GR     1283    164.78      1284    180.62    1285.2    189.61      1286    193.86    1286.19    200.23
GR     1286    203.18    1285.55    210.55      1285    218.79    1284.2    224.84    1284.05     233.5
GR   1284.1    236.98
          **********
          DS FACE   OF 3rd ST CULVERTS

NC    0.045     0.045     0.035       0.3       0.5
X1       87        10      63.5     174.5       108        25        51         0         0         0
X3       10         0         0       137    1282.4       110    1282.4
GR   1285.2         0    1285.05      42.5    1285.23      63.5    1283.1      71.5    1282.79      80.5
GR   1281.1     108.5    1282.22     137.5    1284.49     174.5    1284.19     243.5     1283.2     294.5
          **********

SC    1.024       0.5         3        45       3.5         0        29       2.3    1284.11      1284
          **********
          US FACE   OF 3rd ST CULVERTS
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X1	88	11	134	309	29	29	29	0	0	0
X2			2		1284.9					
X3	10	0	0	298	1282.4	302	1282.4			
GR	1285.6	0	1285.79	86	1286.13	130	1283.2	134	1286.66	196
GR	1282.7	235	1282.87	263	1281.29	300	1284.9	309	1284.45	366
GR	1284.1	437								

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128 FT US OF 3rd ST CULVERTS

NC	0.04	0.04	0.06							
X1	73	43	11.08	196.61	10	118	128	0	0	0
X3	10									
GR	1285.9	0.00	1285.99	7.58	1286.00	8.10	1286.00	8.16	1285.03	11.08
GR	1286.0	16.99	1286.00	17.05	1285.61	19.22	1285.00	22.56	1284.49	26.06
GR	1284.3	29.50	1284.00	33.18	1283.65	35.84	1283.00	40.22	1282.93	42.91
GR	1282.9	44.86	1282.87	46.83	1282.86	47.89	1282.54	62.75	1282.04	100.19
GR	1282.0	100.23	1282.19	108.62	1282.57	127.58	1282.63	129.26	1282.64	130.90
GR	1282.7	133.67	1282.71	139.30	1282.76	144.85	1282.78	145.93	1283.00	156.06
GR	1283.1	177.29	1283.13	177.70	1283.15	178.99	1283.22	185.80	1283.27	190.00
GR	1283.3	196.61	1283.82	240.36	1284.00	252.45	1284.17	258.53	1284.30	263.30
GR	1284.7	279.36	1284.55	291.85	1284.56	336.89				

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265 FT US OF 3rd ST CULVERTS

X1	89	57	92.94	301.66	149	181	137	0	0	0
X3	10									
GR	1284.5	0.00	1284.54	18.37	1284.12	79.12	1284.07	90.11	1284.00	92.94
GR	1283.6	105.86	1283.06	127.07	1283.07	134.03	1283.07	140.74	1283.07	147.22
GR	1283.1	148.68	1283.04	168.21	1283.00	178.16	1282.96	182.57	1282.78	200.00
GR	1282.2	235.18	1282.00	238.43	1281.96	239.12	1282.00	242.05	1282.00	243.54
GR	1282.0	243.58	1282.54	257.32	1283.00	269.10	1283.13	271.42	1283.22	275.79
GR	1283.5	284.89	1284.00	301.66	1284.19	317.71	1284.34	329.04	1284.36	330.85
GR	1284.4	334.31	1284.46	336.53	1284.48	338.08	1284.48	338.29	1284.48	338.66
GR	1284.5	338.67	1284.43	339.04	1284.35	339.72	1284.15	341.39	1284.00	342.71
GR	1284.0	344.05	1283.99	349.42	1284.00	349.46	1284.33	352.48	1285.00	358.81
GR	1285.3	361.42	1285.40	362.57	1285.45	363.06	1285.55	369.03	1285.56	377.97
GR	1285.6	379.11	1285.55	380.37	1285.55	381.74	1285.55	383.27	1285.55	384.96
GR	1285.5	386.86	1285.55	388.32						

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MISC XC

X1	90	20	169.27	394.93	270	236	253			
X3	10									
GR	1285.5	0	1285.53	13.04	1285.38	23.03	1285.3	37.65	1285.17	44.6
GR	1285	58.43	1284.6	97.2	1284	169.27	1283.2	207.86	1282.97	218.98
GR	1283	299.25	1283.2	309.82	1284	340.77	1284.13	344.13	1284.32	349.07
GR	1284.3	372.34	1284.6	394.93	1284.56	420.69	1284.6	448.5	1284.61	536.78

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752 FT US OF 3rd ST CULVERTS

X1	91	31	161.45	419.05	242	252	234	0	0	0
X3	10									
GR	1284.8	0.00	1285.02	109.19	1284.89	117.79	1284.56	133.97	1284.23	161.45
GR	1284.0	198.76	1284.00	198.84	1283.82	212.42	1283.26	281.94	1283.26	282.13
GR	1283.3	282.16	1283.26	282.20	1283.26	282.27	1283.26	283.46	1283.05	346.09
GR	1283.0	348.94	1282.99	349.66	1282.90	353.76	1282.88	379.84	1283.00	393.20
GR	1283.4	403.67	1284.00	419.05	1284.81	466.16	1285.00	477.03	1285.03	479.69
GR	1285.0	480.42	1284.97	500.71	1284.83	520.31	1284.87	544.86	1284.66	573.12
GR	1284.7	801.34								

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807 FT US OF 3rd ST CULVERTS

X1	92	52	248.25	464.86	75	48	55	0	0	0
X3	10									
GR	1284.6	0.00	1284.60	12.79	1284.88	150.79	1284.85	152.92	1284.76	156.94
GR	1284.6	172.89	1284.07	221.03	1284.00	227.41	1283.89	237.62	1283.80	246.42
GR	1283.8	247.31	1283.79	247.59	1283.79	248.25	1283.22	276.24	1283.10	282.62
GR	1283.1	282.88	1283.00	306.09	1282.98	311.38	1282.97	315.11	1282.98	320.08
GR	1283.0	326.27	1283.02	330.93	1283.02	336.14	1283.04	350.90	1283.06	368.14
GR	1283.1	368.46	1283.04	391.79	1283.00	393.03	1282.91	396.36	1282.84	399.08
GR	1282.8	400.69	1282.79	406.80	1282.81	407.41	1282.84	408.24	1282.89	409.43
GR	1282.9	411.85	1282.98	416.58	1283.00	419.07	1283.24	432.06	1283.83	456.90
GR	1284.0	464.86	1284.00	465.57	1284.03	466.89	1284.33	482.40	1284.84	508.83
GR	1284.9	517.53	1284.98	529.41	1284.94	552.18	1284.81	569.96	1284.87	604.53
GR	1284.7	631.09	1284.70	801.34						

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860 FT US OF 3rd ST CULVERTS

X1	93	48	267.85	458.47	61	54	53.00	0	0	0
X3	10									
GR	1284.8	0.00	1284.94	122.37	1284.73	162.93	1284.73	169.08	1284.60	180.38
GR	1284.6	183.64	1284.50	188.21	1284.42	195.07	1284.28	206.50	1284.00	231.85
GR	1283.5	267.85	1283.10	303.91	1283.08	307.36	1283.07	312.62	1283.07	313.64
GR	1283.1	320.94	1283.08	328.09	1283.08	335.07	1283.00	348.77	1283.09	361.21
GR	1283.1	361.37	1283.14	387.73	1283.04	397.39	1283.00	398.38	1282.79	403.28
GR	1282.8	403.83	1282.76	403.90	1282.76	404.16	1282.76	404.23	1282.78	404.76
GR	1282.9	408.53	1282.98	415.16	1283.00	415.89	1283.07	418.67	1283.24	426.09
GR	1283.8	458.47	1284.00	469.62	1284.46	494.62	1284.67	505.69	1284.81	513.30
GR	1284.8	514.55	1284.84	516.16	1284.95	541.01	1284.92	561.56	1284.80	577.60
GR	1284.9	621.75	1284.69	646.69	1284.71	801.34				

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986 FT US OF 3rd ST CULVERTS

X1	94	42	299.13	527.62	149	137	126	0	0	0
X3	10									
GR	1284.8	0.00	1285.04	125.56	1284.57	211.29	1284.57	230.35	1284.12	272.20
GR	1284.0	284.06	1283.84	299.13	1283.73	309.91	1283.55	336.13	1283.54	337.08
GR	1283.4	349.53	1283.43	351.15	1283.36	359.55	1283.11	408.10	1283.18	421.35
GR	1283.1	427.53	1283.05	434.67	1283.09	442.42	1283.00	445.84	1282.97	449.09
GR	1283.0	467.17	1282.89	475.03	1283.00	478.62	1283.12	483.65	1283.13	484.16
GR	1283.3	491.85	1283.95	527.62	1284.00	532.62	1284.14	546.75	1284.23	555.19
GR	1284.3	560.11	1284.30	562.43	1284.33	563.34	1284.33	564.34	1284.32	565.30
GR	1284.8	605.98	1284.86	624.43	1284.83	639.25	1284.76	650.56	1284.88	737.98

GR 1284.7 759.40 1284.76 858.45
****

5175, 20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = 11.839

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 21st STREET BRIDGE TO HIGHWAY 14
T3 HEC-1 GENERATED 10 YEAR EXISTING FLOWS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0		0	0.0000	0.0000	1237	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2		-1				-1			

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****

5175, 20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = 11.416

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 21st STREET BRIDGE TO HIGHWAY 14
T3 HEC-1 GENERATED 25 YEAR EXISTING FLOWS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0		0	0.0000	0.0000	1237	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3		-1				-1			

****
****

5175, 20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = 11.023

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 HEC-1 GENERATED 50 YEAR EXISTING FLOWS
T3 21st STREET BRIDGE TO HIGHWAY 14

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	5	0	0		0	0.0000	0.0000	1237	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4		-1				-1			

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****

5175, 20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = 10.747

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 HEC-1 GENERATED 100 YEAR EXISTING FLOWS
T3 21st STREET BRIDGE TO HIGHWAY 14

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	6	0	0		0	0.0000	0.0000	1237	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15		-1				-1			

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5175, 20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = 10.390

THIS RUN EXECUTED 25FEB99 08:52:31

HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

HEC-1 GENERATED 5 YEAR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.000	.00	.00	.00	1235.00	848.00	1237.00	1235.81	1237.06	8.12	1.91	443.00	297.50
	1.000	.00	.00	.00	1235.00	1090.00	1237.00	1235.96	1237.09	13.42	2.46	443.00	297.50
	1.000	.00	.00	.00	1235.00	1412.00	1237.00	1236.13	1237.16	22.53	3.19	443.00	297.50
	1.000	.00	.00	.00	1235.00	1661.00	1237.00	1236.26	1237.22	31.17	3.75	443.00	297.50
	1.000	.00	.00	.00	1235.00	1967.00	1237.00	1236.40	1237.31	43.71	4.44	443.00	297.50
*	2.000	12.00	.00	.00	1250.70	848.00	1253.38	1253.38	1254.68	28.34	9.17	92.48	159.29
*	2.000	12.00	.00	.00	1250.70	1090.00	1253.85	1253.85	1255.39	27.64	9.98	109.26	207.34
*	2.000	12.00	.00	.00	1250.70	1412.00	1254.43	1254.43	1256.25	26.39	10.85	130.54	274.88
*	2.000	12.00	.00	.00	1250.70	1661.00	1255.33	1255.33	1256.84	17.09	9.98	198.36	401.79
*	2.000	12.00	.00	.00	1250.70	1967.00	1255.93	1255.93	1257.33	14.50	9.90	275.99	516.50
*	3.000	5.00	1250.70	1250.60	1250.70	848.00	1254.28	.00	1254.99	10.87	6.79	125.11	257.18
	3.000	5.00	1250.70	1250.60	1250.70	1090.00	1254.44	.00	1255.52	15.40	8.32	131.41	277.72
	3.000	5.00	1250.70	1250.60	1250.70	1412.00	1254.54	.00	1256.25	23.82	10.51	134.91	289.31
	3.000	5.00	1250.70	1250.60	1250.70	1661.00	1255.51	.00	1256.84	14.55	9.44	221.52	435.44
	3.000	5.00	1250.70	1250.60	1250.70	1967.00	1256.07	.00	1257.33	12.82	9.46	297.06	549.44
*	4.000	3256.00	.00	.00	1249.80	848.00	1255.48	1251.01	1255.48	.05	.38	2250.69	3725.61
*	4.000	3256.00	.00	.00	1249.80	1090.00	1256.22	1251.10	1256.23	.05	.41	2650.75	4649.05
*	4.000	3256.00	.00	.00	1249.80	1412.00	1257.34	1251.22	1257.34	.05	.43	3288.68	6405.77
*	4.000	3256.00	.00	.00	1249.80	1661.00	1257.70	1251.30	1257.70	.05	.47	3501.81	7095.77
*	4.000	3256.00	.00	.00	1249.80	1967.00	1258.16	1251.39	1258.16	.06	.52	3771.85	8007.18
*	5.000	600.00	.00	.00	1250.60	848.00	1255.49	1255.23	1256.20	55.53	6.75	125.72	113.80
*	5.000	600.00	.00	.00	1250.60	1090.00	1256.24	1255.63	1256.79	36.70	5.99	182.12	179.94
*	5.000	600.00	.00	.00	1250.60	1412.00	1257.35	1256.08	1257.71	18.43	4.81	293.53	328.94
*	5.000	600.00	.00	.00	1250.60	1661.00	1257.71	1256.37	1258.09	17.85	4.93	337.12	393.12
*	5.000	600.00	.00	.00	1250.60	1967.00	1258.17	1256.69	1258.55	16.39	4.95	397.05	485.88

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	6.000	1665.00	.00	.00	1250.60	833.00	1257.99	1255.20	1258.07	3.46	2.23	372.89	447.87
*	6.000	1665.00	.00	.00	1250.60	1071.00	1258.44	1255.60	1258.54	3.82	2.46	435.40	547.79
*	6.000	1665.00	.00	.00	1250.60	1387.00	1259.00	1256.05	1259.11	4.04	2.67	519.70	690.16
*	6.000	1665.00	.00	.00	1250.60	1631.00	1259.38	1256.34	1259.51	4.14	2.80	582.39	801.21
*	6.000	1665.00	.00	.00	1250.60	1967.00	1259.82	1256.69	1259.96	4.36	2.99	658.68	941.75
*	7.000	2273.00	.00	.00	1249.80	815.00	1258.24	1251.89	1258.26	.28	1.12	727.36	1544.77
*	7.000	2273.00	.00	.00	1249.80	1046.00	1258.74	1252.16	1258.77	.36	1.33	784.75	1744.30
*	7.000	2273.00	.00	.00	1249.80	1354.00	1259.35	1252.50	1259.39	.46	1.59	855.79	1997.44
*	7.000	2273.00	.00	.00	1249.80	1592.00	1259.77	1252.74	1259.82	.53	1.77	905.50	2178.36
*	7.000	2273.00	.00	.00	1249.80	1884.00	1260.25	1253.01	1260.31	.62	1.97	964.37	2396.32
	8.000	36.00	.00	.00	1249.87	815.00	1258.24	1252.29	1258.26	.33	1.20	706.95	1427.41
	8.000	36.00	.00	.00	1249.87	1046.00	1258.74	1252.57	1258.77	.42	1.41	797.19	1623.01
	8.000	36.00	.00	.00	1249.87	1354.00	1259.35	1252.92	1259.39	.50	1.62	998.31	1911.72
	8.000	36.00	.00	.00	1249.87	1592.00	1259.78	1253.17	1259.82	.55	1.74	1157.38	2153.98
	8.000	36.00	.00	.00	1249.87	1884.00	1260.27	1253.45	1260.32	.57	1.85	1345.49	2484.67
*	9.000	82.00	.00	.00	1249.98	815.00	1258.24	1253.11	1258.29	.80	1.71	476.71	914.00
*	9.000	82.00	.00	.00	1249.98	1046.00	1258.75	1253.49	1258.81	1.01	2.01	520.06	1040.05
*	9.000	82.00	.00	.00	1249.98	1354.00	1259.36	1254.01	1259.45	1.29	2.36	573.80	1191.16
*	9.000	82.00	.00	.00	1249.98	1592.00	1259.79	1254.29	1259.89	1.51	2.60	612.81	1294.35
*	9.000	82.00	.00	.00	1249.98	1884.00	1260.28	1254.61	1260.41	1.75	2.85	660.39	1423.16
	10.000	157.00	1278.48	1274.09	1250.19	815.00	1258.24	.00	1258.29	.83	1.74	468.03	892.44
	10.000	157.00	1278.48	1274.09	1250.19	1046.00	1258.75	.00	1258.82	1.08	2.04	511.71	1004.88
	10.000	157.00	1278.48	1274.09	1250.19	1354.00	1259.37	.00	1259.45	1.38	2.39	567.07	1151.99
	10.000	157.00	1278.48	1274.09	1250.19	1592.00	1259.79	.00	1259.90	1.59	2.62	607.16	1261.58
	10.000	157.00	1278.48	1274.09	1250.19	1884.00	1260.29	.00	1260.42	1.82	2.87	655.75	1397.65
	11.000	100.00	.00	.00	1250.20	815.00	1258.30	1252.95	1258.32	1.01	1.21	763.44	812.85
	11.000	100.00	.00	.00	1250.20	1046.00	1258.83	1253.31	1258.85	1.15	1.37	882.19	975.63
	11.000	100.00	.00	.00	1250.20	1354.00	1259.47	1253.73	1259.50	1.27	1.54	1038.46	1200.79
	11.000	100.00	.00	.00	1250.20	1592.00	1259.92	1254.01	1259.95	1.33	1.64	1160.81	1379.29
	11.000	100.00	.00	.00	1250.20	1884.00	1260.45	1254.32	1260.49	1.37	1.74	1320.58	1611.67
*	12.000	3400.00	.00	.00	1255.16	782.00	1259.16	1257.75	1259.30	16.70	3.31	266.01	191.34
*	12.000	3400.00	.00	.00	1255.16	1003.00	1259.75	1258.00	1259.90	13.94	3.38	335.88	268.63
*	12.000	3400.00	.00	.00	1255.16	1297.00	1260.43	1258.31	1260.59	11.92	3.49	425.61	375.60
*	12.000	3400.00	.00	.00	1255.16	1525.00	1260.90	1258.52	1261.06	11.00	3.58	492.18	459.76
*	12.000	3400.00	.00	.00	1255.16	1805.00	1261.42	1258.77	1261.59	10.10	3.67	573.81	567.91
*	13.000	516.00	.00	.00	1267.27	782.00	1269.15	1269.15	1269.73	332.45	6.12	127.74	42.89
*	13.000	516.00	.00	.00	1267.27	1003.00	1269.37	1269.37	1270.04	316.41	6.56	152.82	56.39
*	13.000	516.00	.00	.00	1267.27	1297.00	1269.63	1269.63	1270.40	298.50	7.02	184.69	75.07
*	13.000	516.00	.00	.00	1267.27	1525.00	1269.82	1269.82	1270.66	288.63	7.33	208.09	89.76
*	13.000	516.00	.00	.00	1267.27	1805.00	1270.04	1270.04	1270.95	279.93	7.67	235.46	107.88

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	14.000	770.00	.00	.00	1266.26	782.00	1271.27	1268.41	1271.30	5.09	1.53	511.34	346.61
*	14.000	770.00	.00	.00	1266.26	1003.00	1271.72	1268.65	1271.77	5.66	1.72	584.49	421.58
*	14.000	770.00	.00	.00	1266.26	1297.00	1272.25	1268.92	1272.31	6.30	1.93	672.22	516.62
*	14.000	770.00	.00	.00	1266.26	1525.00	1272.60	1269.11	1272.66	6.67	2.08	733.00	590.55
*	14.000	770.00	.00	.00	1266.26	1805.00	1272.98	1269.34	1273.06	7.04	2.25	802.79	680.39
*	15.000	522.00	.00	.00	1267.65	782.00	1271.67	1269.71	1271.75	13.01	2.27	353.11	216.77
*	15.000	522.00	.00	.00	1267.65	1003.00	1272.14	1269.96	1272.23	12.37	2.43	423.03	285.18
	15.000	522.00	.00	.00	1267.65	1297.00	1272.68	1270.26	1272.78	11.50	2.59	526.15	382.54
	15.000	522.00	.00	.00	1267.65	1525.00	1273.04	1270.47	1273.14	10.88	2.67	618.74	462.28
	15.000	522.00	.00	.00	1267.65	1805.00	1273.42	1270.70	1273.52	10.07	2.72	737.80	568.68
	16.000	607.00	.00	.00	1268.81	782.00	1272.61	1271.20	1272.69	18.96	2.22	352.47	179.61
	16.000	607.00	.00	.00	1268.81	1003.00	1273.04	1271.41	1273.13	17.80	2.36	424.82	237.74
	16.000	607.00	.00	.00	1268.81	1297.00	1273.52	1271.62	1273.62	16.96	2.53	512.13	314.98
	16.000	607.00	.00	.00	1268.81	1525.00	1273.85	1271.78	1273.96	16.71	2.67	573.35	373.10
	16.000	607.00	.00	.00	1268.81	1805.00	1274.20	1271.96	1274.32	16.69	2.82	643.09	441.87
	17.000	500.00	.00	.00	1270.50	294.00	1273.29	1271.63	1273.30	4.64	.57	333.08	136.45
	17.000	500.00	.00	.00	1270.50	370.00	1273.67	1271.70	1273.69	3.92	.57	401.02	186.84
	17.000	500.00	.00	.00	1270.50	472.00	1274.12	1271.81	1274.15	3.38	.59	484.49	256.60
	17.000	500.00	.00	.00	1270.50	550.00	1274.44	1271.93	1274.47	3.11	.60	544.25	311.63
	17.000	500.00	.00	.00	1270.50	646.00	1274.80	1272.08	1274.82	2.90	.62	612.58	379.19
*	18.000	181.00	.00	.00	1271.00	279.00	1273.45	1272.26	1273.47	23.25	1.01	247.18	57.86
*	18.000	181.00	.00	.00	1271.00	352.00	1273.80	1272.32	1273.83	18.17	1.00	305.38	82.57
*	18.000	181.00	.00	.00	1271.00	448.00	1274.24	1272.43	1274.27	14.43	1.00	380.18	117.93
*	18.000	181.00	.00	.00	1271.00	522.00	1274.54	1272.51	1274.58	12.59	.99	434.91	147.09
*	18.000	181.00	.00	.00	1271.00	612.00	1274.89	1272.60	1274.93	11.10	1.00	498.36	183.65
*	19.000	181.00	.00	.00	1271.02	279.00	1273.72	1271.99	1273.73	8.89	.74	344.52	93.59
*	19.000	181.00	.00	.00	1271.02	352.00	1274.04	1272.08	1274.06	8.13	.77	405.34	123.43
*	19.000	181.00	.00	.00	1271.02	448.00	1274.44	1272.20	1274.46	7.17	.80	484.09	167.29
	19.000	181.00	.00	.00	1271.02	522.00	1274.73	1272.28	1274.75	6.59	.82	542.19	203.29
	19.000	181.00	.00	.00	1271.02	612.00	1275.07	1272.36	1275.09	6.05	.84	609.77	248.78
	20.000	88.00	.00	.00	1270.98	279.00	1273.58	1272.70	1273.83	11.48	3.99	69.87	82.33
	20.000	88.00	.00	.00	1270.98	352.00	1273.84	1272.92	1274.16	12.92	4.51	77.99	97.91
	20.000	88.00	.00	.00	1270.98	448.00	1274.17	1273.20	1274.57	14.26	5.08	88.15	118.65
*	20.000	88.00	.00	.00	1270.98	522.00	1274.39	1273.40	1274.86	15.34	5.50	94.98	133.27
*	20.000	88.00	.00	.00	1270.98	612.00	1274.65	1273.63	1275.20	16.38	5.94	103.03	151.22
*	21.000	50.00	1276.11	1275.63	1271.50	279.00	1273.36	1273.36	1274.05	57.42	6.65	41.95	36.82
*	21.000	50.00	1276.11	1275.63	1271.50	352.00	1273.59	1273.59	1274.39	55.25	7.18	49.06	47.36
*	21.000	50.00	1276.11	1275.63	1271.50	448.00	1273.87	1273.87	1274.81	53.99	7.80	57.46	60.97
*	21.000	50.00	1276.11	1275.63	1271.50	522.00	1274.06	1274.06	1275.11	53.11	8.21	63.59	71.62
*	21.000	50.00	1276.11	1275.63	1271.50	612.00	1274.30	1274.30	1275.46	51.89	8.64	70.83	84.96

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	22.000	125.00	.00	.00	1271.40	279.00	1274.09	1272.38	1274.11	.69	1.06	283.15	336.45
*	22.000	125.00	.00	.00	1271.40	352.00	1274.43	1272.49	1274.45	.66	1.14	338.73	432.34
*	22.000	125.00	.00	.00	1271.40	448.00	1274.85	1272.62	1274.87	.63	1.23	412.28	565.30
*	22.000	125.00	.00	.00	1271.40	522.00	1275.15	1272.71	1275.18	.60	1.28	469.71	672.80
*	22.000	125.00	.00	.00	1271.40	612.00	1275.50	1272.81	1275.53	.57	1.33	541.97	809.43
*	23.000	150.00	.00	.00	1272.45	279.00	1274.11	1273.18	1274.14	67.27	1.50	185.61	34.02
*	23.000	150.00	.00	.00	1272.45	352.00	1274.45	1273.27	1274.48	52.92	1.51	232.88	48.39
*	23.000	150.00	.00	.00	1272.45	448.00	1274.87	1273.38	1274.90	42.43	1.53	292.78	68.78
*	23.000	150.00	.00	.00	1272.45	522.00	1275.17	1273.47	1275.21	37.23	1.55	337.76	85.55
*	23.000	150.00	.00	.00	1272.45	613.00	1275.52	1273.56	1275.55	32.83	1.57	391.26	106.98
*	24.000	656.00	.00	.00	1273.11	234.00	1275.47	1273.86	1275.48	8.65	.65	362.56	79.57
*	24.000	656.00	.00	.00	1273.11	293.00	1275.74	1273.94	1275.75	8.83	.70	416.62	98.61
*	24.000	656.00	.00	.00	1273.11	373.00	1276.07	1274.02	1276.08	8.90	.77	486.52	125.03
*	24.000	656.00	.00	.00	1273.11	433.00	1276.31	1274.07	1276.32	8.81	.80	538.77	145.92
*	24.000	656.00	.00	.00	1273.11	507.00	1276.59	1274.14	1276.61	8.59	.84	603.20	172.95
	25.000	495.00	.00	.00	1273.50	234.00	1276.00	1274.42	1276.01	14.03	.88	291.27	62.48
	25.000	495.00	.00	.00	1273.50	293.00	1276.27	1274.52	1276.28	13.54	.94	343.97	79.62
	25.000	495.00	.00	.00	1273.50	373.00	1276.59	1274.63	1276.60	12.96	1.00	412.80	103.60
	25.000	495.00	.00	.00	1273.50	433.00	1276.82	1274.71	1276.83	12.59	1.04	462.18	122.04
	25.000	495.00	.00	.00	1273.50	507.00	1277.08	1274.80	1277.10	11.97	1.08	523.87	146.53
*	26.000	64.00	.00	.00	1273.11	234.00	1275.87	1274.93	1276.16	30.14	4.32	54.19	42.62
*	26.000	64.00	.00	.00	1273.11	293.00	1276.04	1275.18	1276.44	37.89	5.03	58.21	47.60
*	26.000	64.00	.00	.00	1273.11	373.00	1276.22	1275.49	1276.78	50.98	6.03	61.85	52.24
*	26.000	64.00	.00	.00	1273.11	433.00	1276.32	1275.70	1277.03	61.40	6.75	64.16	55.26
*	26.000	64.00	.00	.00	1273.11	507.00	1276.38	1275.95	1277.31	78.63	7.73	65.60	57.17
	27.000	40.00	1276.64	.00	1273.55	234.00	1277.23	.00	1277.33	28.92	2.53	92.49	43.51
	27.000	40.00	1276.64	.00	1273.55	294.00	1277.35	.00	1277.47	32.88	2.85	103.22	51.27
	27.000	40.00	1276.64	.00	1273.55	373.00	1277.51	.00	1277.66	34.57	3.13	119.16	63.44
	27.000	40.00	1276.64	.00	1273.55	433.00	1277.60	.00	1277.78	37.41	3.37	128.36	70.79
*	27.000	40.00	1276.64	.00	1273.55	507.00	1277.72	.00	1277.92	39.10	3.60	140.79	81.08
*	28.000	146.00	.00	.00	1273.90	234.00	1277.38	1274.66	1277.38	.10	.32	785.60	724.39
*	28.000	146.00	.00	.00	1273.90	294.00	1277.53	1274.75	1277.53	.14	.38	836.60	796.11
*	28.000	146.00	.00	.00	1273.90	373.00	1277.73	1274.84	1277.73	.17	.45	904.94	896.07
*	28.000	146.00	.00	.00	1273.90	433.00	1277.85	1274.91	1277.86	.20	.50	949.05	961.48
*	28.000	146.00	.00	.00	1273.90	507.00	1278.01	1274.98	1278.01	.23	.55	1008.15	1045.94
	29.000	145.00	.00	.00	1274.00	234.00	1277.38	1274.78	1277.38	.10	.25	949.03	726.87
	29.000	145.00	.00	.00	1274.00	294.00	1277.53	1274.86	1277.53	.14	.29	1010.13	799.96
	29.000	145.00	.00	.00	1274.00	373.00	1277.73	1274.94	1277.73	.17	.34	1092.58	901.84
	29.000	145.00	.00	.00	1274.00	433.00	1277.86	1274.98	1277.86	.20	.38	1145.14	968.80
	29.000	145.00	.00	.00	1274.00	507.00	1278.01	1275.03	1278.02	.23	.42	1210.74	1054.51

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	30.000	5.00	.00	.00	1274.00	234.00	1277.38	1274.79	1277.38	.10	.25	952.31	729.90
	30.000	5.00	.00	.00	1274.00	294.00	1277.53	1274.86	1277.53	.13	.29	1013.41	803.32
	30.000	5.00	.00	.00	1274.00	373.00	1277.73	1274.93	1277.73	.17	.34	1095.58	905.40
	30.000	5.00	.00	.00	1274.00	433.00	1277.86	1274.99	1277.86	.20	.38	1148.05	972.47
	30.000	5.00	.00	.00	1274.00	507.00	1278.01	1275.03	1278.02	.23	.42	1213.57	1058.24
*	31.000	71.00	.00	.00	1273.80	234.00	1277.37	1276.73	1277.39	2.69	1.14	204.65	142.68
*	31.000	71.00	.00	.00	1273.80	294.00	1277.52	1276.79	1277.55	2.57	1.24	238.38	183.47
*	31.000	71.00	.00	.00	1273.80	373.00	1277.72	1276.85	1277.75	2.34	1.32	283.39	243.66
*	31.000	71.00	.00	.00	1273.80	433.00	1277.85	1276.91	1277.88	2.31	1.40	311.89	284.99
*	31.000	71.00	.00	.00	1273.80	507.00	1278.00	1276.99	1278.04	2.26	1.48	346.00	337.51
*	32.000	20.00	1276.45	.00	1274.10	234.00	1277.39	.00	1277.39	1.10	.66	353.51	223.53
*	32.000	20.00	1276.45	.00	1274.10	294.00	1277.54	.00	1277.55	.96	.70	423.01	299.91
*	32.000	20.00	1276.45	.00	1274.10	373.00	1277.74	.00	1277.75	.81	.73	515.64	414.14
*	32.000	20.00	1276.45	.00	1274.10	433.00	1277.87	.00	1277.88	.77	.76	574.80	493.95
*	32.000	20.00	1276.45	.00	1274.10	507.00	1278.03	.00	1278.04	.71	.79	648.14	600.08
*	33.000	331.00	.00	.00	1273.80	234.00	1277.40	1274.69	1277.40	.13	.33	738.22	646.97
*	33.000	331.00	.00	.00	1273.80	294.00	1277.56	1274.78	1277.56	.17	.38	790.17	715.25
*	33.000	331.00	.00	.00	1273.80	373.00	1277.76	1274.87	1277.76	.21	.45	859.91	810.12
*	33.000	331.00	.00	.00	1273.80	433.00	1277.89	1274.95	1277.89	.25	.49	904.69	872.98
*	33.000	331.00	.00	.00	1273.80	507.00	1278.05	1275.03	1278.05	.28	.54	960.79	953.19
	34.000	103.00	.00	.00	1274.15	234.00	1277.40	1274.97	1277.40	.17	.38	643.15	569.55
	34.000	103.00	.00	.00	1274.15	294.00	1277.56	1275.05	1277.56	.22	.45	688.73	633.17
	34.000	103.00	.00	.00	1274.15	373.00	1277.76	1275.14	1277.77	.27	.53	748.62	721.29
	34.000	103.00	.00	.00	1274.15	433.00	1277.89	1275.20	1277.90	.31	.58	786.66	779.84
	34.000	103.00	.00	.00	1274.15	507.00	1278.05	1275.27	1278.06	.35	.64	833.36	854.40
*	35.000	66.00	.00	.00	1273.20	234.00	1277.40	1276.19	1277.41	.83	.83	309.79	257.58
*	35.000	66.00	.00	.00	1273.20	294.00	1277.55	1276.28	1277.57	.93	.94	345.17	304.83
*	35.000	66.00	.00	.00	1273.20	373.00	1277.76	1276.36	1277.77	1.01	1.04	392.35	372.00
*	35.000	66.00	.00	.00	1273.20	433.00	1277.89	1276.45	1277.90	1.08	1.12	422.63	417.48
*	35.000	66.00	.00	.00	1273.20	507.00	1278.04	1276.53	1278.06	1.13	1.21	460.24	476.39
	36.000	53.00	1275.26	.00	1273.54	234.00	1277.40	.00	1277.41	1.03	.92	283.09	231.12
	36.000	53.00	1275.26	.00	1273.54	294.00	1277.55	.00	1277.57	1.12	1.03	318.04	277.44
	36.000	53.00	1275.26	.00	1273.54	373.00	1277.75	.00	1277.77	1.18	1.15	365.12	343.60
	36.000	53.00	1275.26	.00	1273.54	433.00	1277.88	.00	1277.90	1.27	1.24	393.02	384.65
	36.000	53.00	1275.26	.00	1273.54	507.00	1278.04	.00	1278.06	1.31	1.34	430.75	442.18
	37.000	140.00	.00	.00	1273.74	234.00	1277.43	1274.79	1277.43	1.15	.31	700.98	217.90
	37.000	140.00	.00	.00	1273.74	294.00	1277.59	1274.92	1277.59	1.36	.35	767.87	252.00
	37.000	140.00	.00	.00	1273.74	373.00	1277.80	1275.05	1277.80	1.57	.39	852.40	297.80
	37.000	140.00	.00	.00	1273.74	433.00	1277.93	1275.14	1277.93	1.73	.42	907.56	329.20
	37.000	140.00	.00	.00	1273.74	507.00	1278.09	1275.24	1278.10	1.89	.45	974.93	368.84

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	38.000	102.00	.00	.00	1273.67	234.00	1277.43	1274.46	1277.44	.71	.28	832.77	277.46
	38.000	102.00	.00	.00	1273.67	294.00	1277.60	1274.54	1277.60	.91	.33	889.30	308.53
	38.000	102.00	.00	.00	1273.67	373.00	1277.81	1274.65	1277.81	1.13	.38	962.96	351.31
	38.000	102.00	.00	.00	1273.67	433.00	1277.94	1274.71	1277.94	1.30	.42	1010.23	379.96
	38.000	102.00	.00	.00	1273.67	507.00	1278.10	1274.79	1278.11	1.48	.46	1067.77	416.13
*	39.000	102.00	.00	.00	1273.62	234.00	1277.44	1274.32	1277.44	.29	.17	1355.53	436.34
*	39.000	102.00	.00	.00	1273.62	294.00	1277.60	1274.39	1277.60	.37	.19	1443.79	484.00
*	39.000	102.00	.00	.00	1273.62	373.00	1277.82	1274.48	1277.82	.46	.23	1558.42	548.90
*	39.000	102.00	.00	.00	1273.62	433.00	1277.95	1274.54	1277.95	.53	.25	1632.13	592.34
*	39.000	102.00	.00	.00	1273.62	507.00	1278.12	1274.60	1278.12	.62	.28	1721.54	646.41
	40.000	127.00	.00	.00	1273.74	234.00	1277.44	1274.76	1277.45	.23	.42	552.01	482.76
	40.000	127.00	.00	.00	1273.74	294.00	1277.61	1274.87	1277.61	.30	.50	591.21	536.44
	40.000	127.00	.00	.00	1273.74	373.00	1277.82	1274.99	1277.82	.37	.58	642.76	609.69
	40.000	127.00	.00	.00	1273.74	433.00	1277.96	1275.07	1277.96	.43	.64	675.13	657.15
	40.000	127.00	.00	.00	1273.74	507.00	1278.12	1275.16	1278.13	.50	.71	716.10	718.82
*	41.000	392.00	.00	.00	1274.64	234.00	1277.44	1276.02	1277.49	6.48	1.77	132.14	91.92
*	41.000	392.00	.00	.00	1274.64	294.00	1277.60	1276.18	1277.67	8.06	2.02	145.63	103.55
*	41.000	392.00	.00	.00	1274.64	373.00	1277.81	1276.38	1277.90	9.77	2.28	163.41	119.35
*	41.000	392.00	.00	.00	1274.64	433.00	1277.96	1276.51	1278.04	10.06	2.36	197.02	136.49
*	41.000	392.00	.00	.00	1274.64	507.00	1278.12	1276.66	1278.22	10.69	2.53	218.84	155.09
*	42.000	22.00	.00	.00	1272.86	234.00	1278.45	1278.45	1278.65	103.92	3.90	78.00	22.95
*	42.000	22.00	.00	.00	1272.86	294.00	1278.52	1278.52	1278.76	119.35	4.40	87.57	26.91
*	42.000	22.00	.00	.00	1272.86	373.00	1278.52	1278.52	1278.90	186.81	5.53	88.46	27.29
*	42.000	22.00	.00	.00	1272.86	433.00	1278.61	1278.61	1278.99	171.22	5.63	101.67	33.09
*	42.000	22.00	.00	.00	1272.86	507.00	1278.67	1278.67	1279.10	177.04	5.99	112.51	38.10
	43.000	17.00	1277.11	.00	1273.60	234.00	1278.47	.00	1278.65	111.98	3.45	70.87	22.11
	43.000	17.00	1277.11	.00	1273.60	294.00	1278.54	.00	1278.76	118.55	3.83	80.83	27.00
	43.000	17.00	1277.11	.00	1273.60	373.00	1278.65	.00	1278.90	107.51	4.06	97.82	35.97
	43.000	17.00	1277.11	.00	1273.60	433.00	1278.67	.00	1278.99	133.83	4.59	100.45	37.43
	43.000	17.00	1277.11	.00	1273.60	507.00	1278.75	.00	1279.10	133.76	4.87	111.73	43.84
*	44.000	62.00	.00	.00	1274.55	234.00	1278.72	1275.39	1278.72	.18	.47	541.96	556.87
*	44.000	62.00	.00	.00	1274.55	294.00	1278.84	1275.49	1278.85	.25	.57	568.35	592.48
*	44.000	62.00	.00	.00	1274.55	373.00	1279.00	1275.61	1279.00	.34	.68	601.65	637.60
*	44.000	62.00	.00	.00	1274.55	433.00	1279.11	1275.69	1279.12	.41	.77	627.70	673.27
*	44.000	62.00	.00	.00	1274.55	507.00	1279.24	1275.79	1279.25	.51	.86	655.98	712.87
*	45.000	62.00	.00	.00	1274.80	234.00	1278.72	1275.58	1278.72	2.91	.50	466.08	137.18
*	45.000	62.00	.00	.00	1274.80	294.00	1278.85	1275.67	1278.85	4.07	.60	488.29	145.76
*	45.000	62.00	.00	.00	1274.80	373.00	1279.00	1275.79	1279.01	5.65	.72	516.18	156.97
*	45.000	62.00	.00	.00	1274.80	433.00	1279.12	1275.87	1279.13	6.66	.81	537.78	167.78
*	45.000	62.00	.00	.00	1274.80	507.00	1279.25	1275.96	1279.26	7.95	.91	561.56	179.79

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	46.000	164.00	.00	.00	1274.89	234.00	1278.76	1276.04	1278.76	1.79	.35	689.27	174.74
	46.000	164.00	.00	.00	1274.89	294.00	1278.90	1276.12	1278.90	2.29	.41	744.70	194.12
	46.000	164.00	.00	.00	1274.89	373.00	1279.07	1276.23	1279.08	2.88	.48	815.29	219.71
*	46.000	164.00	.00	.00	1274.89	433.00	1279.20	1276.31	1279.21	3.24	.53	870.69	240.37
*	46.000	164.00	.00	.00	1274.89	507.00	1279.34	1276.40	1279.35	3.67	.58	932.88	264.55
	47.000	164.00	.00	.00	1275.25	117.00	1278.78	1276.27	1278.78	.29	.14	846.93	218.77
	47.000	164.00	.00	.00	1275.25	147.00	1278.92	1276.32	1278.92	.37	.16	901.66	242.04
	47.000	164.00	.00	.00	1275.25	187.00	1279.10	1276.36	1279.10	.47	.19	969.62	272.21
	47.000	164.00	.00	.00	1275.25	218.00	1279.23	1276.39	1279.23	.54	.21	1023.96	296.06
	47.000	164.00	.00	.00	1275.25	255.00	1279.38	1276.43	1279.38	.62	.24	1088.15	323.56
*	48.000	219.00	.00	.00	1275.70	117.00	1278.79	1276.62	1278.80	4.53	.53	232.01	54.99
*	48.000	219.00	.00	.00	1275.70	147.00	1278.94	1276.73	1278.95	5.53	.61	255.36	62.50
*	48.000	219.00	.00	.00	1275.70	187.00	1279.11	1276.86	1279.11	1.10	.28	579.92	178.11
*	48.000	219.00	.00	.00	1275.70	218.00	1279.25	1276.94	1279.25	1.23	.31	631.73	196.46
*	48.000	219.00	.00	.00	1275.70	255.00	1279.40	1277.03	1279.40	1.36	.34	689.84	218.33
	49.000	180.00	.00	.00	1276.00	117.00	1278.86	1276.74	1278.86	2.81	.34	344.60	69.80
	49.000	180.00	.00	.00	1276.00	147.00	1279.02	1276.83	1279.02	3.38	.39	380.65	80.00
*	49.000	180.00	.00	.00	1276.00	187.00	1279.15	1276.94	1279.16	4.15	.45	414.81	91.82
*	49.000	180.00	.00	.00	1276.00	218.00	1279.29	1277.00	1279.29	4.40	.49	449.35	103.93
*	49.000	180.00	.00	.00	1276.00	255.00	1279.44	1277.06	1279.45	4.67	.53	489.08	118.06
	50.000	45.00	.00	.00	1275.41	117.00	1278.87	1276.68	1278.87	3.52	.43	271.38	62.36
	50.000	45.00	.00	.00	1275.41	147.00	1279.04	1276.83	1279.04	4.23	.50	297.33	71.50
	50.000	45.00	.00	.00	1275.41	187.00	1279.17	1277.16	1279.18	5.57	.60	318.91	79.22
	50.000	45.00	.00	.00	1275.41	218.00	1279.31	1277.18	1279.32	6.16	.65	342.69	87.87
	50.000	45.00	.00	.00	1275.41	255.00	1279.47	1277.23	1279.47	6.78	.71	369.88	97.92
*	51.000	46.00	.00	.00	1276.39	117.00	1278.88	1278.03	1278.94	117.47	1.95	63.25	10.80
*	51.000	46.00	.00	.00	1276.39	147.00	1279.05	1278.17	1279.11	116.89	2.10	75.19	13.60
*	51.000	46.00	.00	.00	1276.39	187.00	1279.19	1278.35	1279.27	130.98	2.37	86.32	16.34
*	51.000	46.00	.00	.00	1276.39	218.00	1279.34	1278.45	1279.42	126.64	2.46	98.10	19.37
*	51.000	46.00	.00	.00	1276.39	255.00	1279.49	1278.57	1279.58	122.08	2.55	111.92	23.08
*	52.000	24.00	.00	.00	1275.67	117.00	1278.97	1276.60	1278.98	6.31	.60	194.12	46.58
*	52.000	24.00	.00	.00	1275.67	147.00	1279.16	1276.71	1279.17	7.84	.69	211.77	52.49
*	52.000	24.00	.00	.00	1275.67	187.00	1279.33	1276.83	1279.34	10.21	.82	228.87	58.52
*	52.000	24.00	.00	.00	1275.67	218.00	1279.48	1276.92	1279.49	11.22	.89	246.36	65.07
*	52.000	24.00	.00	.00	1275.67	255.00	1279.64	1277.01	1279.66	12.46	.97	268.07	72.23
	53.000	100.00	.00	.00	1275.90	117.00	1279.03	1276.77	1279.04	5.05	.52	225.73	52.06
	53.000	100.00	.00	.00	1275.90	147.00	1279.23	1276.87	1279.24	6.45	.59	249.95	57.88
	53.000	100.00	.00	.00	1275.90	187.00	1279.43	1276.98	1279.43	8.35	.68	275.48	64.72
	53.000	100.00	.00	.00	1275.90	218.00	1279.59	1277.05	1279.60	9.31	.73	299.03	71.44
	53.000	100.00	.00	.00	1275.90	255.00	1279.76	1277.13	1279.77	10.28	.78	326.59	79.55

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	54.000	553.00	.00	.00	1277.55	117.00	1279.43	1278.32	1279.47	12.81	1.48	79.02	32.69
*	54.000	553.00	.00	.00	1277.55	147.00	1279.66	1278.43	1279.70	13.12	1.60	92.07	40.59
	54.000	553.00	.00	.00	1277.55	187.00	1279.84	1278.57	1279.86	7.17	1.26	171.18	69.83
	54.000	553.00	.00	.00	1277.55	218.00	1280.00	1278.67	1280.02	6.51	1.28	199.94	85.43
	54.000	553.00	.00	.00	1277.55	255.00	1280.17	1278.78	1280.19	5.86	1.28	242.28	105.30
*	55.000	24.00	.00	.00	1277.55	117.00	1279.44	1278.48	1279.53	30.16	2.47	47.43	21.30
	55.000	24.00	.00	.00	1277.55	147.00	1279.70	1279.70	1279.73	10.69	1.58	120.07	44.95
	55.000	24.00	.00	.00	1277.55	187.00	1279.86	1278.81	1279.89	10.82	1.68	143.31	56.86
	55.000	24.00	.00	.00	1277.55	218.00	1280.02	1278.94	1280.05	9.52	1.66	172.84	70.65
	55.000	24.00	.00	.00	1277.55	255.00	1280.19	1279.09	1280.22	8.13	1.61	216.93	89.42
	56.000	10.00	1279.66	1279.00	1277.55	117.00	1279.57	.00	1279.65	24.00	2.29	51.12	23.88
*	56.000	10.00	1279.66	1279.00	1277.55	147.00	1279.95	.00	1279.97	5.14	1.19	159.98	64.87
*	56.000	10.00	1279.66	1279.00	1277.55	187.00	1280.20	.00	1280.21	4.25	1.17	219.72	90.73
*	56.000	10.00	1279.66	1279.00	1277.55	218.00	1280.41	.00	1280.42	3.32	1.09	275.64	119.69
*	56.000	10.00	1279.66	1279.00	1277.55	255.00	1280.63	.00	1280.64	2.73	1.04	333.50	154.46
*	57.000	52.00	.00	.00	1277.03	117.00	1279.67	1278.36	1279.68	1.85	.72	191.04	85.95
*	57.000	52.00	.00	.00	1277.03	147.00	1279.98	1278.46	1279.98	1.46	.71	242.78	121.67
*	57.000	52.00	.00	.00	1277.03	187.00	1280.22	1278.56	1280.23	1.46	.75	290.56	154.66
*	57.000	52.00	.00	.00	1277.03	218.00	1280.43	1278.63	1280.44	1.34	.76	342.61	189.10
*	57.000	52.00	.00	.00	1277.03	255.00	1280.64	1278.70	1280.65	1.25	.77	398.85	227.65
	58.000	124.00	.00	.00	1278.00	117.00	1279.70	1278.57	1279.71	2.04	.55	211.67	82.01
	58.000	124.00	.00	.00	1278.00	147.00	1280.00	1278.62	1280.00	1.63	.55	265.46	115.20
	58.000	124.00	.00	.00	1278.00	187.00	1280.24	1278.68	1280.25	1.55	.60	314.69	150.15
	58.000	124.00	.00	.00	1278.00	218.00	1280.45	1278.72	1280.45	1.43	.62	358.98	182.20
	58.000	124.00	.00	.00	1278.00	255.00	1280.66	1278.77	1280.66	1.35	.64	409.40	219.68
*	59.000	48.00	.00	.00	1277.48	117.00	1279.67	1279.67	1279.83	267.91	4.11	40.00	7.15
*	59.000	48.00	.00	.00	1277.48	147.00	1280.00	1279.72	1280.05	43.01	2.05	85.12	22.41
*	59.000	48.00	.00	.00	1277.48	187.00	1280.24	1279.78	1280.28	23.27	1.71	121.76	38.77
*	59.000	48.00	.00	.00	1277.48	218.00	1280.45	1279.80	1280.48	15.25	1.51	154.72	55.83
*	59.000	48.00	.00	.00	1277.48	255.00	1280.66	1279.87	1280.69	10.89	1.39	194.69	77.27
*	60.000	11.00	1279.26	.00	1277.59	117.00	1280.28	.00	1280.29	11.83	1.18	111.68	34.02
*	60.000	11.00	1279.26	.00	1277.59	147.00	1280.47	.00	1280.49	9.07	1.13	141.58	48.81
*	60.000	11.00	1279.26	.00	1277.59	187.00	1280.68	.00	1280.70	7.27	1.10	179.65	69.36
*	60.000	11.00	1279.26	.00	1277.59	218.00	1280.87	.00	1280.88	5.88	1.06	217.64	89.93
*	60.000	11.00	1279.26	.00	1277.59	255.00	1281.04	.00	1281.06	5.04	1.04	260.26	113.59
*	61.000	76.00	.00	.00	1277.86	117.00	1280.30	1278.40	1280.30	.13	.46	320.57	323.80
*	61.000	76.00	.00	.00	1277.86	147.00	1280.49	1278.46	1280.49	.15	.52	362.54	378.93
*	61.000	76.00	.00	.00	1277.86	187.00	1280.70	1278.54	1280.71	.18	.59	411.88	445.88
*	61.000	76.00	.00	.00	1277.86	218.00	1280.88	1278.59	1280.89	.19	.64	454.37	506.23
*	61.000	76.00	.00	.00	1277.86	255.00	1281.06	1278.65	1281.06	.20	.69	495.81	568.35

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	62.000	133.00	.00	.00	1277.44	117.00	1280.30	1278.41	1280.30	.19	.57	314.77	271.36
	62.000	133.00	.00	.00	1277.44	147.00	1280.49	1278.49	1280.49	.22	.65	355.58	316.01
	62.000	133.00	.00	.00	1277.44	187.00	1280.71	1278.60	1280.71	.25	.74	406.14	371.16
	62.000	133.00	.00	.00	1277.44	218.00	1280.89	1278.65	1280.89	.27	.79	452.02	421.69
	62.000	133.00	.00	.00	1277.44	255.00	1281.06	1278.71	1281.07	.29	.85	498.74	474.60
*	63.000	133.00	.00	.00	1277.89	117.00	1280.30	1278.59	1280.31	1.16	.50	243.24	108.74
*	63.000	133.00	.00	.00	1277.89	147.00	1280.50	1278.68	1280.50	1.21	.55	282.50	133.41
*	63.000	133.00	.00	.00	1277.89	187.00	1280.71	1278.78	1280.72	1.26	.61	342.34	166.46
*	63.000	133.00	.00	.00	1277.89	218.00	1280.89	1278.85	1280.90	1.18	.62	404.59	200.43
*	63.000	133.00	.00	.00	1277.89	255.00	1281.07	1278.92	1281.07	1.14	.64	468.23	239.09
	64.000	194.00	.00	.00	1277.69	117.00	1280.33	1278.95	1280.33	1.31	.59	239.82	102.40
	64.000	194.00	.00	.00	1277.69	147.00	1280.52	1279.09	1280.52	1.26	.62	294.01	130.98
	64.000	194.00	.00	.00	1277.69	187.00	1280.74	1279.22	1280.74	1.20	.64	365.47	170.96
	64.000	194.00	.00	.00	1277.69	218.00	1280.92	1279.43	1280.92	1.07	.64	431.43	210.51
	64.000	194.00	.00	.00	1277.69	255.00	1281.09	1279.39	1281.09	1.00	.64	500.37	254.80
*	65.000	38.00	.00	.00	1277.90	117.00	1280.33	1278.73	1280.34	2.71	.91	174.51	71.06
*	65.000	38.00	.00	.00	1277.90	147.00	1280.52	1278.86	1280.53	2.64	.94	208.19	90.51
*	65.000	38.00	.00	.00	1277.90	187.00	1280.74	1279.02	1280.75	2.62	.99	247.84	115.64
*	65.000	38.00	.00	.00	1277.90	218.00	1280.92	1279.14	1280.93	2.44	1.00	281.59	139.48
*	65.000	38.00	.00	.00	1277.90	255.00	1281.09	1279.26	1281.10	2.37	1.02	317.39	165.60
	66.000	8.00	1279.26	1278.64	1277.90	117.00	1280.36	.00	1280.37	2.47	.87	180.69	74.50
	66.000	8.00	1279.26	1278.64	1277.90	147.00	1280.56	.00	1280.57	2.36	.90	216.57	95.62
	66.000	8.00	1279.26	1278.64	1277.90	187.00	1280.80	.00	1280.81	2.28	.94	259.87	123.93
	66.000	8.00	1279.26	1278.64	1277.90	218.00	1280.99	.00	1281.00	2.10	.94	296.23	150.38
	66.000	8.00	1279.26	1278.64	1277.90	255.00	1281.18	.00	1281.19	2.00	.95	338.81	180.50
*	67.000	172.00	.00	.00	1278.90	117.00	1280.43	1279.45	1280.44	7.31	.53	182.26	43.26
*	67.000	172.00	.00	.00	1278.90	147.00	1280.63	1279.50	1280.64	6.76	.55	218.62	56.53
*	67.000	172.00	.00	.00	1278.90	187.00	1280.86	1279.56	1280.87	6.32	.58	263.93	74.38
*	67.000	172.00	.00	.00	1278.90	218.00	1281.05	1279.61	1281.05	5.75	.60	307.09	90.94
*	67.000	172.00	.00	.00	1278.90	255.00	1281.23	1279.66	1281.24	5.25	.61	355.13	111.30
	68.000	162.00	.00	.00	1279.00	117.00	1280.61	1279.85	1280.62	12.08	.79	140.36	33.66
	68.000	162.00	.00	.00	1279.00	147.00	1280.79	1280.02	1280.81	11.25	.83	167.13	43.83
	68.000	162.00	.00	.00	1279.00	187.00	1281.01	1280.00	1281.03	10.55	.88	201.18	57.57
	68.000	162.00	.00	.00	1279.00	218.00	1281.18	1280.01	1281.20	9.74	.90	230.31	69.86
	68.000	162.00	.00	.00	1279.00	255.00	1281.36	1280.01	1281.37	9.21	.92	262.51	84.03
*	69.000	161.00	.00	.00	1277.89	117.00	1280.75	1279.27	1280.76	5.37	.56	233.78	50.48
*	69.000	161.00	.00	.00	1277.89	147.00	1280.93	1279.38	1280.94	4.93	.58	278.88	66.24
*	69.000	161.00	.00	.00	1277.89	187.00	1281.14	1279.57	1281.15	4.54	.60	333.07	87.78
*	69.000	161.00	.00	.00	1277.89	218.00	1281.31	1279.66	1281.31	4.22	.61	374.67	106.08
*	69.000	161.00	.00	.00	1277.89	255.00	1281.48	1279.76	1281.48	4.00	.63	419.60	127.44

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	70.000	57.00	.00	.00	1277.72	117.00	1280.71	1279.19	1280.85	16.12	2.98	39.28	29.14
*	70.000	57.00	.00	.00	1277.72	147.00	1280.85	1279.40	1281.04	22.07	3.57	41.23	31.29
*	70.000	57.00	.00	.00	1277.72	187.00	1281.00	1279.66	1281.29	30.87	4.32	43.33	33.66
*	70.000	57.00	.00	.00	1277.72	218.00	1281.10	1279.85	1281.47	37.90	4.86	44.87	35.41
*	70.000	57.00	.00	.00	1277.72	255.00	1281.20	1280.07	1281.67	47.45	5.51	46.26	37.02
*	71.000	51.00	1282.50	.00	1277.90	107.00	1281.73	.00	1281.80	6.06	2.08	51.40	43.45
*	71.000	51.00	1282.50	.00	1277.90	134.00	1282.35	.00	1282.36	9.01	.90	148.15	44.63
*	71.000	51.00	1282.50	.00	1277.90	170.00	1282.66	.00	1282.67	3.23	.71	239.55	94.57
*	71.000	51.00	1282.50	.00	1277.90	197.00	1282.85	.00	1282.85	2.23	.66	308.40	131.92
*	71.000	51.00	1282.50	.00	1277.90	230.00	1283.03	.00	1283.04	1.61	.63	394.97	181.40
*	72.000	98.00	.00	.00	1279.26	107.00	1281.82	1280.08	1281.82	.73	.39	265.08	125.16
*	72.000	98.00	.00	.00	1279.26	134.00	1282.37	1280.12	1282.37	.44	.37	358.49	201.11
*	72.000	98.00	.00	.00	1279.26	170.00	1282.68	1280.21	1282.68	.46	.41	411.13	250.22
*	72.000	98.00	.00	.00	1279.26	197.00	1282.86	1280.26	1282.86	.49	.45	442.29	281.38
*	72.000	98.00	.00	.00	1279.26	230.00	1283.04	1280.31	1283.05	.54	.49	473.58	314.17
	73.000	206.00	.00	.00	1279.36	107.00	1281.83	1280.06	1281.83	.81	.26	371.50	118.93
	73.000	206.00	.00	.00	1279.36	134.00	1282.38	1280.13	1282.38	.47	.23	499.31	195.74
	73.000	206.00	.00	.00	1279.36	170.00	1282.69	1280.20	1282.69	.48	.25	572.33	246.59
	73.000	206.00	.00	.00	1279.36	197.00	1282.87	1280.22	1282.87	.49	.27	617.47	280.46
	73.000	206.00	.00	.00	1279.36	230.00	1283.06	1280.28	1283.06	.53	.29	661.29	315.05
	74.000	251.00	.00	.00	1279.27	107.00	1281.86	1280.24	1281.86	1.21	.30	300.50	97.47
	74.000	251.00	.00	.00	1279.27	134.00	1282.39	1280.33	1282.39	.52	.24	459.81	185.74
	74.000	251.00	.00	.00	1279.27	170.00	1282.70	1280.62	1282.70	.46	.24	554.79	249.40
	74.000	251.00	.00	.00	1279.27	197.00	1282.89	1280.69	1282.89	.46	.25	611.98	291.53
	74.000	251.00	.00	.00	1279.27	230.00	1283.07	1280.76	1283.07	.47	.26	669.73	337.07
*	75.000	250.00	.00	.00	1279.73	107.00	1281.90	1280.57	1281.91	3.30	.48	209.42	58.94
*	75.000	250.00	.00	.00	1279.73	134.00	1282.41	1280.65	1282.42	1.48	.38	313.25	109.97
*	75.000	250.00	.00	.00	1279.73	170.00	1282.72	1280.75	1282.72	1.29	.39	380.30	149.93
*	75.000	250.00	.00	.00	1279.73	197.00	1282.90	1280.81	1282.91	1.25	.40	420.26	176.47
*	75.000	250.00	.00	.00	1279.73	230.00	1283.09	1280.88	1283.09	1.25	.42	460.77	205.32
	76.000	405.00	.00	.00	1279.60	107.00	1282.03	1280.68	1282.03	2.66	.39	260.99	65.58
	76.000	405.00	.00	.00	1279.60	134.00	1282.47	1280.76	1282.47	1.27	.32	371.33	118.88
	76.000	405.00	.00	.00	1279.60	170.00	1282.77	1280.86	1282.77	1.08	.33	447.43	163.24
	76.000	405.00	.00	.00	1279.60	197.00	1282.95	1280.95	1282.95	1.04	.34	493.56	192.90
	76.000	405.00	.00	.00	1279.60	230.00	1283.13	1281.00	1283.14	1.04	.36	540.77	225.32
	77.000	525.00	.00	.00	1279.90	107.00	1282.15	1281.01	1282.15	2.04	.33	289.52	74.96
	77.000	525.00	.00	.00	1279.90	134.00	1282.53	1281.07	1282.53	1.07	.28	401.24	129.63
	77.000	525.00	.00	.00	1279.90	170.00	1282.82	1281.26	1282.82	.90	.29	486.01	179.25
	77.000	525.00	.00	.00	1279.90	197.00	1283.00	1281.31	1283.00	.86	.29	537.71	212.70
	77.000	525.00	.00	.00	1279.90	230.00	1283.18	1281.29	1283.19	.85	.31	589.86	248.78

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	78.000	538.00	.00	.00	1280.15	107.00	1282.30	1281.06	1282.31	4.74	.57	190.64	49.15
*	78.000	538.00	.00	.00	1280.15	134.00	1282.61	1281.15	1282.62	2.80	.49	264.54	80.10
*	78.000	538.00	.00	.00	1280.15	170.00	1282.89	1281.25	1282.89	2.26	.48	328.48	113.09
*	78.000	538.00	.00	.00	1280.15	197.00	1283.06	1281.34	1283.07	2.04	.48	370.74	137.78
*	78.000	538.00	.00	.00	1280.15	230.00	1283.25	1281.45	1283.25	1.92	.49	415.17	166.05
	79.000	513.00	.00	.00	1280.77	107.00	1282.58	1281.54	1282.58	5.95	.60	183.09	43.85
	79.000	513.00	.00	.00	1280.77	134.00	1282.79	1281.63	1282.79	4.07	.54	243.46	66.40
	79.000	513.00	.00	.00	1280.77	170.00	1283.02	1281.74	1283.03	2.89	.50	331.14	100.08
	79.000	513.00	.00	.00	1280.77	197.00	1283.18	1281.81	1283.18	2.38	.48	391.39	127.83
	79.000	513.00	.00	.00	1280.77	230.00	1283.35	1281.89	1283.35	2.01	.46	457.25	162.20
	80.000	234.00	.00	.00	1281.07	107.00	1282.74	1282.25	1282.75	8.74	.49	189.61	36.20
	80.000	234.00	.00	.00	1281.07	134.00	1282.90	1282.28	1282.91	6.16	.47	240.71	54.01
	80.000	234.00	.00	.00	1281.07	170.00	1283.10	1282.32	1283.11	4.45	.45	305.06	80.58
	80.000	234.00	.00	.00	1281.07	197.00	1283.25	1282.34	1283.25	3.80	.44	348.69	101.04
	80.000	234.00	.00	.00	1281.07	230.00	1283.41	1282.37	1283.41	3.22	.44	401.16	128.09
	81.000	84.00	.00	.00	1281.20	19.00	1282.77	1281.76	1282.77	.15	.07	208.47	48.89
	81.000	84.00	.00	.00	1281.20	25.00	1282.93	1281.80	1282.93	.14	.08	257.01	67.96
	81.000	84.00	.00	.00	1281.20	32.00	1283.12	1281.86	1283.12	.11	.08	322.22	97.70
	81.000	84.00	.00	.00	1281.20	37.00	1283.27	1281.88	1283.27	.09	.08	367.74	120.98
	81.000	84.00	.00	.00	1281.20	44.00	1283.43	1281.89	1283.43	.09	.08	422.06	150.73
*	82.000	100.00	.00	.00	1281.60	19.00	1282.77	1281.96	1282.77	.51	.09	187.10	26.48
*	82.000	100.00	.00	.00	1281.60	25.00	1282.93	1282.02	1282.93	.37	.09	244.56	41.26
*	82.000	100.00	.00	.00	1281.60	32.00	1283.12	1282.05	1283.12	.25	.09	320.49	64.39
	82.000	100.00	.00	.00	1281.60	37.00	1283.27	1282.09	1283.27	.19	.08	381.40	85.54
	82.000	100.00	.00	.00	1281.60	44.00	1283.43	1282.12	1283.43	.16	.08	447.26	110.66
*	83.000	554.00	.00	.00	1282.60	19.00	1282.85	1282.84	1282.90	1829.09	1.84	10.33	.44
*	83.000	554.00	.00	.00	1282.60	25.00	1283.00	1282.87	1283.01	198.60	.84	29.59	1.77
*	83.000	554.00	.00	.00	1282.60	32.00	1283.17	1282.89	1283.17	39.48	.51	62.46	5.09
*	83.000	554.00	.00	.00	1282.60	37.00	1283.30	1282.91	1283.30	16.84	.40	92.29	9.02
*	83.000	554.00	.00	.00	1282.60	44.00	1283.45	1282.93	1283.45	8.44	.34	133.02	15.15
*	84.000	207.00	.00	.00	1281.90	19.00	1283.16	1282.28	1283.16	3.14	.25	76.79	10.73
*	84.000	207.00	.00	.00	1281.90	25.00	1283.25	1282.32	1283.25	3.77	.29	87.73	12.87
*	84.000	207.00	.00	.00	1281.90	32.00	1283.35	1282.37	1283.35	3.64	.31	110.38	16.76
*	84.000	207.00	.00	.00	1281.90	37.00	1283.43	1282.40	1283.43	3.13	.30	135.15	20.91
*	84.000	207.00	.00	.00	1281.90	44.00	1283.54	1282.43	1283.54	2.23	.28	176.55	29.49
	85.000	329.00	.00	.00	1282.40	19.00	1283.28	1282.65	1283.28	4.41	.27	69.77	9.04
	85.000	329.00	.00	.00	1282.40	25.00	1283.39	1282.68	1283.39	4.91	.30	83.79	11.29
	85.000	329.00	.00	.00	1282.40	32.00	1283.49	1282.71	1283.49	4.95	.33	97.55	14.38
	85.000	329.00	.00	.00	1282.40	37.00	1283.56	1282.73	1283.56	5.00	.35	106.60	16.55
*	85.000	329.00	.00	.00	1282.40	44.00	1283.64	1282.75	1283.64	4.91	.37	119.87	19.86

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	86.000	50.00	.00	.00	1282.43	19.00	1283.30	1282.63	1283.30	3.49	.26	72.00	10.17
	86.000	50.00	.00	.00	1282.43	25.00	1283.41	1282.66	1283.41	3.68	.30	84.38	13.03
	86.000	50.00	.00	.00	1282.43	32.00	1283.51	1282.69	1283.51	4.13	.34	95.42	15.76
	86.000	50.00	.00	.00	1282.43	37.00	1283.58	1282.71	1283.58	4.28	.36	103.58	17.88
	86.000	50.00	.00	.00	1282.43	44.00	1283.66	1282.74	1283.67	4.65	.39	112.89	20.40
*	87.000	51.00	.00	.00	1281.10	19.00	1283.31	1282.21	1283.31	.81	.31	61.82	21.13
*	87.000	51.00	.00	.00	1281.10	25.00	1283.42	1282.56	1283.42	.90	.35	71.30	26.31
*	87.000	51.00	.00	.00	1281.10	32.00	1283.52	1282.59	1283.52	1.04	.40	79.98	31.35
*	87.000	51.00	.00	.00	1281.10	37.00	1283.59	1282.62	1283.59	1.12	.43	86.01	35.00
*	87.000	51.00	.00	.00	1281.10	44.00	1283.67	1282.66	1283.68	1.22	.47	93.70	39.84
*	88.000	29.00	1284.90	.00	1281.29	19.00	1285.72	.00	1285.72	.00	.05	492.79	292.31
*	88.000	29.00	1284.90	.00	1281.29	25.00	1285.69	.00	1285.69	.01	.06	482.81	285.26
*	88.000	29.00	1284.90	.00	1281.29	32.00	1285.66	.00	1285.66	.01	.08	473.81	278.73
*	88.000	29.00	1284.90	.00	1281.29	37.00	1285.64	.00	1285.64	.02	.09	467.67	274.17
*	88.000	29.00	1284.90	.00	1281.29	44.00	1285.48	.00	1285.48	.03	.12	423.40	240.03
	73.000	128.00	.00	.00	1282.00	19.00	1285.72	1282.38	1285.72	.00	.03	729.94	369.45
	73.000	128.00	.00	.00	1282.00	25.00	1285.69	1282.43	1285.69	.00	.03	720.39	361.74
	73.000	128.00	.00	.00	1282.00	32.00	1285.66	1282.47	1285.66	.01	.04	711.38	354.53
	73.000	128.00	.00	.00	1282.00	37.00	1285.64	1282.49	1285.64	.01	.05	705.02	349.48
	73.000	128.00	.00	.00	1282.00	44.00	1285.48	1282.53	1285.48	.02	.07	654.57	310.58
	89.000	137.00	.00	.00	1281.96	19.00	1285.72	1282.42	1285.72	.00	.02	791.39	378.44
	89.000	137.00	.00	.00	1281.96	25.00	1285.69	1282.48	1285.69	.00	.03	779.64	369.67
	89.000	137.00	.00	.00	1281.96	32.00	1285.66	1282.52	1285.66	.01	.04	768.45	361.42
	89.000	137.00	.00	.00	1281.96	37.00	1285.64	1282.56	1285.64	.01	.05	760.63	355.71
	89.000	137.00	.00	.00	1281.96	44.00	1285.48	1282.60	1285.48	.02	.06	700.32	312.40
	90.000	253.00	.00	.00	1282.97	19.00	1285.72	1283.10	1285.72	.00	.02	818.60	338.44
	90.000	253.00	.00	.00	1282.97	25.00	1285.69	1283.12	1285.69	.01	.03	802.35	327.92
	90.000	253.00	.00	.00	1282.97	32.00	1285.66	1283.15	1285.66	.01	.04	786.96	318.11
	90.000	253.00	.00	.00	1282.97	37.00	1285.64	1283.16	1285.64	.01	.05	776.08	311.27
	90.000	253.00	.00	.00	1282.97	44.00	1285.48	1283.19	1285.48	.03	.07	691.28	260.37
	91.000	234.00	.00	.00	1282.88	19.00	1285.72	1283.10	1285.72	.00	.02	1126.95	454.41
	91.000	234.00	.00	.00	1282.88	25.00	1285.69	1283.13	1285.69	.00	.02	1102.69	438.90
	91.000	234.00	.00	.00	1282.88	32.00	1285.66	1283.16	1285.66	.01	.03	1079.80	424.51
	91.000	234.00	.00	.00	1282.88	37.00	1285.64	1283.18	1285.64	.01	.04	1063.66	414.50
	91.000	234.00	.00	.00	1282.88	44.00	1285.48	1283.21	1285.48	.02	.05	936.59	339.82
	92.000	55.00	.00	.00	1282.79	19.00	1285.72	1283.09	1285.72	.00	.02	1172.90	500.58
	92.000	55.00	.00	.00	1282.79	25.00	1285.69	1283.10	1285.69	.00	.02	1148.74	484.41
	92.000	55.00	.00	.00	1282.79	32.00	1285.66	1283.13	1285.66	.00	.03	1125.75	469.25
	92.000	55.00	.00	.00	1282.79	37.00	1285.64	1283.14	1285.64	.01	.04	1109.81	458.88
	92.000	55.00	.00	.00	1282.79	44.00	1285.48	1283.15	1285.48	.01	.05	982.74	380.36

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
93.000	53.00	.00	.00	1282.76	19.00	1285.72	1283.15	1285.72	.00	.02	1135.38	487.14
93.000	53.00	.00	.00	1282.76	25.00	1285.69	1283.17	1285.69	.00	.02	1111.22	471.08
93.000	53.00	.00	.00	1282.76	32.00	1285.66	1283.18	1285.66	.00	.03	1088.23	456.06
93.000	53.00	.00	.00	1282.76	37.00	1285.64	1283.20	1285.64	.01	.04	1072.19	445.71
93.000	53.00	.00	.00	1282.76	44.00	1285.48	1283.22	1285.48	.01	.05	945.32	368.12
94.000	126.00	.00	.00	1282.89	19.00	1285.72	1283.17	1285.72	.00	.02	1194.81	495.47
94.000	126.00	.00	.00	1282.89	25.00	1285.69	1283.20	1285.69	.00	.02	1168.92	478.64
94.000	126.00	.00	.00	1282.89	32.00	1285.66	1283.23	1285.66	.00	.03	1144.40	462.96
94.000	126.00	.00	.00	1282.89	37.00	1285.64	1283.24	1285.64	.01	.04	1127.22	452.12
94.000	126.00	.00	.00	1282.89	44.00	1285.48	1283.26	1285.48	.01	.05	991.41	370.97

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	848.00	1237.00	.00	.00	.00	243.00	.00
	1.000	1090.00	1237.00	.00	.00	.00	243.00	.00
	1.000	1412.00	1237.00	.00	.00	.00	243.00	.00
	1.000	1661.00	1237.00	.00	.00	.00	243.00	.00
	1.000	1967.00	1237.00	.00	.00	.00	243.00	.00
*	2.000	848.00	1253.38	.00	16.38	.00	35.78	12.00
*	2.000	1090.00	1253.85	.47	16.85	.00	36.05	12.00
*	2.000	1412.00	1254.43	.58	17.43	.00	37.25	12.00
*	2.000	1661.00	1255.33	.90	18.33	.00	118.88	12.00
*	2.000	1967.00	1255.93	.59	18.93	.00	140.95	12.00
*	3.000	848.00	1254.28	.00	.90	.00	36.95	5.00
	3.000	1090.00	1254.44	.16	.60	.00	37.30	5.00
	3.000	1412.00	1254.54	.10	.11	.00	37.49	5.00
	3.000	1661.00	1255.51	.97	.18	.00	126.28	5.00
	3.000	1967.00	1256.07	.56	.14	.00	143.48	5.00
*	4.000	848.00	1255.48	.00	1.20	.00	512.53	3256.00
*	4.000	1090.00	1256.22	.74	1.78	.00	553.54	3256.00
*	4.000	1412.00	1257.34	1.11	2.80	.00	586.70	3256.00
*	4.000	1661.00	1257.70	.36	2.19	.00	588.66	3256.00
*	4.000	1967.00	1258.16	.46	2.09	.00	591.13	3256.00
*	5.000	848.00	1255.49	.00	.01	.00	66.77	600.00
*	5.000	1090.00	1256.24	.74	.01	.00	85.43	600.00
*	5.000	1412.00	1257.35	1.11	.01	.00	114.87	600.00
*	5.000	1661.00	1257.71	.36	.01	.00	124.51	600.00
*	5.000	1967.00	1258.17	.46	.01	.00	136.66	600.00
*	6.000	833.00	1257.99	.00	2.50	.00	131.90	1665.00
*	6.000	1071.00	1258.44	.45	2.21	.00	143.90	1665.00
*	6.000	1387.00	1259.00	.56	1.65	.00	158.65	1665.00
*	6.000	1631.00	1259.38	.38	1.67	.00	168.78	1665.00
*	6.000	1967.00	1259.82	.44	1.65	.00	180.35	1665.00
*	7.000	815.00	1258.24	.00	.25	.00	112.31	2273.00
*	7.000	1046.00	1258.74	.51	.30	.00	115.07	2273.00
*	7.000	1354.00	1259.35	.61	.35	.00	118.40	2273.00
*	7.000	1592.00	1259.77	.42	.38	.00	120.68	2273.00
*	7.000	1884.00	1260.25	.48	.43	.00	123.32	2273.00
	8.000	815.00	1258.24	.00	.00	.00	147.86	36.00
	8.000	1046.00	1258.74	.51	.00	.00	208.76	36.00
	8.000	1354.00	1259.35	.61	.00	.00	381.60	36.00
	8.000	1592.00	1259.78	.42	.01	.00	382.95	36.00
	8.000	1884.00	1260.27	.50	.02	.00	385.79	36.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	9.000	815.00	1258.24	.00	.00	.00	84.68	82.00
*	9.000	1046.00	1258.75	.51	.01	.00	86.53	82.00
*	9.000	1354.00	1259.36	.61	.01	.00	90.14	82.00
*	9.000	1592.00	1259.79	.42	.01	.00	93.79	82.00
*	9.000	1884.00	1260.28	.50	.01	.00	98.06	82.00
	10.000	815.00	1258.24	.00	.00	.00	84.16	157.00
	10.000	1046.00	1258.75	.51	.00	.00	88.00	157.00
	10.000	1354.00	1259.37	.61	.00	.00	92.63	157.00
	10.000	1592.00	1259.79	.43	.01	.00	95.85	157.00
	10.000	1884.00	1260.29	.50	.01	.00	99.61	157.00
	11.000	815.00	1258.30	.00	.05	.00	216.19	100.00
	11.000	1046.00	1258.83	.53	.07	.00	232.28	100.00
	11.000	1354.00	1259.47	.64	.10	.00	257.27	100.00
	11.000	1592.00	1259.92	.45	.13	.00	286.28	100.00
	11.000	1884.00	1260.45	.53	.16	.00	318.62	100.00
*	12.000	782.00	1259.16	.00	.86	.00	112.39	3400.00
*	12.000	1003.00	1259.75	.59	.92	.00	124.43	3400.00
*	12.000	1297.00	1260.43	.68	.96	.00	138.35	3400.00
*	12.000	1525.00	1260.90	.47	.98	.00	147.84	3400.00
*	12.000	1805.00	1261.42	.52	.97	.00	166.23	3400.00
*	13.000	782.00	1269.15	.00	9.99	.00	112.95	516.00
*	13.000	1003.00	1269.37	.22	9.62	.00	117.28	516.00
*	13.000	1297.00	1269.63	.27	9.20	.00	122.56	516.00
*	13.000	1525.00	1269.82	.19	8.93	.00	126.29	516.00
*	13.000	1805.00	1270.04	.21	8.62	.00	130.53	516.00
*	14.000	782.00	1271.27	.00	2.11	.00	157.25	770.00
*	14.000	1003.00	1271.72	.46	2.35	.00	163.70	770.00
*	14.000	1297.00	1272.25	.53	2.61	.00	171.11	770.00
*	14.000	1525.00	1272.60	.35	2.77	.00	176.64	770.00
*	14.000	1805.00	1272.98	.39	2.95	.00	183.04	770.00
*	15.000	782.00	1271.67	.00	.40	.00	139.02	522.00
*	15.000	1003.00	1272.14	.48	.42	.00	162.19	522.00
	15.000	1297.00	1272.68	.54	.43	.00	228.76	522.00
	15.000	1525.00	1273.04	.35	.44	.00	294.56	522.00
	15.000	1805.00	1273.42	.39	.44	.00	322.58	522.00
	16.000	782.00	1272.61	.00	.95	.00	166.58	607.00
	16.000	1003.00	1273.04	.43	.90	.00	174.41	607.00
	16.000	1297.00	1273.52	.48	.84	.00	185.06	607.00
	16.000	1525.00	1273.85	.32	.81	.00	193.60	607.00
	16.000	1805.00	1274.20	.35	.78	.00	202.89	607.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	17.000	294.00	1273.29	.00	.67	.00	174.91	500.00
	17.000	370.00	1273.67	.38	.63	.00	180.06	500.00
	17.000	472.00	1274.12	.46	.60	.00	186.10	500.00
	17.000	550.00	1274.44	.32	.60	.00	190.15	500.00
	17.000	646.00	1274.80	.36	.60	.00	194.69	500.00
*	18.000	279.00	1273.45	.00	.16	.00	161.48	181.00
*	18.000	352.00	1273.80	.35	.13	.00	167.35	181.00
*	18.000	448.00	1274.24	.43	.11	.00	176.03	181.00
*	18.000	522.00	1274.54	.31	.10	.00	180.49	181.00
*	18.000	612.00	1274.89	.35	.09	.00	185.52	181.00
*	19.000	279.00	1273.72	.00	.27	.00	185.67	181.00
*	19.000	352.00	1274.04	.32	.24	.00	192.95	181.00
*	19.000	448.00	1274.44	.40	.21	.00	198.36	181.00
	19.000	522.00	1274.73	.29	.19	.00	201.81	181.00
	19.000	612.00	1275.07	.33	.18	.00	205.76	181.00
	20.000	279.00	1273.58	.00	-.14	.00	31.21	88.00
	20.000	352.00	1273.84	.26	-.20	.00	31.21	88.00
	20.000	448.00	1274.17	.32	-.28	.00	31.21	88.00
*	20.000	522.00	1274.39	.23	-.34	.00	31.21	88.00
*	20.000	612.00	1274.65	.26	-.42	.00	31.21	88.00
*	21.000	279.00	1273.36	.00	-.22	.00	30.90	50.00
*	21.000	352.00	1273.59	.23	-.25	.00	30.90	50.00
*	21.000	448.00	1273.87	.27	-.30	.00	30.90	50.00
*	21.000	522.00	1274.06	.20	-.33	.00	30.90	50.00
*	21.000	612.00	1274.30	.23	-.35	.00	30.90	50.00
*	22.000	279.00	1274.09	.00	.72	.00	155.79	125.00
*	22.000	352.00	1274.43	.34	.84	.00	168.38	125.00
*	22.000	448.00	1274.85	.42	.98	.00	183.96	125.00
*	22.000	522.00	1275.15	.30	1.09	.00	197.74	125.00
*	22.000	612.00	1275.50	.35	1.20	.00	219.35	125.00
*	23.000	279.00	1274.11	.00	.02	.00	135.32	150.00
*	23.000	352.00	1274.45	.34	.02	.00	140.59	150.00
*	23.000	448.00	1274.87	.42	.02	.00	146.98	150.00
*	23.000	522.00	1275.17	.30	.02	.00	151.40	150.00
*	23.000	613.00	1275.52	.35	.01	.00	156.33	150.00
*	24.000	234.00	1275.47	.00	1.37	.00	201.83	656.00
*	24.000	293.00	1275.74	.27	1.29	.00	207.07	656.00
*	24.000	373.00	1276.07	.33	1.21	.00	213.69	656.00
*	24.000	433.00	1276.31	.24	1.14	.00	218.72	656.00
*	24.000	507.00	1276.59	.28	1.08	.00	224.78	656.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	25.000	234.00	1276.00	.00	.53	.00	195.76	495.00
	25.000	293.00	1276.27	.26	.53	.00	209.34	495.00
	25.000	373.00	1276.59	.32	.52	.00	220.08	495.00
	25.000	433.00	1276.82	.23	.50	.00	227.40	495.00
	25.000	507.00	1277.08	.26	.49	.00	235.83	495.00
*	26.000	234.00	1275.87	.00	-.13	.00	22.25	64.00
*	26.000	293.00	1276.04	.18	-.22	.00	22.25	64.00
*	26.000	373.00	1276.22	.17	-.37	.00	22.25	64.00
*	26.000	433.00	1276.32	.10	-.50	.00	22.25	64.00
*	26.000	507.00	1276.38	.06	-.70	.00	22.25	64.00
	27.000	234.00	1277.23	.00	1.37	.00	92.96	40.00
	27.000	294.00	1277.35	.11	1.30	.00	95.51	40.00
	27.000	373.00	1277.51	.16	1.29	.00	99.17	40.00
	27.000	433.00	1277.60	.09	1.28	.00	101.23	40.00
*	27.000	507.00	1277.72	.12	1.34	.00	103.94	40.00
*	28.000	234.00	1277.38	.00	.14	.00	336.45	146.00
*	28.000	294.00	1277.53	.15	.18	.00	339.53	146.00
*	28.000	373.00	1277.73	.20	.22	.00	343.62	146.00
*	28.000	433.00	1277.85	.13	.25	.00	364.07	146.00
*	28.000	507.00	1278.01	.16	.29	.00	398.05	146.00
	29.000	234.00	1277.38	.00	.00	.00	399.14	145.00
	29.000	294.00	1277.53	.15	.00	.00	407.12	145.00
	29.000	373.00	1277.73	.20	.00	.00	413.57	145.00
	29.000	433.00	1277.86	.13	.00	.00	417.63	145.00
	29.000	507.00	1278.01	.16	.01	.00	422.62	145.00
	30.000	234.00	1277.38	.00	.00	.00	399.54	5.00
	30.000	294.00	1277.53	.15	.00	.00	405.08	5.00
	30.000	373.00	1277.73	.20	.00	.00	412.38	5.00
	30.000	433.00	1277.86	.13	.00	.00	417.82	5.00
	30.000	507.00	1278.01	.16	.00	.00	422.79	5.00
*	31.000	234.00	1277.37	.00	-.01	.00	221.06	71.00
*	31.000	294.00	1277.52	.15	-.01	.00	222.48	71.00
*	31.000	373.00	1277.72	.20	-.01	.00	224.37	71.00
*	31.000	433.00	1277.85	.13	-.01	.00	225.56	71.00
*	31.000	507.00	1278.00	.16	-.01	.00	226.97	71.00
*	32.000	234.00	1277.39	.00	.01	.00	447.57	20.00
*	32.000	294.00	1277.54	.15	.02	.00	451.86	20.00
*	32.000	373.00	1277.74	.20	.02	.00	457.53	20.00
*	32.000	433.00	1277.87	.13	.02	.00	461.11	20.00
*	32.000	507.00	1278.03	.16	.02	.00	463.68	20.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	33.000	234.00	1277.40	.00	.02	.00	331.27	331.00
*	33.000	294.00	1277.56	.16	.02	.00	337.31	331.00
*	33.000	373.00	1277.76	.20	.02	.00	345.23	331.00
*	33.000	433.00	1277.89	.13	.02	.00	350.19	331.00
*	33.000	507.00	1278.05	.16	.02	.00	356.56	331.00
	34.000	234.00	1277.40	.00	.00	.00	294.50	103.00
	34.000	294.00	1277.56	.16	.00	.00	294.50	103.00
	34.000	373.00	1277.76	.20	.00	.00	294.50	103.00
	34.000	433.00	1277.89	.13	.00	.00	294.50	103.00
	34.000	507.00	1278.05	.16	.00	.00	294.50	103.00
*	35.000	234.00	1277.40	.00	.00	.00	225.25	66.00
*	35.000	294.00	1277.55	.15	.00	.00	228.32	66.00
*	35.000	373.00	1277.76	.20	-.01	.00	232.34	66.00
*	35.000	433.00	1277.89	.13	-.01	.00	234.89	66.00
*	35.000	507.00	1278.04	.16	-.01	.00	238.01	66.00
	36.000	234.00	1277.40	.00	.00	.00	221.45	53.00
	36.000	294.00	1277.55	.15	.00	.00	226.62	53.00
	36.000	373.00	1277.75	.20	.00	.00	233.41	53.00
	36.000	433.00	1277.88	.13	.00	.00	237.34	53.00
	36.000	507.00	1278.04	.16	-.01	.00	242.55	53.00
	37.000	234.00	1277.43	.00	.03	.00	395.43	140.00
	37.000	294.00	1277.59	.16	.04	.00	400.40	140.00
	37.000	373.00	1277.80	.21	.04	.00	412.63	140.00
	37.000	433.00	1277.93	.13	.05	.00	414.45	140.00
	37.000	507.00	1278.09	.16	.05	.00	416.05	140.00
	38.000	234.00	1277.43	.00	.01	.00	349.61	102.00
	38.000	294.00	1277.60	.16	.01	.00	350.49	102.00
	38.000	373.00	1277.81	.21	.01	.00	351.64	102.00
	38.000	433.00	1277.94	.13	.01	.00	352.37	102.00
	38.000	507.00	1278.10	.16	.01	.00	353.26	102.00
*	39.000	234.00	1277.44	.00	.01	.00	539.14	102.00
*	39.000	294.00	1277.60	.16	.01	.00	540.03	102.00
*	39.000	373.00	1277.82	.21	.01	.00	541.18	102.00
*	39.000	433.00	1277.95	.14	.01	.00	541.93	102.00
*	39.000	507.00	1278.12	.17	.01	.00	543.27	102.00
	40.000	234.00	1277.44	.00	.00	.00	235.05	127.00
	40.000	294.00	1277.61	.16	.00	.00	238.19	127.00
	40.000	373.00	1277.82	.21	.00	.00	242.27	127.00
	40.000	433.00	1277.96	.14	.00	.00	244.79	127.00
	40.000	507.00	1278.12	.17	.00	.00	247.91	127.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	41.000	234.00	1277.44	.00	.00	.00	79.13	392.00
*	41.000	294.00	1277.60	.16	.00	.00	84.39	392.00
*	41.000	373.00	1277.81	.21	.00	.00	90.97	392.00
*	41.000	433.00	1277.96	.14	.00	.00	127.20	392.00
*	41.000	507.00	1278.12	.17	.00	.00	162.18	392.00
*	42.000	234.00	1278.45	.00	1.01	.00	151.16	22.00
*	42.000	294.00	1278.52	.06	.91	.00	155.27	22.00
*	42.000	373.00	1278.52	.01	.71	.00	155.65	22.00
*	42.000	433.00	1278.61	.08	.65	.00	161.13	22.00
*	42.000	507.00	1278.67	.07	.55	.00	165.49	22.00
	43.000	234.00	1278.47	.00	.01	.00	135.79	17.00
	43.000	294.00	1278.54	.07	.02	.00	139.78	17.00
	43.000	373.00	1278.65	.12	.13	.00	146.34	17.00
	43.000	433.00	1278.67	.02	.07	.00	147.33	17.00
	43.000	507.00	1278.75	.07	.08	.00	151.50	17.00
*	44.000	234.00	1278.72	.00	.25	.00	206.20	62.00
*	44.000	294.00	1278.84	.13	.31	.00	212.74	62.00
*	44.000	373.00	1279.00	.15	.34	.00	220.73	62.00
*	44.000	433.00	1279.11	.12	.44	.00	226.06	62.00
*	44.000	507.00	1279.24	.13	.49	.00	226.75	62.00
*	45.000	234.00	1278.72	.00	.00	.00	172.85	62.00
*	45.000	294.00	1278.85	.13	.00	.00	177.39	62.00
*	45.000	373.00	1279.00	.15	.01	.00	182.56	62.00
*	45.000	433.00	1279.12	.12	.01	.00	186.48	62.00
*	45.000	507.00	1279.25	.13	.01	.00	190.58	62.00
	46.000	234.00	1278.76	.00	.04	.00	388.74	164.00
	46.000	294.00	1278.90	.14	.05	.00	403.06	164.00
	46.000	373.00	1279.07	.17	.07	.00	421.45	164.00
*	46.000	433.00	1279.20	.13	.08	.00	438.07	164.00
*	46.000	507.00	1279.34	.14	.10	.00	448.58	164.00
	47.000	117.00	1278.78	.00	.02	.00	374.74	164.00
	47.000	147.00	1278.92	.15	.02	.00	378.01	164.00
	47.000	187.00	1279.10	.18	.03	.00	390.72	164.00
	47.000	218.00	1279.23	.13	.03	.00	424.34	164.00
	47.000	255.00	1279.38	.15	.03	.00	455.75	164.00
*	48.000	117.00	1278.79	.00	.02	.00	149.69	219.00
*	48.000	147.00	1278.94	.15	.02	.00	158.32	219.00
*	48.000	187.00	1279.11	.17	.01	.00	377.27	219.00
*	48.000	218.00	1279.25	.13	.02	.00	387.82	219.00
*	48.000	255.00	1279.40	.15	.02	.00	399.37	219.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	49.000	117.00	1278.86	.00	.06	.00	216.39	180.00
	49.000	147.00	1279.02	.16	.08	.00	230.34	180.00
*	49.000	187.00	1279.15	.13	.04	.00	243.24	180.00
*	49.000	218.00	1279.29	.14	.04	.00	255.80	180.00
*	49.000	255.00	1279.44	.15	.05	.00	269.53	180.00
	50.000	117.00	1278.87	.00	.01	.00	151.53	45.00
	50.000	147.00	1279.04	.17	.02	.00	160.15	45.00
	50.000	187.00	1279.17	.14	.02	.00	166.99	45.00
	50.000	218.00	1279.31	.14	.02	.00	174.21	45.00
	50.000	255.00	1279.47	.15	.02	.00	182.11	45.00
*	51.000	117.00	1278.88	.00	.01	.00	67.05	46.00
*	51.000	147.00	1279.05	.17	.01	.00	74.01	46.00
*	51.000	187.00	1279.19	.14	.02	.00	79.95	46.00
*	51.000	218.00	1279.34	.14	.02	.00	85.79	46.00
*	51.000	255.00	1279.49	.16	.03	.00	92.17	46.00
*	52.000	117.00	1278.97	.00	.10	.00	94.29	24.00
*	52.000	147.00	1279.16	.18	.11	.00	97.96	24.00
*	52.000	187.00	1279.33	.17	.14	.00	103.56	24.00
*	52.000	218.00	1279.48	.15	.14	.00	119.10	24.00
*	52.000	255.00	1279.64	.16	.15	.00	153.33	24.00
	53.000	117.00	1279.03	.00	.06	.00	116.54	100.00
	53.000	147.00	1279.23	.20	.07	.00	128.27	100.00
	53.000	187.00	1279.43	.19	.10	.00	138.34	100.00
	53.000	218.00	1279.59	.16	.11	.00	146.43	100.00
	53.000	255.00	1279.76	.18	.12	.00	155.36	100.00
*	54.000	117.00	1279.43	.00	.40	.00	56.11	553.00
*	54.000	147.00	1279.66	.23	.43	.00	59.41	553.00
	54.000	187.00	1279.84	.18	.42	.00	161.71	553.00
	54.000	218.00	1280.00	.16	.42	.00	201.96	553.00
	54.000	255.00	1280.17	.17	.41	.00	261.86	553.00
*	55.000	117.00	1279.44	.00	.00	.00	27.73	24.00
	55.000	147.00	1279.70	.27	.05	.00	127.13	24.00
	55.000	187.00	1279.86	.16	.02	.00	157.12	24.00
	55.000	218.00	1280.02	.16	.02	.00	230.46	24.00
	55.000	255.00	1280.19	.17	.02	.00	262.49	24.00
	56.000	117.00	1279.57	.00	.13	.00	28.05	10.00
*	56.000	147.00	1279.95	.39	.25	.00	185.45	10.00
*	56.000	187.00	1280.20	.25	.34	.00	262.75	10.00
*	56.000	218.00	1280.41	.21	.39	.00	267.82	10.00
*	56.000	255.00	1280.63	.21	.44	.00	272.97	10.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	57.000	117.00	1279.67	.00	.11	.00	161.68	52.00
*	57.000	147.00	1279.98	.30	.02	.00	168.39	52.00
*	57.000	187.00	1280.22	.24	.02	.00	226.11	52.00
*	57.000	218.00	1280.43	.21	.02	.00	266.92	52.00
*	57.000	255.00	1280.64	.21	.01	.00	266.92	52.00
	58.000	117.00	1279.70	.00	.03	.00	174.26	124.00
	58.000	147.00	1280.00	.30	.02	.00	185.28	124.00
	58.000	187.00	1280.24	.24	.02	.00	208.23	124.00
	58.000	218.00	1280.45	.21	.02	.00	227.12	124.00
	58.000	255.00	1280.66	.21	.02	.00	245.25	124.00
*	59.000	117.00	1279.67	.00	-.03	.00	126.94	48.00
*	59.000	147.00	1280.00	.33	.00	.00	142.49	48.00
*	59.000	187.00	1280.24	.25	.00	.00	153.97	48.00
*	59.000	218.00	1280.45	.21	.00	.00	172.71	48.00
*	59.000	255.00	1280.66	.21	.00	.00	208.03	48.00
*	60.000	117.00	1280.28	.00	.61	.00	150.59	11.00
*	60.000	147.00	1280.47	.19	.47	.00	159.45	11.00
*	60.000	187.00	1280.68	.22	.44	.00	194.33	11.00
*	60.000	218.00	1280.87	.18	.42	.00	224.82	11.00
*	60.000	255.00	1281.04	.18	.38	.00	264.85	11.00
*	61.000	117.00	1280.30	.00	.02	.00	211.92	76.00
*	61.000	147.00	1280.49	.19	.02	.00	222.89	76.00
*	61.000	187.00	1280.70	.22	.02	.00	235.07	76.00
*	61.000	218.00	1280.88	.18	.02	.00	236.52	76.00
*	61.000	255.00	1281.06	.17	.02	.00	237.94	76.00
	62.000	117.00	1280.30	.00	.00	.00	201.88	133.00
	62.000	147.00	1280.49	.19	.00	.00	222.42	133.00
	62.000	187.00	1280.71	.22	.00	.00	248.52	133.00
	62.000	218.00	1280.89	.18	.00	.00	260.74	133.00
	62.000	255.00	1281.06	.17	.00	.00	272.63	133.00
*	63.000	117.00	1280.30	.00	.00	.00	187.03	133.00
*	63.000	147.00	1280.50	.19	.01	.00	232.99	133.00
*	63.000	187.00	1280.71	.22	.01	.00	321.16	133.00
*	63.000	218.00	1280.89	.18	.01	.00	357.19	133.00
*	63.000	255.00	1281.07	.18	.01	.00	371.19	133.00
	64.000	117.00	1280.33	.00	.02	.00	262.06	194.00
	64.000	147.00	1280.52	.19	.02	.00	307.58	194.00
	64.000	187.00	1280.74	.22	.02	.00	348.21	194.00
	64.000	218.00	1280.92	.18	.02	.00	380.41	194.00
	64.000	255.00	1281.09	.17	.02	.00	403.37	194.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	65.000	117.00	1280.33	.00	.00	.00	169.12	38.00
*	65.000	147.00	1280.52	.19	.00	.00	177.90	38.00
*	65.000	187.00	1280.74	.22	.00	.00	186.71	38.00
*	65.000	218.00	1280.92	.18	.00	.00	190.42	38.00
*	65.000	255.00	1281.09	.17	.00	.00	224.78	38.00
	66.000	117.00	1280.36	.00	.03	.00	170.77	8.00
	66.000	147.00	1280.56	.20	.04	.00	180.02	8.00
	66.000	187.00	1280.80	.23	.06	.00	188.04	8.00
	66.000	218.00	1280.99	.19	.07	.00	201.63	8.00
	66.000	255.00	1281.18	.19	.08	.00	240.04	8.00
*	67.000	117.00	1280.43	.00	.07	.00	176.03	172.00
*	67.000	147.00	1280.63	.20	.07	.00	187.46	172.00
*	67.000	187.00	1280.86	.23	.06	.00	221.68	172.00
*	67.000	218.00	1281.05	.18	.06	.00	252.48	172.00
*	67.000	255.00	1281.23	.19	.06	.00	259.91	172.00
	68.000	117.00	1280.61	.00	.18	.00	137.59	162.00
	68.000	147.00	1280.79	.19	.16	.00	148.80	162.00
	68.000	187.00	1281.01	.22	.15	.00	162.49	162.00
	68.000	218.00	1281.18	.17	.14	.00	178.87	162.00
	68.000	255.00	1281.36	.18	.13	.00	188.01	162.00
*	69.000	117.00	1280.75	.00	.15	.00	254.42	161.00
*	69.000	147.00	1280.93	.18	.14	.00	255.95	161.00
*	69.000	187.00	1281.14	.21	.13	.00	257.84	161.00
*	69.000	218.00	1281.31	.16	.12	.00	259.31	161.00
*	69.000	255.00	1281.48	.17	.12	.00	260.88	161.00
*	70.000	117.00	1280.71	.00	-.05	.00	14.00	57.00
*	70.000	147.00	1280.85	.14	-.09	.00	14.00	57.00
*	70.000	187.00	1281.00	.15	-.15	.00	14.00	57.00
*	70.000	218.00	1281.10	.11	-.20	.00	14.00	57.00
*	70.000	255.00	1281.20	.10	-.27	.00	14.00	57.00
*	71.000	107.00	1281.73	.00	1.02	.00	14.00	51.00
*	71.000	134.00	1282.35	.62	1.50	.00	275.89	51.00
*	71.000	170.00	1282.66	.32	1.67	.00	310.24	51.00
*	71.000	197.00	1282.85	.19	1.74	.00	437.38	51.00
*	71.000	230.00	1283.03	.19	1.83	.00	498.84	51.00
*	72.000	107.00	1281.82	.00	.09	.00	167.69	98.00
*	72.000	134.00	1282.37	.55	.02	.00	170.18	98.00
*	72.000	170.00	1282.68	.31	.02	.00	170.18	98.00
*	72.000	197.00	1282.86	.18	.01	.00	170.18	98.00
*	72.000	230.00	1283.04	.18	.01	.00	170.18	98.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	73.000	107.00	1281.83	.00	.02	.00	231.95	206.00
	73.000	134.00	1282.38	.55	.01	.00	235.85	206.00
	73.000	170.00	1282.69	.31	.01	.00	235.85	206.00
	73.000	197.00	1282.87	.18	.01	.00	235.85	206.00
	73.000	230.00	1283.06	.18	.01	.00	235.85	206.00
	74.000	107.00	1281.86	.00	.03	.00	293.04	251.00
	74.000	134.00	1282.39	.53	.01	.00	302.46	251.00
	74.000	170.00	1282.70	.31	.01	.00	310.43	251.00
	74.000	197.00	1282.89	.18	.01	.00	310.43	251.00
	74.000	230.00	1283.07	.19	.01	.00	310.43	251.00
*	75.000	107.00	1281.90	.00	.05	.00	196.48	250.00
*	75.000	134.00	1282.41	.51	.02	.00	217.35	250.00
*	75.000	170.00	1282.72	.31	.02	.00	217.35	250.00
*	75.000	197.00	1282.90	.18	.02	.00	217.35	250.00
*	75.000	230.00	1283.09	.19	.02	.00	217.35	250.00
	76.000	107.00	1282.03	.00	.12	.00	253.62	405.00
	76.000	134.00	1282.47	.44	.06	.00	253.62	405.00
	76.000	170.00	1282.77	.30	.05	.00	253.62	405.00
	76.000	197.00	1282.95	.18	.05	.00	253.62	405.00
	76.000	230.00	1283.13	.19	.05	.00	253.62	405.00
	77.000	107.00	1282.15	.00	.12	.00	287.90	525.00
	77.000	134.00	1282.53	.38	.06	.00	287.90	525.00
	77.000	170.00	1282.82	.29	.05	.00	287.90	525.00
	77.000	197.00	1283.00	.18	.05	.00	287.90	525.00
	77.000	230.00	1283.18	.19	.05	.00	287.90	525.00
*	78.000	107.00	1282.30	.00	.16	.00	223.88	538.00
*	78.000	134.00	1282.61	.31	.09	.00	240.25	538.00
*	78.000	170.00	1282.89	.27	.07	.00	240.25	538.00
*	78.000	197.00	1283.06	.17	.07	.00	240.25	538.00
*	78.000	230.00	1283.25	.18	.06	.00	240.25	538.00
	79.000	107.00	1282.58	.00	.27	.00	261.61	513.00
	79.000	134.00	1282.79	.21	.17	.00	317.33	513.00
	79.000	170.00	1283.02	.23	.13	.00	382.92	513.00
	79.000	197.00	1283.18	.16	.11	.00	382.92	513.00
	79.000	230.00	1283.35	.17	.10	.00	382.92	513.00
	80.000	107.00	1282.74	.00	.16	.00	320.27	234.00
	80.000	134.00	1282.90	.16	.11	.00	320.27	234.00
	80.000	170.00	1283.10	.20	.08	.00	320.27	234.00
	80.000	197.00	1283.25	.14	.07	.00	320.27	234.00
	80.000	230.00	1283.41	.16	.06	.00	320.27	234.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	81.000	19.00	1282.77	.00	.03	.00	313.49	84.00
	81.000	25.00	1282.93	.15	.03	.00	317.58	84.00
	81.000	32.00	1283.12	.20	.02	.00	322.96	84.00
	81.000	37.00	1283.27	.14	.02	.00	326.66	84.00
	81.000	44.00	1283.43	.16	.02	.00	344.51	84.00
*	82.000	19.00	1282.77	.00	.00	.00	369.91	100.00
*	82.000	25.00	1282.93	.15	.00	.00	379.65	100.00
*	82.000	32.00	1283.12	.20	.00	.00	395.35	100.00
	82.000	37.00	1283.27	.14	.00	.00	407.38	100.00
	82.000	44.00	1283.43	.16	.00	.00	418.03	100.00
*	83.000	19.00	1282.85	.00	.07	.00	92.78	554.00
*	83.000	25.00	1283.00	.15	.07	.00	161.42	554.00
*	83.000	32.00	1283.17	.17	.04	.00	214.71	554.00
*	83.000	37.00	1283.30	.13	.03	.00	246.94	554.00
*	83.000	44.00	1283.45	.15	.03	.00	337.92	554.00
*	84.000	19.00	1283.16	.00	.31	.00	117.73	207.00
*	84.000	25.00	1283.25	.09	.26	.00	163.40	207.00
*	84.000	32.00	1283.35	.10	.18	.00	295.80	207.00
*	84.000	37.00	1283.43	.08	.13	.00	349.94	207.00
*	84.000	44.00	1283.54	.11	.08	.00	378.96	207.00
	85.000	19.00	1283.28	.00	.12	.00	119.61	329.00
	85.000	25.00	1283.39	.11	.14	.00	135.59	329.00
	85.000	32.00	1283.49	.10	.14	.00	142.98	329.00
	85.000	37.00	1283.56	.07	.13	.00	147.95	329.00
*	85.000	44.00	1283.64	.08	.10	.00	157.47	329.00
	86.000	19.00	1283.30	.00	.02	.00	108.48	50.00
	86.000	25.00	1283.41	.11	.02	.00	111.32	50.00
	86.000	32.00	1283.51	.10	.02	.00	113.78	50.00
	86.000	37.00	1283.58	.07	.02	.00	115.57	50.00
	86.000	44.00	1283.66	.08	.02	.00	117.58	50.00
*	87.000	19.00	1283.31	.00	.01	.00	83.06	51.00
*	87.000	25.00	1283.42	.11	.01	.00	85.48	51.00
*	87.000	32.00	1283.52	.10	.01	.00	87.63	51.00
*	87.000	37.00	1283.59	.07	.01	.00	89.09	51.00
*	87.000	44.00	1283.67	.09	.01	.00	90.93	51.00
*	88.000	19.00	1285.72	.00	2.41	.00	334.28	29.00
*	88.000	25.00	1285.69	-.03	2.27	.00	319.58	29.00
*	88.000	32.00	1285.66	-.03	2.14	.00	305.71	29.00
*	88.000	37.00	1285.64	-.02	2.05	.00	295.89	29.00
*	88.000	44.00	1285.48	-.16	1.81	.00	273.35	29.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
73.000	19.00	1285.72	.00	.00	.00	318.30	128.00
73.000	25.00	1285.69	-.03	.00	.00	318.13	128.00
73.000	32.00	1285.66	-.03	.00	.00	317.97	128.00
73.000	37.00	1285.64	-.02	.00	.00	317.86	128.00
73.000	44.00	1285.48	-.16	.00	.00	316.99	128.00
89.000	19.00	1285.72	.00	.00	.00	388.32	137.00
89.000	25.00	1285.69	-.03	.00	.00	388.32	137.00
89.000	32.00	1285.66	-.03	.00	.00	388.32	137.00
89.000	37.00	1285.64	-.02	.00	.00	388.32	137.00
89.000	44.00	1285.48	-.16	.00	.00	364.90	137.00
90.000	19.00	1285.72	.00	.00	.00	536.78	253.00
90.000	25.00	1285.69	-.03	.00	.00	536.78	253.00
90.000	32.00	1285.66	-.03	.00	.00	536.78	253.00
90.000	37.00	1285.64	-.02	.00	.00	536.78	253.00
90.000	44.00	1285.48	-.16	.00	.00	520.49	253.00
91.000	19.00	1285.72	.00	.00	.00	801.34	234.00
91.000	25.00	1285.69	-.03	.00	.00	801.34	234.00
91.000	32.00	1285.66	-.03	.00	.00	801.34	234.00
91.000	37.00	1285.64	-.02	.00	.00	801.34	234.00
91.000	44.00	1285.48	-.16	.00	.00	801.34	234.00
92.000	19.00	1285.72	.00	.00	.00	801.34	55.00
92.000	25.00	1285.69	-.03	.00	.00	801.34	55.00
92.000	32.00	1285.66	-.03	.00	.00	801.34	55.00
92.000	37.00	1285.64	-.02	.00	.00	801.34	55.00
92.000	44.00	1285.48	-.16	.00	.00	801.34	55.00
93.000	19.00	1285.72	.00	.00	.00	801.34	53.00
93.000	25.00	1285.69	-.03	.00	.00	801.34	53.00
93.000	32.00	1285.66	-.03	.00	.00	801.34	53.00
93.000	37.00	1285.64	-.02	.00	.00	801.34	53.00
93.000	44.00	1285.48	-.16	.00	.00	801.34	53.00
94.000	19.00	1285.72	.00	.00	.00	858.45	126.00
94.000	25.00	1285.69	-.03	.00	.00	858.45	126.00
94.000	32.00	1285.66	-.03	.00	.00	858.45	126.00
94.000	37.00	1285.64	-.02	.00	.00	858.45	126.00
94.000	44.00	1285.48	-.16	.00	.00	858.45	126.00

PROPOSED HEC-2 OUTPUT

PROPOSED STONY RUN 3rd STREET TO STONY RUN DAM 2/25/99

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*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    25FEB99    TIME   11:22:32  *
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*           (916) 756-1104              *
*****************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 25FEB99 11:22:32

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 3rd STREET TO STONY RUN LAKE DAM
T3 HEC-1 GENERATED 5 YEAR PROPOSED FLOWS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	0		0	0.0000	0.0000	1237	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	0		-1				-1			

J5 LPRNT NUMSEC ********REQUESTED SECTION NUMBERS********

-10 -10

****
JUNCTION J75 FLOWS FROM HEC-1 ANALYSIS

QT	5	914	1171	1511	1773	2095				

****
DS OF SPILLWAY

NC	0.033	0.033	0.033							
X1	1	8	0	800	100	100	100			
X3	10									
GR	1265	0	1260	80	1250	200	1245	240	1240	300
GR	1235	380	1235	580	1275	800				

****
DS FACE OF SPILLWAY

NC	0.033	0.033	0.015	0.6	1					
X1	2	21	684	720	12	12	12			
X3	10									
GR	1254.6	0	1264	87.6	1255.17	114.03	1254.6	168.44	1255.87	199.87
GR	1260.5	212.41	1259.45	278.53	1258.7	381.02	1258.74	483.98	1258.91	594.69
GR	1259.8	664.53	1258.9	673.49	1253.76	684	1250.89	684.56	1250.7	702.67
GR	1250.8	719.79	1258.85	720	1258.85	730.71	1264.21	741.13	1283.68	763.84
GR	1284.3	768								

****

SB	1.05	1.6	2.7		0.1		0.01		1250.7	1250.6

****
US FACE OF SPILLWAY

```
X1       3         0         0         0         5         5         5
X2                           1    1250.6    1250.7
X3      10
BT     -21         0   1264.86                87.6      1264                114.03   1255.17
BT              168.44    1254.6               199.87    1255.87               212.41    1260.5
BT              278.53   1259.45               381.02     1258.7               483.98   1258.74
BT              594.69   1258.91               664.53    1259.79               673.49    1258.9
BT                 684   1253.76               684.56    1280.89               702.67    1250.7
BT              719.79   1250.75                  720    1258.85               730.71   1258.85
BT              741.13   1264.21               763.84    1283.68                  768   1274.31
        ********
        BASE OF SPILL WAY

NC   0.033     0.033     0.024
X1       4        20     87.92    766.91      2958      3279      3256
X3      10
GR  1272.5         0   1271.31     87.92    1266.99    100.24    1265.95    113.65   1257.12    134.32
GR  1255.7    180.63      1255     249.6    1250.58    259.98    1251.02    284.52   1250.64    391.32
GR  1249.8     495.7   1251.25    601.54    1249.85    633.46    1250.36    640.83   1250.77    644.94
GR  1250.2     681.2   1252.01       709    1253.98    710.23    1272.49    766.91   1277.51    808.35
        ********
        600 FEET US OF SPILLWAY

X1       5        18    127.23    923.12       600       600       600
X3      10
GR  1280.5         0   1279.81     61.68    1278.65    127.23    1269.99    176.65   1261.85    210.85
GR  1255.9    235.88   1251.67    243.08    1250.77    247.98      1340    403.47    1250.6    554.95
GR  1253.9    563.84   1261.63    709.36    1266.05    809.41    1274.17    877.45   1262.57    923.12
GR  1286.5     968.7   1287.57    986.49    1288.91   1057.02
        ********
        JUNCTION    J71 FLOWS FROM HEC-1 ANALYSIS

QT       5       899      1152      1486      1744      2061
        ********
        2383 FEET DS OF SD HIGHWAY 37 BRIDGE
X1       6                                    1565      1812      1665
X3      10
        ********
        JUNCTION    J70 FLOWS FROM HEC-1 ANALYSIS

QT       5       880      1126      1452      1703      2012
        ********
        118 FEET DS OF SD HIGHWAY 37 BRIDGE
X1       7        11    460.25     571.8      2300      2300      2273
X3      10
GR  1283.4         0   1270.93    181.75    1267.85    320.82    1266.42    380.13   1263.03    433.27
GR  1258.1    460.25   1251.03    474.16    1249.89    500.54    1249.8     519.39   1251.42    550.82
GR  1258.1     571.8
        ********
        82 FEET DS OF SD HIGHWAY 37 BRIDGE
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X1        8         19      244.62     357.13         78          0         36
X3       10
GR    1274.3          0     1273.87      82.66     1273.28     138.43    1272.96     170.05    1271.82     196.58
GR    1266.7     214.83     1261.68     229.17     1260.07     244.62    1251.54     272.28    1251.09     274.99
GR    1251.1     280.92     1249.87     301.52     1250.33     318.47    1251.57     337.83     1251.4     341.99
GR    1255.6     357.13     1258.09     380.27     1258.92     477.47    1258.97     628.52
        ********
        DS FACE OF SD HIGHWAY 37 BRIDGE

X1        9         24      150.88     315.79         82          82        82
X3       10
GR    1277.9          0     1278.01     112.31     1278.4      147.98    1271.8      149.14    1273.63     150.88
GR    1266.8     166.11     1260.59        181     1259.08       191.4    1256.34     196.67     1253.6     205.34
GR    1251.4     218.47     1249.98     231.07     1250.42       240.2    1251.33     250.73    1252.16     259.73
GR    1253.9     263.16     1253.82     266.14     1253.97      270.34    1260.82     282.14    1266.29      294.6
GR    1272.6     315.79     1274.54     319.49     1276.82       319.6    1278.21     410.87
        ********

SB      1.05       1.56         2.6          0          65           4        2535       2.73    1250.19    1249.98
        ********
        US FACE OF SD HIGHWAY 37 BRIDGE
X1       10         17      82.46     247.74         157         157       157
X2                             1     1274.09     1278.48
X3       10
GR    1277.7          0     1273.93      79.98     1272.31       82.46    1266.57     101.37    1261.01     116.92
GR    1257.2     137.09     1251.67     151.96     1251.28      154.81    1250.19     169.09    1250.53      182.1
GR    1251.5     197.62     1252.31     201.03     1255.03      208.42    1261.19      222.4    1274.26     247.74
GR    1272.1     248.81     1277.98      299.7
        ********
        100 FEET US OF SD HIGHWAY 37 BRIDGE

NC      0.04       0.04         0.04
X1        11         14           73        175         100         100       100
X3        10
GR    1257.9          0     1256.58         34     1255.39          73    1253.01          96    1251.11         108
GR    1250.2        120     1250.44        129     1251.46         148    1253.73         164    1255.97         175
GR    1257.5        192     1259.31        247     1260.35         314    1261.88         387
        ********
        JUNCTION   J65  FLOWS FROM HEC-1 ANALYSIS

QT        5        847        1083       1395        1636        1932
        ********
        XC AT SECTION LINE BETWEEN SECTIONS 13 & 24
X1       12         15       212.5      262.5        3400        3400      3400
X3       10
GR    1279.6          0     1279.74      62.33     1279.55      124.23    1274.42         157    1271.62         171
GR      1262        198     1257.33      212.5     1255.63      225.11    1255.16         231    1255.51         242
GR    1256.6      262.5        1257     293.24     1258.94      315.46     1261.1       352.8    1262.43      407.71
        ********
          XC "D"
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NC    0.033     0.033     0.048
X1       13        10         0       207       540       500       516
X3       10
GR   1274.4         0   1267.27        96   1267.94       108   1267.88       161   1268.43       179
GR   1272.8       207   1276.15       266   1278.21       322   1280.62       377   1283.61       432
        ********
          XC "C"

X1       14        14    222.46    403.96       760       780       770
X3       10
GR   1279.8         0    1279.7     56.27   1279.23    113.68   1276.53    170.87   1272.35    222.46
GR   1269.5    250.97   1268.62    268.46   1266.26    327.71   1267.79    376.11    1274.5    403.96
GR   1276.1     463.8   1280.09    520.05   1281.03    576.59   1280.86    634.25
        ********
          XC "B"

X1       15        19       320       429       520       530       522
X3       10
GR   1281.6         0   1281.02        55   1280.52        81   1279.43       111   1276.78       168
GR   1272.5       224    1274.3       281   1271.77       320   1269.12       344   1267.65    390.14
GR   1268.8    408.05   1268.04    415.65    1267.7    419.28   1268.04       423   1269.11       429
GR     1272       464    1272.6       516   1273.03       571    1281.7       679
        **********
          XC "A"

X1       16        18    357.37    592.11       605       610       607
X3       10
GR   1281.7         0    1281.1     55.82    1281.3     78.53   1281.26    108.54   1281.11    158.29
GR   1280.7    207.14   1279.43    257.74   1276.99    307.57   1273.31    357.37   1270.77    371.54
GR   1269.9     387.7   1268.81    405.38   1270.21    423.89   1270.29    464.03   1271.27    510.63
GR   1277.6    592.11   1277.21    662.13   1279.07    711.52
        ********
        ********
        FLOWS FROM JUNCTION JS HEC-1
        CELLS 1-4 HEC-1 GENERATED, CELLS 5-2 RATIONAL METHOD

QT        5       358       450       568       658       768
        ********
        500 FEET DS OF 21st ST BRIDGE
NC     0.03      0.03     0.025
X1       17        63    166.98     247.3       146       195       181         .   0         0
X3       10
GR   1279.8         0   1279.43     12.82   1279.32     21.64    1279.3     26.79   1278.52     42.9
GR   1278.7     50.28      1278     60.04      1279     71.61      1278     72.68      1277    74.37
GR   1276.7      75.9      1277     80.02      1278     86.25   1278.67     93.48   1278.92    95.64
GR   1279.1     98.74    1279.2    103.57      1279       109   1279.05    112.62      1278    117.29
GR     1277    121.46      1276    125.65   1275.73    126.77   1275.66    127.07   1275.51     129.2
GR   1275.3    137.15      1275    138.61   1274.97    138.74   1274.46    141.03      1274    143.09
GR     1273    147.94      1273    147.97   1272.11    154.85      1272    164.72   1271.96    165.71
GR   1271.9    166.98   1271.83    168.41   1270.59    192.92    1270.5     223.2   1271.08    229.93
GR   1271.1    237.39   1271.11    239.81   1271.62     247.3    1271.3    261.06    1271.5    289.61
GR   1271.5    294.09   1270.99    298.33   1271.12    300.03    1271.1    300.39   1271.83    307.81
GR     1272     308.8   1272.19    311.76   1272.28    312.51    1272.5    314.88   1272.54    315.09
```

GR	1273	319.02	1273.92	326.92	1273.98	327.45	1275	335.89	1275.47	340.55
GR	1276.6	358.86	1277.75	377.73	1278.2	396.76				

****

MISC XC STATION 1+81

X1	18	40	81.68	256.64	146	195	181			
X3	10									
GR	1278.7	0	1278.61	9.05	1278.5	16.96	1278.46	20.77	1278.3	31.77
GR	1278	60.04	1277.34	77.06	1277.3	80.02	1277.3	81.68	1277	87.63
GR	1276.3	95.95	1276	99.59	1275.04	109.86	1274.86	111.71	1274.17	118.8
GR	1274	120.78	1273.77	124.29	1273	128.67	1272.29	133.55	1272	135.93
GR	1271.9	181.13	1271.47	218.32	1271.5	218.53	1271.37	220.02	1271	226.34
GR	1271.9	256.64	1272.9	282.11	1274	293.16	1276	301.63	1277	305.29
GR	1278	317.98	1277.22	337.39	1275.6	342.72	1275.7	347.38	1277	358.97
GR	1277.4	363.2	1278	371.14	1278.3	377.45	1278.3	399.05	1278.2	407.72

****

QT	5	338	425	537	621	724

****

88 FEET SOUTH OF 21st STREET BRIDGE STATION 3+62

X1	19	49	171.49	313.62	136	205	181			
X3	10									
GR	1278.8	0	1278.73	9.84	1278.69	11.44	1278.51	28.78	1278.46	32.85
GR	1278.4	39.51	1278.46	39.8	1278.41	44.5	1278.3	47.05	1278.29	50.23
GR	1278.2	50.44	1278.08	73.86	1278.12	90	1277.87	108.06	1277.51	117.44
GR	1277.2	131.79	1277.16	132.35	1277	138.82	1276.32	143.4	1276	145.57
GR	1275.2	151.36	1275	153.17	1274.27	161.16	1274	163.82	1273.71	166.01
GR	1273	171.49	1272.49	178.5	1272	185.15	1271.61	200.04	1271.5	204.2
GR	1271.5	205.52	1271.44	206.17	1271.36	208.17	1271.32	211.09	1271.02	242.02
GR	1271.2	255.29	1271.29	262.12	1271.44	272.36	1271.98	306.74	1272	313.62
GR	1274	356.15	1274	356.23	1274.3	357.19	1274.43	357.51	1274.42	357.61
GR	1274.5	357.63	1276	359.55	1276.1	362.7	1276.45	370.99		

****

DS FACE OF 21st STREET BRIDGE STATION 4+50

NC	0.03	0.03	0.025	0.04	0.06					
X1	20	8	75	118.5	138	47	88			
X3	10									
GR	1277.8	0	1275.87	75	1271.96	75.16	1270.98	96.54	1272.04	118.47
GR	1276	118.5	1276.28	132.48	1276.28	213.05				

****

SB		1.6	3.0	213	31		144.151			

****

US FACE OF 21st STREET BRIDGE STATION 5+00

X1	21	11	105.19	136.2	50	50	50			
X2			1	1275.63	1276.11					
X3	10			105.2	1276.63	136.1	1276.67			
GR	1278.1	0	1277.26	51.1	1276.77	78.65	1276.67	105.19	1272.53	105.2
GR	1271.5	118.2	1272.5	136.1	1276	136.2	1276.55	153.68	1276.29	224.11
GR	1276.7	248.2								

****

STATION 5+50

```
NC    0.03      0.03      0.025
X1      22        22         53      295         50         50         50                    0          0
X3      10
GR  1278.1         0    1278.6        53     1271.5         82     1271.5       182     1271.5        282
GR  1275.1       296    1274.9       300       1274        310       1275     310.1     1275.3        346
GR  1274.3     346.1    1274.9       331     1275.1        381     1275.1       419     1275.6        460
GR  1276.6       550    1277.8       641       1279        705     1279.3     727.8     1280.3      727.9
GR  1281.4       743    1280.8     757.7
          *********

QT        5       338       425       537        621        724
          *********
          STATION 8+50
X1       23         0         0         0        300        300        300                 0.28          0
X3       10
          *********
          STATION 12+50

X1       24        14        79     304.7        400        400        400                    0          0
X3       10
GR  1280.9         0   1278.93      25.8    1277.01       62.1    1277.47       79.    1272.21       99.6
GR  1272.2     199.6    1272.21     299.6    1273.57      304.7     1273.7     312.1    1276.57      331.1
GR  1277.1       369    1276.37       433    1277.77        494    1279.97       535
          *********
          STATION    15+00

X1       25                                              250        250        250                 0.24          0
X3       10
          *********

QT        5       276       348       439        507        591
          *********
          STATION 19+00
NC    0.03      0.03      0.021
X1       26         7        70       385        400        400        400                                0
X3       10
GR  1281.1         0    1280.2        50     1279.3         70     1272.9       128     1272.9        338
GR  1279.3       385    1281.4       595
          *********
          STATION    19+50

X1       27                                              50         50         50                  0.05          0
X3       10
          *********
          STATION    23+00

NC    0.03      0.03      0.025
X1       28        14      99.4     257.7        450        450        450                    0          0
X3       10
GR  1278.9         0    1277.86        30     1276.4         43     1274.65       64     1274.01       99.4
GR  1273.2     102.5    1273.19     177.5    1273.19      252.5     1274.61     257.7    1275.01        302
GR  1276.5       396    1281.51       477    1282.41        506    1282.41       546
          *********
```

STATION 25+00

X1	29				200	200	200		0.19	0
X3	10									

****

STATION 27+50 SPECIAL SECTION E-E

NC	0.03	0.03	0.021							
X1	30	7	36	256	250	250	250			
X3	10									
GR	1280.5	0	1279.6	36	1273.8	85	1273.8	150	1273.8	235
GR	1276.3	256	1276.7	315						

****

STATION 28+00 SPECIAL SECTION E-E

X1	31				50	50	50		0.05	
X3	10									

****

STATION 29+00

NC	0.03	0.03	0.025							
X1	32	20	221.8	379.6	100	100	100			0
X3	10									
GR	1281.9	0	1281.3	44.2	1277.3	103	1275.7	118	1275.2	142.3
GR	1274.3	153	1273.9	197	1273.82	221.8	1273.75	223.4	1273.75	298.4
GR	1273.8	373.4	1282.12	379.6	1275.3	395	1274.4	416	1275	435
GR	1275.3	478	1276.8	495	1274.2	502	1277.6	624	1278.1	740

****

QT	5	276	348	439	507	591

****

STATION 33+00

X1	33	20	221.8	379.6	400	400	400		0	0
X3	10									
GR	1281.9	0	1281.3	44.2	1277.3	103	1275.7	118	1275.2	142.3
GR	1274.3	153	1273.9	197	1274.2	221.8	1274.13	223.4	1274.13	298.4
GR	1274.1	373.4	1282.5	379.6	1275.3	395	1274.4	416	1275	435
GR	1275.3	478	1276.8	495	1274.2	502	1277.6	624	1278.1	740

****

STATION 35+00

X1	34	13	130.8	298.3	200	200	200		0	0
X3	10									
GR	1278.9	0	1277.3	40	1275.3	77	1274.5	96.2	1274.5	115
GR	1274.4	130.8	1274.32	130.9	1274.32	205.8	1274.32	280.8	1278.9	298.3
GR	1279.3	307.5	1276.9	322	1278.2	339				

****

STATION 40+22

X1	35	20	54.3	271.9	522	522	522		0	0
X3	10									
GR	1280	0	1279.2	54.3	1274.75	73.1	1274.81	166.2	1274.85	259.2
GR	1277.8	271.9	1277.9	314	1276	355	1275.4	399	1277.36	423
GR	1277.0	472	1277.87	480	1279.4	610	1279	703	1276.8	828
GR	1277	961	1279	1041	1278.15	1075	1278.28	1157	1280.68	1213
	********									
	STATION 45+00									
X1	36	11	31.3	219.4	478	478	478		0	0
X3	10									
GR	1280.3	0	1280.4	31.3	1285.26	50.6	1275.26	125.6	1275.26	200.6
GR	1280.3	219.4	1280	261	1279.5	285	1279.48	367	1279.74	392
GR	1281.3	467								
	********									
	STATION 49+00 SPECIAL SECTION									
NC	0.03	0.03	0.021							
X1	37	8	46	206	400	400	400			0
X3	10									
GR	1281	0	1280	38	1279.48	46	1275.73	76	1275.73	126
GR	1275.7	176	1279.48	206	1280	258				
	********									
	STATION 49+50 SPECIAL SECTION									
X1	38				50	50	50		0.05	0
X3	10									
	********									
	STATION 55+00									
NC	0.03	0.03	0.025							
X1	39	13	128.2	253	550	550	550		0	0
X3	10									
GR	1281.1	0	1280.9	29	1280.3	70	1279.2	90	1278.3	111
GR	1277.9	128.2	1276.2	133.7	1276.2	183.7	1276.2	233.7	1281.35	253
GR	1281.2	289	1280.5	367	1281.5	454				
	********									
	STATION 59+50 SPECIAL SECTION									
NC	0.03	0.03	0.021							
X1	40	8	42	182	450	450	450			
X3	10									
GR	1280	0	1279.17	42	1276.67	62	1276.67	112	1276.67	162
GR	1279.2	182	1280	196	1281	217				
	********									
	STATION 60+00 SPECIAL SECTION									
X1	41				50	50	50		0.05	
X3	10									
	********									
	STATION 62+00									

```
NC     0.03       0.03      0.025
X1       42         13      128.2        253         200         200         200                    0           0
X3       10
GR   1281.8          0     1281.6         29        1281          70      1279.9          90  1278.96         111
GR   1278.6      128.2    1276.86      133.7     1276.86       183.7     1276.86       233.7     1282         253
GR   1281.9        289    1281.16        357     1282.16         454
        ********
        DS FACE OF 9TH STREET CULVERTS  64+00

NC     0.03       0.03      0.025        0.3         0.5
X1       43                                           200         200         200                 0.19
X3       10
        ********

SC    6.012        0.6          3        100           4                     65         3.2  1277.47      1277.4
        ********
QT       5        142        181        229         264         308
        ********
        US FACE 9TH STREET CULVERTS     STATION    64+65
X1       44         17        460      583.3          65          65          65                    0           0
X2        0          0          2          0        1282
X3       10
GR   1286.5          0     1281.15       18.5      1286.6        42.1     1286.26          72  1285.36         120
GR   1284.4        192     1281.33        375     1281.25         460     1277.14       474.6  1277.14       524.6
GR   1277.2      574.6      1279.7      583.3     1280.61         652     1280.79         666  1278.92         742
GR   1281.3        893     1283.39       1025
        ********
        STATION    69+00

NC     0.03       0.03      0.025
X1       45         15       19.9      213.9         600         300         445                    0           0
X3       10
GR   1281.6          0     1281.4         9.3     1281.55        19.9     1277.52          79.4  1277.52       116.9
GR   1277.5      154.4       1280      213.9      1279.1         244     1279.48         259  1280.62         281
GR   1281.8      312.7     1280.3      321.7     1279.86       332.1     1282.65       345.1  1283.14         357
        ********
        STATION    74+50

X1       46                                           500         600         550                 0.512           0
X3       10
        ********

QT       5         19         24         31          37          44
        ********
        STATION    78+50
X1       47         10         57        157         400         400         400                    0           0
X3       10
GR     1283          0       1282         57        1281          61        1280          65     1279          69
GR   1278.8        100       1279        148        1280         152        1281         157     1283         350
        ********
        STATION 79+00
```

X1	48	12	95	192	50	50	50		0	0
X3	10									
GR	1283	0	1282	95	1281	99	1280	104	1279	108
GR	1278	112	1277.9	130	1278	180	1279	184	1280	188
GR	1281	192	1283	310						
	********									
	STATION	84+00								
NC	0.03	0.03	0.025	0.3						
X1	49	13	160	331	492	535	500		0	0
X3	10									
GR	1283	0	1283	55	1282	160	1281	164	1280	168
GR	1279	172	1278	176	1277.9	200	1278	318	1279	322
GR	1280	327	1281	331	1283	747				
	********									
	STATION	90+00								
NC	0.03	0.03	0.025							
X1	50	14	165	853	577	985	600		0	0
X3	10									
GR	1282	0	1281.5	94	1282	165	1281	169	1280	173
GR	1279	177	1278	181	1277.9	355	1278	837	1279	841
GR	1280	845	1281	849	1282	853	1282	979		
	********									
	STATION	94+00								
X1	51	13	211	945	408	400	400		0	0
X3	10									
GR	1281.8	0	1282	211	1281	215	1280	219	1279	223
GR	1278	227	1277.9	452	1278	933	1279	937	1280	941
GR	1281	945	1282	949	1283	1007				
	********									
	STATION	98+00								
X1	52	16	160	755	550	23	400		0	0
X3	10									
GR	1283	0	1282	40	1281.5	65	1282	80	1282	160
GR	1281	164	1280	168	1279	172	1278	176	1277.8	265
GR	1278	739	1279	743	1280	747	1281	751	1282	755
GR	1283	818								
	********									
	STATION	102+00								
NC	0.03	0.03	0.025		0.6					
X1	53	9	71	160	415	459	400		0	0
X3	10									
GR	1283	0	1283	71	1282	74	1281	77.5	1280.82	115
GR	1281	152.5	1282	156	1283	160	1283	252		
	********									
	STATION	105+00								

NC	0.03	0.03	0.025							
X1	54				300	300	300		0.28	
X3	10									
	********									
	STATION	109+00								
X1	55	16	172.1	257.6	400	400	400		0	0
X3	10									
GR	1284.3	0	1284	36.9	1286.1	89	1283.37	110.9	1283.32	165.62
GR	1283.4	172.1	1281.28	182.5	1281.28	220	1281.28	257.5	1281.1	257.6
GR	1281.6	285.8	1282.46	305.8	1282.58	313.25	1283.19	382.57	1283.47	407.2
GR	1283.8	442								
	********									
	********									

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 3rd STREET TO STONY RUN LAKE DAM
T3 HEC-1 GENERATED 10 YEAR EXISTING FLOWS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0		0	0.0000	0.0000	1237	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2		-1				-1			

****
****

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 3rd STREET TO STONY RUN LAKE DAM
T3 HEC-1 GENERATED 25 YEAR EXISTING FLOWS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0		0	0.0000	0.0000	1237	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3		-1				-1			

****
****

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 HEC-1 GENERATED 50 YEAR EXISTING FLOWS
T3 3rd STREET TO STONY RUN LAKE DAM

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	5	0	0		0	0.0000	0.0000	1237	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4		-1				-1			

****
****

5175, 20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = 264.000

T1 HURON, SD, STONEY RUN CREEK WATERSHED
T2 3rd STREET TO STONY RUN LAKE DAM
T3 HEC-1 GENERATED 100 YEAR EXISTING FLOWS

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	6	0	0		0	0.0000	0.0000	1237	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15		-1				-1			

****

5175, 20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = 308.000

THIS RUN EXECUTED 25FEB99 11:22:36

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

HEC-1 GENERATED 5 YEAR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.000	.00	.00	.00	1235.00	914.00	1237.00	1235.85	1237.07	9.44	2.06	443.00	297.50
	1.000	.00	.00	.00	1235.00	1171.00	1237.00	1236.00	1237.11	15.49	2.64	443.00	297.50
	1.000	.00	.00	.00	1235.00	1511.00	1237.00	1236.18	1237.18	25.80	3.41	443.00	297.50
	1.000	.00	.00	.00	1235.00	1773.00	1237.00	1236.31	1237.25	35.52	4.00	443.00	297.50
	1.000	.00	.00	.00	1235.00	2095.00	1237.00	1236.46	1237.35	49.59	4.73	443.00	297.50
*	2.000	12.00	.00	.00	1250.70	914.00	1253.51	1253.51	1254.88	28.01	9.39	97.35	172.71
*	2.000	12.00	.00	.00	1250.70	1171.00	1254.00	1254.00	1255.62	27.19	10.20	114.84	224.57
*	2.000	12.00	.00	.00	1250.70	1511.00	1254.61	1254.61	1256.51	25.82	11.06	137.33	297.37
*	2.000	12.00	.00	.00	1250.70	1773.00	1255.56	1255.56	1257.04	16.06	9.97	226.27	442.39
*	2.000	12.00	.00	.00	1250.70	2095.00	1256.08	1256.08	1257.51	14.44	10.05	298.24	551.31
*	3.000	5.00	1250.70	1250.60	1250.70	914.00	1255.80	.00	1256.13	3.46	4.77	259.53	491.61
*	3.000	5.00	1250.70	1250.60	1250.70	1171.00	1256.11	.00	1256.55	4.41	5.57	302.33	557.82
*	3.000	5.00	1250.70	1250.60	1250.70	1511.00	1256.46	.00	1257.03	5.52	6.47	354.07	642.95
*	3.000	5.00	1250.70	1250.60	1250.70	1773.00	1256.70	.00	1257.37	6.29	7.08	391.19	706.85
*	3.000	5.00	1250.70	1250.60	1250.70	2095.00	1256.98	.00	1257.75	7.13	7.74	434.85	784.67
*	4.000	3256.00	.00	.00	1249.80	914.00	1256.37	1251.05	1256.37	.04	.33	2730.78	4855.37
*	4.000	3256.00	.00	.00	1249.80	1171.00	1256.85	1251.13	1256.86	.04	.39	3006.70	5585.19
*	4.000	3256.00	.00	.00	1249.80	1511.00	1257.42	1251.26	1257.43	.05	.45	3339.26	6567.14
*	4.000	3256.00	.00	.00	1249.80	1773.00	1257.82	1251.33	1257.83	.06	.50	3573.64	7334.19
*	4.000	3256.00	.00	.00	1249.80	2095.00	1258.27	1251.42	1258.28	.06	.55	3840.87	8246.65
*	5.000	600.00	.00	.00	1250.60	914.00	1256.38	1255.35	1256.72	21.95	4.70	194.35	195.09
*	5.000	600.00	.00	.00	1250.60	1171.00	1256.86	1255.75	1257.23	20.96	4.86	240.99	255.75
*	5.000	600.00	.00	.00	1250.60	1511.00	1257.43	1256.20	1257.82	19.34	4.98	303.67	343.60
*	5.000	600.00	.00	.00	1250.60	1773.00	1257.83	1256.49	1258.23	18.12	5.03	352.58	416.56
*	5.000	600.00	.00	.00	1250.60	2095.00	1258.29	1256.81	1258.69	16.75	5.07	413.31	511.90

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	6.000	1665.00	.00	.00	1250.60	899.00	1258.06	1255.36	1258.14	3.80	2.36	381.52	461.37
*	6.000	1665.00	.00	.00	1250.60	1152.00	1258.58	1255.76	1258.68	3.95	2.53	454.82	579.84
*	6.000	1665.00	.00	.00	1250.60	1486.00	1259.15	1256.17	1259.27	4.11	2.73	544.27	733.19
*	6.000	1665.00	.00	.00	1250.60	1744.00	1259.54	1256.46	1259.67	4.21	2.86	609.32	850.16
*	6.000	1665.00	.00	.00	1250.60	2061.00	1259.97	1256.78	1260.11	4.31	3.01	685.81	993.09
*	7.000	2273.00	.00	.00	1249.80	880.00	1258.33	1251.98	1258.35	.31	1.19	737.85	1580.88
*	7.000	2273.00	.00	.00	1249.80	1126.00	1258.89	1252.25	1258.93	.39	1.41	802.20	1805.88
*	7.000	2273.00	.00	.00	1249.80	1452.00	1259.52	1252.60	1259.56	.49	1.67	875.78	2069.84
*	7.000	2273.00	.00	.00	1249.80	1703.00	1259.94	1252.84	1259.99	.57	1.85	926.45	2255.44
*	7.000	2273.00	.00	.00	1249.80	2012.00	1260.40	1253.12	1260.47	.66	2.07	983.47	2467.83
	8.000	36.00	.00	.00	1249.87	880.00	1258.33	1252.36	1258.36	.36	1.27	721.51	1462.45
	8.000	36.00	.00	.00	1249.87	1126.00	1258.90	1252.66	1258.93	.45	1.47	830.28	1686.43
	8.000	36.00	.00	.00	1249.87	1452.00	1259.53	1253.03	1259.57	.52	1.67	1062.64	2006.01
	8.000	36.00	.00	.00	1249.87	1703.00	1259.96	1253.29	1260.00	.57	1.79	1223.67	2263.48
	8.000	36.00	.00	.00	1249.87	2012.00	1260.43	1253.57	1260.48	.60	1.91	1406.17	2602.54
*	9.000	82.00	.00	.00	1249.98	880.00	1258.34	1253.24	1258.39	.88	1.82	484.74	936.99
*	9.000	82.00	.00	.00	1249.98	1126.00	1258.90	1253.60	1258.97	1.09	2.11	533.25	1079.32
*	9.000	82.00	.00	.00	1249.98	1452.00	1259.53	1254.12	1259.63	1.39	2.46	589.37	1232.09
*	9.000	82.00	.00	.00	1249.98	1703.00	1259.96	1254.41	1260.08	1.62	2.70	629.58	1339.39
*	9.000	82.00	.00	.00	1249.98	2012.00	1260.44	1254.75	1260.58	1.88	2.98	676.18	1466.60
	10.000	157.00	1278.48	1274.09	1250.19	880.00	1258.34	.00	1258.39	.93	1.85	476.06	912.85
	10.000	157.00	1278.48	1274.09	1250.19	1126.00	1258.90	.00	1258.98	1.17	2.14	525.22	1040.31
	10.000	157.00	1278.48	1274.09	1250.19	1452.00	1259.54	.00	1259.63	1.48	2.49	583.09	1195.49
	10.000	157.00	1278.48	1274.09	1250.19	1703.00	1259.97	.00	1260.08	1.69	2.73	624.33	1309.26
	10.000	157.00	1278.48	1274.09	1250.19	2012.00	1260.45	.00	1260.59	1.94	2.99	671.86	1443.52
	11.000	100.00	.00	.00	1250.20	880.00	1258.40	1253.06	1258.42	1.09	1.27	785.61	842.66
	11.000	100.00	.00	.00	1250.20	1126.00	1258.99	1253.43	1259.01	1.20	1.42	919.92	1028.87
	11.000	100.00	.00	.00	1250.20	1452.00	1259.65	1253.85	1259.68	1.31	1.58	1086.35	1270.91
	11.000	100.00	.00	.00	1250.20	1703.00	1260.11	1254.13	1260.15	1.36	1.68	1216.24	1459.71
	11.000	100.00	.00	.00	1250.20	2012.00	1260.62	1254.45	1260.66	1.41	1.79	1377.32	1695.85
*	12.000	3400.00	.00	.00	1255.16	847.00	1259.31	1257.83	1259.46	16.20	3.37	283.77	210.44
*	12.000	3400.00	.00	.00	1255.16	1083.00	1259.93	1258.09	1260.08	13.42	3.43	359.16	295.61
*	12.000	3400.00	.00	.00	1255.16	1395.00	1260.63	1258.40	1260.79	11.58	3.54	453.11	409.91
*	12.000	3400.00	.00	.00	1255.16	1636.00	1261.10	1258.62	1261.26	10.75	3.63	522.26	498.99
*	12.000	3400.00	.00	.00	1255.16	1932.00	1261.62	1258.90	1261.79	9.97	3.73	607.01	611.96
*	13.000	516.00	.00	.00	1267.27	847.00	1269.22	1269.22	1269.83	327.37	6.26	135.25	46.81
*	13.000	516.00	.00	.00	1267.27	1083.00	1269.44	1269.44	1270.14	310.68	6.70	161.72	61.44
*	13.000	516.00	.00	.00	1267.27	1395.00	1269.72	1269.72	1270.51	294.49	7.16	194.75	81.29
*	13.000	516.00	.00	.00	1267.27	1636.00	1269.91	1269.91	1270.78	285.34	7.47	218.97	96.85
*	13.000	516.00	.00	.00	1267.27	1932.00	1270.13	1270.13	1271.07	276.75	7.81	247.48	116.14

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	14.000	770.00	.00	.00	1266.26	847.00	1271.41	1268.48	1271.45	5.27	1.59	533.62	369.00
*	14.000	770.00	.00	.00	1266.26	1083.00	1271.88	1268.72	1271.93	5.87	1.78	608.42	446.97
*	14.000	770.00	.00	.00	1266.26	1395.00	1272.41	1269.01	1272.47	6.48	2.00	699.26	548.07
*	14.000	770.00	.00	.00	1266.26	1636.00	1272.76	1269.20	1272.83	6.82	2.15	761.21	626.56
*	14.000	770.00	.00	.00	1266.26	1932.00	1273.15	1269.43	1273.23	7.17	2.32	833.85	721.30
*	15.000	522.00	.00	.00	1267.65	847.00	1271.81	1269.79	1271.89	12.74	2.31	373.94	237.26
	15.000	522.00	.00	.00	1267.65	1083.00	1272.30	1270.05	1272.39	11.91	2.46	449.90	313.78
	15.000	522.00	.00	.00	1267.65	1395.00	1272.84	1270.35	1272.94	11.01	2.60	564.38	420.35
	15.000	522.00	.00	.00	1267.65	1636.00	1273.19	1270.56	1273.29	10.34	2.67	664.98	508.77
	15.000	522.00	.00	.00	1267.65	1932.00	1273.58	1270.80	1273.68	9.51	2.71	788.64	626.51
	16.000	607.00	.00	.00	1268.81	847.00	1272.74	1271.25	1272.82	18.61	2.26	373.95	196.36
	16.000	607.00	.00	.00	1268.81	1083.00	1273.17	1271.47	1273.26	17.63	2.41	448.70	257.96
	16.000	607.00	.00	.00	1268.81	1395.00	1273.66	1271.69	1273.76	16.93	2.60	537.70	339.00
	16.000	607.00	.00	.00	1268.81	1636.00	1273.98	1271.85	1274.10	16.84	2.74	599.56	398.66
	16.000	607.00	.00	.00	1268.81	1932.00	1274.33	1272.04	1274.46	16.91	2.90	670.63	469.85
	17.000	181.00	.00	.00	1270.50	358.00	1272.97	1271.75	1273.00	2.47	1.50	278.73	227.83
	17.000	181.00	.00	.00	1270.50	450.00	1273.40	1271.87	1273.43	1.89	1.49	352.96	327.43
	17.000	181.00	.00	.00	1270.50	568.00	1273.89	1271.97	1273.92	1.50	1.50	442.46	463.39
*	17.000	181.00	.00	.00	1270.50	658.00	1274.22	1272.07	1274.25	1.37	1.54	501.61	562.01
*	17.000	181.00	.00	.00	1270.50	768.00	1274.59	1272.17	1274.62	1.25	1.57	572.36	688.17
*	18.000	181.00	.00	.00	1271.00	358.00	1273.05	1272.34	1273.11	8.26	2.04	183.69	124.56
*	18.000	181.00	.00	.00	1271.00	450.00	1273.45	1272.44	1273.51	5.14	1.90	247.95	198.58
*	18.000	181.00	.00	.00	1271.00	568.00	1273.93	1272.57	1273.98	3.52	1.83	327.20	302.71
*	18.000	181.00	.00	.00	1271.00	658.00	1274.26	1272.65	1274.30	2.93	1.80	383.99	384.26
	18.000	181.00	.00	.00	1271.00	768.00	1274.62	1272.75	1274.67	2.49	1.80	448.92	486.33
*	19.000	181.00	.00	.00	1271.02	338.00	1273.18	1272.06	1273.21	3.07	1.43	244.43	192.79
	19.000	181.00	.00	.00	1271.02	425.00	1273.55	1272.17	1273.58	2.39	1.45	308.15	274.66
	19.000	181.00	.00	.00	1271.02	537.00	1274.00	1272.29	1274.04	1.85	1.46	392.66	394.77
	19.000	181.00	.00	.00	1271.02	621.00	1274.32	1272.37	1274.35	1.59	1.47	454.43	493.04
	19.000	181.00	.00	.00	1271.02	724.00	1274.68	1272.47	1274.71	1.39	1.49	525.25	614.92
*	20.000	88.00	.00	.00	1270.98	338.00	1272.72	1272.72	1273.35	90.93	6.36	53.18	35.44
*	20.000	88.00	.00	.00	1270.98	425.00	1273.10	1272.92	1273.67	57.93	6.04	70.35	55.84
*	20.000	88.00	.00	.00	1270.98	537.00	1273.55	1273.16	1274.11	42.35	5.99	89.61	82.52
*	20.000	88.00	.00	.00	1270.98	621.00	1273.85	1273.33	1274.42	36.58	6.05	102.61	102.54
*	20.000	88.00	.00	.00	1270.98	724.00	1274.18	1273.53	1274.78	33.10	6.21	116.67	125.85
*	21.000	50.00	1276.11	1275.63	1271.50	338.00	1273.55	1273.55	1274.33	87.30	7.09	47.66	36.18
*	21.000	50.00	1276.11	1275.63	1271.50	425.00	1273.80	1273.80	1274.71	85.25	7.67	55.41	46.03
*	21.000	50.00	1276.11	1275.63	1271.50	537.00	1274.10	1274.10	1275.17	82.76	8.29	64.79	59.03
*	21.000	50.00	1276.11	1275.63	1271.50	621.00	1274.32	1274.32	1275.49	81.05	8.69	71.50	68.98
*	21.000	50.00	1276.11	1275.63	1271.50	724.00	1274.57	1274.57	1275.87	80.11	9.15	79.12	80.89

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	22.000	50.00	.00	.00	1271.50	338.00	1274.36	1271.94	1274.36	.23	.56	604.58	697.67
*	22.000	50.00	.00	.00	1271.50	425.00	1274.75	1272.02	1274.75	.24	.61	691.61	864.77
*	22.000	50.00	.00	.00	1271.50	537.00	1275.21	1272.10	1275.22	.24	.67	833.74	1095.55
*	22.000	50.00	.00	.00	1271.50	621.00	1275.53	1272.16	1275.54	.23	.70	955.32	1285.30
*	22.000	50.00	.00	.00	1271.50	724.00	1275.91	1272.24	1275.92	.22	.72	1109.90	1536.48
	23.000	300.00	.00	.00	1271.78	338.00	1274.37	1272.22	1274.37	.33	.62	544.17	589.34
	23.000	300.00	.00	.00	1271.78	425.00	1274.76	1272.30	1274.76	.32	.67	630.33	745.80
	23.000	300.00	.00	.00	1271.78	537.00	1275.22	1272.38	1275.22	.32	.73	734.47	951.57
	23.000	300.00	.00	.00	1271.78	621.00	1275.54	1272.44	1275.55	.30	.76	852.45	1124.62
	23.000	300.00	.00	.00	1271.78	724.00	1275.92	1272.51	1275.93	.29	.78	997.38	1352.61
	24.000	400.00	.00	.00	1272.20	338.00	1274.38	1272.65	1274.39	.58	.74	458.54	444.05
	24.000	400.00	.00	.00	1272.20	425.00	1274.77	1272.72	1274.78	.52	.79	546.78	587.94
	24.000	400.00	.00	.00	1272.20	537.00	1275.23	1272.81	1275.24	.47	.83	653.81	780.81
	24.000	400.00	.00	.00	1272.20	621.00	1275.55	1272.87	1275.57	.45	.87	730.46	930.20
	24.000	400.00	.00	.00	1272.20	724.00	1275.93	1272.94	1275.94	.42	.90	821.34	1118.53
	25.000	250.00	.00	.00	1272.44	338.00	1274.40	1272.89	1274.41	.84	.83	408.03	368.42
	25.000	250.00	.00	.00	1272.44	425.00	1274.78	1272.96	1274.79	.72	.87	494.99	501.72
	25.000	250.00	.00	.00	1272.44	537.00	1275.24	1273.05	1275.25	.62	.91	600.57	682.48
	25.000	250.00	.00	.00	1272.44	621.00	1275.56	1273.11	1275.58	.57	.93	676.20	823.53
	25.000	250.00	.00	.00	1272.44	724.00	1275.94	1273.18	1275.96	.52	.96	765.88	1002.21
	26.000	400.00	.00	.00	1272.90	276.00	1274.43	1273.27	1274.44	.81	.81	339.48	306.79
	26.000	400.00	.00	.00	1272.90	348.00	1274.81	1273.34	1274.82	.60	.81	430.30	447.49
	26.000	400.00	.00	.00	1272.90	439.00	1275.27	1273.41	1275.28	.46	.81	542.01	644.11
	26.000	400.00	.00	.00	1272.90	507.00	1275.59	1273.46	1275.60	.40	.81	622.88	800.76
	26.000	400.00	.00	.00	1272.90	591.00	1275.96	1273.52	1275.97	.35	.82	719.55	1002.19
	27.000	50.00	.00	.00	1272.95	276.00	1274.43	1273.32	1274.45	.89	.84	329.91	293.07
	27.000	50.00	.00	.00	1272.95	348.00	1274.81	1273.39	1274.82	.65	.83	419.83	430.35
	27.000	50.00	.00	.00	1272.95	439.00	1275.27	1273.46	1275.28	.50	.83	530.85	623.40
	27.000	50.00	.00	.00	1272.95	507.00	1275.59	1273.51	1275.60	.42	.83	611.39	777.83
	27.000	50.00	.00	.00	1272.95	591.00	1275.96	1273.57	1275.98	.37	.84	707.69	976.69
*	28.000	450.00	.00	.00	1273.19	276.00	1274.49	1273.66	1274.52	3.93	1.37	205.31	139.24
*	28.000	450.00	.00	.00	1273.19	348.00	1274.85	1273.74	1274.88	2.61	1.32	277.34	215.57
*	28.000	450.00	.00	.00	1273.19	439.00	1275.29	1273.83	1275.32	1.68	1.25	386.98	338.42
*	28.000	450.00	.00	.00	1273.19	507.00	1275.61	1273.89	1275.63	1.30	1.21	474.57	445.22
*	28.000	450.00	.00	.00	1273.19	591.00	1275.98	1273.97	1276.00	1.00	1.17	586.95	591.33
	29.000	200.00	.00	.00	1273.38	276.00	1274.58	1273.85	1274.61	5.14	1.49	187.83	121.76
	29.000	200.00	.00	.00	1273.38	348.00	1274.91	1273.93	1274.94	3.48	1.45	250.37	186.59
	29.000	200.00	.00	.00	1273.38	439.00	1275.33	1274.02	1275.36	2.27	1.38	346.40	291.44
	29.000	200.00	.00	.00	1273.38	507.00	1275.64	1274.09	1275.66	1.72	1.32	426.86	386.18
	29.000	200.00	.00	.00	1273.38	591.00	1276.00	1274.16	1276.02	1.29	1.27	533.12	520.18

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	30.000	250.00	.00	.00	1273.80	276.00	1274.72	1274.27	1274.77	8.66	1.91	144.87	93.78
	30.000	250.00	.00	.00	1273.80	348.00	1275.00	1274.34	1275.05	5.76	1.83	190.25	145.02
	30.000	250.00	.00	.00	1273.80	439.00	1275.38	1274.43	1275.43	3.52	1.71	257.44	234.08
	30.000	250.00	.00	.00	1273.80	507.00	1275.67	1274.50	1275.71	2.61	1.63	310.51	313.98
	30.000	250.00	.00	.00	1273.80	591.00	1276.03	1274.57	1276.06	1.95	1.57	376.34	423.26
	31.000	50.00	.00	.00	1273.85	276.00	1274.76	1274.32	1274.82	9.17	1.94	142.31	91.13
	31.000	50.00	.00	.00	1273.85	348.00	1275.02	1274.39	1275.08	6.09	1.86	186.92	140.99
	31.000	50.00	.00	.00	1273.85	439.00	1275.40	1274.48	1275.44	3.77	1.74	251.91	226.21
	31.000	50.00	.00	.00	1273.85	507.00	1275.68	1274.55	1275.73	2.80	1.67	303.34	302.74
	31.000	50.00	.00	.00	1273.85	591.00	1276.03	1274.62	1276.07	2.09	1.61	367.73	408.37
*	32.000	100.00	.00	.00	1273.75	276.00	1274.86	1274.20	1274.88	4.55	1.33	224.66	129.45
	32.000	100.00	.00	.00	1273.75	348.00	1275.10	1274.27	1275.12	3.56	1.35	279.96	184.31
	32.000	100.00	.00	.00	1273.75	439.00	1275.45	1274.35	1275.48	2.48	1.32	362.87	278.50
	32.000	100.00	.00	.00	1273.75	507.00	1275.73	1274.40	1275.75	1.93	1.28	432.50	364.92
	32.000	100.00	.00	.00	1273.75	591.00	1276.07	1274.46	1276.09	1.47	1.25	521.16	486.63
	33.000	400.00	.00	.00	1273.90	276.00	1275.06	1274.47	1275.09	5.79	1.37	213.38	114.73
	33.000	400.00	.00	.00	1273.90	348.00	1275.26	1274.53	1275.29	4.83	1.42	259.87	158.36
	33.000	400.00	.00	.00	1273.90	439.00	1275.56	1274.60	1275.59	3.43	1.40	334.73	237.02
	33.000	400.00	.00	.00	1273.90	507.00	1275.82	1274.66	1275.84	2.64	1.37	399.44	312.13
	33.000	400.00	.00	.00	1273.90	591.00	1276.14	1274.71	1276.16	1.98	1.33	482.20	419.68
	34.000	200.00	.00	.00	1274.32	276.00	1275.20	1274.77	1275.24	10.95	1.79	164.01	83.42
	34.000	200.00	.00	.00	1274.32	348.00	1275.37	1274.83	1275.42	9.25	1.85	200.06	114.43
	34.000	200.00	.00	.00	1274.32	439.00	1275.64	1274.92	1275.69	6.80	1.84	254.98	168.33
	34.000	200.00	.00	.00	1274.32	507.00	1275.87	1274.97	1275.91	5.15	1.78	305.06	223.49
	34.000	200.00	.00	.00	1274.32	591.00	1276.17	1275.04	1276.21	3.68	1.69	374.26	308.02
	35.000	522.00	.00	.00	1274.75	276.00	1275.71	1275.21	1275.75	8.63	1.61	171.57	93.95
	35.000	522.00	.00	.00	1274.75	348.00	1275.84	1275.28	1275.89	8.69	1.76	197.27	118.08
	35.000	522.00	.00	.00	1274.75	439.00	1276.02	1275.36	1276.07	8.12	1.89	232.13	154.05
	35.000	522.00	.00	.00	1274.75	507.00	1276.17	1275.41	1276.23	7.24	1.93	262.72	188.48
	35.000	522.00	.00	.00	1274.75	591.00	1276.40	1275.48	1276.46	5.91	1.92	307.34	243.20
*	36.000	478.00	.00	.00	1275.26	276.00	1276.30	1275.99	1276.47	31.50	3.27	84.38	49.17
*	36.000	478.00	.00	.00	1275.26	348.00	1276.43	1276.11	1276.63	34.14	3.65	95.28	59.56
*	36.000	478.00	.00	.00	1275.26	439.00	1276.55	1276.25	1276.81	37.99	4.11	106.79	71.23
*	36.000	478.00	.00	.00	1275.26	507.00	1276.63	1276.35	1276.94	41.58	4.46	113.75	78.63
*	36.000	478.00	.00	.00	1275.26	591.00	1276.72	1276.46	1277.09	45.83	4.86	121.66	87.30
*	37.000	400.00	.00	.00	1275.70	276.00	1276.94	1276.33	1277.01	7.37	2.07	133.56	101.70
*	37.000	400.00	.00	.00	1275.70	348.00	1277.11	1276.43	1277.19	7.47	2.26	154.24	127.34
*	37.000	400.00	.00	.00	1275.70	439.00	1277.31	1276.54	1277.40	7.60	2.46	178.16	159.24
*	37.000	400.00	.00	.00	1275.70	507.00	1277.44	1276.62	1277.54	7.67	2.60	195.01	183.04
*	37.000	400.00	.00	.00	1275.70	591.00	1277.60	1276.72	1277.71	7.68	2.74	215.40	213.21

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	38.000	50.00	.00	.00	1275.75	276.00	1276.98	1276.38	1277.05	7.59	2.09	132.30	100.20
	38.000	50.00	.00	.00	1275.75	348.00	1277.15	1276.48	1277.23	7.65	2.27	153.05	125.81
	38.000	50.00	.00	.00	1275.75	439.00	1277.34	1276.59	1277.44	7.76	2.48	176.94	157.55
	38.000	50.00	.00	.00	1275.75	507.00	1277.48	1276.67	1277.58	7.82	2.62	193.82	181.33
	38.000	50.00	.00	.00	1275.75	591.00	1277.63	1276.77	1277.75	7.83	2.76	214.11	211.27
	39.000	550.00	.00	.00	1276.20	276.00	1277.45	1276.81	1277.52	9.94	2.11	130.63	87.55
	39.000	550.00	.00	.00	1276.20	348.00	1277.63	1276.92	1277.71	10.13	2.32	149.97	109.36
	39.000	550.00	.00	.00	1276.20	439.00	1277.83	1277.03	1277.93	10.36	2.55	172.14	136.41
	39.000	550.00	.00	.00	1276.20	507.00	1277.97	1277.12	1278.08	10.50	2.71	187.52	156.47
	39.000	550.00	.00	.00	1276.20	591.00	1278.12	1277.21	1278.25	10.62	2.88	206.24	181.40
	40.000	450.00	.00	.00	1276.67	276.00	1277.85	1277.28	1277.93	8.15	2.14	129.27	96.69
	40.000	450.00	.00	.00	1276.67	348.00	1278.03	1277.37	1278.12	8.05	2.31	150.53	122.69
	40.000	450.00	.00	.00	1276.67	439.00	1278.24	1277.49	1278.33	7.86	2.49	176.17	156.61
	40.000	450.00	.00	.00	1276.67	507.00	1278.38	1277.57	1278.48	7.79	2.61	193.94	181.63
	40.000	450.00	.00	.00	1276.67	591.00	1278.54	1277.67	1278.66	7.76	2.75	214.60	212.17
	41.000	50.00	.00	.00	1276.72	276.00	1277.90	1277.33	1277.97	8.20	2.14	129.02	96.40
	41.000	50.00	.00	.00	1276.72	348.00	1278.07	1277.43	1278.16	8.03	2.31	150.63	122.82
	41.000	50.00	.00	.00	1276.72	439.00	1278.28	1277.54	1278.37	7.92	2.50	175.73	156.00
	41.000	50.00	.00	.00	1276.72	507.00	1278.42	1277.62	1278.52	7.85	2.62	193.46	180.94
	41.000	50.00	.00	.00	1276.72	591.00	1278.58	1277.72	1278.70	7.79	2.76	214.35	211.78
	42.000	200.00	.00	.00	1276.86	276.00	1278.08	1277.47	1278.15	10.81	2.17	127.22	83.94
	42.000	200.00	.00	.00	1276.86	348.00	1278.26	1277.57	1278.34	10.95	2.38	146.34	105.18
	42.000	200.00	.00	.00	1276.86	439.00	1278.45	1277.69	1278.56	11.12	2.61	168.28	131.62
	42.000	200.00	.00	.00	1276.86	507.00	1278.59	1277.78	1278.71	11.44	2.78	182.54	149.91
	42.000	200.00	.00	.00	1276.86	591.00	1278.75	1277.87	1278.89	11.46	2.95	200.98	174.62
	43.000	200.00	.00	.00	1277.05	276.00	1278.29	1277.66	1278.36	10.15	2.13	129.73	86.62
	43.000	200.00	.00	.00	1277.05	348.00	1278.47	1277.76	1278.56	10.28	2.33	149.25	108.56
	43.000	200.00	.00	.00	1277.05	439.00	1278.68	1277.88	1278.78	10.43	2.56	171.70	135.93
	43.000	200.00	.00	.00	1277.05	507.00	1278.82	1277.96	1278.93	10.44	2.70	187.77	156.89
	43.000	200.00	.00	.00	1277.05	591.00	1278.98	1278.06	1279.11	10.52	2.87	206.62	182.18
*	44.000	65.00	1282.00	.00	1277.14	142.00	1280.71	.00	1280.71	.05	.30	604.46	610.26
*	44.000	65.00	1282.00	.00	1277.14	181.00	1281.19	.00	1281.19	.05	.31	800.63	835.63
*	44.000	65.00	1282.00	.00	1277.14	229.00	1281.78	.00	1281.78	.04	.29	1109.03	1212.11
*	44.000	65.00	1282.00	.00	1277.14	264.00	1282.21	.00	1282.21	.03	.28	1373.22	1563.77
*	44.000	65.00	1282.00	.00	1277.14	308.00	1282.76	.00	1282.76	.02	.26	1745.28	2097.42
	45.000	445.00	.00	.00	1277.50	142.00	1280.72	1277.97	1280.72	.08	.30	512.35	498.90
	45.000	445.00	.00	.00	1277.50	181.00	1281.19	1278.05	1281.20	.07	.31	646.74	687.82
	45.000	445.00	.00	.00	1277.50	229.00	1281.78	1278.14	1281.78	.06	.31	832.07	971.81
	45.000	445.00	.00	.00	1277.50	264.00	1282.21	1278.20	1282.21	.05	.30	980.54	1231.21
	45.000	445.00	.00	.00	1277.50	308.00	1282.76	1278.26	1282.77	.04	.30	1171.04	1603.74

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	46.000	550.00	.00	.00	1278.01	142.00	1280.72	1278.49	1280.72	.18	.40	382.17	333.74
	46.000	550.00	.00	.00	1278.01	181.00	1281.20	1278.56	1281.20	.14	.39	504.35	488.15
	46.000	550.00	.00	.00	1278.01	229.00	1281.78	1278.65	1281.78	.10	.38	668.54	719.83
	46.000	550.00	.00	.00	1278.01	264.00	1282.21	1278.71	1282.22	.08	.37	806.43	930.07
	46.000	550.00	.00	.00	1278.01	308.00	1282.77	1278.78	1282.77	.06	.35	995.03	1258.04
*	47.000	400.00	.00	.00	1278.80	19.00	1280.73	1279.02	1280.73	.02	.12	156.46	130.67
*	47.000	400.00	.00	.00	1278.80	24.00	1281.21	1279.04	1281.21	.02	.12	203.97	195.58
*	47.000	400.00	.00	.00	1278.80	31.00	1281.79	1279.07	1281.79	.01	.12	288.56	298.61
*	47.000	400.00	.00	.00	1278.80	37.00	1282.22	1279.09	1282.22	.01	.11	374.91	399.37
*	47.000	400.00	.00	.00	1278.80	44.00	1282.77	1279.11	1282.77	.01	.11	524.89	567.47
*	48.000	50.00	.00	.00	1277.90	19.00	1280.73	1278.08	1280.73	.01	.09	219.04	233.48
*	48.000	50.00	.00	.00	1277.90	24.00	1281.21	1278.11	1281.21	.01	.09	264.34	309.49
*	48.000	50.00	.00	.00	1277.90	31.00	1281.79	1278.13	1281.79	.01	.10	336.48	422.66
	48.000	50.00	.00	.00	1277.90	37.00	1282.22	1278.16	1282.22	.00	.10	406.23	526.20
	48.000	50.00	.00	.00	1277.90	44.00	1282.77	1278.19	1282.77	.00	.10	534.14	692.29
*	49.000	500.00	.00	.00	1277.90	19.00	1280.73	1278.03	1280.73	.00	.04	425.74	475.14
*	49.000	500.00	.00	.00	1277.90	24.00	1281.21	1278.05	1281.21	.00	.05	509.46	624.43
*	49.000	500.00	.00	.00	1277.90	31.00	1281.79	1278.06	1281.79	.00	.05	667.47	848.02
*	49.000	500.00	.00	.00	1277.90	37.00	1282.22	1278.08	1282.22	.00	.05	834.16	1059.34
*	49.000	500.00	.00	.00	1277.90	44.00	1282.77	1278.09	1282.77	.00	.05	1128.23	1404.41
*	50.000	600.00	.00	.00	1277.90	19.00	1280.73	1277.97	1280.73	.00	.01	1853.06	2152.15
*	50.000	600.00	.00	.00	1277.90	24.00	1281.21	1277.98	1281.21	.00	.01	2176.91	2804.07
*	50.000	600.00	.00	.00	1277.90	31.00	1281.79	1277.99	1281.79	.00	.01	2574.09	3690.38
*	50.000	600.00	.00	.00	1277.90	37.00	1282.22	1277.99	1282.22	.00	.01	2976.68	4448.96
*	50.000	600.00	.00	.00	1277.90	44.00	1282.77	1278.00	1282.77	.00	.01	3516.01	5560.02
	51.000	400.00	.00	.00	1277.90	19.00	1280.73	1277.97	1280.73	.00	.01	1991.85	2315.07
	51.000	400.00	.00	.00	1277.90	24.00	1281.21	1277.98	1281.21	.00	.01	2339.52	3018.36
	51.000	400.00	.00	.00	1277.90	31.00	1281.79	1277.99	1281.79	.00	.01	2765.73	3978.35
	51.000	400.00	.00	.00	1277.90	37.00	1282.22	1277.99	1282.22	.00	.01	3153.60	4781.40
	51.000	400.00	.00	.00	1277.90	44.00	1282.77	1278.00	1282.77	.00	.01	3692.33	5941.65
	52.000	400.00	.00	.00	1277.80	19.00	1280.73	1277.90	1280.73	.00	.01	1622.58	1902.90
	52.000	400.00	.00	.00	1277.80	24.00	1281.21	1277.91	1281.21	.00	.01	1902.12	2469.09
	52.000	400.00	.00	.00	1277.80	31.00	1281.79	1277.92	1281.79	.00	.01	2245.29	3237.82
	52.000	400.00	.00	.00	1277.80	37.00	1282.22	1277.93	1282.22	.00	.01	2541.34	3880.95
	52.000	400.00	.00	.00	1277.80	44.00	1282.77	1277.94	1282.77	.00	.02	2963.39	4807.86
*	53.000	400.00	.00	.00	1280.82	19.00	1281.03	1281.03	1281.10	192.44	2.04	9.29	1.37
*	53.000	400.00	.00	.00	1280.82	24.00	1281.20	1281.06	1281.22	16.92	1.08	22.32	5.84
*	53.000	400.00	.00	.00	1280.82	31.00	1281.78	1281.08	1281.79	.74	.46	67.88	35.95
*	53.000	400.00	.00	.00	1280.82	37.00	1282.22	1281.10	1282.22	.27	.36	103.38	70.64
*	53.000	400.00	.00	.00	1280.82	44.00	1282.77	1281.13	1282.77	.12	.29	150.47	128.00

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	54.000	300.00	.00	.00	1281.10	19.00	1281.56	1281.32	1281.56	5.02	.68	28.01	8.48
*	54.000	300.00	.00	.00	1281.10	24.00	1281.56	1281.33	1281.57	8.61	.88	27.40	8.18
*	54.000	300.00	.00	.00	1281.10	31.00	1281.82	1281.36	1281.83	2.25	.64	48.26	20.66
*	54.000	300.00	.00	.00	1281.10	37.00	1282.23	1281.38	1282.23	.61	.46	80.54	47.36
	54.000	300.00	.00	.00	1281.10	44.00	1282.77	1281.41	1282.78	.20	.35	126.39	97.21
*	55.000	400.00	.00	.00	1281.10	19.00	1281.69	1281.38	1281.69	2.30	.49	41.03	12.52
*	55.000	400.00	.00	.00	1281.10	24.00	1281.74	1281.41	1281.74	2.46	.55	46.46	15.30
	55.000	400.00	.00	.00	1281.10	31.00	1281.90	1281.42	1281.90	1.56	.53	62.88	24.80
	55.000	400.00	.00	.00	1281.10	37.00	1282.25	1281.44	1282.25	.45	.38	105.11	55.42
	55.000	400.00	.00	.00	1281.10	44.00	1282.78	1281.46	1282.78	.13	.27	177.78	121.28

HEC-1 GENERATED 5 YEAR

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	914.00	1237.00	.00	.00	.00	243.00	.00
	1.000	1171.00	1237.00	.00	.00	.00	243.00	.00
	1.000	1511.00	1237.00	.00	.00	.00	243.00	.00
	1.000	1773.00	1237.00	.00	.00	.00	243.00	.00
	1.000	2095.00	1237.00	.00	.00	.00	243.00	.00
*	2.000	914.00	1253.51	.00	16.51	.00	35.81	12.00
*	2.000	1171.00	1254.00	.49	17.00	.00	36.37	12.00
*	2.000	1511.00	1254.61	.61	17.61	.00	38.73	12.00
*	2.000	1773.00	1255.56	.95	18.56	.00	127.74	12.00
*	2.000	2095.00	1256.08	.53	19.08	.00	143.62	12.00
*	3.000	914.00	1255.80	.00	2.29	.00	137.55	5.00
*	3.000	1171.00	1256.11	.31	2.11	.00	144.11	5.00
*	3.000	1511.00	1256.46	.35	1.85	.00	150.12	5.00
*	3.000	1773.00	1256.70	.24	1.15	.00	154.29	5.00
*	3.000	2095.00	1256.98	.28	.90	.00	159.05	5.00
*	4.000	914.00	1256.37	.00	.56	.00	558.68	3256.00
*	4.000	1171.00	1256.85	.49	.74	.00	576.03	3256.00
*	4.000	1511.00	1257.42	.57	.96	.00	587.16	3256.00
*	4.000	1773.00	1257.82	.40	1.12	.00	589.32	3256.00
*	4.000	2095.00	1258.27	.45	1.30	.00	591.76	3256.00
*	5.000	914.00	1256.38	.00	.01	.00	89.14	600.00
*	5.000	1171.00	1256.86	.49	.01	.00	102.05	600.00
*	5.000	1511.00	1257.43	.57	.01	.00	117.19	600.00
*	5.000	1773.00	1257.83	.40	.01	.00	127.76	600.00
*	5.000	2095.00	1258.29	.45	.01	.00	139.77	600.00
*	6.000	899.00	1258.06	.00	1.68	.00	133.62	1665.00
*	6.000	1152.00	1258.58	.52	1.71	.00	147.43	1665.00
*	6.000	1486.00	1259.15	.58	1.72	.00	162.70	1665.00
*	6.000	1744.00	1259.54	.39	1.71	.00	172.95	1665.00
*	6.000	2061.00	1259.97	.43	1.68	.00	184.29	1665.00
*	7.000	880.00	1258.33	.00	.28	.00	112.82	2273.00
*	7.000	1126.00	1258.89	.56	.32	.00	115.90	2273.00
*	7.000	1452.00	1259.52	.63	.37	.00	119.32	2273.00
*	7.000	1703.00	1259.94	.42	.40	.00	121.63	2273.00
*	7.000	2012.00	1260.40	.46	.43	.00	124.16	2273.00
	8.000	880.00	1258.33	.00	.00	.00	159.27	36.00
	8.000	1126.00	1258.90	.56	.00	.00	227.04	36.00
	8.000	1452.00	1259.53	.63	.01	.00	382.15	36.00
	8.000	1703.00	1259.96	.43	.01	.00	383.51	36.00
	8.000	2012.00	1260.43	.48	.03	.00	387.29	36.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	9.000	880.00	1258.34	.00	.00	.00	85.03	82.00
*	9.000	1126.00	1258.90	.56	.01	.00	87.08	82.00
*	9.000	1452.00	1259.53	.63	.01	.00	91.62	82.00
*	9.000	1703.00	1259.96	.43	.01	.00	95.32	82.00
*	9.000	2012.00	1260.44	.48	.01	.00	99.44	82.00
	10.000	880.00	1258.34	.00	.00	.00	84.88	157.00
	10.000	1126.00	1258.90	.56	.00	.00	89.15	157.00
	10.000	1452.00	1259.54	.63	.00	.00	93.93	157.00
	10.000	1703.00	1259.97	.43	.01	.00	97.20	157.00
	10.000	2012.00	1260.45	.48	.01	.00	100.83	157.00
	11.000	880.00	1258.40	.00	.06	.00	219.28	100.00
	11.000	1126.00	1258.99	.59	.08	.00	237.17	100.00
	11.000	1452.00	1259.65	.67	.11	.00	269.00	100.00
	11.000	1703.00	1260.11	.46	.14	.00	298.49	100.00
	11.000	2012.00	1260.62	.51	.17	.00	327.01	100.00
*	12.000	847.00	1259.31	.00	.91	.00	115.57	3400.00
*	12.000	1083.00	1259.93	.62	.95	.00	128.18	3400.00
*	12.000	1395.00	1260.63	.69	.98	.00	142.35	3400.00
*	12.000	1636.00	1261.10	.47	.99	.00	151.93	3400.00
*	12.000	1932.00	1261.62	.52	.99	.00	174.87	3400.00
*	13.000	847.00	1269.22	.00	9.90	.00	114.26	516.00
*	13.000	1083.00	1269.44	.23	9.51	.00	118.77	516.00
*	13.000	1395.00	1269.72	.27	9.09	.00	124.18	516.00
*	13.000	1636.00	1269.91	.19	8.81	.00	127.99	516.00
*	13.000	1932.00	1270.13	.22	8.51	.00	132.35	516.00
*	14.000	847.00	1271.41	.00	2.19	.00	159.24	770.00
*	14.000	1083.00	1271.88	.47	2.43	.00	165.75	770.00
*	14.000	1395.00	1272.41	.53	2.69	.00	173.46	770.00
*	14.000	1636.00	1272.76	.35	2.85	.00	179.26	770.00
*	14.000	1932.00	1273.15	.39	3.02	.00	185.82	770.00
*	15.000	847.00	1271.81	.00	.41	.00	142.44	522.00
	15.000	1083.00	1272.30	.49	.42	.00	178.30	522.00
	15.000	1395.00	1272.84	.54	.43	.00	258.28	522.00
	15.000	1636.00	1273.19	.35	.43	.00	305.75	522.00
	15.000	1932.00	1273.58	.39	.43	.00	333.83	522.00
	16.000	847.00	1272.74	.00	.93	.00	168.94	607.00
	16.000	1083.00	1273.17	.43	.87	.00	176.92	607.00
	16.000	1395.00	1273.66	.49	.82	.00	188.68	607.00
	16.000	1636.00	1273.98	.32	.79	.00	197.14	607.00
	16.000	1932.00	1274.33	.35	.75	.00	206.44	607.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
17.000	358.00	1272.97	.00	.23	.00	170.57	181.00
17.000	450.00	1273.40	.43	.22	.00	176.43	181.00
17.000	568.00	1273.89	.49	.23	.00	183.12	181.00
17.000	658.00	1274.22	.33	.24	.00	187.27	181.00
17.000	768.00	1274.59	.37	.26	.00	192.03	181.00
18.000	358.00	1273.05	.00	.08	.00	155.17	181.00
18.000	450.00	1273.45	.41	.05	.00	161.55	181.00
18.000	568.00	1273.93	.48	.04	.00	170.62	181.00
18.000	658.00	1274.26	.33	.04	.00	176.35	181.00
18.000	768.00	1274.62	.36	.03	.00	181.61	181.00
19.000	338.00	1273.18	.00	.14	.00	168.71	181.00
19.000	425.00	1273.55	.37	.10	.00	179.32	181.00
19.000	537.00	1274.00	.45	.07	.00	192.46	181.00
19.000	621.00	1274.32	.32	.06	.00	196.65	181.00
19.000	724.00	1274.68	.36	.06	.00	201.16	181.00
20.000	338.00	1272.72	.00	-.47	.00	43.35	88.00
20.000	425.00	1273.10	.39	-.45	.00	43.37	88.00
20.000	537.00	1273.55	.45	-.45	.00	43.39	88.00
20.000	621.00	1273.85	.30	-.47	.00	43.40	88.00
20.000	724.00	1274.18	.32	-.50	.00	43.42	88.00
21.000	338.00	1273.55	.00	.83	.00	30.90	50.00
21.000	425.00	1273.80	.25	.70	.00	30.90	50.00
21.000	537.00	1274.10	.30	.55	.00	30.90	50.00
21.000	621.00	1274.32	.22	.47	.00	30.90	50.00
21.000	724.00	1274.57	.25	.39	.00	30.90	50.00
22.000	338.00	1274.36	.00	.81	.00	222.80	50.00
22.000	425.00	1274.75	.39	.95	.00	225.90	50.00
22.000	537.00	1275.21	.46	1.11	.00	350.23	50.00
22.000	621.00	1275.53	.33	1.21	.00	389.12	50.00
22.000	724.00	1275.91	.38	1.35	.00	424.38	50.00
23.000	338.00	1274.37	.00	.01	.00	220.63	300.00
23.000	425.00	1274.76	.39	.01	.00	223.72	300.00
23.000	537.00	1275.22	.46	.01	.00	227.40	300.00
23.000	621.00	1275.54	.33	.01	.00	361.06	300.00
23.000	724.00	1275.92	.38	.01	.00	398.65	300.00
24.000	338.00	1274.38	.00	.01	.00	225.49	400.00
24.000	425.00	1274.77	.39	.01	.00	229.57	400.00
24.000	537.00	1275.23	.46	.01	.00	234.43	400.00
24.000	621.00	1275.55	.32	.01	.00	237.85	400.00
24.000	724.00	1275.93	.38	.01	.00	241.84	400.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	25.000	338.00	1274.40	.00	.02	.00	223.11	250.00
	25.000	425.00	1274.78	.39	.01	.00	227.18	250.00
	25.000	537.00	1275.24	.46	.01	.00	232.03	250.00
	25.000	621.00	1275.56	.32	.01	.00	235.44	250.00
	25.000	724.00	1275.94	.38	.01	.00	239.42	250.00
	26.000	276.00	1274.43	.00	.03	.00	235.03	400.00
	26.000	348.00	1274.81	.38	.03	.00	241.29	400.00
	26.000	439.00	1275.27	.46	.02	.00	248.77	400.00
	26.000	507.00	1275.59	.32	.02	.00	254.04	400.00
	26.000	591.00	1275.96	.38	.02	.00	260.21	400.00
	27.000	276.00	1274.43	.00	.00	.00	234.36	50.00
	27.000	348.00	1274.81	.38	.00	.00	240.57	50.00
	27.000	439.00	1275.27	.45	.00	.00	248.03	50.00
	27.000	507.00	1275.59	.32	.00	.00	253.30	50.00
	27.000	591.00	1275.96	.38	.00	.00	259.46	50.00
*	28.000	276.00	1274.49	.00	.06	.00	183.92	450.00
*	28.000	348.00	1274.85	.36	.04	.00	221.61	450.00
*	28.000	439.00	1275.29	.44	.03	.00	263.26	450.00
*	28.000	507.00	1275.61	.32	.02	.00	287.16	450.00
*	28.000	591.00	1275.98	.37	.02	.00	315.18	450.00
	29.000	276.00	1274.58	.00	.08	.00	178.23	200.00
	29.000	348.00	1274.91	.33	.05	.00	206.14	200.00
	29.000	439.00	1275.33	.42	.03	.00	251.42	200.00
	29.000	507.00	1275.64	.31	.03	.00	274.40	200.00
	29.000	591.00	1276.00	.37	.02	.00	302.08	200.00
	30.000	276.00	1274.72	.00	.14	.00	165.47	250.00
	30.000	348.00	1275.00	.28	.09	.00	170.03	250.00
	30.000	439.00	1275.38	.38	.05	.00	176.56	250.00
	30.000	507.00	1275.67	.29	.04	.00	181.56	250.00
	30.000	591.00	1276.03	.35	.02	.00	187.57	250.00
	31.000	276.00	1274.76	.00	.04	.00	165.21	50.00
	31.000	348.00	1275.02	.26	.03	.00	169.70	50.00
	31.000	439.00	1275.40	.37	.02	.00	176.04	50.00
	31.000	507.00	1275.68	.29	.01	.00	180.89	50.00
	31.000	591.00	1276.03	.35	.01	.00	186.79	50.00
*	32.000	276.00	1274.86	.00	.10	.00	227.73	100.00
	32.000	348.00	1275.10	.24	.08	.00	230.77	100.00
	32.000	439.00	1275.45	.35	.05	.00	244.12	100.00
	32.000	507.00	1275.73	.28	.04	.00	257.02	100.00
	32.000	591.00	1276.07	.34	.04	.00	260.49	100.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	33.000	276.00	1275.06	.00	.20	.00	230.16	400.00
	33.000	348.00	1275.26	.20	.16	.00	234.96	400.00
	33.000	439.00	1275.56	.30	.11	.00	250.18	400.00
	33.000	507.00	1275.82	.25	.09	.00	257.83	400.00
	33.000	591.00	1276.14	.32	.07	.00	261.06	400.00
	34.000	276.00	1275.20	.00	.14	.00	204.71	200.00
	34.000	348.00	1275.37	.17	.11	.00	209.16	200.00
	34.000	439.00	1275.64	.27	.07	.00	214.94	200.00
	34.000	507.00	1275.87	.23	.05	.00	220.08	200.00
	34.000	591.00	1276.17	.30	.04	.00	226.99	200.00
	35.000	276.00	1275.71	.00	.51	.00	193.84	522.00
	35.000	348.00	1275.84	.13	.47	.00	194.97	522.00
	35.000	439.00	1276.02	.18	.38	.00	196.49	522.00
	35.000	507.00	1276.17	.15	.30	.00	197.81	522.00
	35.000	591.00	1276.40	.22	.22	.00	199.73	522.00
*	36.000	276.00	1276.30	.00	.59	.00	86.72	478.00
*	36.000	348.00	1276.43	.12	.58	.00	88.12	478.00
*	36.000	439.00	1276.55	.13	.53	.00	89.57	478.00
*	36.000	507.00	1276.63	.08	.45	.00	90.44	478.00
*	36.000	591.00	1276.72	.09	.32	.00	91.42	478.00
*	37.000	276.00	1276.94	.00	.64	.00	119.50	400.00
*	37.000	348.00	1277.11	.17	.69	.00	122.23	400.00
*	37.000	439.00	1277.31	.19	.76	.00	125.31	400.00
*	37.000	507.00	1277.44	.13	.81	.00	127.43	400.00
*	37.000	591.00	1277.60	.16	.88	.00	129.96	400.00
	38.000	276.00	1276.98	.00	.04	.00	119.33	50.00
	38.000	348.00	1277.15	.17	.04	.00	122.07	50.00
	38.000	439.00	1277.34	.19	.04	.00	125.15	50.00
	38.000	507.00	1277.48	.13	.04	.00	127.28	50.00
	38.000	591.00	1277.63	.16	.04	.00	129.80	50.00
	39.000	276.00	1277.45	.00	.47	.00	108.74	550.00
	39.000	348.00	1277.63	.18	.48	.00	109.97	550.00
	39.000	439.00	1277.83	.20	.49	.00	111.37	550.00
	39.000	507.00	1277.97	.14	.49	.00	114.93	550.00
	39.000	591.00	1278.12	.16	.49	.00	122.31	550.00
	40.000	276.00	1277.85	.00	.40	.00	118.79	450.00
	40.000	348.00	1278.03	.18	.41	.00	121.61	450.00
	40.000	439.00	1278.24	.20	.41	.00	124.92	450.00
	40.000	507.00	1278.38	.14	.41	.00	127.16	450.00
	40.000	591.00	1278.54	.16	.42	.00	129.72	450.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	41.000	276.00	1277.90	.00	.04	.00	118.76	50.00
	41.000	348.00	1278.07	.18	.04	.00	121.62	50.00
	41.000	439.00	1278.28	.20	.04	.00	124.86	50.00
	41.000	507.00	1278.42	.14	.04	.00	127.10	50.00
	41.000	591.00	1278.58	.16	.04	.00	129.69	50.00
	42.000	276.00	1278.08	.00	.19	.00	108.44	200.00
	42.000	348.00	1278.26	.18	.18	.00	109.65	200.00
	42.000	439.00	1278.45	.20	.18	.00	111.03	200.00
	42.000	507.00	1278.59	.14	.18	.00	111.91	200.00
	42.000	591.00	1278.75	.16	.17	.00	119.39	200.00
	43.000	276.00	1278.29	.00	.21	.00	108.60	200.00
	43.000	348.00	1278.47	.18	.22	.00	109.84	200.00
	43.000	439.00	1278.68	.20	.22	.00	111.24	200.00
	43.000	507.00	1278.82	.14	.23	.00	113.54	200.00
	43.000	591.00	1278.98	.16	.23	.00	121.80	200.00
*	44.000	142.00	1280.71	.00	2.42	.00	384.84	65.00
*	44.000	181.00	1281.19	.48	2.72	.00	426.01	65.00
*	44.000	229.00	1281.78	.58	3.10	.00	579.83	65.00
*	44.000	264.00	1282.21	.43	3.39	.00	636.74	65.00
*	44.000	308.00	1282.76	.55	3.78	.00	709.19	65.00
	45.000	142.00	1280.72	.00	.00	.00	268.21	445.00
	45.000	181.00	1281.19	.48	.00	.00	293.24	445.00
	45.000	229.00	1281.78	.58	.00	.00	340.28	445.00
	45.000	264.00	1282.21	.43	.00	.00	343.06	445.00
	45.000	308.00	1282.76	.55	.00	.00	347.87	445.00
*	46.000	142.00	1280.72	.00	.01	.00	243.11	550.00
	46.000	181.00	1281.20	.48	.00	.00	266.64	550.00
	46.000	229.00	1281.78	.58	.00	.00	297.10	550.00
	46.000	264.00	1282.21	.43	.00	.00	337.44	550.00
	46.000	308.00	1282.77	.55	.00	.00	343.25	550.00
*	47.000	19.00	1280.73	.00	.01	.00	93.54	400.00
*	47.000	24.00	1281.21	.48	.01	.00	116.41	400.00
*	47.000	31.00	1281.79	.58	.01	.00	174.80	400.00
*	47.000	37.00	1282.22	.43	.00	.00	229.82	400.00
*	47.000	44.00	1282.77	.55	.00	.00	314.42	400.00
*	48.000	19.00	1280.73	.00	.00	.00	90.56	50.00
*	48.000	24.00	1281.21	.48	.00	.00	105.94	50.00
*	48.000	31.00	1281.79	.58	.00	.00	142.53	50.00
	48.000	37.00	1282.22	.43	.00	.00	189.71	50.00
	48.000	44.00	1282.77	.55	.00	.00	274.56	50.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	49.000	19.00	1280.73	.00	.00	.00	164.84	500.00
*	49.000	24.00	1281.21	.48	.00	.00	210.63	500.00
*	49.000	31.00	1281.79	.58	.00	.00	333.71	500.00
*	49.000	37.00	1282.22	.43	.00	.00	447.58	500.00
*	49.000	44.00	1282.77	.55	.00	.00	620.02	500.00
*	50.000	19.00	1280.73	.00	.00	.00	677.83	600.00
*	50.000	24.00	1281.21	.48	.00	.00	681.65	600.00
*	50.000	31.00	1281.79	.58	.00	.00	686.29	600.00
*	50.000	37.00	1282.22	.43	.00	.00	979.00	600.00
*	50.000	44.00	1282.77	.55	.00	.00	979.00	600.00
	51.000	19.00	1280.73	.00	.00	.00	727.83	400.00
	51.000	24.00	1281.21	.48	.00	.00	731.64	400.00
	51.000	31.00	1281.79	.58	.00	.00	736.29	400.00
	51.000	37.00	1282.22	.43	.00	.00	961.70	400.00
	51.000	44.00	1282.77	.55	.00	.00	993.66	400.00
	52.000	19.00	1280.73	.00	.00	.00	584.83	400.00
	52.000	24.00	1281.21	.48	.00	.00	588.64	400.00
	52.000	31.00	1281.79	.58	.00	.00	593.29	400.00
	52.000	37.00	1282.22	.43	.00	.00	737.56	400.00
	52.000	44.00	1282.77	.55	.00	.00	794.31	400.00
*	53.000	19.00	1281.03	.00	.30	.00	75.24	400.00
*	53.000	24.00	1281.20	.16	-.01	.00	76.44	400.00
*	53.000	31.00	1281.78	.59	.00	.00	80.50	400.00
*	53.000	37.00	1282.22	.43	.00	.00	83.53	400.00
*	53.000	44.00	1282.77	.55	.00	.00	87.39	400.00
*	54.000	19.00	1281.56	.00	.52	.00	76.96	300.00
*	54.000	24.00	1281.56	.00	.36	.00	76.90	300.00
*	54.000	31.00	1281.82	.26	.03	.00	78.78	300.00
*	54.000	37.00	1282.23	.41	.01	.00	81.60	300.00
	54.000	44.00	1282.77	.54	.00	.00	85.44	300.00
*	55.000	19.00	1281.69	.00	.14	.00	107.44	400.00
*	55.000	24.00	1281.74	.04	.18	.00	108.85	400.00
	55.000	31.00	1281.90	.16	.08	.00	113.02	400.00
	55.000	37.00	1282.25	.35	.02	.00	123.10	400.00
	55.000	44.00	1282.78	.53	.01	.00	160.89	400.00

Form 12

Flood Control Permit No. FC-27

James River - Water District

Report of Examination of Works and/or Application of Water to Beneficial Use

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have made a thorough examination of the water use system constructed by the **City of Huron** of **PO Box 1369, Huron, SD 57350** holder of Permit No. **FC-27**, bearing the priority of **February 9, 1998** authorizing the **Modifications of Stony Run Creek** for **Flood Control** purposes, in **Beadle** County.

Inspection contact & relationship to permit holder, if applicable: **Mike Wever (City Engineer)**

A. Compliance with Permit Requirements:

1) Permit qualifications being abided by **Y**
2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period **NA**
3) Exceptions to compliance are: **None**

The system is in **Good** condition.

All structures, wells and lands on map **Y**

Comments or other permit(s) associated with the project:

Flood Control Permit No. FC-27 authorizes modification of a portion the existing channel of Stony Run Creek to facilitate the movement of water. The project has been completed as permitted with modifications to the creek and the construction of the detention pond.

The project is located in S ½ Section 2, extends through the E ½ Section 11 and into the SW ¼ SW ¼ Section 12; all in T110N-R62W.

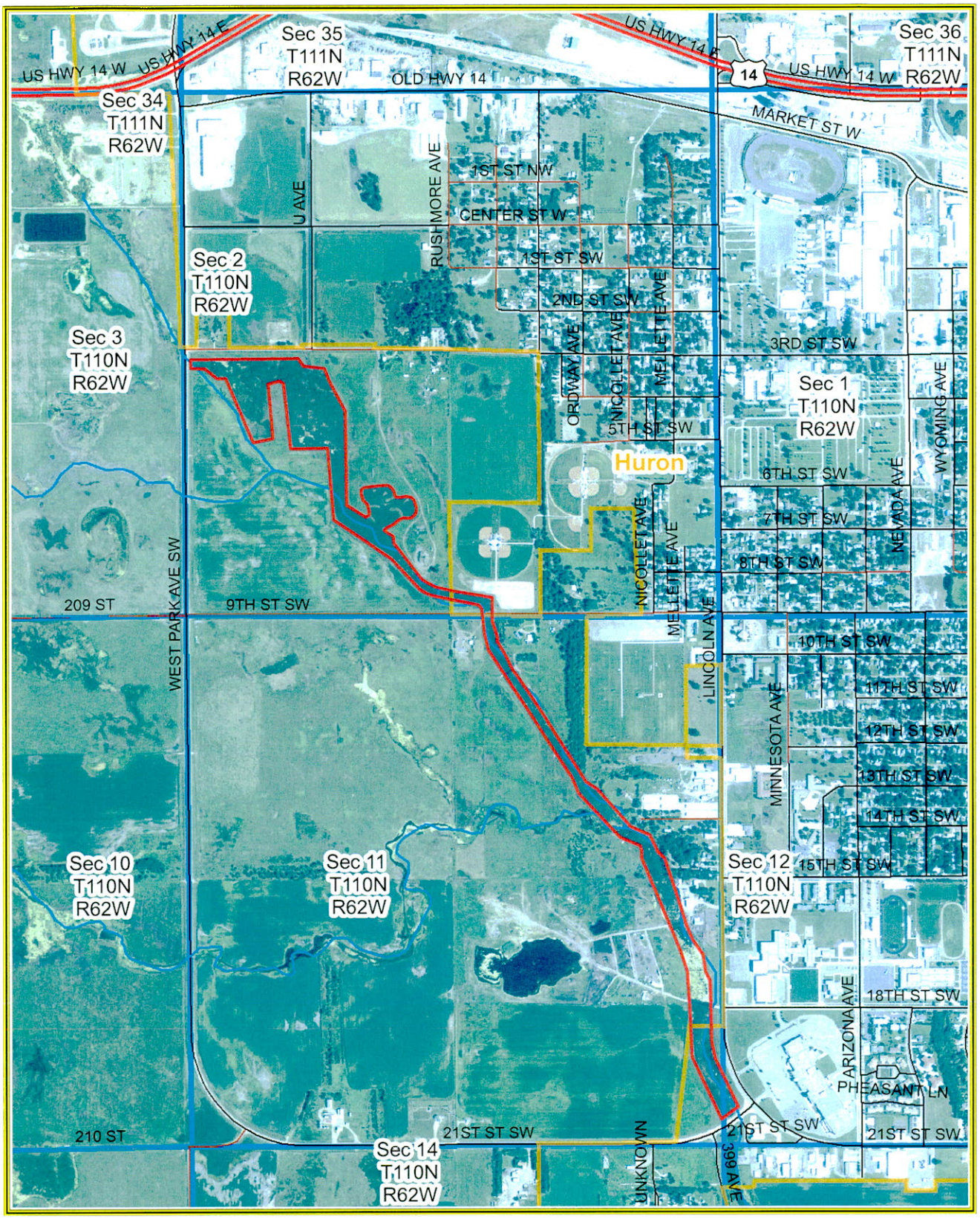
The permit was issued with a qualification that the City of Huron and SD School and Public Lands enter into a joint agreement prior to construction of flood control works to address potential impacts to Stony Run Lake Dam. DENR records show that a "Joint Powers Agreement" was entered into on June 21, 1999.

Stony Run Lake Dam is located approx. 3.2 stream-miles downstream of this project.

Mike DeFea
Natural Resources Engineer II
DENR, Water Rights Program

Date report completed: **April 1, 2015**

Flood Control Permit No. FC-27
City of Huron



0 0.25 0.5 1 Miles

Mike DeFea
Natural Resources Engineer
DENR, Water Rights Program
March 30, 2015

South Dakota
Department of Environment & Natural Resources
Protecting SD's Tomorrow...Today

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

FC-27

MAY 19 2015

Mike Wever, City Engineer
City of Huron
PO Box 1369
Huron SD 57350

Dear Mr. Wever:

Enclosed is Flood Control Water License No. FC-27. This is the final water right document completing the City's process of obtaining a flood control permit. Also, included with the license is a map prepared by the staff engineer who conducted the investigation.

As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that the City has a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

Jeanne Goodman

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

STATE OF SOUTH DAKOTA

FLOOD CONTROL WATER LICENSE NO. FC-27

(1) The City of Huron, PO Box 1369, Huron SD 57350 made Application No. FC-27, February 9, 1999 for a flood control permit modifying the channel of Stony Run Creek to facilitate water movement. The project is located in Beadle County, South Dakota. Flood Control Permit No. FC-27, with a priority date of February 9, 1999 was approved May 5, 1999 and issued to the applicant for construction and operation of the project.

(2) The flood control project has been completed and complies with South Dakota State Law relating to the project. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Flood Control Permit No. FC-27 is issued a license, bearing a priority date of February 9, 1999.

Flood Control Permit No. FC-27 modified a portion of the existing channel of Stoney Run Creek to facilitate the movement of water. The project included modifications to the creek and the construction of a detention pond. The project is located in the S 1/2 Section 2, extends through the E 1/2 Section 11 and into the SW 1/4 SW 1/4 Section 12; all in T110N-R62W.

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Flood Control Permit No. FC-27.

- On June 21, 1999, the City of Huron and the South Dakota School and Public lands entered into a "Joint Powers Agreement" which addressed potential impacts to Stoney Run Lake Dam. Stoney Run Lake Dam is located approximately 3.2 downstream miles from the flood control project.

Jeanne Goodman

MAY 19 2015

Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

date