Change Order #2 Alternatives for Osborn Road Alignment

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STP Papago
Regional Flood Control Project

Watershed Study (FCD 95-46)

Prepared for:
Flood Control District of Maricopa County

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Kimley-Horn
and Associates, Inc.
Engineering, Planning, and Environmental Consultants

KVL Consultants, Inc.

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Change Order #2
Alternatives for
Osborn Road Alignment

STP Papago
Regional Flood Control Project

Watershed Study (FCD 95-46)

December, 1997

Registered Professional Engineer (Civil)
CERTIFICATE NO.
24426
DOUGLAS J.
PLASENCIA
Date Signed 12/22/97
ARIZONA, U.S.A.

Kimley-Horn and Associates, Inc.

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FLOOD CONTROL DISTRICT
OF
MARICOPA COUNTY
INTEROFFICE MEMORANDUM

TO: Afshin Ahouraiyan
Richard Harris

FROM: Raj Shah

DATE: December 24, 1997

SUBJECT: STP Drainage Study (Alternative analysis for Osborn Storm Drain)

Attached with this memo is an alternative analysis for the Osborn Road Storm Drain. The change order was awarded to Kimley-Horn & Associates to analyze the tail end of the Osborn Storm drain. The Consultant has analyzed four different alternatives.

Afshin, please review the report and HEC-1 analysis and provide your comments no later than January 14, 1998. The Consultant has not submitted the data disk with this report. However, I have told Doug P. to mail us a disk with HEC-1 files and StormPlus files.

Richard, please review the report and StormPlus analysis and provide your comments no later than January 14, 1998. Also, review any information regarding utility conflicts and outlet elevations.

12/29/97

Per my request, R. Shah tried to get topo for me from C.O.S., but learned Dave Meinhardt will not be in office until 1/5/98, pushing review deadline back a few days, according to Raju.
RPH

Summary

The STP Papago Watershed Study was initiated by the Flood Control District of Maricopa County in response to a request by the City of Scottsdale to evaluate and resolve drainage issues in southwest Scottsdale. The Recommended Plan has been completed and submitted to the District.

Subsequent to the Recommended Plan submittal, the District determined that additional evaluation of alternatives was warranted. This was due to the introduction of last minute policy constraints voiced by the steering committee that reduced the level of project performance from a 10-year system to approximately a 5-year system. This report is intended to provide the technical information to the District to support the continued evaluation of options for the Osborn Road Outfall of the Recommended Plan.

The following variations were evaluated for this report:

Alternative A: Osborn Park Storage

The Osborn Road outfall system has been modified to include a junction structure at Miller Road. The junction conveys runoff in excess of what the existing system can accommodate, across Osborn Road into Osborn Park, located between old Osborn Road and new Osborn Road. The outfall structures for the park have been augmented to handle the excess runoff. The primary runoff continues east along Osborn Road and outfalls to Indian Bend Wash.

Alternative B: Civic Center Diversion

Osborn Road outfall has been modified to include a junction structure at Civic Center Boulevard. The structure diverts primary runoff south along Civic Center Boulevard in a proposed storm drain. The proposed storm drain runs south along Civic Center Blvd. and east along Earll Drive to Indian Bend Wash. The excess runoff at the Civic Center Blvd. junction structure is conveyed east along Osborn Road in the existing storm drain to Indian Bend Wash.

Alternative C: Scottsdale Road Diversion

The Osborn Road outfall system has been modified to include a junction structure at Scottsdale Road. The structure diverts primary runoff south along Scottsdale Road in the existing storm drain which ties in to a proposed storm drain at Earll Drive, running east to Indian Bend Wash. The excess runoff at the Scottsdale Road junction structure is conveyed east along Osborn Road in a proposed storm drain that ties in to the existing storm drain at Civic Center Boulevard.

Alternative D: 71st Street Diversion

The Osborn Road outfall system has been modified to include a storm drain in Osborn Road running from the Paiute Basin to 71st Street, south on 71st Street to Earll Drive and east on Earll Dr. to Indian Bend Wash. Use of the existing storm drain in Osborn Road for excess runoff has not been included in this model, since the benefit of this alternative is the elimination of any construction activities in Osborn Road east of Scottsdale Road. This existing storm drain will continue to function as it does currently.

1. Introduction

Following the submittal of the Draft Recommended Plan, Kimley-Horn was directed by the Steering Committee to modify the Plan by connecting the proposed Osborn Road storm drain to the existing storm drain in the vicinity of Civic Center Boulevard. It was understood that the existing storm drain would not provide a 10 year level of protection. Further analysis revealed that the existing storm drain provides between a 2 year and 5 year level of protection, with excess flows being conveyed overland in Osborn Road to Indian Bend Wash. Utility conflicts, slope restrictions and invert connections required that the storm drain be connected to the existing system just east of Miller Road, instead of at Civic Center Boulevard.

The recommended plan was developed by identifying drainage issues in the study area, grouping the drainage issues into major areas, and then analyzing the major areas to develop alternatives. An overview of the process is provided below for convenience.

Four alternatives were evaluated through a comparative analysis which included consideration of project hydrology, use of existing storm drain, potential for utility conflicts, permit and coordination issues, maintenance of traffic concerns, project viability, and the opinions of probable cost.

Based on the comparative analysis, public comments, and the consensus of the steering committee, the recommended plan was chosen. It includes the Oak Street Outfall and the Osborn Road Outfall.

This Alternative Analysis for the Osborn Road Alignment addresses variations of the recommended plan design so that adequate capacity for the 10-year storm event can be provided for the entire Osborn Road outfall.

Study Area

The study area for the STP Papago Watershed Study is bounded by the Arizona Canal and Camelback Road (north), Indian Bend Wash (east), McKellips Road and Roosevelt Street (south), and 56th Street (west), as shown in Figure 1-1. The study area comprises about seven square miles and is primarily located in the City of Scottsdale, with a portion of the study area in the Cities of Tempe and Phoenix.

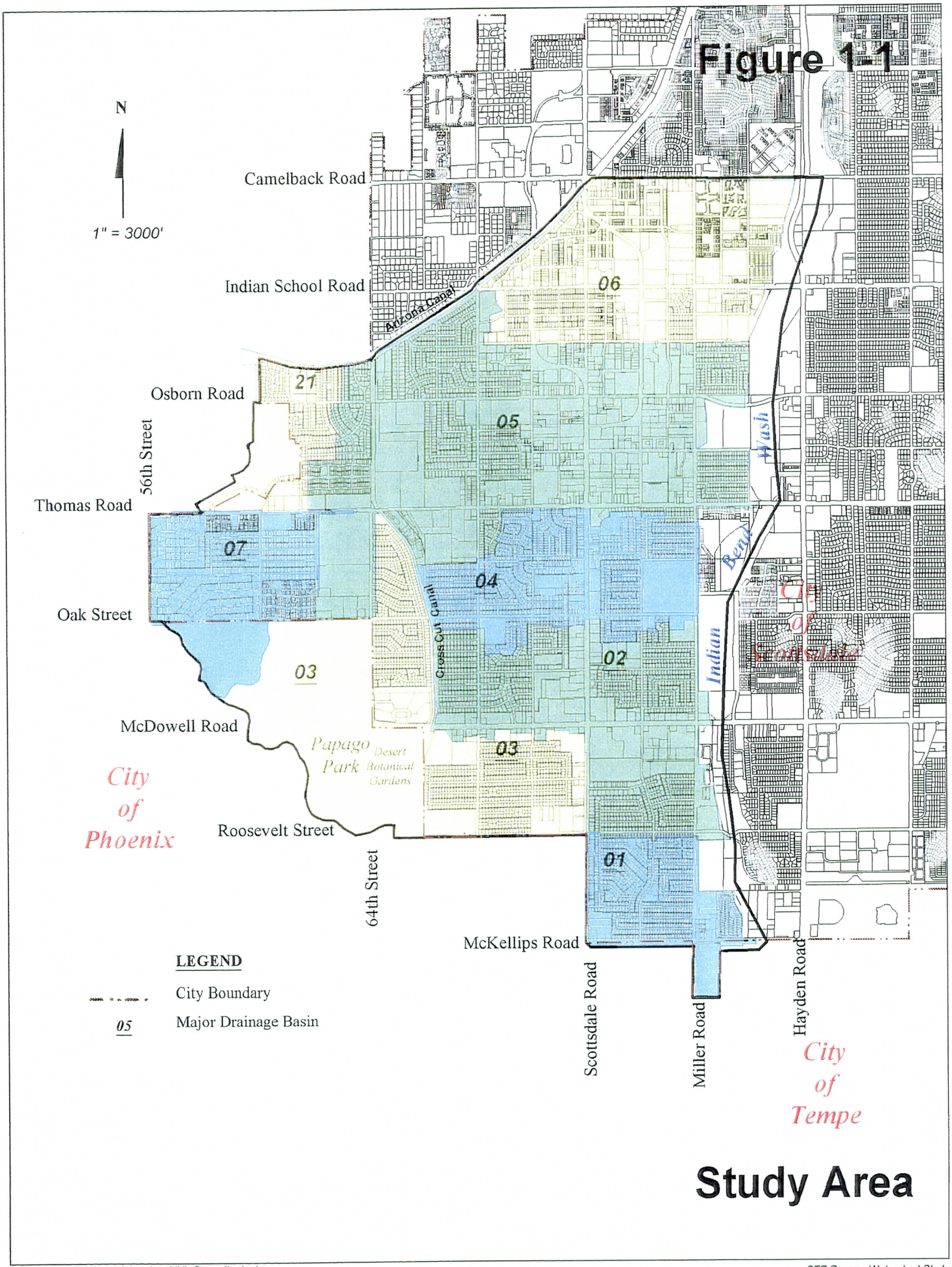


Figure 1-1
N
1" = 3000'
Camelback Road
Indian School Road
Arizona Canal
Osborn Road
56th Street
Thomas Road
Oak Street
McDowell Road
Roosevelt Street
64th Street
McKellips Road
Scottsdale Road
Miller Road
Hayden Road
06
21
05
07
04
03
02
03
01
Cross Cut Canal
Indian Bend Wash
City of Scottsdale
Papago Park
Desert Botanical Gardens
City of Phoenix
City of Tempe
LEGEND
City Boundary
05 Major Drainage Basin
Study Area

2. Alternative Analysis

Recommended Plan

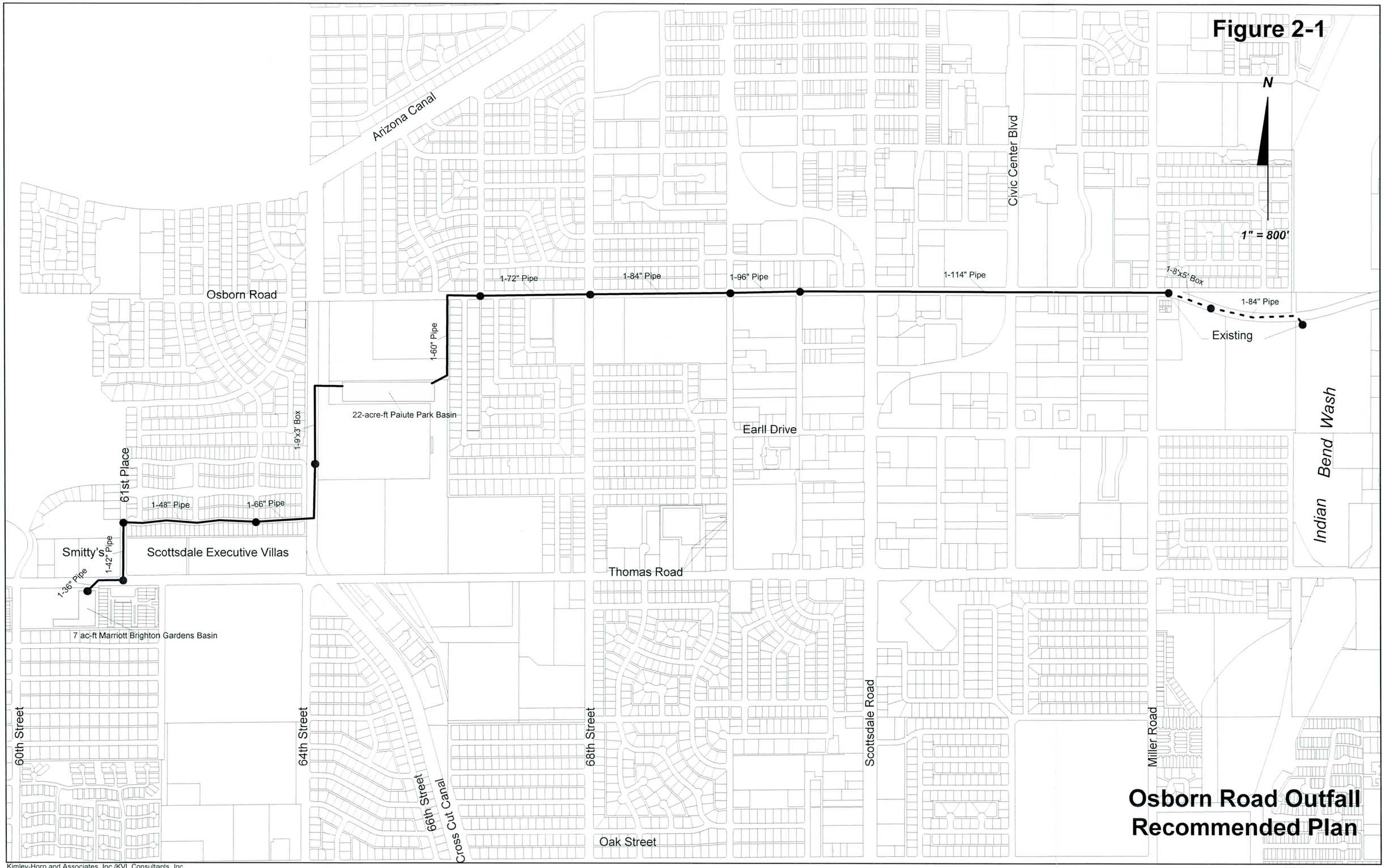
The Osborn Road outfall system is described in the Recommended Plan as follows:

> *Runoff from the residential neighborhoods south of Thomas Road is collected in an existing detention basin located at Marriott's Brighton Gardens of Scottsdale at 60th Street and Thomas Road. The basin will discharge to a 10 year storm drain in Thomas Road. This 10 year storm drain will then run north along 61st Place and east along Catalina Drive. The storm drain will collect runoff from 64th Street and then cross under the Cross Cut Canal and convey the runoff north to an outfall at Paiute Park. A new detention basin at Paiute Park will collect runoff and attenuate the peak flow. The Paiute Park basin will then discharge to a 10 year storm drain which runs east along Osborn Road to Civic Center Blvd. At this point the proposed system connects to the existing Osborn Road storm drain which outfalls to Indian Bend Wash. The existing storm drain system from Civic Center Blvd. to Indian Bend Wash does not have 10 year capacity.*

Alternative Formulation

The analysis of the Osborn Road outfall alternatives was conducted in two steps. The first step was to develop possible solutions to the problem. Alternatives were developed based on several factors including the key objectives of the project, a qualitative comparison of benefits, the opinions of probable cost, and an evaluation of viability considering community based opportunities and constraints.

The second step was to analyze each alternative to determine the most feasible solutions. An alternatives analysis was conducted to determine the specific components of the most feasible alternatives. These alternatives are described in the next sub-section and are shown on the attached figures.



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AA3-5Rec.wor

STP Papago Watershed Study

Alternative Descriptions

Alternative A: Osborn Park Storage (Figure 2-2)

The Osborn Road outfall system has been modified to include a junction structure at Miller Road. The junction conveys runoff in excess of what the existing system can accommodate, across Osborn Road into Osborn Park, located between old Osborn Road and new Osborn Road. The outfall structures for the park have been augmented to handle the excess runoff. The primary runoff continues east along Osborn Road and outfalls to Indian Bend Wash.

Alternative B: Civic Center Diversion (Figure 2-3)

The Osborn Road outfall system has been modified to include a junction structure at Civic Center Boulevard. The structure diverts primary runoff south along Civic Center Boulevard in a proposed storm drain. The proposed storm drain runs south along Civic Center Blvd. and east along Earll Drive to Indian Bend Wash. The excess runoff at the Civic Center Blvd. junction structure is conveyed east along Osborn Road in the existing storm drain to Indian Bend Wash.

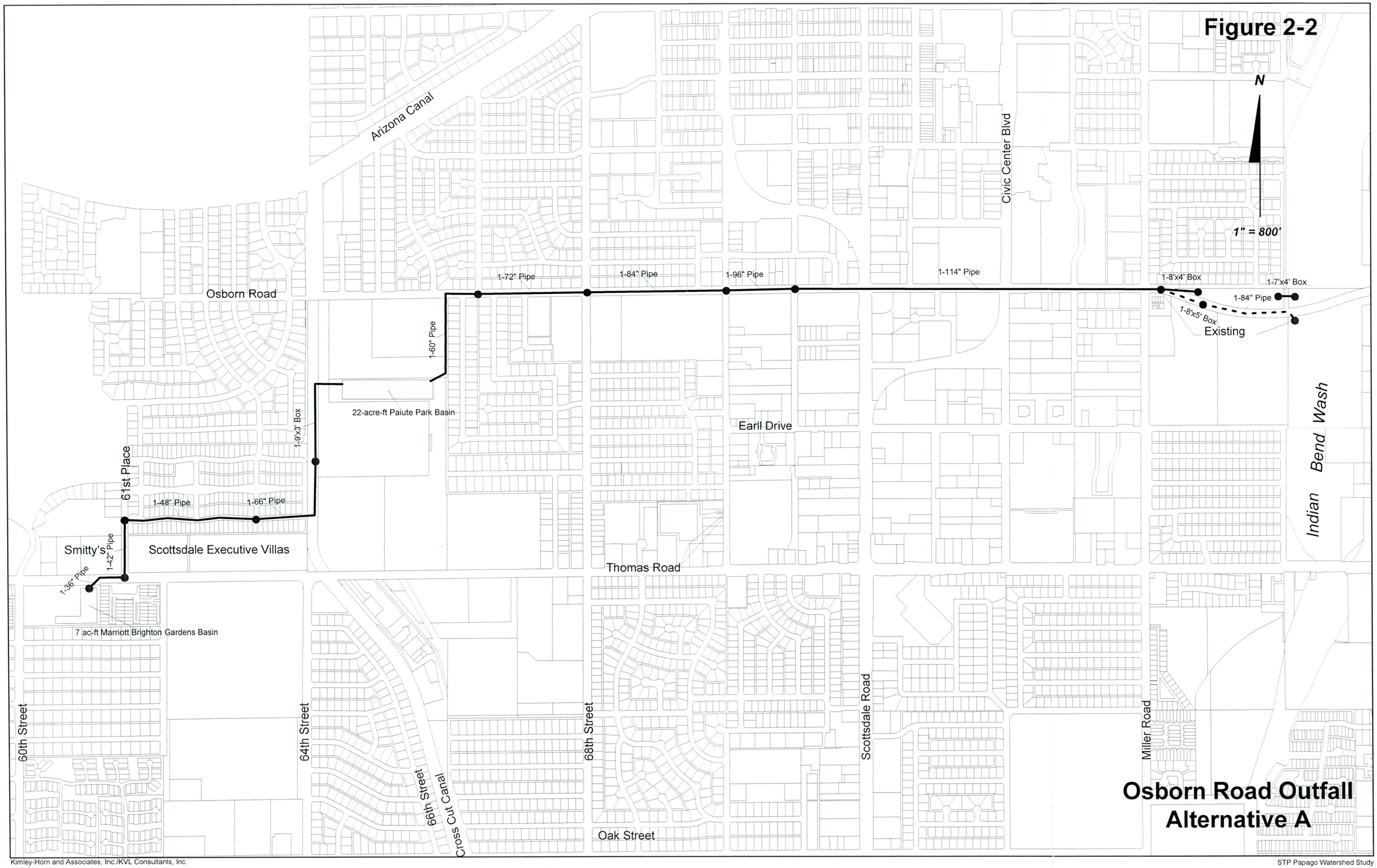
Alternative C: Scottsdale Road Diversion (Figure 2-4)

The Osborn Road outfall system has been modified to include a junction structure at Scottsdale Road. The structure diverts primary runoff south along Scottsdale Road in the existing storm drain which ties in to a proposed storm drain at Earll Drive, running east to Indian Bend Wash. The excess runoff at the Scottsdale Road junction structure is conveyed east along Osborn Road in a proposed storm drain that ties in to the existing storm drain at Civic Center Boulevard.

Alternative D: 71st Street Diversion (Figure 2-5)

The Osborn Road outfall system has been modified to include a storm drain in Osborn Road running from the Paiute Basin to 71st Street, south on 71st Street to Earll Drive and east on Earll Drive to Indian Bend Wash. Use of the existing storm drain in Osborn Road for excess runoff has not been included in this model, since the benefit of this alternative is the elimination of any construction activities in Osborn Road east of Scottsdale Road. This existing storm drain will continue to function as it does currently.

Figure 2-2



Osborn Road Outfall
Alternative A

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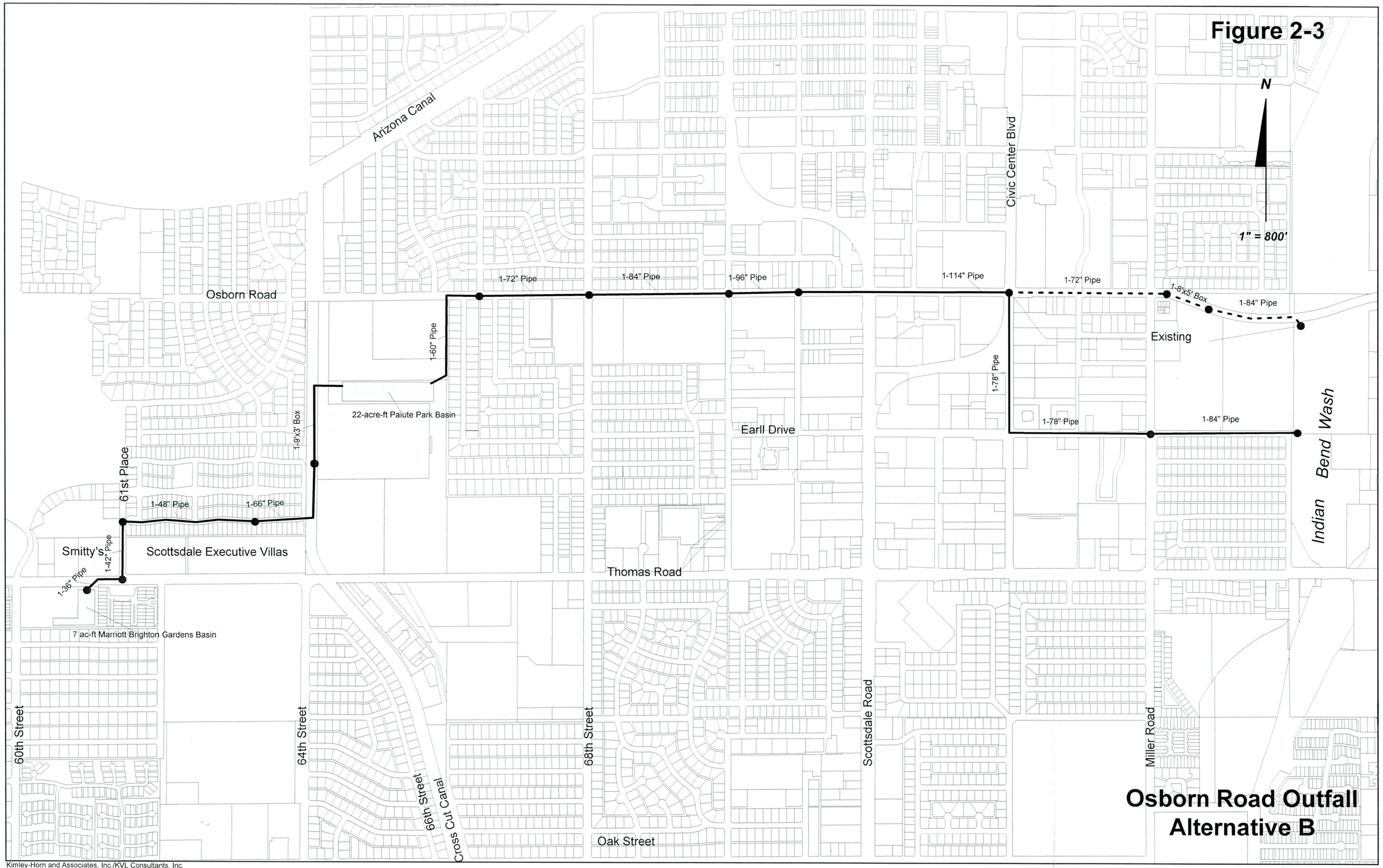
AA3-5A.wor

STP Papago Watershed Study

Figure 2-3



Osborn Road Outfall
Alternative B

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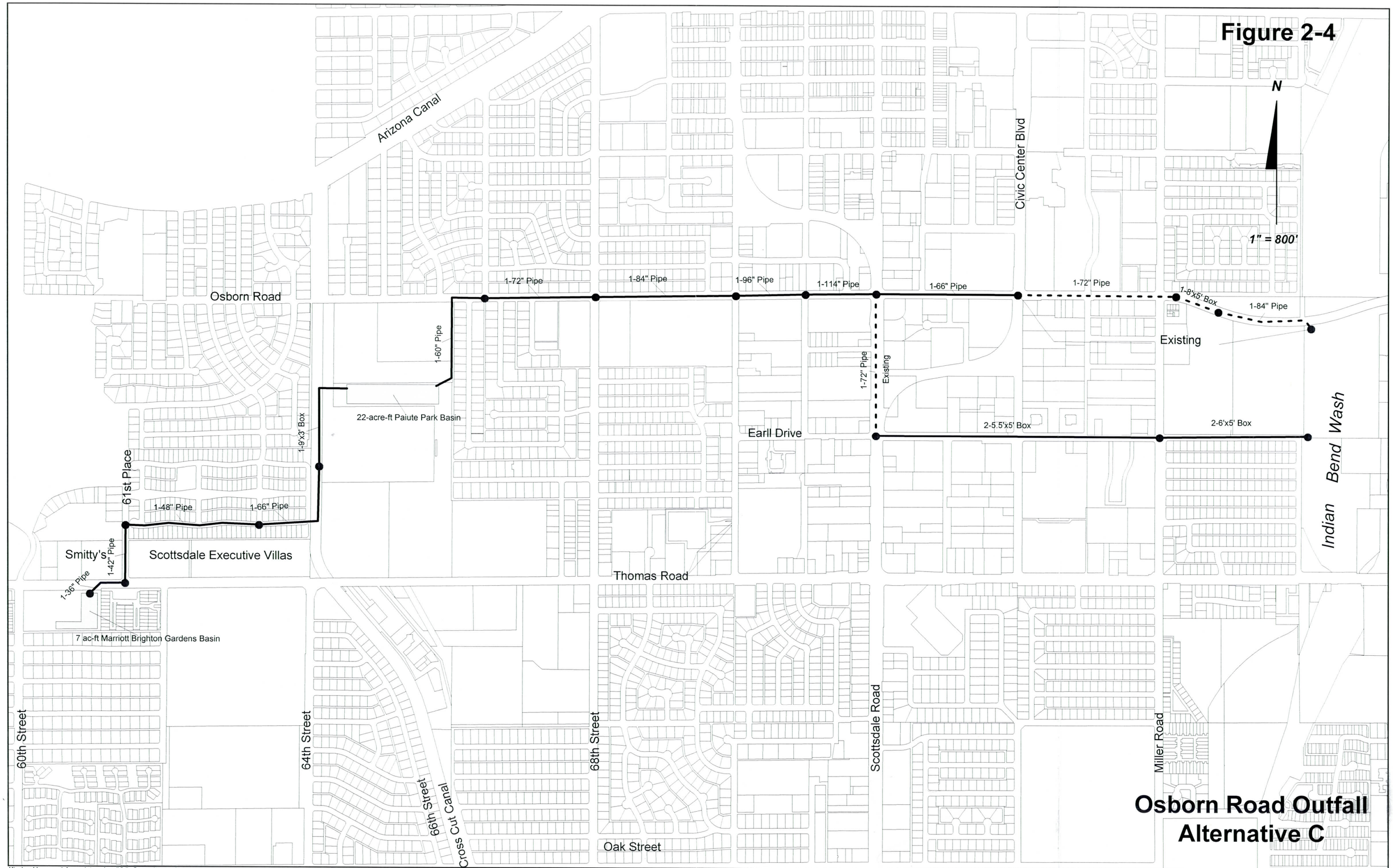
STP Papago Watershed Study



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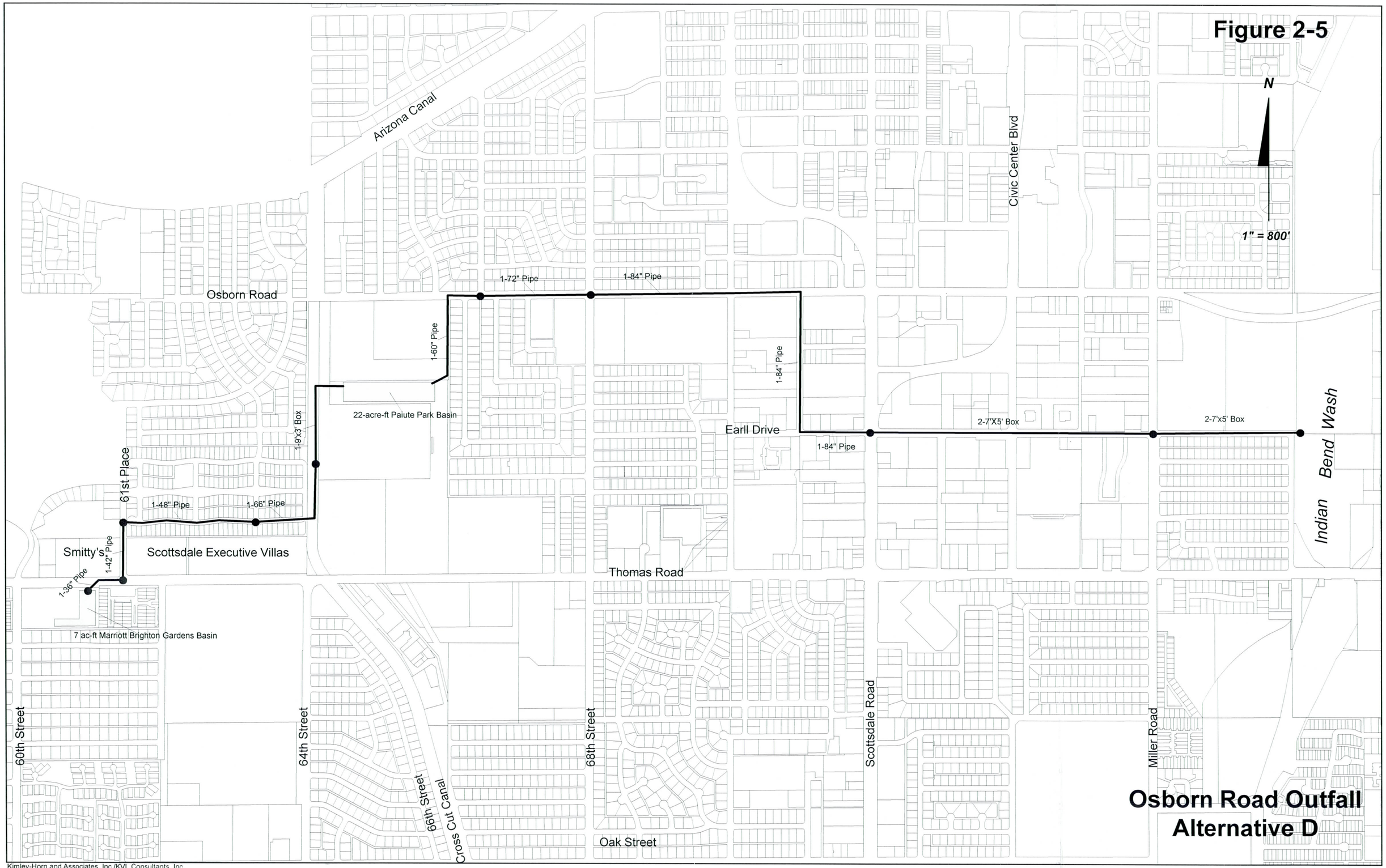
STP Papago Watershed Study

Figure 2-5



Osborn Road Outfall
Alternative D

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STP Papago Watershed Study

3. Comparative Analysis

Introduction

This section provides a comparative analysis of the alternatives considered and includes: consideration of the project hydrology and hydraulics, use of existing storm drain, potential for utility conflicts, permit and coordination issues, maintenance of traffic concerns, overall project viability and opinions of probable cost.

Hydrology

Methodology

The hydrology models for this study are based on the HEC-1 model developed for the Recommended Plan hydrology. The Recommended Plan model was developed from part of the City of Scottsdale Stormwater Master Plan and Management Program. The methodology, hydrologic sub-basins, and concentration point identification numbers were modified as needed. The primary changes made to the Recommended Plan hydrology were as follows:

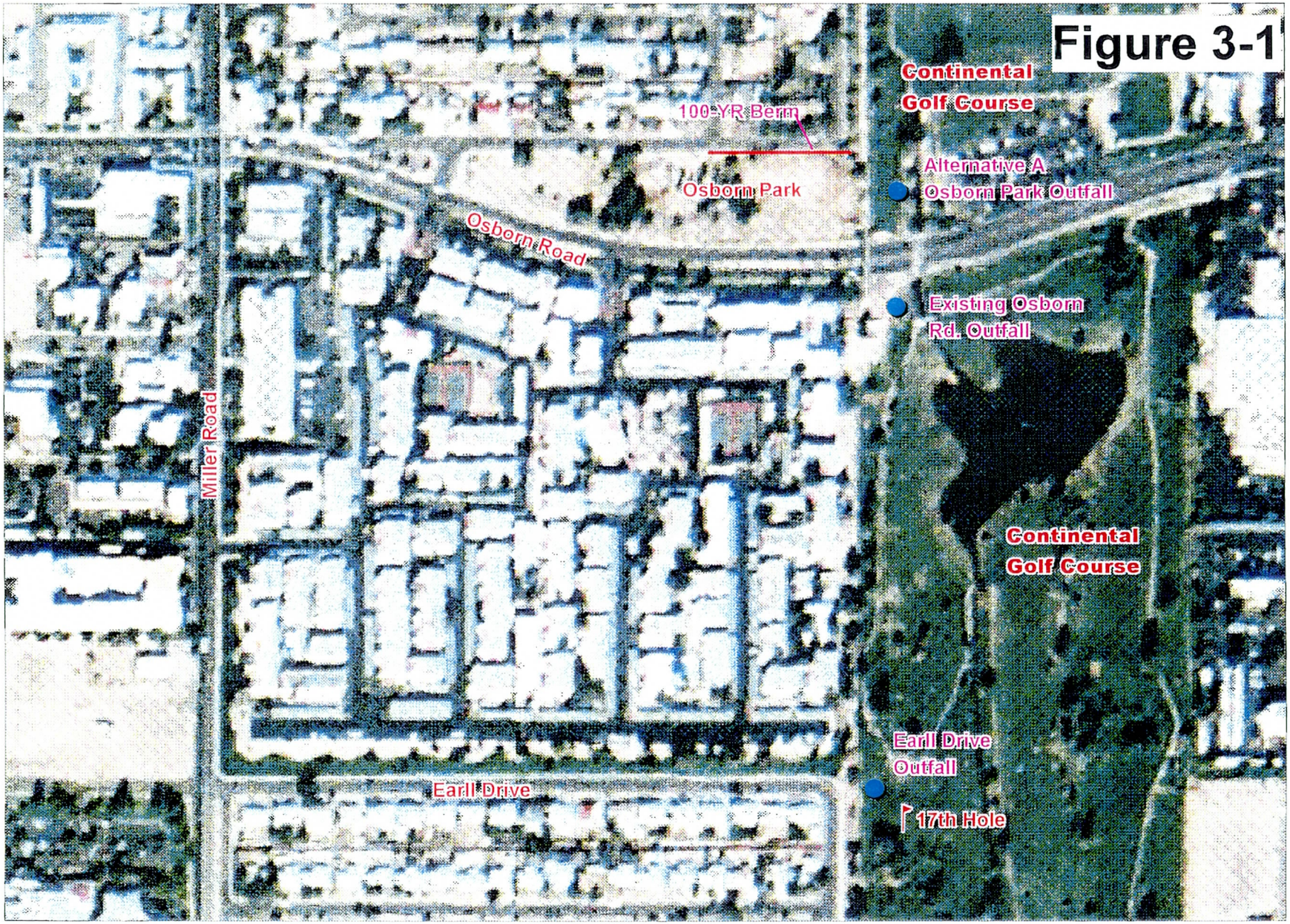
- Routing paths were changed to reflect the objectives of each alternative
- Pipe sizes and slopes were adjusted to match the hydraulic analysis
- New concentration points were added where hydrologic results were required
- Storage nodes were added where needed for detention basins.

In performing these revisions, care was taken to use the same methodology and sources as in the original HEC-1 models. The four alternatives being compared in this report only affect the hydrology of sub-basins 05, 07 and 21.

Effects on Indian Bend Wash

Within the study area, there are dozens of outfalls which convey runoff to Indian Bend Wash (IBW), the Salt River, and the Old Cross Cut Canal. This report involves four outfalls located at Osborn Park, Osborn Road, Earll Drive and Thomas Road. Figure 3-1 shows the proposed Osborn Park, Osborn Road and Earll Drive storm drain outfall locations. The peak discharges for a 10 year, 6-hour event for each alternative and the recommended plan were compared at these four outfall locations. The resulting peak discharges are shown in Table 3-1 and the following observations can be made:

- All four alternatives result in virtually no net change in flows to Indian Bend Wash. The location of the outfalls varies, but the overall amount of flow entering IBW is unchanged from the Recommended Plan.
- In general, flow in excess of the 10 year capacity of the existing storm drain system has been diverted out of that system and redirected to IBW along different paths.



Scale 1"=300'

Outfall Locations

Kimley-Horn and Associates, Inc
Earlloutfall.wor

STP Papago Watershed Study

Table 3-1 Peak Discharges at the IBW Outfalls for 10-Year 6-Hour Event

Concentration Point Number	Location	Recommended Plan (cfs)	Alternative A (cfs)	Alternative B (cfs)	Alternative C (cfs)	Alternative D (cfs)
051565	Osborn Park	0	242	N/A	N/A	N/A
051570	Osborn Road	693	437	398	393	218
051420	Earll Drive	0	0	440	547	718
050160	Thomas Road	1382	1382	1228	1131	1131
Total	Between Osborn Park and Thomas Road	2075	2061	2066	2071	2067

Hydraulics

Methodology

The hydraulic models for this study are based on the STORMPlus models developed for the Recommended Plan Osborn Road Outfall. The models for the storm drain proposed in the recommended plan have been truncated where each of the alternatives is connected. The alternatives have been sized such that the hydraulic grade line at the junction most nearly matches the elevation shown in the recommended plan.

Use of Existing Storm Drain

In all four alternatives existing storm drain was utilized when possible.

Alternative A: Osborn Park Storage

There is an existing storm drain in Osborn Road from Civic Center Blvd. to Indian Bend Wash. For this alternative the existing system does not provide 10 year protection for its entire length. For this reason, the portion from Civic Center Boulevard to Miller Road was replaced with a larger pipe. The portion from Miller Road to Indian Bend Wash was left as is.

Alternative B: Civic Center Diversion

There is an existing storm drain in Osborn Road from Civic Center Blvd. to Indian Bend Wash. Due to upstream diversions in this alternative, the existing system does provide 10 year protection for its entire length. For this reason, the existing system was left as is. Sealed manholes should be installed for rim elevations lower than the top of the Indian Bend Wash levee at the outfall. Additionally, no inlets should be installed in the section where rim elevations are lower than the top of the Indian Bend Wash levee at the outfall.

what is that elevation?

Alternative C : Scottsdale Road Diversion

There is an existing storm drain in Osborn Road from Civic Center Blvd. to Indian Bend Wash. Due to upstream diversions in this alternative, the existing system does provide 10 year protection for its entire length. For this reason, the existing system was left as is. There is also an existing 72" storm drain in Scottsdale Road. The portion from Osborn Road to Earll Drive is utilized by this alternative. In order to accommodate the 10 year flows all the way to IBW, a slip liner will need to be installed for this reach of storm drain. Two hydraulic models are given for the section including the slip-liner each with different Manning's n-values. The first represents the plastic pipe as given in textbooks and a the second uses the friction value provided by an Insituform representative as a result of testing in-service pipe liner.

Sealed manholes should be installed for rim elevations lower than the top of the Indian Bend Wash levee at the outfall. Additionally, no inlets should be installed in the section where rim elevations are lower than the top of the Indian Bend Wash levee at the outfall.

Alternative D: 71st Street Diversion

In this alternative all upstream flow is directed away from the existing storm drain in Osborn Road from Civic Center Blvd. to Indian Bend Wash. The system was left as is and will convey the existing flows to IBW. Sealed manholes should be installed for rim elevations lower than the top of the Indian Bend Wash levee at the outfall. Additionally, no inlets should be installed in the section where rim elevations are lower than the top of the Indian Bend Wash levee at the outfall.

These segments should be Identified!

Potential for Utility Conflicts

The potential conflicts with existing utilities will be need to be quantified in detail as part of a final design plan, but the issue was considered in comparing the alternatives. Available record drawings and facility maps were collected and reviewed to provide an idea of the types of utility conflicts to be expected. The identified potential utility conflicts are as follows:

Alternative A: Osborn Park Storage

The adoption of Alternative A would require no major additional utility crossings from the recommended plan, since it essentially is the same with the exception of the overflow conveyance to Osborn Park. It should be noted, however, that the overflow conveyance would run parallel and near to two existing 48" concrete pipes. The northern pipe is a storm drain that carries flows from the north along Miller Road and then east to IBW in an independent system. This storm drain does not have any additional capacity, to be utilized in this alternative. The southern pipe appears to be an old storm drain, now serving as an irrigation overflow pipe. This alternative is expected to have the least potential for utility conflicts.

Alternative B: Civic Center Diversion

The adoption of Alternative B would require sanitary sewer crossings, mainly in Earll Drive, which may affect the final design. As in the Recommended Plan design, these conflicts can be avoided by deepening the storm drain or reconstructing the sewer line. This alternative also conflicts with minor utilities, such as water and gas, which can be relocated with minimal effort.

Alternative C: Scottsdale Road Diversion

The adoption of Alternative C would require sanitary sewer crossings in Earll Drive which may affect the final design. As in the Recommended Plan design, these conflicts can be avoided by deepening the storm drain or reconstructing the sewer line. This alternative also conflicts with minor utilities, such as water and gas, which can be relocated with minimal effort.

Alternative D: 71st Street Diversion

The adoption of Alternative D would require sanitary sewer crossings, mainly in Earll Drive, which may affect the final design. As in the Recommended Plan design, these conflicts can be avoide by deepening the storm drain or reconstructing the sewer line. This alternative also conflicts wit minor utilities, such as water and gas, which can be relocated with minimal effort.

Are any of these quantified?

Permit and Coordination Issues

A preliminary investigation was conducted to determine the types of permit and coordination issue that are anticipated for final design. The results reveal no major obstacles.

- For construction in the City of Scottsdale, plan reviews will be coordinated through the Development Services Department.

Sealed manholes should be installed for rim elevations lower than the top of the Indian Bend Wash levee at the outfall. Additionally, no inlets should be installed in the section where rim elevations are lower than the top of the Indian Bend Wash levee at the outfall.

Alternative D: 71st Street Diversion

In this alternative all upstream flow is directed away from the existing storm drain in Osborn Road from Civic Center Blvd. to Indian Bend Wash. The system was left as is and will convey the existing flows to IBW. Sealed manholes should be installed for rim elevations lower than the top of the Indian Bend Wash levee at the outfall. Additionally, no inlets should be installed in the section where rim elevations are lower than the top of the Indian Bend Wash levee at the outfall.

These segments should be identified!

Potential for Utility Conflicts

The potential conflicts with existing utilities will be need to be quantified in detail as part of a final design plan, but the issue was considered in comparing the alternatives. Available record drawings and facility maps were collected and reviewed to provide an idea of the types of utility conflicts to be expected. The identified potential utility conflicts are as follows:

Alternative A: Osborn Park Storage

The adoption of Alternative A would require no major additional utility crossings from the recommended plan, since it essentially is the same with the exception of the overflow conveyance to Osborn Park. It should be noted, however, that the overflow conveyance would run parallel and near to two existing 48" concrete pipes. The northern pipe is a storm drain that carries flows from the north along Miller Road and then east to IBW in an independent system. This storm drain does not have any additional capacity, to be utilized in this alternative. The southern pipe appears to be an old storm drain, now serving as an irrigation overflow pipe. This alternative is expected to have the least potential for utility conflicts.

Alternative B: Civic Center Diversion

The adoption of Alternative B would require sanitary sewer crossings, mainly in Earll Drive, which may affect the final design. As in the Recommended Plan design, these conflicts can be avoided by deepening the storm drain or reconstructing the sewer line. This alternative also conflicts with minor utilities, such as water and gas, which can be relocated with minimal effort.

Alternative C: Scottsdale Road Diversion

The adoption of Alternative C would require sanitary sewer crossings in Earll Drive which may affect the final design. As in the Recommended Plan design, these conflicts can be avoided by deepening the storm drain or reconstructing the sewer line. This alternative also conflicts with minor utilities, such as water and gas, which can be relocated with minimal effort.

Alternative D: 71st Street Diversion

The adoption of Alternative D would require sanitary sewer crossings, mainly in Earll Drive, which may affect the final design. As in the Recommended Plan design, these conflicts can be avoided by deepening the storm drain or reconstructing the sewer line. This alternative also conflicts with minor utilities, such as water and gas, which can be relocated with minimal effort.

Are any of these quantified?

Permit and Coordination Issues

A preliminary investigation was conducted to determine the types of permit and coordination issues that are anticipated for final design. The results reveal no major obstacles.

- For construction in the City of Scottsdale, plan reviews will be coordinated through the Development Services Department.

- For outlet works in IBW, compliance with Section 404 of the Clean Water Act through the US Army Corps of Engineers regulatory program is required.
- For hydrologic and hydraulic impacts on IBW, coordination with the US Army Corps of Engineers engineering staff is required.
- For outlet works in IBW, compliance with Sections 401 and 402 of the Clean Water Act through the Arizona Department of Environmental Quality regulatory program is required.
- At least six private utility owners share use of the rights of way in the recommended plan and should be contacted to determine prior rights during final design.

} figured into cost estimate?

Maintenance of Traffic Concerns

The alternative alignments are along Scottsdale Road, Osborn Road, Civic Center Boulevard, 71st Street and Earll Drive. These roads carry moderate to high traffic volumes, therefore maintenance of traffic during construction will require consideration in the final design. Scottsdale Road will continue to be a difficult area to cross, or run parallel construction.

Project Viability

The following conclusions were drawn during the Osborn Road outfall alternative analysis regarding the expected pitfalls and opportunities to be considered for each of the alternatives. These items are in addition to what was provided in the Recommended Plan report regarding the Osborn Road outfall.

Alternative A: Osborn Park Storage

- This alternative makes use of the existing storm drain from Miller Road to IBW. The existing storm drain from Civic Center Blvd. to Miller Road would need to be replaced with a new section of pipe.
- A large junction structure would need to be constructed just east of Miller Road with a box culvert diversion into the west end of Osborn Park.
- The design criteria for this alternative was to use the 10 year tailwater elevation in IBW with the 10 year Osborn Road inflow. This alternative meets that objective.
- A factor to consider is what will occur if the inflow is greater than that of the 10 year storm. This situation was examined and it was determined that a 100 year storm with a 100 year tailwater elevation in IBW would result in a water surface elevation greater than the park depth impacting several homes in the Peaceful Valley neighborhood to the north. Recommendations of minor variations to this alternative in order to alleviate this problem are:

    1) Do nothing and let the area flood with the idea that the chances of a 100 year watershed and a 100 year tailwater in IBW occurring at the same time is a remote possibility.
    2) Sixteen properties are affected in the event of a 100 year storm. Flow easements could be purchased at an approximate cost of $50,000 per property or the properties themselves could be purchased for approximately $100,000 per property. These amounts are based on 1996 sale prices for properties in the area (Appendix A). (low) Paiute park easement @ 175 K/acre & area is dillapidated.
    3) Construct a berm on the north side of the park and along the east side of 78th Street (Figure 3-1). The berm would detain the 100 year storm within Osborn Park until it can outflow to IBW.

We recommend #3, but in no case should design proceed without full consideration.

- For outlet works in IBW, compliance with Section 404 of the Clean Water Act through the US Army Corps of Engineers regulatory program is required.
- For hydrologic and hydraulic impacts on IBW, coordination with the US Army Corps of Engineers engineering staff is required.
- For outlet works in IBW, compliance with Sections 401 and 402 of the Clean Water Act through the Arizona Department of Environmental Quality regulatory program is required.
- At least six private utility owners share use of the rights of way in the recommended plan and should be contacted to determine prior rights during final design.

} figured into cost estimate?

Maintenance of Traffic Concerns

The alternative alignments are along Scottsdale Road, Osborn Road, Civic Center Boulevard, 71st Street and Earll Drive. These roads carry moderate to high traffic volumes, therefore maintenance of traffic during construction will require consideration in the final design. Scottsdale Road will continue to be a difficult area to cross, or run parallel construction.

Project Viability

The following conclusions were drawn during the Osborn Road outfall alternative analysis regarding the expected pitfalls and opportunities to be considered for each of the alternatives. These items are in addition to what was provided in the Recommended Plan report regarding the Osborn Road outfall.

Alternative A: Osborn Park Storage

- This alternative makes use of the existing storm drain from Miller Road to IBW. The existing storm drain from Civic Center Blvd. to Miller Road would need to be replaced with a new section of pipe.
- A large junction structure would need to be constructed just east of Miller Road with a box culvert diversion into the west end of Osborn Park.
- The design criteria for this alternative was to use the 10 year tailwater elevation in IBW with the 10 year Osborn Road inflow. This alternative meets that objective.
- A factor to consider is what will occur if the inflow is greater than that of the 10 year storm. This situation was examined and it was determined that a 100 year storm with a 100 year tailwater elevation in IBW would result in a water surface elevation greater than the park depth impacting several homes in the Peaceful Valley neighborhood to the north. Recommendations of minor variations to this alternative in order to alleviate this problem are:

    1) Do nothing and let the area flood with the idea that the chances of a 100 year watershed and a 100 year tailwater in IBW occurring at the same time is a remote possibility.
    2) Sixteen properties are affected in the event of a 100 year storm. Flow easements could be purchased at an approximate cost of $50,000 per property or the properties themselves could be purchased for approximately $100,000 per property. These amounts are based on 1996 sale prices for properties in the area (Appendix A). (low) @ Paiute park easement @ 175 K/acre & area is dillapidated.
    3) Construct a berm on the north side of the park and along the east side of 78th Street (Figure 3-1). The berm would detain the 100 year storm within Osborn Park until it can outflow to IBW.

We recommend #3, but in no case should design proceed without full consideration.

Alternative B: Civic Center Diversion

- Connecting this alternative to the storm drain proposed in the Recommended Plan requires matching inverts at the junction of Osborn Road and Civic Center Blvd. This invert elevation is lower than the ground elevation at the outfall. Furthermore, minimum slope requirements for the proposed pipe would require an invert depth for this alternative approximately 9 feet below the outfall ground elevation. Since it is not feasible to grade out Indian Bend Wash to this elevation, this alternative has been eliminated by inspection as a viable alternative.
- During the recommended plan design, the Osborn Road system was raised to connect to the existing system, with low-rise conflict structures proposed for the sanitary sewer crossings. Since this constraint has already been applied to the system, raising it to solve the above problem would cause major sewer conflicts requiring relocating sewer lines in the area west of Civic Center Blvd. Additional sewer conflicts in Earll Drive are also expected due to similar sewer line depths as in Osborn Road.

Alternative C: Scottsdale Road Diversion

- This alternative makes use of existing storm drain both in Scottsdale Road and Osborn Road. The Scottsdale Road section from Osborn Road south to Earll Drive would need to have an in-situ slip lining installed to increase the capacity. The greatest advantage to in-situ slip lining technology is the speed of installation and the low traffic impact during installation. At this time, the in-situ slip lining technology from Insituform Inc., with their water inversion process, costs nearly three times as much as new pipe installation. However, the savings in traffic delays may well be worth the higher costs. According to the representative from Insituform Inc., a new air inversion process under development will cut the cost to be competitive with pipe replacement within the next six months. This translates to a cost savings of nearly $500,000 (50%) if the new installation technology is successful.
- With increased capacity in Scottsdale Road the excess flow to the Osborn Road system is minimized, thereby allowing that system to provide 10 year protection for the area. Since the existing Osborn Road system is used as an overflow mechanism, the proposed system is no longer constrained to matching inverts at the Civic Center Blvd. junction. Therefore, this alternative makes use of the entire Osborn Road existing system, and the replacement as shown in the recommended plan is not necessary.
- The portion of the recommended plan system between Scottsdale Road and the Cross Cut Canal was raised to meet the existing storm drain invert. This will cause conflict with the sanitary sewer in Osborn Road. Additionally, the portion of storm drain between Scottsdale Road and the connection to the existing system at Civic Center Blvd. has been reduced in size from that proposed in the recommended plan.
- The Earll Drive outfall is adjacent to the seventeenth fairway of Continental Golf Course. There is an existing low flow drainage channel on the golf course. A shallow low flow swale would need to be graded from the outfall to join this channel. This re-grading of the golf course would need to be approved by and coordinated with the property owners.
- Additional sewer conflicts in Earll Drive are expected due to similar depths as in Osborn Road.

Alternative D: 71st Street Diversion

- This alternative does not make use of any existing pipe to carry flows from the Paiute Park basin to IBW. However, the existing Osborn Road system is left as is and will continue to convey local flows to IBW.
- The Earll Drive outfall is adjacent to the seventeenth fairway of Continental Golf Course. There is an existing low flow drainage channel on the golf course. A shallow low flow swale would need to be graded from the outfall to join this channel. This re-grading of the golf course would need to be approved by and coordinated with the property owners.

Opinions of Probable Cost

The opinion of probable cost is only intended for the purpose of comparing and evaluating the alternatives. A more detailed opinion of probable cost should be prepared in the final design.

Alternative B was determined to be unfeasible hydraulically. For this reason no opinion of probable cost was provided.

The contingency for these costs was determined based on bid tabulations for recent District projects, as provided by the Flood Control District of Maricopa County. A review of these bid tabulations revealed that the cost for a storm drain project is primarily found in the pipe costs, with the incidental costs not exceeding 10% of the total project cost. Engineering design and permitting costs are also estimated to be 10% of the total project cost. An additional increase of 15% was added to cover other contingencies, totaling a 35% contingency for the opinions of probable cost. The detailed utility conflict budget has been modified in each of the alternatives by determining the cost per foot of storm drain installed in the recommended plan and multiplying by the total length of pipe for each of the alternatives. The opinions of probable cost for the alternatives are provided in Tables 3-2 to 3-4.

Opinions of Probable Cost

The opinion of probable cost is only intended for the purpose of comparing and evaluating the alternatives. A more detailed opinion of probable cost should be prepared in the final design.

Alternative B was determined to be unfeasible hydraulically. WHY? For this reason no opinion of probable cost was provided.

The contingency for these costs was determined based on bid tabulations for recent District projects, as provided by the Flood Control District of Maricopa County. A review of these bid tabulations revealed that the cost for a storm drain project is primarily found in the pipe costs, with the incidental costs not exceeding 10% of the total project cost. Engineering design and permitting costs are also estimated to be 10% of the total project cost. An additional increase of 15% was added to cover other contingencies, totaling a 35% contingency for the opinions of probable cost. The detailed utility conflict budget has been modified in each of the alternatives by determining the cost per foot of storm drain installed in the recommended plan and multiplying by the total length of pipe for each of the alternatives. The opinions of probable cost for the alternatives are provided in Tables 3-2 to 3-4.

Table 3-2 Alternative A: Osborn Park Storage Opinion of Probable Cost

Description	Quantity	Units	Rate	Amount
9.5' x 5.5' RCB (Table 1)	25	lf	$468.00	$11,700
9' x 5' RCB (Table 1)	100	lf	$433.00	$43,300
9' x 3' RCB (Table 1)	1,089	lf	$376.00	$409,464
8.5' x 3' RCB (Table 2)	31	lf	$351.00	$10,881
8' x 4' RCB (Table 1)	500	lf	$369.00	$184,500
7' x 4' RCB (Table 1)	130	lf	$325.00	$42,250
5' x 3.5' RCB (Table 2)	30	lf	$234.00	$7,020
4.5' x 3' RCB (Table 2)	34	lf	$185.00	$6,290
114" RGRCP	2,430	lf	$357.73	~~$869,284~~
96" RGRCP	1,252	lf	$254.55	~~$318,697~~
84" RGRCP	1,292	lf	~~$375.00~~ 325	~~$484,500~~
72" RGRCP	900	lf	$300.00	$270,000
66" RGRCP	980	lf	$280.00	$274,400
60" RGRCP	1,105	lf	$250.00	$276,250
48" RGRCP	1,200	lf	$235.00	$282,000
42" RGRCP	524	lf	$175.00	$91,700
36" RGRCP	362	lf	$160.00	$57,920
Special Design Junction Box	1	ea	$50,000.00	$50,000
Junction Boxes	18	ea	$20,000.00	~~$360,000~~
Manholes	5	ea	$3,000.00	$15,000
Transition Structures	18	ea	$13,500.00	$243,000
Inlet / Outlet Works	6	ea	$50,000.00	$300,000
Paiute Park Basin Excavation	34,500	cy	$6.00	$207,000
3' Retaining Wall	1,520	lf	$75.00	$114,000
Landscape Budget	1	ls	$20,000.00	$20,000
Marriott Homes Basin Excavation	9,000	cy	$6.00	$54,000
Landscape Budget	1	ls	$20,000.00	$20,000
Osborn Park Grading and Berm	500	cy	$6.00	$3,000
Subtotal Construction Costs				**$5,026,156**
Marriott Homes Easement Costs	2.30	ac	$240,000.00	$552,000
Paiute Park Easement Costs	4.80	ac	$175,000.00	$840,000
Catalina Drive Easement Costs	0.01	ac	$175,000.00	$1,750
Subtotal Acquisition Costs				**$1,393,750**
Utility Conflicts Budget				$546,028
Contingency @ 35%				$1,759,154
Total Opinion of Probable Cost				**$8,725,088**

Not found in StormPlus models ? where? not modeled

11984, ~~14359~~

11 counted!

Far too low for 114" for 96"

460 - $ 360

1,117,800 +248,516

450,720 → +132,023

419,900 → - 64,600

220,000 - 140,000

Doubled, over previous report (-80K)

seems low need schematic xsectn's

653,334.5

dk

$ 28,705.00 more than previous report

218,189

$ 235,939 more

seems like a typo since it's so low

$ 8,961,027

U.C. cost/LF = $

+ 248,516
+ 132,023
− 64,600
+ 42,250
− 140,000

+ 218,189 more

8,725,088
218,189

8,943,277 → 8.94 K

Table 3-2 Alternative A: Osborn Park Storage Opinion of Probable Cost

Description	Quantity	Units	Rate	Amount
9.5' x 5.5' RCB (Table 1)	25	lf	$468.00	$11,700
9' x 5' RCB (Table 1)	100	lf	$433.00	$43,300
9' x 3' RCB (Table 1)	1,089	lf	$376.00	$409,464
8.5' x 3' RCB (Table 2)	31	lf	$351.00	$10,881
8' x 4' RCB (Table 1)	500	lf	$369.00	$184,500
7' x 4' RCB (Table 1)	130	lf	$325.00	$42,250
5' x 3.5' RCB (Table 2)	30	lf	$234.00	$7,020
4.5' x 3' RCB (Table 2)	34	lf	$185.00	$6,290
114" RGRCP	2,430	lf	$357.73	$869,284
96" RGRCP	1,252	lf	$254.55	$318,697
84" RGRCP	1,292	lf	$375.00	$484,500
72" RGRCP	900	lf	$300.00	$270,000
66" RGRCP	980	lf	$280.00	$274,400
60" RGRCP	1,105	lf	$250.00	$276,250
48" RGRCP	1,200	lf	$235.00	$282,000
42" RGRCP	524	lf	$175.00	$91,700
36" RGRCP	362	lf	$160.00	$57,920
Special Design Junction Box	1	ea	$50,000.00	$50,000
Junction Boxes	18	ea	$20,000.00	$360,000
Manholes	5	ea	$3,000.00	$15,000
Transition Structures	18	ea	$13,500.00	$243,000
Inlet / Outlet Works	6	ea	$50,000.00	$300,000
Paiute Park Basin Excavation	34,500	cy	$6.00	$207,000
3' Retaining Wall	1,520	lf	$75.00	$114,000
Landscape Budget	1	ls	$20,000.00	$20,000
Marriott Homes Basin Excavation	9,000	cy	$6.00	$54,000
Landscape Budget	1	ls	$20,000.00	$20,000
Osborn Park Grading and Berm	500	cy	$6.00	$3,000
Subtotal Construction Costs				**$5,026,156**
Marriott Homes Easement Costs	2.30	ac	$240,000.00	$552,000
Paiute Park Easement Costs	4.80	ac	$175,000.00	$840,000
Catalina Drive Easement Costs	0.01	ac	$175,000.00	$1,750
Subtotal Acquisition Costs				**$1,393,750**
Utility Conflicts Budget				$546,028
Contingency @ 35%				$1,759,154
Total Opinion of Probable Cost				**$8,725,088**

Not found in StormPlus models ? where? not modeled

far too low for 114" 460 for 96" - $360

1,117,800 +248,516
450,720 → +132,023
419,900 → -64,600

11984, ~~14359~~

11 counted!

220,000 - 140,000

Doubled, over previous report (-80K)

seems low need schematic xsectn's

653,334.5

OK

$28,705.00 more than previous report

218,189

$235,939 more

seems like a typo since it's so low

$8,961,027

U.C. cost/SF = $245.56 per recommended plan. Using the stated criteria, the above U.C. estimate is over $100 SF low.

+ 248,516
+ 132,023
- 64,600
+ 42,250
- 140,000

+ 218,189 more

8,725,088
218,189
8,943,277 → 8.94 K

Table 3-3 Alternative C: Scottsdale Road Diversion Opinion of Probable Cost

Description	Quantity	Units	Rate	Amount	
Dual 6' x 5' RCB (Table 1)	1,460	lf	$532.00	$776,720	
Dual 5.5' x 5' RCB (Table 1)	2,640	lf	$500.00	$1,320,000	
9' x 3' RCB (Table 1)	1,089	lf	$376.00	$409,464	
8.5' x 3' RCB (Table 2)	31	lf	$351.00	$10,881	
5' x 3.5' RCB (Table 2)	30	lf	$234.00	$7,020	
4.5' x 3' RCB (Table 2)	34	lf	$185.00	$6,290	
96" RGRCP	1,252	lf	~~$254.55~~ 360	~~$318,697~~	450,720 (+132,023)
84" RGRCP	1,292	lf	~~$375.00~~ 325	~~$484,500~~	419,900 (-64,600)
72" RGRCP	~~900~~ 936	lf	$300.00	~~$270,000~~	280,800 (+10,800)
~~66" RGRCP~~	2,205	lf	$280.00	$617,400	
60" RGRCP	1,105	lf	$250.00	$276,250	
48" RGRCP	1,200	lf	$235.00	$282,000	
42" RGRCP	524	lf	$175.00	$91,700	
36" RGRCP 14124	362	lf	$160.00	$57,920	
72" Slip Lining	1,253	lf	$800.00	$1,002,400	
Special Design Junction Box	2	ea	$50,000.00	$100,000	
Junction Boxes	18	ea	$20,000.00	$360,000	240k (-80k)
Manholes	12	ea	$3,000.00	$36,000	
Transition Structures check	13	ea	$13,500.00	$175,500	
Inlet / Outlet Works	4	ea	$50,000.00	$200,000	
Paiute Park Basin Excavation	34,500	cy	$6.00	$207,000	
3' Retaining Wall	1,520	lf	$75.00	$114,000	
Landscape Budget	1	ls	$20,000.00	$20,000	
Marriott Homes Basin Excavation	9,000	cy	$6.00	$54,000	
Landscape Budget	1	ls	$20,000.00	$20,000	
Subtotal Construction Costs				**$7,217,742**	
Marriott Homes Easement Costs	2.30	ac	$240,000.00	$552,000	
Paiute Park Easement Costs	4.80	ac	$175,000.00	$840,000	
Catalina Drive Easement Costs	0.01	ac	$175,000.00	$1,750	
Subtotal Acquisition Costs				**$1,393,750**	
Utility Conflicts Budget				$643,533	
Contingency @ 35%				$2,526,210	
Total Opinion of Probable Cost				**$11,781,234**	

here

12 counted!

+ 132,023
- 64,000
+ 10,800
- 80,000

1,177 less

not important

Table 3-4 Alternative D: 71st Street Diversion Opinion of Probable Cost

check

Description	Quantity	Units	Rate	Amount
Dual 7' x 5' RCB (Table 1)	4,100	lf	$608.00	$2,492,800
9' x 5' RCB (Table 1)	100	lf	$433.00	$43,300
9' x 3' RCB (Table 1)	1,089	lf	$376.00	$409,464
8.5' x 3' RCB (Table 2)	31	lf	$351.00	$10,881
5' x 3.5' RCB (Table 2)	30	lf	$234.00	$7,020
4.5' x 3' RCB (Table 2)	34	lf	$185.00	$6,290
96" RGRCP	637	lf	$254.55	$162,148
84" RGRCP	~~3,282~~ 3852	lf	$375.00	~~$1,230,750~~
72" RGRCP	900	lf	$300.00	$270,000
66" RGRCP	980	lf	$280.00	$274,400
60" RGRCP	1,105	lf	$250.00	$276,250
48" RGRCP	1,200	lf	$235.00	$282,000
42" RGRCP	524	lf	$175.00	$91,700
36" RGRCP	362	lf	$160.00	$57,920
Special Design Junction Box	1	ea	$50,000.00	$50,000
Junction Boxes	18	ea	$20,000.00	~~$360,000~~
Manholes	16	ea	$3,000.00	$48,000
Transition Structures	11	ea	$13,500.00	$148,500
Inlet / Outlet Works	4	ea	$50,000.00	~~$200,000~~
Paiute Park Basin Excavation	34,500	cy	$6.00	$207,000
3' Retaining Wall	1,520	lf	$75.00	$114,000
Landscape Budget	1	ls	$20,000.00	$20,000
Marriott Homes Basin Excavation	9,000	cy	$6.00	$54,000
Landscape Budget	1	ls	$20,000.00	$20,000
Subtotal Construction Costs				**$6,836,423**
Marriott Homes Easement Costs	2.30	ac	$240,000.00	$552,000
Paiute Park Easement Costs	4.80	ac	$175,000.00	$840,000
Catalina Drive Easement Costs	0.01	ac	$175,000.00	$1,750
Subtotal Acquisition Costs				**$1,393,750**
Utility Conflicts Budget				$654,923
Contingency @ 35%				$2,392,748
Total Opinion of Probable Cost				**$11,277,845**

Not found in StormPlus output

none in StormPlus model

14,404'

9 counted!

12 counted

only 3 needed

-43,300

(-162,148 K)

360 325

1,251,900 (+21.15 K)

180,000 (-180 K)

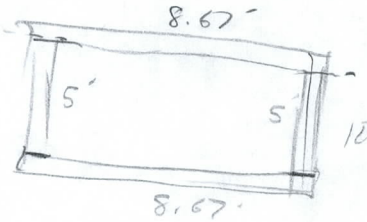
150,000 (-50 K)

$10,863,545

~~370~~

414,300 less

-43,300
-162,148
+ 21,150
- 180,000
- 50,000



10'

(4.167 x 2) + (1.23/2)

22.78 ft³ / ft · CY / 27 ft³ = 0.85 CY / ft × 2 / 6

$358/C.Y. for conc.

Summary

The opinions of probable cost are summarized in Table 3-5. The conclusions drawn based on the qualitative comparison of the alternatives are summarized in Table 3-6.

Table 3-5 Summary of Opinions of Probable Cost

Comparison Description	Recommended Plan	Alternative A	Alternative C	Alternative D
Construction Costs	$4,646,406	$5,026,156	$7,217,742	$6,836,423
Land Acquisition Costs	$1,393,750	$1,393,750	$1,393,750	$1,393,750
Utility Conflicts Budget	$517,323	$543,028	$643,533	$654,923
Contingency @ 35%	$1,626,242	$1,758,104	$2,526,210	$2,392,748
Total Costs	**$8,183,721**	**$8,725,088**	**$11,781,234**	**$11,277,845**

Table 3-6 Summary of Qualitative Comparisons

Comparison Description	Alternative A	Alternative B	Alternative C	Alternative D
Minimization of Peak Discharge Impacts at Outfalls	Good	Poor	Fair	Fair
Use of Existing Storm Drain	Fair	Fair	Good	Poor
Possibility for Minimal Additional Utility Conflicts	Good	Fair	Poor	Poor*
Minimization of Permit and Coordination Issues	Fair	Fair	Fair	Fair
Minimization of Traffic Maintenance Concerns	Fair	Fair	Fair	Good
Project Viability	Good	Poor	Fair	Good

(* -- By avoiding the portion of Osborn Road east of Scottsdale Road, we will avoid significant utilities. Since this is a new alignment, new additional utility conflicts will be encountered, thus the poor rating. However, overall utility conflicts will be reduced.)

More like poor

4. Recommendations

The *least cost* alternative is ***Alternative A: Osborn Park Storage***. Based on the level of analysis performed on the Recommended Plan, there is a high degree of confidence that Alternative A will work to provide the additional protection desired. This plan is summarized as follows:

- Design and construct the Osborn Outfall with the modification described in Alternative A for a probable total cost of $8.7 million. Coordinate construction in the vicinity of 64th Street with the City of Scottsdale's ongoing roadway design efforts. Use the existing storm drain in Osborn Road as much as possible, with excess flow diverted into and through Osborn Park. Construct a small berm on the north portion of the park to prevent flooding of several homes in the unlikely event of 100-year storm event on the watershed with a 100 year tailwater in Indian Bend Wash.

Another sound alternative is ***Alternative D: 71st Street Diversion.*** This plan is summarized as follows:

- Design and construct the Osborn Outfall with the modification described in Alternative D for a probable total cost of $11.3 million. Coordinate construction in the vicinity of 64th Street with the City of Scottsdale's ongoing roadway design efforts. Coordinate construction of the Indian Bend Wash outfall with the Continental Golf Course.

- There are several points which make Alternative D a good choice over Alternative A. For an additional $2.6 million Alternative D provides:

  - Improved performance of Thomas Road storm drain system.
  - No construction on Osborn Road in the vicinity of the Post Office, Scottsdale Memorial Hospital, and the Baseball Stadium.
  - No alterations of the existing storm drain system in Osborn Road from Civic Center Blvd. to the outfall at IBW. This system would continue to provide 100 year protection for the local area.
  - Most of the major construction will occur in the streets of 71st Street and Earll Drive.
  - Crossing Scottsdale Road at Earll Road instead of Osborn Road will be easier in terms of both traffic and underground utilities.

Appendix A: TRW Property Data

Alternative A: Osborn Park Storage

Attached is the TRW REDI data for the affected properties in the event of a 100 year storm with a 100 year tailwater in IBW.

STP Papago Watershed Study - Change Order #2

Alternative A

Property Ownership

APN Number	*Mailing Address*	*Mailing Address City/State*	*Property Address*	*Property Address City/State*
130-29-002E	3939 N CIVIC CENTER BLVD	SCOTTSDALE AZ 85251-4433		
130-28-036	3513 N KALAMARA AVE	SCOTTSDALE AZ 85251-5730	3513 N KALAMARA AVE	SCOTTSDALE AZ 85251-5730
130-28-037	3507 N KALARAMA AVE	SCOTTSDALE AZ 85251-5730	3507 N KALARAMA AVE	SCOTTSDALE AZ 85251-5730
130-28-038	3501 N KALARAMA AVE	SCOTTSDALE AZ 85251-5730	3501 N KALARAMA AVE	SCOTTSDALE AZ 85251-5730
130-28-039	3423 N KALARAMA AVE	SCOTTSDALE AZ 85251-5728	3423 N KALARAMA AVE	SCOTTSDALE AZ 85251-5728
130-28-040	3417 N KALARAMA AVE	SCOTTSDALE AZ 85251-5728	3417 N KALARAMA AVE	SCOTTSDALE AZ 85251-5728
130-28-041	7735 E 6TH ST	SCOTTSDALE AZ 85251-5715	7735 E 6TH ST	SCOTTSDALE AZ 85251-5715
130-28-081	7730 E OSBORN RD	SCOTTSDALE AZ 85251-7404	7730 E OSBORN RD	SCOTTSDALE AZ 85251-7404
130-28-082	7736 E OSBORN RD	SCOTTSDALE AZ 85251-7404	7736 E OSBORN RD	SCOTTSDALE AZ 85251-7404
130-28-083	7742 E OSBORN RD	SCOTTSDALE AZ 85251-7405	7742 E OSBORN RD	SCOTTSDALE AZ 85251-7405
130-28-084	4612 N 65TH ST	SCOTTSDALE AZ 85251-1037	7748 E OSBORN RD	SCOTTSDALE AZ 85251-7405
130-28-085	7754 E OSBORN RD	SCOTTSDALE AZ 85251-7405	7754 E OSBORN RD	SCOTTSDALE AZ 85251-7405
130-28-086	3408 N 78TH ST	SCOTTSDALE AZ 85251-5718	3408 N 78TH ST	SCOTTSDALE AZ 85251-5718
130-28-087	3414 N 78TH ST	SCOTTSDALE AZ 85251-5718	3414 N 78TH ST	SCOTTSDALE AZ 85251-5718
130-28-088	3420 N 78TH ST	SCOTTSDALE AZ 85251-5718	3420 N 78TH ST	SCOTTSDALE AZ 85251-5718
130-28-089	3502 N 78TH ST	SCOTTSDALE AZ 85251-5714	3502 N 78TH ST	SCOTTSDALE AZ 85251-5714
130-28-090	5151 MURPHY CANYON RD #2	SAN DIEGO CA 92123-4339	3508 N 78TH ST	SCOTTSDALE AZ 85251-5714

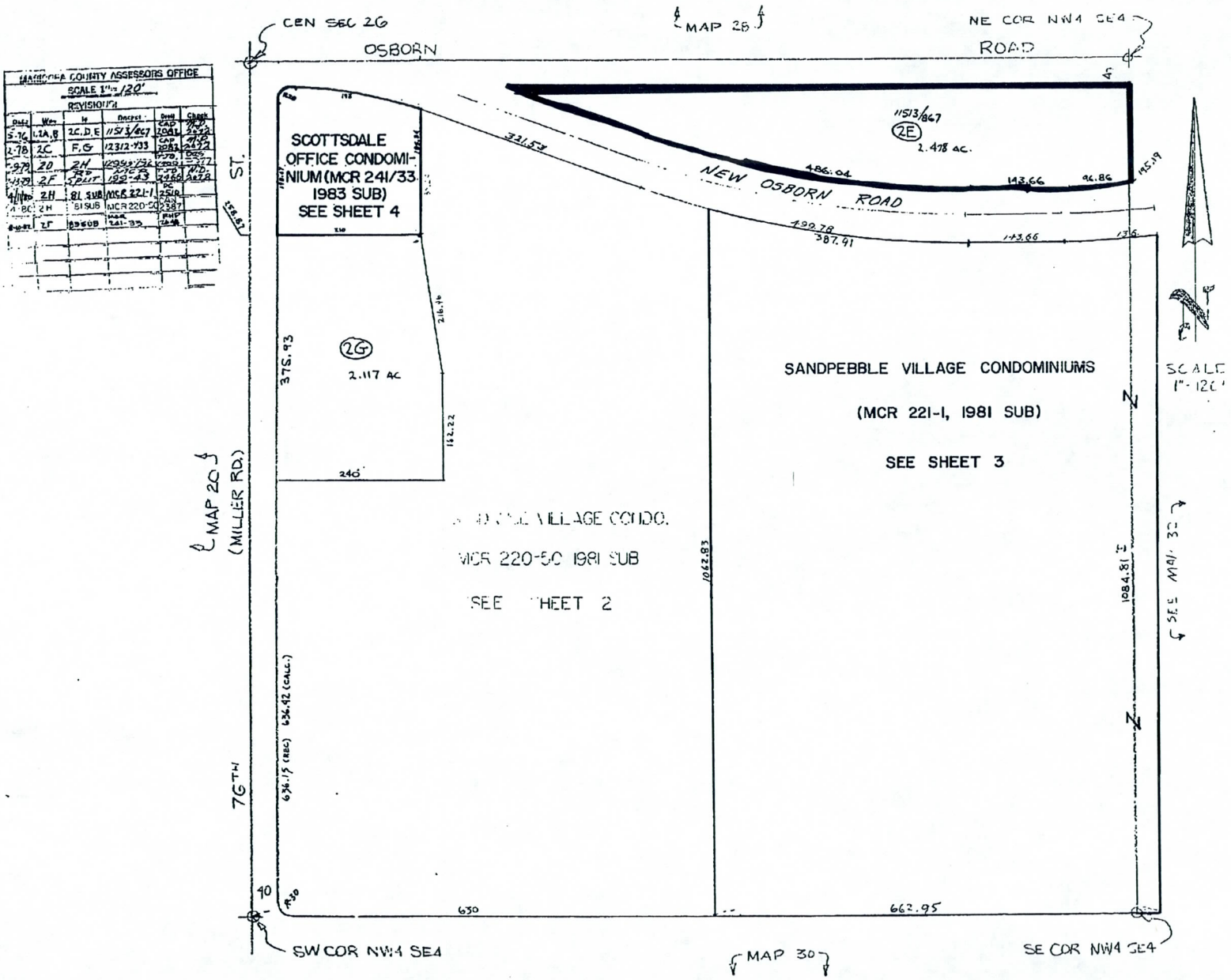
TRW REDI Property Data: Maricopa, AZ 1993-94 - Map: 130-29, Sheet 1 of 4

TRW•REDI
1-800-345-7334

SCALE IN 1/10 OF AN INCH

NW4 SE4 SECTION 26 T-2N R-4E

BOOK 130
MAP 29
SHEET 1 of 4



TRW•REDI
1-800-345-7334

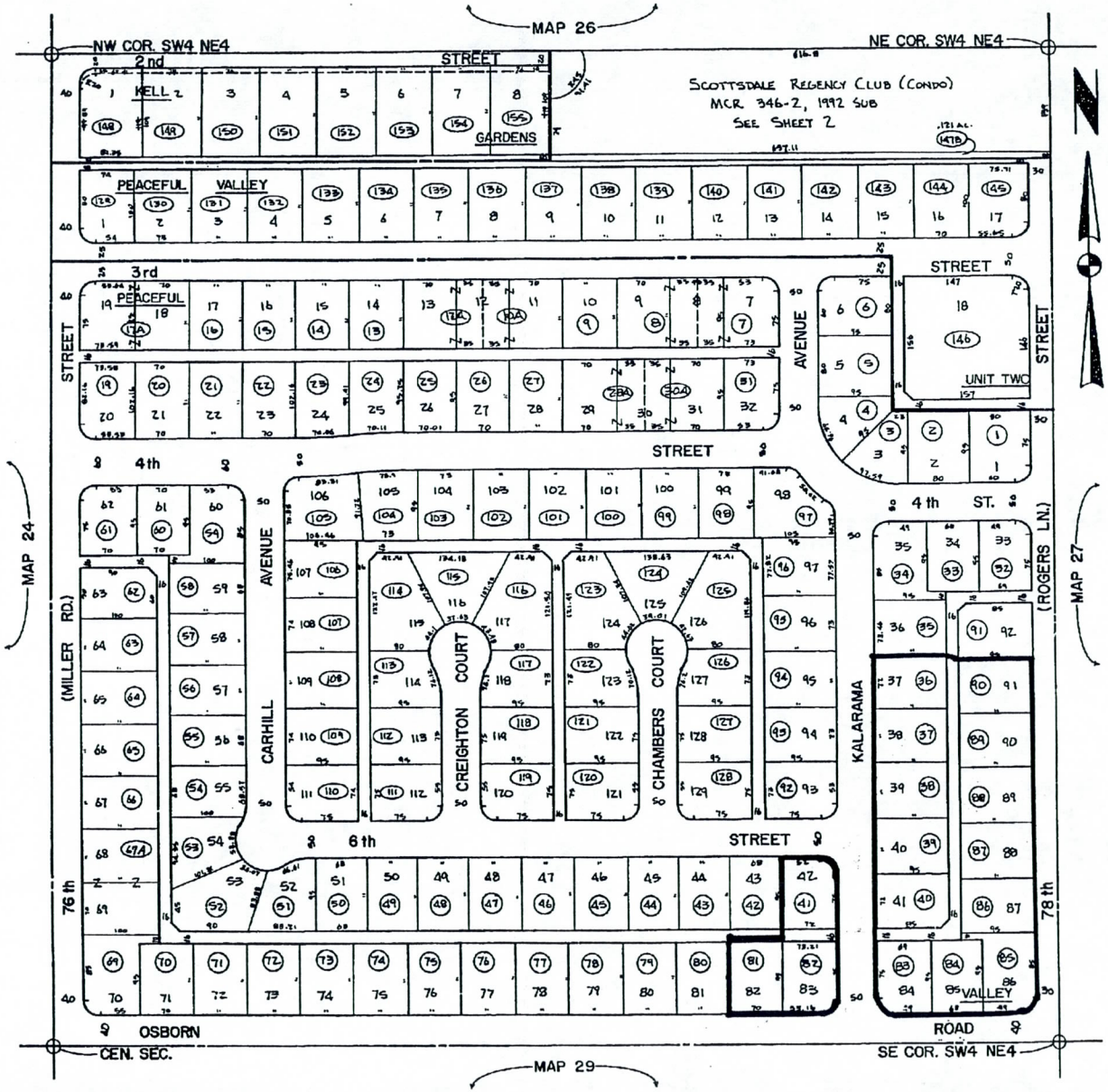
SCALE IN 1/10 OF AN INCH

SW4 NE4 SEC. 26-T2N R4E

PEACEFUL VALLEY (MCR 62/33)
PEACEFUL VALLEY UNIT TWO (MCR 64/40)
KELL GARDENS (MCR 81/22)

BOOK 130
MAP 28

SHEET 1 OF 2



MARICOPA COUNTY ASSESSORS OFFICE
SCALE 1" = 120'
REVISIONS:

Date	Was	As	Doc No	Initials	Checked
1/18	MAP REDRAWN-NO CHANGES			BHP 2449	—
5-31-91	147A	Rem 38LT 147A	90-334623	AL 2416	N.J.D. 2472
8/24/91	CORR MCR	147A 64/40	64/40 To	JWC 2920	—
7/1/92	147A	147B 47 SUB	MCR 346-2	BHP 2448	—
7-6-94	67, 68	67A	CONSOLIDATE OWNER REC	N.J.D. 2472	—

TRW REDI Property Data: Maricopa, AZ 1993-94 - Map: 130-28, Sheet 1 of 2

Appendix B: Hydrologic Models

Alternative A: Osborn Park Storage

- HEC-1 - 10 year, 6 hr storm (alta610.out)

HEC1 S/N: 1343001471 HMVersion: 6.33 Data File: alta610.hc1

```
****************************************
*                                      *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            MAY   1991                *
*         VERSION 4.0.1E               *
*                                      *
*  RUN DATE  12/18/1997  TIME  09:02:45 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
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
```

```
:::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::
:::                                   :::
:::  Full Microcomputer Implementation :::
:::                by                 :::
:::        Haestad Methods, Inc.      :::
:::                                   :::
:::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

              * ******************************************************************************
              * This is ALTERNATIVE A hydrology for Change Order #2
              *
              * - This model is based on the Recommended Plan - Part A for the Osborn Road
              *     Outfall with the following changes:
              *        Osborn Road Outfall has been modified to include a junction structure
              *        at Miller Road.  The junction conveys excess runoff across Osborn Road
              *        into Osborn Park located between old Osborn Road and new Osborn Road.
              *        The outfall structure(s) for the park have been augmented to handle the
              *        excess runoff.  The primary runoff continues east along Osborn Road and
              *        outfalls to Indian Bend Wash.
              *
    1         ID    ******************************************************************************
    2         ID    STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
    3         ID    SCOTTSDALE - TEMPE - PHOENIX
    4         ID    ******************************************************************************
    5         ID
    6         ID    Kimley-Horn and Associates, Inc.
    7         ID    KVL Consultants, Inc.
    8         ID
    9         ID    10-Year, 6-Hour Storm Event
   10         ID    10/97
              *
              *DIAGRAM
   11         IT       2                     300
   12         IO       5

   13         KK  070808   BASIN
   14         BA   0.017
   15         PH       0       0    0.50    0.97    1.61    1.76    1.86    2.05
   16         LS       0      88       0       0      98       0
   17         UK     300  0.0100    0.20      99
   18         UK     100  0.0100    0.10       1
   19         RK    1600   0.214    0.03            TRAP       2     3.5
              *
              * The 10 year flows are diverted into a proposed storm drain along Oak Street.
              * In storm events greater than the 10 yr, the remaining flow will follow its
              * natural course across and sheet flow across Oak Street to the north.
              *

   20         KK   808PP  Divert 10-year flows into storm drain
   21         DT  808OUT
   22         DI       0      12      13      15      50     100
   23         DQ       0    0.01       1       3      38      88

   24         KK  070610 FROM  070808
   25         RK     240  0.0066   0.013            CIRC    3.00

   26         KK  070610   BASIN
   27         BA   0.007
   28         LS       0      88       0       0      98       0
   29         UK     300  0.0100    0.20      99
   30         UK     100  0.0100    0.10       1
   31         RK     500   0.054    0.03            TRAP       2     3.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  32          KK   610PP  Divert 10-year flows into storm drain
  33          DT  610OUT
  34          DI       0       5       6      10      50     100
  35          DQ       0     .01       1       5      45      95

  36          KK  070610 COMBINE
  37          HC       2

  38          KK  070508    FROM  070610
  39          RK     420  0.0066   0.013            CIRC    3.00

  40          KK  070508   BASIN
  41          BA   0.008
  42          LS       0      85       0       0      98       0
  43          UK     300  0.0100    0.20      99
  44          UK     100  0.0100    0.10       1
  45          RK     600   0.048    0.03            TRAP       9     1.0

  46          KK   508PP  Divert 10-year flows into storm drain
  47          DT  508OUT
  48          DI       0       4       5      15      50     100
  49          DQ       0     .01       1      11      46      96

  50          KK  070508 COMBINE
  51          HC       2

  52          KK  070010    FROM  070508
  53          RK     270  0.0066   0.013            CIRC    3.00

  54          KK  070010   BASIN
  55          BA   0.009
  56          LS       0      88       0       0      98       0
  57          UK     300  0.0100    0.20      99
  58          UK     100  0.0100    0.10       1
  59          RK    1200   0.042    0.03            TRAP       2     3.5

  60          KK   010PP  Divert 10-year flows into storm drain
  61          DT  010OUT
  62          DI       0       7      10      15      50     100
  63          DQ       0     .01       3       8      43      93

  64          KK  070010 COMBINE
  65          HC       2

  66          KK  070210    FROM  070010
  67          RK     120  0.0033   0.013            CIRC    3.00

  68          KK  070209   BASIN
  69          BA   0.018
  70          LS       0      87       0       0      98       0
  71          UK     300  0.0100    0.20      99
  72          UK     100  0.0100    0.10       1
  73          RK    1200   0.252    0.03            TRAP       2     3.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  74          KK  070210    FROM  070209
  75          RK     750   0.252   0.013            TRAP      10       1

  76          KK  070210   BASIN
  77          BA   0.008
  78          LS       0      87       0       0      98       0
  79          UK     300  0.0100    0.20      99
  80          UK     100  0.0100    0.10       1
  81          RK     600   0.043    0.03            TRAP       2     3.5

  82          KK  070210 COMBINE
  83          HC       2

  84          KK   210PP  Divert 10-year flows into storm drain
  85          DT  210OUT
  86          DI       0      17      20      30      50     100
  87          DQ       0     .01       3      13      33      83

  88          KK  070210 COMBINE
  89          HC       2

  90          KK  050005   FROM 070210
  91          RK     950   0.008   0.013            CIRC    3.00

  92          KK  050005   BASIN
  93          BA   0.038
  94          LS       0      85       0       0      98       0
  95          UK     300  0.0100    0.20      99
  96          UK     100  0.0100    0.10       1
  97          RK    1650    0.09    0.03            TRAP      30     1.0

  98          KK   005PP  Divert 10-year flows into storm drain
  99          DT  005OUT
 100          DI       0      21      22     100     150     200
 101          DQ       0     .01       1      79     129     179
              *
              * The start of the Osborn Road outfall hydrology
              *

 102          KK  070010
 103          KM    Retrieve overland flows at CP 070010
 104          DR  010OUT

 105          KK  070020    FROM  070010
 106          RK     178  0.0131   0.013            CIRC     1.0

 107          KK  070030    FROM  070020
 108          RK     520  0.0146   0.025            TRAP     9.0       1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 109          KK  070030   BASIN
 110          BA   0.004
 111          LS       0      85       0       0      98       0
 112          UK     150  0.0100    0.30      65
 113          UK      50  0.0100    0.10      35
 114          RK     522  0.0146    0.03            TRAP       2     3.5

 115          KK  070030 COMBINE
 116          HC       2

 117          KK  070040    FROM  070030
 118          RK     177  0.0146   0.017            TRAP    54.8       1

 119          KK  070210
 120          KM    Retrieve overland flows at CP 070210
 121          DR  210OUT

 122          KK  070220    FROM  070210
 123          RK     164  0.0131   0.013            CIRC     1.0

 124          KK  070040    FROM  070220
 125          RK     723  0.0146   0.017            TRAP    54.8       1

 126          KK  070040   BASIN
 127          BA   0.006
 128          LS       0      86       0       0      98       0
 129          UK     181  0.0100    0.28      72
 130          UK      60  0.0100    0.10      28
 131          RK    1946  0.0146    0.02            TRAP      30     1.0

 132          KK  070040 COMBINE
 133          HC       3

 134          KK  070050    FROM  070040
 135          RK     878  0.0146   0.025            TRAP    20.0     1.0

 136          KK  070050   BASIN
 137          BA   0.018
 138          LS       0      86       0       0      98       0
 139          UK     150  0.0100    0.30      65
 140          UK      50  0.0100    0.10      35
 141          RK     290  0.0058    0.02            TRAP      11     1.0
 142          RK     981  0.0146    0.02            TRAP      11     1.0

 143          KK  070050 COMBINE
 144          HC       2

 145          KK  070060    FROM  070050
 146          RK     872  0.0058   0.025            TRAP     1.0     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 147          KK  070310   BASIN
 148          BA   0.023
 149          LS       0       86        0        0       98        0
 150          UK     150   0.0100     0.30       65
 151          UK      50   0.0100     0.10       35
 152          RK     278   0.0058     0.02             TRAP       11      1.0
 153          RK     986   0.0146     0.02             TRAP       11      1.0

 154          KK  070060     FROM  070310
 155          RK     745   0.0058    0.025             TRAP      1.0      1.0

 156          KK  070060   BASIN
 157          BA   0.020
 158          LS       0       86        0        0       98        0
 159          UK     150   0.0100     0.30       65
 160          UK      50   0.0100     0.10       35
 161          RK    1096   0.0058     0.03             TRAP        2      1.0

 162          KK  070060 COMBINE
 163          HC       3

 164          KK  070070     FROM  070060
 165          RK     726   0.0146    0.025             TRAP     30.0      1.0

 166          KK  070070   BASIN
 167          BA   0.032
 168          LS       0       86        0        0       98        0
 169          UK     150   0.0100     0.30       65
 170          UK      50   0.0100     0.10       35
 171          RK    1209   0.0146     0.03             TRAP        2      1.0

 172          KK  070080   BASIN
 173          BA   0.021
 174          LS       0       83        0        0       98        0
 175          UK      29   0.0100     0.39        9
 176          UK     189   0.0100     0.10       91
 177          RK    1257   0.0058     0.02             TRAP       30      1.0

 178          KK  070080 COMBINE
 179          HC       3

 180          KK   07Det   Detention basin at Marriott's Brighton Gardens
 181          RS       1    STOR
 182          SV       0    0.78     1.64     2.65     3.84     5.21     6.77     6.77
 183          SE      66      67       68       69       70       71       72       73
 184          SQ       0      12       36       42       46       48       52      355
              *
              * Marriott's Brighton Gardens outfall - 07Qpip is the outflow in the storm drain
              * 07Qspl is the flow overtopping the basin
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 185          KK  07Qpip
 186          DT  07Qspl
 187          DI       0      71     112     172     245     329     420     518     623
 188          DQ       0     0.1      26      72     132     204     285     374     471

 189          KK  070420   FROM 07Qpip
 190          RK    1000   0.005   0.013            CIRC     3.0

 191          KK  070410   BASIN
 192          BA   0.011
 193          LS       0      84       0       0      98       0
 194          UK     144  0.0100    0.32      44
 195          UK     121  0.0100    0.10      56
 196          RK    1816  0.0146    0.02            TRAP      23     1.0

 197          KK  070420    FROM  070410
 198          RK     183  0.0058   0.017            TRAP    52.5       1

 199          KK  070420   BASIN
 200          BA   0.003
 201          LS       0      79       0       0      98       0
 202          UK     177  0.0100    0.31      25
 203          UK     200  0.0100    0.10      75
 204          RK    1046  0.0058    0.02            TRAP      49     1.0

 205          KK  070420 COMBINE
 206          HC       3

 207          KK  210005  FROM 070420
 208          RK     450   0.005   0.013            CIRC     3.5

 209          KK  210005   BASIN
 210          BA   0.008
 211          LS       0      79       0       0      98       0
 212          UK      94  0.0100    0.34      26
 213          UK     116  0.0100    0.10      74
 214          RK     523  0.0032    0.02            TRAP      38     1.0
 215          RK    1250  0.0020    0.02            TRAP      45     1.0

 216          KK  210005 COMBINE
 217          HC       2

 218          KK  050030   FROM 210005
 219          RK    1600   0.005   0.013            CIRC       4

 220          KK  050005
 221          KM    Retrieve overland flows at CP 050005
 222          DR  005OUT
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 223          KK  050010   FROM 050005
 224          RK    1300   0.015    0.02            TRAP      35       1

 225          KK  050010   BASIN
 226          BA   0.066
 227          LS       0      81       0       0      98       0
 228          UK     144  0.0100    0.30      52
 229          UK      57  0.0100    0.10      48
 230          RK    1189  0.0033    0.02            TRAP      30     1.0
 231          RK    1197  0.0038    0.02            TRAP      60     1.0

 232          KK  050010   COMBINE
 233          HC       2

 234          KK  050020    FROM  050010
 235          RK    1370  0.0038   0.017            TRAP    37.5       1

 236          KK  050210   BASIN
 237          BA   0.054
 238          LS       0      79       0       0      98       0
 239          UK     200  0.0100    0.30      28
 240          UK     200  0.0100    0.10      72
 241          RK     564  0.0038    0.02            TRAP      23     1.0
 242          RK    1199  0.0033    0.02            TRAP      23     1.0

 243          KK   210ST STORAGE
 244          RS       1    STOR
 245          SV    0.00    7.72    7.72
 246          SE    0.00    1.00    2.00
 247          SQ    0.00    0.01    0.01
 248          ST     1.0     500     3.0     1.5

 249          KK  050020    FROM  050210
 250          RK     278  0.0033   0.017            TRAP    60.0       1

 251          KK  050020   BASIN
 252          BA   0.009
 253          LS       0      79       0       0      98       0
 254          UK     166  0.0100    0.30      39
 255          UK      98  0.0100    0.10      61
 256          RK    1304  0.0038    0.02            TRAP      60     1.0

 257          KK  050020 COMBINE
 258          HC       3

 259          KK  050030    FROM  050020
 260          RK     347  0.0038   0.017            TRAP    37.5       1

 261          KK  050030   BASIN
 262          BA   0.020
 263          LS       0      79       0       0      98       0
 264          UK     150  0.0100    0.30      15
 265          UK      50  0.0100    0.10      85
 266          RK     278  0.0038    0.02            TRAP       9     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 267          RK    1468  0.0033    0.02            TRAP       9     1.0
              *
              * Scottsdale Executive Villas natural storage in parking lot
              *

 268          KK   030ST STORAGE
 269          RS       1    STOR
 270          SV       0    0.01    0.06    0.62    2.72    2.72
 271          SE      65      66      67      68      69      70
 272          SQ    0.00    0.01    0.01    0.01    0.01    0.01
 273          ST      68     150     3.0     1.5

 274          KK  050030 COMBINE
 275          HC       3

 276          KK  050305   FROM 050030
 277          RK     150   0.002   0.013            CIRC     5.5

 278          KK  050050   FROM 050305
 279          RK    1500   0.001   0.013            TRAP       9     1.0

 280          KK  050040   BASIN
 281          BA   0.102
 282          LS       0      79       0       0      98       0
 283          UK     150  0.0100    0.30      57
 284          UK      50  0.0100    0.10      43
 285          RK    2230  0.0038    0.02            TRAP      38     1.0
 286          RK    2654  0.0038    0.02            TRAP      38     1.0

 287          KK  40STOR  Storage on west side of cross-cut canal
 288          RS       1
 289          SV       0       0       0       0     2.6    13.5    13.5
 290          SE      58      59      60      61      62      63      64
 291          SQ       0      10      22      32      40      50      55

 292          KK  050050    FROM  050040
 293          RK     491  0.0334   0.013            CIRC     2.5

 294          KK  050310   BASIN
 295          BA   0.041
 296          LS       0      79       0       0      98       0
 297          UK     200  0.0100    0.30      28
 298          UK     200  0.0100    0.10      72
 299          RK     816  0.0033    0.02            TRAP      30     1.0
 300          RK     848  0.0038    0.02            TRAP      30     1.0

 301          KK  050065   BASIN
 302          BA   0.014
 303          LS       0      79       0       0      98       0
 304          UK     100    0.01     0.3      15
 305          UK     100    0.01     0.1      85
 306          RK     500   0.005   0.012            TRAP      60       1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 307          KK  050060   BASIN
 308          BA   0.029
 309          LS       0      79       0       0      98       0
 310          UK     105    0.01     0.3      20
 311          UK     160    0.01     0.1      80
 312          RK    1300  0.0038    0.03            TRAP     100     1.0
              *
              * Flows combined from 050040, 050305, 050310, 050060 and 050065 into Paiute
              * Park detention basin
              *

 313          KK  050050 COMBINE
 314          HC       5

 315          KK   05Det  Storage
 316          RS       1    STOR
 317          SV       0    0.64    2.37    5.14    8.40    11.7    15.1    18.5    22.1    22.1
 318          SE      49      50      51      52      53      54      55      56      57      58
 319          SQ     4.5      22      37      47      56      65      73      81      88     156
              *
              * Paiute Park outfall - 05Qpip is the outflow in the storm drain
              * 05Qspl is the flow overtopping the basin
              *
              *
              * Overflows to CP 050060
              *

 320          KK  05Qpip
 321          DT  05Qspl
 322          DI       0     160     382     780    1292    1897
 323          DQ       0    0.01     212     600    1102    1697
              *
              * Begin storm drain system in Osborn Road
              *

 324          KK  050062   BASIN
 325          BA   0.006
 326          BA   0.014
 327          LS       0      79       0       0      98       0
 328          UK     100    0.01     0.3      15
 329          UK      50    0.01     0.1      85
 330          RK     900   0.005   0.012            TRAP      60       1

 331          KK  050610   FROM 050062
 332          RK    1500   0.003   0.013            TRAP      60       1

 333          KK  050610   BASIN
 334          BA   0.081
 335          LS       0      79       0       0      98       0
 336          UK     130  0.0100    0.32      56
 337          UK      70  0.0100    0.10      44
 338          RK    1450  0.0038    0.02            TRAP      45     1.0
 339          RK    1240  0.0033    0.02            TRAP      60     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 340          KK  050610    COMBINE
 341          HC       3

 342          KK  050620    FROM  050610
 343          RK    1050  0.0037   0.013            CIRC       6

 344          KK  050620   BASIN
 345          BA   0.099
 346          LS       0      79       0       0      98       0
 347          UK     147  0.0100    0.30      56
 348          UK      53  0.0100    0.10      44
 349          RK     940  0.0033    0.02            TRAP      41     1.0
 350          RK    2545  0.0038    0.02            TRAP      60     1.0

 351          KK  050620 COMBINE
 352          HC       2

 353          KK  050630    FROM  050620
 354          RK    1440  0.0028   0.013            CIRC       7

 355          KK  050630   BASIN
 356          BA   0.062
 357          LS       0      79       0       0      98       0
 358          UK     138  0.0100    0.31      33
 359          UK      64  0.0100    0.10      67
 360          RK    1205  0.0038    0.02            TRAP      41     1.0
 361          RK    1348  0.0033    0.02            TRAP      60     1.0

 362          KK  050630 COMBINE
 363          HC       2

 364          KK  050640    FROM  050630
 365          RK    1150  0.0024   0.013            CIRC       8

 366          KK  050710   BASIN
 367          BA   0.005
 368          LS       0      79       0       0      98       0
 369          UK      21  0.0100    0.40      15
 370          UK     200  0.0100    0.10      85
 371          RK     610  0.0038    0.02            TRAP      55     1.0

 372          KK  050720    FROM  050710
 373          RK     316  0.0045   0.013            CIRC     5.5

 374          KK  050720   BASIN
 375          BA   0.028
 376          LS       0      79       0       0      98       0
 377          UK      57  0.0100    0.38      17
 378          UK     188  0.0100    0.10      83
 379          RK     580  0.0038    0.02            TRAP      45     1.0
 380          RK    1594  0.0033    0.02            TRAP      55     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          KK  050720   COMBINE
 382          HC       2

 383          KK  050640    FROM  050720
 384          RK     422  0.0045   0.013            CIRC     5.5

 385          KK  050640   BASIN
 386          BA   0.032
 387          LS       0      79       0       0      98       0
 388          UK      64  0.0100    0.37      15
 389          UK     149  0.0100    0.10      85
 390          RK    1605  0.0038    0.02            TRAP      41     1.0
 391          RK    1168  0.0033    0.02            TRAP      60     1.0

 392          KK  050640 COMBINE
 393          HC       3

 394          KK  051510   FROM 050640
 395          RK     700  0.0044   0.013            CIRC     9.5

 396          KK  050810   BASIN
 397          BA   0.013
 398          LS       0      79       0       0      98       0
 399          UK      88  0.0100    0.36      20
 400          UK     200  0.0100    0.10      80
 401          RK     164  0.0033    0.02            TRAP      28     1.0
 402          RK    1031  0.0038    0.02            TRAP      55     1.0

 403          KK  051510    FROM  050810
 404          RK     705  0.0025   0.013            CIRC     4.0

 405          KK  051510   BASIN
 406          BA   0.010
 407          LS       0      79       0       0      98       0
 408          UK      59  0.0100    0.38      18
 409          UK     200  0.0100    0.10      82
 410          RK     139  0.0038    0.02            TRAP      41     1.0
 411          RK     521  0.0033    0.02            TRAP      71     1.0

 412          KK  051510    COMBINE
 413          HC       3

 414          KK  051520    FROM  051510
 415          RK     680  0.0028   0.013            CIRC     9.5

 416          KK  051610   BASIN
 417          BA   0.021
 418          LS       0      79       0       0      98       0
 419          UK     165  0.0100    0.32      25
 420          UK     200  0.0100    0.10      75
 421          RK     624  0.0038    0.02            TRAP      41     1.0
 422          RK     792  0.0033    0.02            TRAP      60     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 423          KK  051520    FROM  051610
 424          RK     601  0.0047   0.013            CIRC     5.0

 425          KK  051710   BASIN
 426          BA   0.004
 427          LS       0      79       0       0      98       0
 428          UK     146  0.0100    0.33      24
 429          UK     200  0.0100    0.10      76
 430          RK     515  0.0038    0.02            TRAP      30     1.0
 431          RK     287  0.0033    0.02            TRAP      30     1.0

 432          KK  051520    FROM  051710
 433          RK     567  0.0032   0.013            CIRC     4.0

 434          KK  051520   BASIN
 435          BA   0.023
 436          LS       0      79       0       0      98       0
 437          UK     179  0.0100    0.31      26
 438          UK     198  0.0100    0.10      74
 439          RK     473  0.0038    0.02            TRAP      60     1.0
 440          RK     704  0.0033    0.02            TRAP      71     1.0

 441          KK  051520 COMBINE
 442          HC       4

 443          KK  051530    FROM  051520
 444          RK     926   0.001   0.013            CIRC     9.5

 445          KK  051530   BASIN
 446          BA   0.041
 447          LS       0      79       0       0      98       0
 448          UK      26  0.0100    0.40      15
 449          UK     193  0.0100    0.10      85
 450          RK     889  0.0038    0.02            TRAP      38     1.0
 451          RK     860  0.0033    0.02            TRAP      60     1.0

 452          KK  051530 COMBINE
 453          HC       2

 454          KK  051540    FROM  051530
 455          RK     360   0.001   0.013            CIRC     9.5

 456          KK  051810   BASIN
 457          BA   0.005
 458          LS       0      79       0       0      98       0
 459          UK      23  0.0100    0.40      16
 460          UK     196  0.0100    0.10      84
 461          RK     272  0.0033    0.02            TRAP      19     1.0
 462          RK     272  0.0038    0.02            TRAP      30     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

463           KK  051540    FROM  051810
464           RK     218  0.0045   0.013            CIRC     4.5

465           KK  051540   BASIN
466           BA   0.004
467           LS       0      79       0       0      98       0
468           UK      44  0.0100    0.38      16
469           UK     172  0.0100    0.10      84
470           RK     233  0.0038    0.02            TRAP      12     1.0
471           RK     265  0.0033    0.02            TRAP      60     1.0

472           KK  051540 COMBINE
473           HC       3

474           KK  051550    FROM  051540
475           RK     273   0.001   0.013            CIRC     9.5

476           KK    05EX
477           DT   05PRK
478           DI       0   246.1    1000
479           DQ       0     246     246

480           KK  051560    FROM  051550
481           RK     800  0.0038   0.013            CIRC     6.0
              *
              * Osborn Rd outfall to Indian Bend Wash
              *

482           KK  051570    FROM  051560
483           RK     228   0.003   0.013            CIRC     7.0
              *
              * Osborn Park Storage and Outflow to IBW
              *

484           KK  051550
485           DR   05PRK

486           KK  051560   BASIN
487           BA   0.008
488           LS       0      79       0       0      98       0
489           UK     116  0.0100    0.33      47
490           UK      89  0.0100    0.10      53
491           RK    1126  0.0033    0.02            TRAP      60     1.0

492           KK     PRK
493           HC       2

494           KK  05PKST   STORAGE
495           RS       1    STOR
496           SV       0    0.08    0.31    0.69    1.20    1.92    3.01    3.01
497           SE    1224    1225    1226    1227    1228    1229    1230    1231
498           SQ       0    0.01      62     111     167     218     262     600
              *
              * New CP 051565 located at the outfall from Osborn Park to IBW
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 499          KK  051565    FROM   05PRK
 500          RK     130   0.003   0.013            TRAP       7
              *
              * Notice:
              * This document, together with the concepts and designs presented herein, as an
              * instrument of service, is intended for the specific purpose and client for
              * which it was prepared.  Reuse of and improper reliance on this document
              * without written authorization and adaptation by Kimley-Horn and Associates,
              * Inc. shall be without liability to Kimley-Horn and Associates, Inc.
              *
 501          ZZ
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

 13       070808
               .
               .
 21            .-------> 808OUT
 20        808PP
               V
               V
 24       070610
               .
               .
 26            .      070610
               .           .
               .           .
 33            .           .-------> 610OUT
 32            .       610PP
               .           .
               .           .
 36       070610............
               V
               V
 38       070508
               .
               .
 40            .      070508
               .           .
               .           .
 47            .           .-------> 508OUT
 46            .       508PP
               .           .
               .           .
 50       070508............
               V
               V
 52       070010
               .
               .
 54            .      070010
               .           .
               .           .
 61            .           .-------> 010OUT
 60            .       010PP
               .           .
               .           .
 64       070010............
               V
               V
 66       070210
               .
               .
 68            .      070209
               .           V
               .           V
 74            .      070210
               .           .
               .           .
 76            .           .      070210
               .           .           .
               .           .           .
 82            .      070210............
```

```
          .          .
          .          .
 85       .          .-------> 210OUT
 84       .      210PP
          .          .
          .          .
 88   070210............
          V
          V
 90   050005
          .
          .
 92       .      050005
          .          .
          .          .
 99       .          .-------> 005OUT
 98       .      005PP
          .          .
          .          .
104       .          .          .<-------  010OUT
102       .          .     070010
          .          .          V
          .          .          V
105       .          .     070020
          .          .          V
          .          .          V
107       .          .     070030
          .          .          .
          .          .          .
109       .          .          .     070030
          .          .          .          .
          .          .          .          .
115       .          .     070030............
          .          .          V
          .          .          V
117       .          .     070040
          .          .          .
          .          .          .
121       .          .          .          .<-------  210OUT
119       .          .          .     070210
          .          .          .          V
          .          .          .          V
122       .          .          .     070220
          .          .          .          V
          .          .          .          V
124       .          .          .     070040
          .          .          .          .
          .          .          .          .
126       .          .          .          .     070040
          .          .          .          .          .
          .          .          .          .          .
132       .          .     070040........................
          .          .          V
          .          .          V
134       .          .     070050
          .          .          .
          .          .          .
136       .          .          .     070050
          .          .          .          .
          .          .          .          .
143       .          .     070050............
          .          .          V
          .          .          V
145       .          .     070060
          .          .          .
          .          .          .
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147          .          .          .      070310
             .          .          .          V
             .          .          .          V
154          .          .          .      070060
             .          .          .          .
             .          .          .          .
156          .          .          .          .      070060
             .          .          .          .          .
             .          .          .          .          .
162          .          .     070060.......................
             .          .          V
             .          .          V
164          .          .     070070
             .          .          .
             .          .          .
166          .          .          .      070070
             .          .          .          .
             .          .          .          .
172          .          .          .          .      070080
             .          .          .          .          .
             .          .          .          .          .
178          .          .     070080.......................
             .          .          V
             .          .          V
180          .          .      07Det
             .          .          .
             .          .          .
186          .          .          .-------> 07Qspl
185          .          .     07Qpip
             .          .          V
             .          .          V
189          .          .     070420
             .          .          .
             .          .          .
191          .          .          .      070410
             .          .          .          V
             .          .          .          V
197          .          .          .      070420
             .          .          .          .
             .          .          .          .
199          .          .          .          .      070420
             .          .          .          .          .
             .          .          .          .          .
205          .          .     070420.......................
             .          .          V
             .          .          V
207          .          .     210005
             .          .          .
             .          .          .
209          .          .          .      210005
             .          .          .          .
             .          .          .          .
216          .          .     210005............
             .          .          V
             .          .          V
218          .          .     050030
             .          .          .
             .          .          .
222          .          .          .          .<------- 005OUT
220          .          .          .      050005
             .          .          .          V
             .          .          .          V
223          .          .          .      050010
             .          .          .          .
             .          .          .          .
225          .          .          .          .      050010
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                .         .         .         .         .
                .         .         .         .         .
232             .         .         .   050010............
                .         .         .       V
                .         .         .       V
234             .         .         .   050020
                .         .         .       .
                .         .         .       .
236             .         .         .       .     050210
                .         .         .       .         V
                .         .         .       .         V
243             .         .         .       .      210ST
                .         .         .       .         V
                .         .         .       .         V
249             .         .         .       .     050020
                .         .         .       .         .
                .         .         .       .         .
251             .         .         .       .         .     050020
                .         .         .       .         .         .
                .         .         .       .         .         .
257             .         .         .   050020......................
                .         .         .       V
                .         .         .       V
259             .         .         .   050030
                .         .         .       .
                .         .         .       .
261             .         .         .       .     050030
                .         .         .       .         V
                .         .         .       .         V
268             .         .         .       .      030ST
                .         .         .       .         .
                .         .         .       .         .
274             .         .   050030......................
                .         .       V
                .         .       V
276             .         .   050305
                .         .       V
                .         .       V
278             .         .   050050
                .         .       .
                .         .       .
280             .         .         .   050040
                .         .         .       V
                .         .         .       V
287             .         .         .   40STOR
                .         .         .       V
                .         .         .       V
292             .         .         .   050050
                .         .         .       .
                .         .         .       .
294             .         .         .       .     050310
                .         .         .       .         .
                .         .         .       .         .
301             .         .         .       .         .     050065
                .         .         .       .         .         .
                .         .         .       .         .         .
307             .         .         .       .         .         .     050060
                .         .         .       .         .         .         .
                .         .         .       .         .         .         .
313             .         .   050050.............................................
                .         .       V
                .         .       V
315             .         .   05Det
                .         .       .
                .         .       .
321             .         .       .-------> 05Qspl
```

```
320          .          .     05Qpip
             .          .        .
             .          .        .
324          .          .        .     050062
             .          .        .        V
             .          .        .        V
331          .          .        .     050610
             .          .        .        .
             .          .        .        .
333          .          .        .        .     050610
             .          .        .        .        .
             .          .        .        .        .
340          .          .     050610.......................
             .          .        V
             .          .        V
342          .          .     050620
             .          .        .
             .          .        .
344          .          .        .     050620
             .          .        .        .
             .          .        .        .
351          .          .     050620............
             .          .        V
             .          .        V
353          .          .     050630
             .          .        .
             .          .        .
355          .          .        .     050630
             .          .        .        .
             .          .        .        .
362          .          .     050630............
             .          .        V
             .          .        V
364          .          .     050640
             .          .        .
             .          .        .
366          .          .        .     050710
             .          .        .        V
             .          .        .        V
372          .          .        .     050720
             .          .        .        .
             .          .        .        .
374          .          .        .        .     050720
             .          .        .        .        .
             .          .        .        .        .
381          .          .        .     050720............
             .          .        .        V
             .          .        .        V
383          .          .        .     050640
             .          .        .        .
             .          .        .        .
385          .          .        .        .     050640
             .          .        .        .        .
             .          .        .        .        .
392          .          .     050640.......................
             .          .        V
             .          .        V
394          .          .     051510
             .          .        .
             .          .        .
396          .          .        .     050810
             .          .        .        V
             .          .        .        V
403          .          .        .     051510
             .          .        .        .
             .          .        .        .
```

```
405          .          .          .          .      051510
             .          .          .          .          .
             .          .          .          .          .
412          .          .     051510.......................
             .          .          V
             .          .          V
414          .          .     051520
             .          .          .
             .          .          .
416          .          .          .     051610
             .          .          .          V
             .          .          .          V
423          .          .          .     051520
             .          .          .          .
             .          .          .          .
425          .          .          .          .      051710
             .          .          .          .          V
             .          .          .          .          V
432          .          .          .          .      051520
             .          .          .          .          .
             .          .          .          .          .
434          .          .          .          .          .      051520
             .          .          .          .          .           .
             .          .          .          .          .           .
441          .          .     051520.................................
             .          .          V
             .          .          V
443          .          .     051530
             .          .          .
             .          .          .
445          .          .          .     051530
             .          .          .          .
             .          .          .          .
452          .          .     051530............
             .          .          V
             .          .          V
454          .          .     051540
             .          .          .
             .          .          .
456          .          .          .     051810
             .          .          .          V
             .          .          .          V
463          .          .          .     051540
             .          .          .          .
             .          .          .          .
465          .          .          .          .      051540
             .          .          .          .          .
             .          .          .          .          .
472          .          .     051540.......................
             .          .          V
             .          .          V
474          .          .     051550
             .          .          .
             .          .          .
477          .          .          .-------->   05PRK
476          .          .       05EX
             .          .          V
             .          .          V
480          .          .     051560
             .          .          V
             .          .          V
482          .          .     051570
             .          .          .
             .          .          .
485          .          .          .          .<-------   05PRK
484          .          .          .     051550
```

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          .         .         .         .
          .         .         .         .
486       .         .         .         .      051560
          .         .         .         .           .
          .         .         .         .           .
492       .         .         .       PRK............
          .         .         .         V
          .         .         .         V
494       .         .         .     05PKST
          .         .         .         V
          .         .         .         V
499       .         .         .     051565
```

***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1343001471 HMVersion: 6.33 Data File: alta610.hc1

```
****************************************
*                                      *
  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
            MAY   1991                 *
*         VERSION 4.0.1E               *
*                                      *
 RUN DATE  12/18/1997  TIME  09:02:45  *
                                       *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
*************************************************************************
STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
SCOTTSDALE - TEMPE - PHOENIX
*************************************************************************

Kimley-Horn and Associates, Inc.
KVL Consultants, Inc.

10-Year, 6-Hour Storm Event
10/97

12 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN           2  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      1    0  ENDING DATE
                    NDTIME        0958  ENDING TIME
                     ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL    0.03 HOURS
                   TOTAL TIME BASE    9.97 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
```

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	070808	12.	3.43	2.	1.	1.	0.02		
DIVERSION TO	808OUT	0.	3.43	0.	0.	0.	0.02		
HYDROGRAPH AT	808PP	12.	3.43	2.	1.	1.	0.02		
ROUTED TO	070610	12.	3.43	2.	1.	1.	0.02		
HYDROGRAPH AT	070610	5.	3.43	1.	0.	0.	0.01		
DIVERSION TO	610OUT	0.	3.40	0.	0.	0.	0.01		
HYDROGRAPH AT	610PP	5.	3.40	1.	0.	0.	0.01		
2 COMBINED AT	070610	17.	3.43	3.	2.	2.	0.02		
ROUTED TO	070508	17.	3.43	3.	2.	2.	0.02		
HYDROGRAPH AT	070508	4.	3.50	1.	0.	0.	0.01		
DIVERSION TO	508OUT	0.	3.50	0.	0.	0.	0.01		
HYDROGRAPH AT	508PP	4.	3.50	1.	0.	0.	0.01		
2 COMBINED AT	070508	21.	3.47	3.	2.	2.	0.03		
ROUTED TO	070010	21.	3.47	3.	2.	2.	0.03		
HYDROGRAPH AT	070010	7.	3.43	1.	1.	1.	0.01		
DIVERSION TO	010OUT	0.	3.43	0.	0.	0.	0.01		
HYDROGRAPH AT	010PP	6.	3.43	1.	1.	1.	0.01		
2 COMBINED AT	070010	27.	3.47	4.	3.	3.	0.04		
ROUTED TO	070210	27.	3.47	4.	3.	3.	0.04		
HYDROGRAPH AT	070209	12.	3.47	2.	1.	1.	0.02		
ROUTED TO	070210	12.	3.47	2.	1.	1.	0.02		
HYDROGRAPH AT	070210	5.	3.47	1.	0.	0.	0.01		
2 COMBINED AT	070210	17.	3.47	3.	2.	2.	0.03		
DIVERSION TO	210OUT	0.	3.43	0.	0.	0.	0.03		
HYDROGRAPH AT	210PP	17.	3.43	3.	2.	2.	0.03		
2 COMBINED AT	070210	44.	3.47	7.	4.	4.	0.07		
ROUTED TO	050005	44.	3.47	7.	4.	4.	0.07		
HYDROGRAPH AT	050005	21.	3.53	3.	2.	2.	0.04		
DIVERSION TO	005OUT	0.	3.53	0.	0.	0.	0.04		

HYDROGRAPH AT	005PP	21.	3.53	3.	2.	2.	0.04		
HYDROGRAPH AT	070010	0.	3.37	0.	0.	0.	0.00		
ROUTED TO	070020	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070030	0.	3.67	0.	0.	0.	0.00		
HYDROGRAPH AT	070030	5.	3.07	1.	0.	0.	0.00		
2 COMBINED AT	070030	5.	3.07	1.	0.	0.	0.00		
ROUTED TO	070040	5.	3.10	1.	0.	0.	0.00		
HYDROGRAPH AT	070210	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070220	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070040	0.	3.77	0.	0.	0.	0.00		
HYDROGRAPH AT	070040	5.	3.20	1.	0.	0.	0.01		
3 COMBINED AT	070040	9.	3.13	1.	1.	1.	0.01		
ROUTED TO	070050	9.	3.17	1.	1.	1.	0.01		
HYDROGRAPH AT	070050	24.	3.07	2.	1.	1.	0.02		
2 COMBINED AT	070050	30.	3.10	4.	2.	2.	0.03		
ROUTED TO	070060	30.	3.13	4.	2.	2.	0.03		
HYDROGRAPH AT	070310	30.	3.07	3.	2.	2.	0.02		
ROUTED TO	070060	30.	3.10	3.	2.	2.	0.02		
HYDROGRAPH AT	070060	25.	3.10	3.	2.	2.	0.02		
3 COMBINED AT	070060	84.	3.10	9.	6.	6.	0.07		
ROUTED TO	070070	82.	3.13	9.	6.	6.	0.07		
HYDROGRAPH AT	070070	42.	3.07	4.	3.	3.	0.03		
HYDROGRAPH AT	070080	52.	3.13	4.	2.	2.	0.02		
3 COMBINED AT	070080	168.	3.13	17.	10.	10.	0.12		
ROUTED TO	07Det	46.	3.67	17.	10.	10.	0.12	69.95	3.67
DIVERSION TO	07Qspl	0.	3.67	0.	0.	0.	0.12		
HYDROGRAPH AT	07Qpip	46.	3.67	17.	10.	10.	0.12		
ROUTED TO	070420	46.	3.67	17.	10.	10.	0.12		
HYDROGRAPH AT	070410	17.	3.13	2.	1.	1.	0.01		
ROUTED TO	070420	17.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	070420	5.	3.20	0.	0.	0.	0.00		
3 COMBINED AT	070420	59.	3.20	19.	12.	12.	0.14		
ROUTED TO	210005	59.	3.20	19.	12.	12.	0.14		

HYDROGRAPH AT	210005	13.	3.23	1.	1.	1.	0.01		
2 COMBINED AT	210005	72.	3.23	20.	12.	12.	0.15		
ROUTED TO	050030	72.	3.23	20.	12.	12.	0.15		
HYDROGRAPH AT	050005	0.	3.40	0.	0.	0.	0.00		
ROUTED TO	050010	0.	4.63	0.	0.	0.	0.00		
HYDROGRAPH AT	050010	96.	3.13	8.	5.	5.	0.07		
2 COMBINED AT	050010	96.	3.13	8.	5.	5.	0.07		
ROUTED TO	050020	93.	3.17	8.	5.	5.	0.07		
HYDROGRAPH AT	050210	100.	3.13	8.	5.	5.	0.05		
ROUTED TO	210ST	0.	5.53	0.	0.	0.	0.05	0.55	9.97
ROUTED TO	050020	0.	4.73	0.	0.	0.	0.05		
HYDROGRAPH AT	050020	13.	3.17	1.	1.	1.	0.01		
3 COMBINED AT	050020	106.	3.17	10.	6.	6.	0.13		
ROUTED TO	050030	103.	3.20	10.	6.	6.	0.13		
HYDROGRAPH AT	050030	54.	3.10	3.	2.	2.	0.02		
ROUTED TO	030ST	20.	3.27	2.	1.	1.	0.02	68.13	3.27
3 COMBINED AT	050030	190.	3.20	32.	20.	20.	0.30		
ROUTED TO	050305	188.	3.20	32.	20.	20.	0.30		
ROUTED TO	050050	186.	3.27	32.	20.	20.	0.30		
HYDROGRAPH AT	050040	105.	3.20	12.	7.	7.	0.10		
ROUTED TO	40STOR	37.	3.67	12.	7.	7.	0.10	61.58	3.67
ROUTED TO	050050	37.	3.67	12.	7.	7.	0.10		
HYDROGRAPH AT	050310	75.	3.13	6.	4.	4.	0.04		
HYDROGRAPH AT	050065	37.	3.07	2.	1.	1.	0.01		
HYDROGRAPH AT	050060	53.	3.17	5.	3.	3.	0.03		
5 COMBINED AT	050050	341.	3.23	58.	35.	35.	0.48		
ROUTED TO	05Det	71.	4.70	55.	36.	36.	0.48	54.77	4.70
DIVERSION TO	05Qspl	0.	4.70	0.	0.	0.	0.48		
HYDROGRAPH AT	05Qpip	71.	4.70	55.	36.	36.	0.48		
HYDROGRAPH AT	050062	40.	3.07	2.	1.	1.	0.01		
ROUTED TO	050610	38.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	050610	99.	3.17	10.	6.	6.	0.08		
3 COMBINED AT	050610	173.	3.17	67.	43.	43.	0.58		

ROUTED TO	050620	172.	3.17	67.	43.	43.	0.58
HYDROGRAPH AT	050620	111.	3.17	12.	7.	7.	0.10
2 COMBINED AT	050620	283.	3.17	78.	50.	50.	0.67
ROUTED TO	050630	279.	3.20	78.	50.	50.	0.67
HYDROGRAPH AT	050630	120.	3.13	9.	6.	6.	0.06
2 COMBINED AT	050630	376.	3.17	87.	56.	56.	0.74
ROUTED TO	050640	375.	3.20	87.	56.	56.	0.74
HYDROGRAPH AT	050710	11.	3.13	1.	1.	1.	0.00
ROUTED TO	050720	11.	3.17	1.	1.	1.	0.00
HYDROGRAPH AT	050720	54.	3.20	5.	3.	3.	0.03
2 COMBINED AT	050720	64.	3.20	6.	3.	3.	0.03
ROUTED TO	050640	63.	3.20	6.	3.	3.	0.03
HYDROGRAPH AT	050640	65.	3.20	6.	3.	3.	0.03
3 COMBINED AT	050640	503.	3.20	98.	63.	63.	0.80
ROUTED TO	051510	498.	3.20	98.	63.	63.	0.80
HYDROGRAPH AT	050810	25.	3.17	2.	1.	1.	0.01
ROUTED TO	051510	25.	3.20	2.	1.	1.	0.01
HYDROGRAPH AT	051510	21.	3.13	2.	1.	1.	0.01
3 COMBINED AT	051510	541.	3.20	102.	65.	65.	0.82
ROUTED TO	051520	533.	3.20	102.	65.	65.	0.82
HYDROGRAPH AT	051610	39.	3.17	3.	2.	2.	0.02
ROUTED TO	051520	39.	3.17	3.	2.	2.	0.02
HYDROGRAPH AT	051710	8.	3.17	1.	0.	0.	0.00
ROUTED TO	051520	8.	3.17	1.	0.	0.	0.00
HYDROGRAPH AT	051520	43.	3.17	4.	2.	2.	0.02
4 COMBINED AT	051520	617.	3.20	109.	70.	70.	0.87
ROUTED TO	051530	610.	3.23	109.	70.	70.	0.87
HYDROGRAPH AT	051530	92.	3.17	7.	4.	4.	0.04
2 COMBINED AT	051530	682.	3.23	116.	74.	74.	0.91
ROUTED TO	051540	681.	3.23	116.	74.	74.	0.91
HYDROGRAPH AT	051810	12.	3.13	1.	1.	1.	0.00
ROUTED TO	051540	12.	3.13	1.	1.	1.	0.00
HYDROGRAPH AT	051540	9.	3.13	1.	0.	0.	0.00

3 COMBINED AT	051540	695.	3.23	118.	75.	75.	0.92		
ROUTED TO	051550	693.	3.23	118.	75.	75.	0.92		
DIVERSION TO	05PRK	246.	3.23	98.	63.	63.	0.92		
HYDROGRAPH AT	05EX	447.	3.23	20.	12.	12.	0.92		
ROUTED TO	051560	441.	3.23	20.	12.	12.	0.92		
ROUTED TO	051570	437.	3.23	20.	12.	12.	0.92		
HYDROGRAPH AT	051550	246.	3.10	98.	63.	63.	0.00		
HYDROGRAPH AT	051560	10.	3.17	1.	1.	1.	0.01		
2 COMBINED AT	PRK	256.	3.17	99.	64.	64.	0.01		
ROUTED TO	05PKST	242.	3.70	99.	64.	64.	0.01	1229.54	3.70
ROUTED TO	051565	242.	3.70	99.	64.	64.	0.01		

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
070808	MANE	0.73	12.39	206.77	1.00	2.00	12.37	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9191E+00 OUTFLOW=0.9057E+00 BASIN STORAGE=0.9232E-02 PERCENT ERROR= 0.5

070610	MANE	0.18	11.99	206.43	1.00	2.00	11.99	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9031E+00 EXCESS=0.0000E+00 OUTFLOW=0.9031E+00 BASIN STORAGE=0.5171E-04 PERCENT ERROR= 0.0

070610	MANE	0.47	5.12	206.50	1.00	2.00	5.11	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3785E+00 OUTFLOW=0.3729E+00 BASIN STORAGE=0.3754E-02 PERCENT ERROR= 0.5

070508	MANE	0.27	16.98	206.55	1.00	2.00	16.98	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1275E+01 EXCESS=0.0000E+00 OUTFLOW=0.1275E+01 BASIN STORAGE=0.1197E-03 PERCENT ERROR= 0.0

070508	MANE	0.71	4.42	210.48	0.83	2.00	4.40	210.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3592E+00 OUTFLOW=0.3530E+00 BASIN STORAGE=0.4247E-02 PERCENT ERROR= 0.5

070010	MANE	0.18	20.97	207.86	0.95	2.00	20.97	208.00	0.95

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1624E+01 EXCESS=0.0000E+00 OUTFLOW=0.1624E+01 BASIN STORAGE=0.9866E-04 PERCENT ERROR= 0.0

070010	MANE	1.09	6.53	206.99	1.00	2.00	6.50	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4866E+00 OUTFLOW=0.4794E+00 BASIN STORAGE=0.5001E-02 PERCENT ERROR= 0.4

070210	MANE	0.11	27.45	208.01	0.96	2.00	27.45	208.00	0.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2103E+01 EXCESS=0.0000E+00 OUTFLOW=0.2103E+01 BASIN STORAGE=0.7125E-04 PERCENT ERROR= 0.0

070209	MANE	0.46	11.88	206.50	0.94	2.00	11.86	208.00	0.94

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9154E+00 OUTFLOW=0.9007E+00 BASIN STORAGE=0.1018E-01 PERCENT ERROR= 0.5

070210	MANE	0.36	11.85	207.78	0.94	2.00	11.85	208.00	0.94

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.9005E+00 EXCESS=0.0000E+00 OUTFLOW=0.9004E+00 BASIN STORAGE=0.1804E-03 PERCENT ERROR= 0.0

070210	MANE	0.70	5.27	207.97	0.94	2.00	5.27	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4069E+00 OUTFLOW=0.4004E+00 BASIN STORAGE=0.4546E-02 PERCENT ERROR= 0.5

050005	MANE	0.50	44.43	208.32	0.95	2.00	44.42	208.00	0.95

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.3403E+01 EXCESS=0.0000E+00 OUTFLOW=0.3403E+01 BASIN STORAGE=0.5932E-03 PERCENT ERROR= 0.0

050005	MANE	1.25	20.70	210.86	0.83	2.00	20.62	212.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1706E+01 OUTFLOW=0.1674E+01 BASIN STORAGE=0.2220E-01 PERCENT ERROR= 0.5

070020	MANE	0.45	0.01	207.04	-1.00	2.00	0.01	208.00	-1.00
070030	MANE	2.00	0.01	222.25	-1.00	2.00	0.01	222.00	-1.00
070030	MANE	0.85	5.34	184.06	1.17	2.00	5.33	184.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2515E+00 OUTFLOW=0.2501E+00 BASIN STORAGE=0.1024E-02 PERCENT ERROR= 0.2

070040	MANE	0.43	5.26	184.66	1.18	2.00	5.07	186.00	1.18

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.2507E+00 EXCESS=0.0000E+00 OUTFLOW=0.2508E+00 BASIN STORAGE=0.9675E-04 PERCENT ERROR= 0.0

070220	MANE	0.31	0.12	208.48	-1.00	2.00	0.10	208.00	-1.00
070040	MANE	1.94	0.13	225.41	-1.00	2.00	0.11	226.00	-1.00
070040	MANE	2.00	4.95	192.74	1.14	2.00	4.92	192.00	1.13

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3678E+00 OUTFLOW=0.3632E+00 BASIN STORAGE=0.3287E-02 PERCENT ERROR= 0.3

070050	MANE	1.40	8.63	189.86	1.15	2.00	8.62	190.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6163E+00 EXCESS=0.0000E+00 OUTFLOW=0.6150E+00 BASIN STORAGE=0.8373E-03 PERCENT ERROR= 0.1

070050	MANE	0.78	24.29	184.85	1.21	2.00	23.78	184.00	1.21

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1166E+01 OUTFLOW=0.1159E+01 BASIN STORAGE=0.5169E-02 PERCENT ERROR= 0.2

070060 MANE 0.97 29.75 187.77 1.19 2.00 29.61 188.00 1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1774E+01 EXCESS=0.0000E+00 OUTFLOW=0.1775E+01 BASIN STORAGE=0.6068E-03 PERCENT ERROR= -0.1

070310 MANE 0.76 30.67 184.48 1.21 2.00 30.08 184.00 1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1490E+01 OUTFLOW=0.1481E+01 BASIN STORAGE=0.6574E-02 PERCENT ERROR= 0.2

070060 MANE 0.74 29.98 185.96 1.21 2.00 29.98 186.00 1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1481E+01 EXCESS=0.0000E+00 OUTFLOW=0.1482E+01 BASIN STORAGE=0.3630E-03 PERCENT ERROR= -0.1

070060 MANE 1.23 25.91 185.60 1.21 2.00 25.47 186.00 1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1296E+01 OUTFLOW=0.1288E+01 BASIN STORAGE=0.5563E-02 PERCENT ERROR= 0.1

070070 MANE 0.67 82.61 187.81 1.20 2.00 82.33 188.00 1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4545E+01 EXCESS=0.0000E+00 OUTFLOW=0.4545E+01 BASIN STORAGE=0.2515E-02 PERCENT ERROR= -0.1

070070 MANE 0.94 42.52 184.23 1.21 2.00 42.12 184.00 1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2073E+01 OUTFLOW=0.2061E+01 BASIN STORAGE=0.8684E-02 PERCENT ERROR= 0.2

070080 MANE 1.20 51.89 187.39 1.72 2.00 51.60 188.00 1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1932E+01 OUTFLOW=0.1925E+01 BASIN STORAGE=0.3459E-02 PERCENT ERROR= 0.2

070420 MANE 0.57 45.74 220.82 1.28 2.00 45.74 220.00 1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8494E+01 EXCESS=0.0000E+00 OUTFLOW=0.8494E+01 BASIN STORAGE=0.1546E-02 PERCENT ERROR= 0.0

070410 MANE 1.87 17.40 187.32 1.36 2.00 17.33 188.00 1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8003E+00 OUTFLOW=0.7949E+00 BASIN STORAGE=0.3259E-02 PERCENT ERROR= 0.3

070420 MANE 0.32 17.31 188.65 1.35 2.00 16.89 188.00 1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7944E+00 EXCESS=0.0000E+00 OUTFLOW=0.7946E+00 BASIN STORAGE=0.2700E-03 PERCENT ERROR= -0.1

070420 MANE 2.00 4.86 190.82 1.49 2.00 4.84 192.00 1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2409E+00 OUTFLOW=0.2387E+00 BASIN STORAGE=0.1374E-02 PERCENT ERROR= 0.3

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210005  MANE        0.26     59.21    192.44      1.29      2.00     59.12    192.00        1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9526E+01 EXCESS=0.0000E+00 OUTFLOW=0.9525E+01 BASIN STORAGE=0.7249E-03 PERCENT ERROR=   0.0

210005  MANE        2.00     13.06    194.11      1.48      2.00     13.04    194.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6370E+00 OUTFLOW=0.6324E+00 BASIN STORAGE=0.3350E-02 PERCENT ERROR=   0.2

050030  MANE        0.82     71.80    194.69      1.30      2.00     71.78    194.00        1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1016E+02 EXCESS=0.0000E+00 OUTFLOW=0.1016E+02 BASIN STORAGE=0.2660E-02 PERCENT ERROR=   0.0

050010  MANE        2.00      0.01    283.63     -1.00      2.00      0.01    282.00       -1.00

050010  MANE        1.33     96.72    187.31      1.20      2.00     95.85    188.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4245E+01 OUTFLOW=0.4215E+01 BASIN STORAGE=0.2301E-01 PERCENT ERROR=   0.2

050020  MANE        1.39     93.12    190.07      1.20      2.00     92.86    190.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4220E+01 EXCESS=0.0000E+00 OUTFLOW=0.4213E+01 BASIN STORAGE=0.6933E-02 PERCENT ERROR=   0.0

050210  MANE        0.98     99.92    188.76      1.46      2.00     99.54    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4226E+01 OUTFLOW=0.4205E+01 BASIN STORAGE=0.1724E-01 PERCENT ERROR=   0.1

050020  MANE        2.00      0.01    599.05      0.00      2.00      0.01    598.00        0.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2856E-02 EXCESS=0.0000E+00 OUTFLOW=0.2431E-02 BASIN STORAGE=0.4309E-03 PERCENT ERROR=  -0.2

050020  MANE        2.00     12.86    189.95      1.32      2.00     12.85    190.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6373E+00 OUTFLOW=0.6317E+00 BASIN STORAGE=0.4033E-02 PERCENT ERROR=   0.2

050030  MANE        0.37    105.06    190.65      0.70      2.00    103.35    192.00        0.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4844E+01 EXCESS=0.0000E+00 OUTFLOW=0.4844E+01 BASIN STORAGE=0.2094E-02 PERCENT ERROR=   0.0

050030  MANE        1.39     54.49    185.60      1.63      2.00     53.61    186.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1742E+01 OUTFLOW=0.1739E+01 BASIN STORAGE=0.2044E-02 PERCENT ERROR=   0.0
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050305  MANE        0.22    189.38    192.40      1.03      2.00    188.41    192.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1613E+02 BASIN STORAGE=0.4682E-03 PERCENT ERROR=   0.0

050050  MANE        1.14    187.38    195.07      1.02      2.00    185.84    196.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1611E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.1

050040  MANE        1.85    106.07    192.81      1.08      2.00    105.50    192.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5976E+01 OUTFLOW=0.5901E+01 BASIN STORAGE=0.5232E-01 PERCENT ERROR=   0.4

050050  MANE        0.14     36.67    220.33      1.09      2.00     36.67    220.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5915E+01 EXCESS=0.0000E+00 OUTFLOW=0.5930E+01 BASIN STORAGE=-.2270E-01 PERCENT ERROR=   0.1

050310  MANE        0.92     75.75    188.93      1.46      2.00     75.20    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3209E+01 OUTFLOW=0.3190E+01 BASIN STORAGE=0.1452E-01 PERCENT ERROR=   0.1

050065  MANE        0.57     37.43    184.88      1.63      2.00     36.96    184.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1294E-02 PERCENT ERROR=   0.0

050060  MANE        2.00     52.72    191.87      1.56      2.00     52.58    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2427E+01 OUTFLOW=0.2408E+01 BASIN STORAGE=0.1081E-01 PERCENT ERROR=   0.3

050062  MANE        0.98     40.00    184.01      1.63      2.00     39.98    184.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1174E-02 PERCENT ERROR=   0.0

050610  MANE        2.00     38.54    187.67      1.65      2.00     38.37    188.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1219E+01 EXCESS=0.0000E+00 OUTFLOW=0.1228E+01 BASIN STORAGE=0.2229E-02 PERCENT ERROR=  -1.0

050610  MANE        1.46    101.00    189.46      1.10      2.00     99.04    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4801E+01 OUTFLOW=0.4760E+01 BASIN STORAGE=0.2964E-01 PERCENT ERROR=   0.2

050620  MANE        0.58    172.55    190.62      1.16      2.00    171.92    190.00        1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3566E+02 EXCESS=0.0000E+00 OUTFLOW=0.3565E+02 BASIN STORAGE=-.6676E-02 PERCENT ERROR=   0.0
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050620  MANE        2.00    111.40    190.17      1.10      2.00    110.58    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5867E+01 OUTFLOW=0.5804E+01 BASIN STORAGE=0.4209E-01 PERCENT ERROR=   0.4

050630  MANE        0.67    280.79    191.23      1.15      2.00    279.07    192.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4146E+02 EXCESS=0.0000E+00 OUTFLOW=0.4146E+02 BASIN STORAGE=-.8065E-02 PERCENT ERROR=   0.0

050630  MANE        1.37    120.14    187.99      1.40      2.00    120.11    188.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4642E+01 OUTFLOW=0.4618E+01 BASIN STORAGE=0.1773E-01 PERCENT ERROR=   0.1

050640  MANE        0.65    375.16    191.75      1.17      2.00    374.73    192.00        1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4607E+02 EXCESS=0.0000E+00 OUTFLOW=0.4607E+02 BASIN STORAGE=-.5648E-02 PERCENT ERROR=   0.0

050710  MANE        1.41     11.04    187.86      1.63      2.00     11.03    188.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4355E+00 OUTFLOW=0.4336E+00 BASIN STORAGE=0.1041E-02 PERCENT ERROR=   0.2

050720  MANE        0.26     11.00    188.46      1.63      2.00     10.77    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4340E+00 EXCESS=0.0000E+00 OUTFLOW=0.4340E+00 BASIN STORAGE=0.1446E-04 PERCENT ERROR=   0.0

050720  MANE        2.00     54.40    190.79      1.60      2.00     53.82    192.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2400E+01 OUTFLOW=0.2385E+01 BASIN STORAGE=0.8781E-02 PERCENT ERROR=   0.3

050640  MANE        0.31     63.52    192.28      1.60      2.00     63.46    192.00        1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2816E+01 EXCESS=0.0000E+00 OUTFLOW=0.2816E+01 BASIN STORAGE=0.1211E-03 PERCENT ERROR=   0.0

050640  MANE        1.50     65.19    191.21      1.62      2.00     64.77    192.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2787E+01 OUTFLOW=0.2769E+01 BASIN STORAGE=0.9847E-02 PERCENT ERROR=   0.3

051510  MANE        0.38    500.53    192.36      1.21      2.00    497.89    192.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5165E+02 EXCESS=0.0000E+00 OUTFLOW=0.5165E+02 BASIN STORAGE=-.2091E-02 PERCENT ERROR=   0.0

050810  MANE        1.74     25.55    189.14      1.56      2.00     25.37    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1088E+01 OUTFLOW=0.1080E+01 BASIN STORAGE=0.3609E-02 PERCENT ERROR=   0.4
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051510  MANE        0.59     25.29    191.22      1.56      2.00     24.71    192.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1079E+01 EXCESS=0.0000E+00 OUTFLOW=0.1080E+01 BASIN STORAGE=0.1186E-03 PERCENT ERROR=  -0.1

051510  MANE        1.18     21.27    188.57      1.59      2.00     21.15    188.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8506E+00 OUTFLOW=0.8466E+00 BASIN STORAGE=0.2308E-02 PERCENT ERROR=   0.2

051520  MANE        0.30    539.77    192.60      1.22      2.00    532.54    192.00        1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5358E+02 EXCESS=0.0000E+00 OUTFLOW=0.5357E+02 BASIN STORAGE=-.1980E-02 PERCENT ERROR=   0.0

051610  MANE        1.22     39.29    190.01      1.50      2.00     39.29    190.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1686E+01 OUTFLOW=0.1676E+01 BASIN STORAGE=0.7637E-02 PERCENT ERROR=   0.2

051520  MANE        0.40     39.05    190.64      1.50      2.00     38.52    190.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1676E+01 EXCESS=0.0000E+00 OUTFLOW=0.1676E+01 BASIN STORAGE=0.1288E-03 PERCENT ERROR=   0.0

051710  MANE        0.65      7.88    188.76      1.51      2.00      7.77    190.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3240E+00 OUTFLOW=0.3224E+00 BASIN STORAGE=0.1233E-02 PERCENT ERROR=   0.1

051520  MANE        0.60      7.76    190.34      1.51      2.00      7.75    190.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3226E+00 EXCESS=0.0000E+00 OUTFLOW=0.3227E+00 BASIN STORAGE=0.3447E-04 PERCENT ERROR=   0.0

051520  MANE        1.21     43.16    189.81      1.48      2.00     42.92    190.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1831E+01 OUTFLOW=0.1819E+01 BASIN STORAGE=0.8303E-02 PERCENT ERROR=   0.2

051530  MANE        0.59    614.67    193.31      1.23      2.00    609.63    194.00        1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5740E+02 EXCESS=0.0000E+00 OUTFLOW=0.5740E+02 BASIN STORAGE=-.2706E-02 PERCENT ERROR=   0.0

051530  MANE        0.97     92.52    188.84      1.63      2.00     91.53    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3570E+01 OUTFLOW=0.3558E+01 BASIN STORAGE=0.8718E-02 PERCENT ERROR=   0.1

051540  MANE        0.35    680.89    194.09      1.25      2.00    680.88    194.00        1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6095E+02 EXCESS=0.0000E+00 OUTFLOW=0.6095E+02 BASIN STORAGE=-.7044E-03 PERCENT ERROR=   0.0
```

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051810  MANE        0.51     11.76    187.31      1.62      2.00     11.63    188.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4321E+00 OUTFLOW=0.4306E+00 BASIN STORAGE=0.7745E-03 PERCENT ERROR=   0.2

051540  MANE        0.23     11.60    188.25      1.61      2.00     11.57    188.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4304E+00 EXCESS=0.0000E+00 OUTFLOW=0.4304E+00 BASIN STORAGE=0.8082E-05 PERCENT ERROR=   0.0

051540  MANE        0.78      9.52    187.16      1.62      2.00      9.38    188.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3457E+00 OUTFLOW=0.3447E+00 BASIN STORAGE=0.6075E-03 PERCENT ERROR=   0.1

051550  MANE        0.22    693.32    194.16      1.25      2.00    692.75    194.00        1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6173E+02 EXCESS=0.0000E+00 OUTFLOW=0.6173E+02 BASIN STORAGE=-.3836E-03 PERCENT ERROR=   0.0

051560  MANE        0.44    443.56    194.56      0.20      2.00    440.60    194.00        0.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9707E+01 EXCESS=0.0000E+00 OUTFLOW=0.9717E+01 BASIN STORAGE=0.1329E-05 PERCENT ERROR=  -0.1

051570  MANE        0.17    439.43    194.23      0.20      2.00    436.99    194.00        0.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9733E+01 EXCESS=0.0000E+00 OUTFLOW=0.9730E+01 BASIN STORAGE=0.1336E-05 PERCENT ERROR=   0.0

051560  MANE        2.00     10.16    189.32      1.22      2.00     10.12    190.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5231E+00 OUTFLOW=0.5186E+00 BASIN STORAGE=0.3077E-02 PERCENT ERROR=   0.3

051565  MANE        0.18    241.72    221.97    122.87      2.00    241.71    222.00      122.87

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5243E+02 EXCESS=0.0000E+00 OUTFLOW=0.5242E+02 BASIN STORAGE=0.4635E-02 PERCENT ERROR=   0.0
```

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 210ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	0.00	1.00	1.00
STORAGE	0.	8.	8.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	0.55	0.00	4.	0.	0.00	9.97	0.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 030ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	65.00	68.00	68.00
STORAGE	0.	1.	1.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	68.13	0.13	1.	20.	6.87	3.27	0.00

*** NORMAL END OF HEC-1 ***

Alternative B: Civic Center Diversion

- HEC-1 - 10 year, 6 hr storm (altb610.out)

HEC1 S/N: 1343001471 HMVersion: 6.33 Data File: altb610.hc1

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             MAY   1991               *
*          VERSION 4.0.1E              *
*                                      *
* RUN DATE  12/18/1997  TIME  09:04:24 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET            *
*      DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
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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::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::
:::                                  :::
:::  Full Microcomputer Implementation :::
:::                by                :::
:::       Haestad Methods, Inc.      :::
:::                                  :::
::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

              * ***********************************************************************
              * This is ALTERNATIVE B hydrology for Change Order #2
              *
              * - This model is based on the Recommended Plan - Part A for the Osborn Road
              *     Outfall with the following changes:
              *        Osborn Road Outfall has been modified to include a junction structure
              *        at Civic Center Boulevard.  The structure diverts primary runoff south
              *        along Civic Center Boulevard in a proposed storm drain.  The proposed
              *        storm drain runs south along Civic Center Boulevard and east along
              *        Earll Drive to Indian Bend Wash.  The excess runoff at the Civic Center
              *        Blvd. junction structure is conveyed east along Osborn Road in the
              *        existing storm drain to Indian Bend Wash.
              *
              *
    1         ID    ***********************************************************************
    2         ID    STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
    3         ID    SCOTTSDALE - TEMPE - PHOENIX
    4         ID    ***********************************************************************
    5         ID
    6         ID    Kimley-Horn and Associates, Inc.
    7         ID
    8         ID    10-Year, 6-Hour Storm Event
    9         ID    11/97
              *
              *DIAGRAM
   10         IT       2                    300
   11         IO       5

   12         KK  070808   BASIN
   13         BA   0.017
   14         PH       0       0    0.50    0.97    1.61    1.76    1.86    2.05
   15         LS       0      88       0       0      98       0
   16         UK     300  0.0100    0.20      99
   17         UK     100  0.0100    0.10       1
   18         RK    1600   0.214    0.03            TRAP       2     3.5
              *
              * The 10 year flows are diverted into a proposed storm drain along Oak Street.
              * In storm events greater than the 10 yr, the remaining flow will follow its
              * natural course across and sheet flow across Oak Street to the north.
              *

   19         KK   808PP  Divert 10-year flows into storm drain
   20         DT  808OUT
   21         DI       0      12      13      15      50     100
   22         DQ       0    0.01       1       3      38      88

   23         KK  070610 FROM  070808
   24         RK     240  0.0066   0.013            CIRC    3.00

   25         KK  070610   BASIN
   26         BA   0.007
   27         LS       0      88       0       0      98       0
   28         UK     300  0.0100    0.20      99
   29         UK     100  0.0100    0.10       1
   30         RK     500   0.054    0.03            TRAP       2     3.5
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  31          KK   610PP  Divert 10-year flows into storm drain
  32          DT  610OUT
  33          DI       0       5       6      10      50     100
  34          DQ       0     .01       1       5      45      95

  35          KK  070610 COMBINE
  36          HC       2

  37          KK  070508    FROM  070610
  38          RK     420  0.0066   0.013            CIRC    3.00

  39          KK  070508   BASIN
  40          BA   0.008
  41          LS       0      85       0       0      98       0
  42          UK     300  0.0100    0.20      99
  43          UK     100  0.0100    0.10       1
  44          RK     600   0.048    0.03            TRAP       9     1.0

  45          KK   508PP  Divert 10-year flows into storm drain
  46          DT  508OUT
  47          DI       0       4       5      15      50     100
  48          DQ       0     .01       1      11      46      96

  49          KK  070508 COMBINE
  50          HC       2

  51          KK  070010    FROM  070508
  52          RK     270  0.0066   0.013            CIRC    3.00

  53          KK  070010   BASIN
  54          BA   0.009
  55          LS       0      88       0       0      98       0
  56          UK     300  0.0100    0.20      99
  57          UK     100  0.0100    0.10       1
  58          RK    1200   0.042    0.03            TRAP       2     3.5

  59          KK   010PP  Divert 10-year flows into storm drain
  60          DT  010OUT
  61          DI       0       7      10      15      50     100
  62          DQ       0     .01       3       8      43      93

  63          KK  070010 COMBINE
  64          HC       2

  65          KK  070210    FROM  070010
  66          RK     120  0.0033   0.013            CIRC    3.00

  67          KK  070209   BASIN
  68          BA   0.018
  69          LS       0      87       0       0      98       0
  70          UK     300  0.0100    0.20      99
  71          UK     100  0.0100    0.10       1
  72          RK    1200   0.252    0.03            TRAP       2     3.5
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  73          KK  070210    FROM  070209
  74          RK     750   0.252   0.013            TRAP      10       1

  75          KK  070210   BASIN
  76          BA   0.008
  77          LS       0      87       0       0      98       0
  78          UK     300  0.0100    0.20      99
  79          UK     100  0.0100    0.10       1
  80          RK     600   0.043    0.03            TRAP       2     3.5

  81          KK  070210 COMBINE
  82          HC       2

  83          KK   210PP  Divert 10-year flows into storm drain
  84          DT  210OUT
  85          DI       0      17      20      30      50     100
  86          DQ       0     .01       3      13      33      83

  87          KK  070210 COMBINE
  88          HC       2

  89          KK  050005   FROM 070210
  90          RK     950   0.008   0.013            CIRC    3.00

  91          KK  050005   BASIN
  92          BA   0.038
  93          LS       0      85       0       0      98       0
  94          UK     300  0.0100    0.20      99
  95          UK     100  0.0100    0.10       1
  96          RK    1650    0.09    0.03            TRAP      30     1.0

  97          KK   005PP  Divert 10-year flows into storm drain
  98          DT  005OUT
  99          DI       0      21      22     100     150     200
 100          DQ       0     .01       1      79     129     179
              *
              * The start of the Osborn Road outfall hydrology
              *

 101          KK  070010
 102          KM    Retrieve overland flows at CP 070010
 103          DR  010OUT

 104          KK  070020    FROM  070010
 105          RK     178  0.0131   0.013            CIRC     1.0

 106          KK  070030    FROM  070020
 107          RK     520  0.0146   0.025            TRAP     9.0       1
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 108          KK  070030   BASIN
 109          BA   0.004
 110          LS       0      85       0       0      98       0
 111          UK     150  0.0100    0.30      65
 112          UK      50  0.0100    0.10      35
 113          RK     522  0.0146    0.03            TRAP       2     3.5

 114          KK  070030 COMBINE
 115          HC       2

 116          KK  070040    FROM  070030
 117          RK     177  0.0146   0.017            TRAP    54.8       1

 118          KK  070210
 119          KM    Retrieve overland flows at CP 070210
 120          DR  210OUT

 121          KK  070220    FROM  070210
 122          RK     164  0.0131   0.013            CIRC     1.0

 123          KK  070040    FROM  070220
 124          RK     723  0.0146   0.017            TRAP    54.8       1

 125          KK  070040   BASIN
 126          BA   0.006
 127          LS       0      86       0       0      98       0
 128          UK     181  0.0100    0.28      72
 129          UK      60  0.0100    0.10      28
 130          RK    1946  0.0146    0.02            TRAP      30     1.0

 131          KK  070040 COMBINE
 132          HC       3

 133          KK  070050    FROM  070040
 134          RK     878  0.0146   0.025            TRAP    20.0     1.0

 135          KK  070050   BASIN
 136          BA   0.018
 137          LS       0      86       0       0      98       0
 138          UK     150  0.0100    0.30      65
 139          UK      50  0.0100    0.10      35
 140          RK     290  0.0058    0.02            TRAP      11     1.0
 141          RK     981  0.0146    0.02            TRAP      11     1.0

 142          KK  070050 COMBINE
 143          HC       2

 144          KK  070060    FROM  070050
 145          RK     872  0.0058   0.025            TRAP     1.0     1.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

146           KK  070310   BASIN
147           BA   0.023
148           LS       0      86       0       0      98       0
149           UK     150  0.0100    0.30      65
150           UK      50  0.0100    0.10      35
151           RK     278  0.0058    0.02            TRAP      11     1.0
152           RK     986  0.0146    0.02            TRAP      11     1.0

153           KK  070060    FROM  070310
154           RK     745  0.0058   0.025            TRAP     1.0     1.0

155           KK  070060   BASIN
156           BA   0.020
157           LS       0      86       0       0      98       0
158           UK     150  0.0100    0.30      65
159           UK      50  0.0100    0.10      35
160           RK    1096  0.0058    0.03            TRAP       2     1.0

161           KK  070060 COMBINE
162           HC       3

163           KK  070070    FROM  070060
164           RK     726  0.0146   0.025            TRAP    30.0     1.0

165           KK  070070   BASIN
166           BA   0.032
167           LS       0      86       0       0      98       0
168           UK     150  0.0100    0.30      65
169           UK      50  0.0100    0.10      35
170           RK    1209  0.0146    0.03            TRAP       2     1.0

171           KK  070080   BASIN
172           BA   0.021
173           LS       0      83       0       0      98       0
174           UK      29  0.0100    0.39       9
175           UK     189  0.0100    0.10      91
176           RK    1257  0.0058    0.02            TRAP      30     1.0

177           KK  070080 COMBINE
178           HC       3

179           KK   07Det   Detention basin at Marriott's Brighton Gardens
180           RS       1    STOR
181           SV       0    0.78    1.64    2.65    3.84    5.21    6.77    6.77
182           SE      66      67      68      69      70      71      72      73
183           SQ       0      12      36      42      46      48      52     355
              *
              * Marriott's Brighton Gardens outfall - 07Qpip is the outflow in the storm drain
              * 07Qspl is the flow overtopping the basin
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 184          KK  07Qpip
 185          DT  07Qspl
 186          DI       0      71     112     172     245     329     420     518     623
 187          DQ       0     0.1      26      72     132     204     285     374     471

 188          KK  070420   FROM 07Qpip
 189          RK    1000   0.005   0.013            CIRC     3.0

 190          KK  070410   BASIN
 191          BA   0.011
 192          LS       0      84       0       0      98       0
 193          UK     144  0.0100    0.32      44
 194          UK     121  0.0100    0.10      56
 195          RK    1816  0.0146    0.02            TRAP      23     1.0

 196          KK  070420    FROM  070410
 197          RK     183  0.0058   0.017            TRAP    52.5       1

 198          KK  070420   BASIN
 199          BA   0.003
 200          LS       0      79       0       0      98       0
 201          UK     177  0.0100    0.31      25
 202          UK     200  0.0100    0.10      75
 203          RK    1046  0.0058    0.02            TRAP      49     1.0

 204          KK  070420 COMBINE
 205          HC       3

 206          KK  210005  FROM 070420
 207          RK     450   0.005   0.013            CIRC     3.5

 208          KK  210005   BASIN
 209          BA   0.008
 210          LS       0      79       0       0      98       0
 211          UK      94  0.0100    0.34      26
 212          UK     116  0.0100    0.10      74
 213          RK     523  0.0032    0.02            TRAP      38     1.0
 214          RK    1250  0.0020    0.02            TRAP      45     1.0

 215          KK  210005 COMBINE
 216          HC       2

 217          KK  050030   FROM 210005
 218          RK    1600   0.005   0.013            CIRC       4

 219          KK  050005
 220          KM    Retrieve overland flows at CP 050005
 221          DR  005OUT
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 222          KK  050010   FROM 050005
 223          RK    1300   0.015    0.02            TRAP      35       1

 224          KK  050010   BASIN
 225          BA   0.066
 226          LS       0      81       0       0      98       0
 227          UK     144  0.0100    0.30      52
 228          UK      57  0.0100    0.10      48
 229          RK    1189  0.0033    0.02            TRAP      30     1.0
 230          RK    1197  0.0038    0.02            TRAP      60     1.0

 231          KK  050010   COMBINE
 232          HC       2

 233          KK  050020    FROM  050010
 234          RK    1370  0.0038   0.017            TRAP    37.5       1

 235          KK  050210   BASIN
 236          BA   0.054
 237          LS       0      79       0       0      98       0
 238          UK     200  0.0100    0.30      28
 239          UK     200  0.0100    0.10      72
 240          RK     564  0.0038    0.02            TRAP      23     1.0
 241          RK    1199  0.0033    0.02            TRAP      23     1.0

 242          KK   210ST STORAGE
 243          RS       1    STOR
 244          SV    0.00    7.72    7.72
 245          SE    0.00    1.00    2.00
 246          SQ    0.00    0.01    0.01
 247          ST     1.0     500     3.0     1.5

 248          KK  050020    FROM  050210
 249          RK     278  0.0033   0.017            TRAP    60.0       1

 250          KK  050020   BASIN
 251          BA   0.009
 252          LS       0      79       0       0      98       0
 253          UK     166  0.0100    0.30      39
 254          UK      98  0.0100    0.10      61
 255          RK    1304  0.0038    0.02            TRAP      60     1.0

 256          KK  050020 COMBINE
 257          HC       3

 258          KK  050030    FROM  050020
 259          RK     347  0.0038   0.017            TRAP    37.5       1

 260          KK  050030   BASIN
 261          BA   0.020
 262          LS       0      79       0       0      98       0
 263          UK     150  0.0100    0.30      15
 264          UK      50  0.0100    0.10      85
 265          RK     278  0.0038    0.02            TRAP       9     1.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 266          RK    1468  0.0033    0.02            TRAP       9     1.0
              *
              * Scottsdale Executive Villas natural storage in parking lot
              *

 267          KK   030ST STORAGE
 268          RS       1    STOR
 269          SV       0    0.01    0.06    0.62    2.72    2.72
 270          SE      65      66      67      68      69      70
 271          SQ    0.00    0.01    0.01    0.01    0.01    0.01
 272          ST      68     150     3.0     1.5

 273          KK  050030 COMBINE
 274          HC       3

 275          KK  050305   FROM 050030
 276          RK     150   0.002   0.013            CIRC     5.5

 277          KK  050050   FROM 050305
 278          RK    1500   0.001   0.013            TRAP       9     1.0

 279          KK  050040   BASIN
 280          BA   0.102
 281          LS       0      79       0       0      98       0
 282          UK     150  0.0100    0.30      57
 283          UK      50  0.0100    0.10      43
 284          RK    2230  0.0038    0.02            TRAP      38     1.0
 285          RK    2654  0.0038    0.02            TRAP      38     1.0

 286          KK  40STOR  Storage on west side of cross-cut canal
 287          RS       1
 288          SV       0       0       0       0     2.6    13.5    13.5
 289          SE      58      59      60      61      62      63      64
 290          SQ       0      10      22      32      40      50      55

 291          KK  050050    FROM  050040
 292          RK     491  0.0334   0.013            CIRC     2.5

 293          KK  050310   BASIN
 294          BA   0.041
 295          LS       0      79       0       0      98       0
 296          UK     200  0.0100    0.30      28
 297          UK     200  0.0100    0.10      72
 298          RK     816  0.0033    0.02            TRAP      30     1.0
 299          RK     848  0.0038    0.02            TRAP      30     1.0

 300          KK  050065   BASIN
 301          BA   0.014
 302          LS       0      79       0       0      98       0
 303          UK     100    0.01     0.3      15
 304          UK     100    0.01     0.1      85
 305          RK     500   0.005   0.012            TRAP      60       1
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 306          KK  050060   BASIN
 307          BA   0.029
 308          LS       0      79       0       0      98       0
 309          UK     105    0.01     0.3      20
 310          UK     160    0.01     0.1      80
 311          RK    1300  0.0038    0.03            TRAP     100     1.0
              *
              * Flows combined from 050040, 050305, 050310, 050060 and 050065 into Paiute
              * Park detention basin
              *

 312          KK  050050 COMBINE
 313          HC       5

 314          KK   05Det  Storage
 315          RS       1    STOR
 316          SV       0    0.64    2.37    5.14    8.40    11.7    15.1    18.5    22.1    22.1
 317          SE      49      50      51      52      53      54      55      56      57      58
 318          SQ     4.5      22      37      47      56      65      73      81      88     156
              *
              * Paiute Park outfall - 05Qpip is the outflow in the storm drain
              * 05Qspl is the flow overtopping the basin
              *
              *
              * Overflows to CP 050060
              *

 319          KK  05Qpip
 320          DT  05Qspl
 321          DI       0     160     382     780    1292    1897
 322          DQ       0    0.01     212     600    1102    1697
              *
              * Begin storm drain system in Osborn Road
              *

 323          KK  050062   BASIN
 324          BA   0.006
 325          BA   0.014
 326          LS       0      79       0       0      98       0
 327          UK     100    0.01     0.3      15
 328          UK      50    0.01     0.1      85
 329          RK     900   0.005   0.012            TRAP      60       1

 330          KK  050610   FROM 050062
 331          RK    1500   0.003   0.013            TRAP      60       1

 332          KK  050610   BASIN
 333          BA   0.081
 334          LS       0      79       0       0      98       0
 335          UK     130  0.0100    0.32      56
 336          UK      70  0.0100    0.10      44
 337          RK    1450  0.0038    0.02            TRAP      45     1.0
 338          RK    1240  0.0033    0.02            TRAP      60     1.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 339          KK  050610    COMBINE
 340          HC       3

 341          KK  050620    FROM  050610
 342          RK    1050  0.0037   0.013            CIRC       6

 343          KK  050620   BASIN
 344          BA   0.099
 345          LS       0      79       0       0      98       0
 346          UK     147  0.0100    0.30      56
 347          UK      53  0.0100    0.10      44
 348          RK     940  0.0033    0.02            TRAP      41     1.0
 349          RK    2545  0.0038    0.02            TRAP      60     1.0

 350          KK  050620 COMBINE
 351          HC       2

 352          KK  050630    FROM  050620
 353          RK    1440  0.0028   0.013            CIRC       7

 354          KK  050630   BASIN
 355          BA   0.062
 356          LS       0      79       0       0      98       0
 357          UK     138  0.0100    0.31      33
 358          UK      64  0.0100    0.10      67
 359          RK    1205  0.0038    0.02            TRAP      41     1.0
 360          RK    1348  0.0033    0.02            TRAP      60     1.0

 361          KK  050630 COMBINE
 362          HC       2

 363          KK  050640    FROM  050630
 364          RK    1150  0.0024   0.013            CIRC       8

 365          KK  050710   BASIN
 366          BA   0.005
 367          LS       0      79       0       0      98       0
 368          UK      21  0.0100    0.40      15
 369          UK     200  0.0100    0.10      85
 370          RK     610  0.0038    0.02            TRAP      55     1.0

 371          KK  050720    FROM  050710
 372          RK     316  0.0045   0.013            CIRC     5.5

 373          KK  050720   BASIN
 374          BA   0.028
 375          LS       0      79       0       0      98       0
 376          UK      57  0.0100    0.38      17
 377          UK     188  0.0100    0.10      83
 378          RK     580  0.0038    0.02            TRAP      45     1.0
 379          RK    1594  0.0033    0.02            TRAP      55     1.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 380          KK  050720   COMBINE
 381          HC       2

 382          KK  050640    FROM  050720
 383          RK     422  0.0045   0.013            CIRC     5.5

 384          KK  050640   BASIN
 385          BA   0.032
 386          LS       0      79       0       0      98       0
 387          UK      64  0.0100    0.37      15
 388          UK     149  0.0100    0.10      85
 389          RK    1605  0.0038    0.02            TRAP      41     1.0
 390          RK    1168  0.0033    0.02            TRAP      60     1.0

 391          KK  050640 COMBINE
 392          HC       3

 393          KK  051510   FROM 050640
 394          RK     700  0.0044   0.013            CIRC     9.5

 395          KK  050810   BASIN
 396          BA   0.013
 397          LS       0      79       0       0      98       0
 398          UK      88  0.0100    0.36      20
 399          UK     200  0.0100    0.10      80
 400          RK     164  0.0033    0.02            TRAP      28     1.0
 401          RK    1031  0.0038    0.02            TRAP      55     1.0

 402          KK  051510    FROM  050810
 403          RK     705  0.0025   0.013            CIRC     4.0

 404          KK  051510   BASIN
 405          BA   0.010
 406          LS       0      79       0       0      98       0
 407          UK      59  0.0100    0.38      18
 408          UK     200  0.0100    0.10      82
 409          RK     139  0.0038    0.02            TRAP      41     1.0
 410          RK     521  0.0033    0.02            TRAP      71     1.0

 411          KK  051510    COMBINE
 412          HC       3

 413          KK  051520    FROM  051510
 414          RK     680  0.0030   0.013            CIRC     9.5

 415          KK  051520   BASIN
 416          BA   0.023
 417          LS       0      79       0       0      98       0
 418          UK     179  0.0100    0.31      26
 419          UK     198  0.0100    0.10      74
 420          RK     473  0.0038    0.02            TRAP      60     1.0
 421          RK     704  0.0033    0.02            TRAP      71     1.0
              *
              * COMBINE FLOW ROUTED FROM 051510 WITH RUNOFF FROM BASIN 051520 AND DIVERT FLOW
              * TO PROPOSED STORM DRAIN IN CIVIC CENTER BLVD.  FLOW FROM THE SOUTH (051710)
              * AND THE NORTH (051610) ENTER THE EXISTING OSBORN RD STORM DRAIN EAST OF
              * SCOTTSDALE RD
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 422          KK  051520   COMBINE
 423          HC       2
              *
              * DIVERT FLOW (05NEW) INTO NEW PIPE SYSTEM DOWN CIVIC CENTER BLVD.
              * THE EXISTING SYSTEM IN OSBORN RD FROM CIVIC CENTER BLVD TO IBW WILL CONVEY
              * ITS CAPACITY OF 264 CFS (05EX).  THE REMAINDER IS 05NEW.
              *

 424          KK   05NEW
 425          DT    05EX
 426          DI       0   240.1    1000
 427          DQ       0     240     240

 428          KK  051410    FROM  051520
 429          RK    2640   0.002    .013            CIRC     6.5

 430          KK  051410   BASIN
 431          BA   0.072
 432          LS       0      79       0       0      98       0
 433          UK      64  0.0100    0.37       9
 434          UK     150  0.0100    0.10      91
 435          RK    1170  0.0033    0.02            TRAP      38     1.0
 436          RK    1180  0.0038    0.02            TRAP      55     1.0

 437          KK  051410    COMBINE
 438          HC       2

 439          KK  051420    FROM  051410
 440          RK    1460   0.002   0.013            CIRC       7

 441          KK  051520    RETRIEVE FLOW INTO EXISTING SYSTEM
 442          DR    05EX

 443          KK  051610   BASIN
 444          BA   0.021
 445          LS       0      79       0       0      98       0
 446          UK     165  0.0100    0.32      25
 447          UK     200  0.0100    0.10      75
 448          RK     624  0.0038    0.02            TRAP      41     1.0
 449          RK     792  0.0033    0.02            TRAP      60     1.0

 450          KK  051520    FROM  051610
 451          RK     601  0.0047   0.013            CIRC     5.0

 452          KK  051710   BASIN
 453          BA   0.004
 454          LS       0      79       0       0      98       0
 455          UK     146  0.0100    0.33      24
 456          UK     200  0.0100    0.10      76
 457          RK     515  0.0038    0.02            TRAP      30     1.0
 458          RK     287  0.0033    0.02            TRAP      30     1.0
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 459          KK  051520    FROM  051710
 460          RK     567  0.0032   0.013            CIRC     4.0

 461          KK  051520    COMBINE
 462          HC       3

 463          KK  051530    FROM  051520
 464          RK     926   0.001   0.013            CIRC     9.5

 465          KK  051530   BASIN
 466          BA   0.041
 467          LS       0      79       0       0      98       0
 468          UK      26  0.0100    0.40      15
 469          UK     193  0.0100    0.10      85
 470          RK     889  0.0038    0.02            TRAP      38     1.0
 471          RK     860  0.0033    0.02            TRAP      60     1.0

 472          KK  051530 COMBINE
 473          HC       2

 474          KK  051540    FROM  051530
 475          RK     360   0.001   0.013            CIRC     9.5

 476          KK  051810   BASIN
 477          BA   0.005
 478          LS       0      79       0       0      98       0
 479          UK      23  0.0100    0.40      16
 480          UK     196  0.0100    0.10      84
 481          RK     272  0.0033    0.02            TRAP      19     1.0
 482          RK     272  0.0038    0.02            TRAP      30     1.0

 483          KK  051540    FROM  051810
 484          RK     218  0.0045   0.013            CIRC     4.5

 485          KK  051540   BASIN
 486          BA   0.004
 487          LS       0      79       0       0      98       0
 488          UK      44  0.0100    0.38      16
 489          UK     172  0.0100    0.10      84
 490          RK     233  0.0038    0.02            TRAP      12     1.0
 491          RK     265  0.0033    0.02            TRAP      60     1.0

 492          KK  051540 COMBINE
 493          HC       3

 494          KK  051550    FROM  051540
 495          RK     273   0.001   0.013            CIRC     9.5

 496          KK  051560    FROM  051550
 497          RK     800  0.0038   0.013            CIRC     6.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 498          KK  051560   BASIN
 499          BA   0.008
 500          LS       0       79        0        0       98        0
 501          UK     116   0.0100     0.33       47
 502          UK      89   0.0100     0.10       53
 503          RK    1126   0.0033     0.02             TRAP       60      1.0

 504          KK  051560 COMBINE
 505          HC       2
              *
              * Osborn Rd outfall to Indian Bend Wash
              *

 506          KK  051570    FROM  051560
 507          RK     228    0.003    0.013             CIRC      7.0
              *
              * Begin Thomas Rd outfall
              *

 508          KK  05Qspl  Retrieve spill from Paiute Park detention basin
 509          DR  05Qspl

 510          KK  050060    Qspl FROM  05Det
 511          RK     500    0.002    0.027             TRAP        5        1

 512          KK  050070    FROM  050060
 513          RK    1429   0.0033    0.030             TRAP      5.0      1.0

 514          KK  050410   BASIN
 515          BA   0.041
 516          LS       0       79        0        0       98        0
 517          UK      77   0.0100     0.36       25
 518          UK     137   0.0100     0.10       75
 519          RK     694   0.0038     0.02             TRAP       38      1.0
 520          RK    1177   0.0033     0.02             TRAP       38      1.0

 521          KK  050070    FROM  050410
 522          RK     187   0.0038    0.017             TRAP     60.0        1

 523          KK  050070   BASIN
 524          BA   0.084
 525          LS       0       79        0        0       98        0
 526          UK      22   0.0100     0.40        8
 527          UK     198   0.0100     0.10       92
 528          RK    3223   0.0038     0.02             TRAP       38      1.0

 529          KK  050070 COMBINE
 530          HC       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 531          KK  050080    FROM  050070
 532          RK    1112  0.0027   0.013            CIRC     4.5

 533          KK  050080   BASIN
 534          BA   0.021
 535          LS       0      79       0       0      98       0
 536          UK     132  0.0100    0.31      60
 537          UK      71  0.0100    0.10      40
 538          RK    1365  0.0033    0.02            TRAP      38     1.0

 539          KK  050080 COMBINE
 540          HC       2

 541          KK  050090    FROM  050080
 542          RK     416  0.0052   0.013            CIRC     4.0

 543          KK  050510   BASIN
 544          BA   0.054
 545          LS       0      79       0       0      98       0
 546          UK     109  0.0100    0.33      48
 547          UK      97  0.0100    0.10      52
 548          RK    1096  0.0038    0.02            TRAP      41     1.0
 549          RK    1304  0.0033    0.02            TRAP      41     1.0

 550          KK  050090    FROM  050510
 551          RK     626  0.0052   0.013            CIRC     4.0

 552          KK  050090   BASIN
 553          BA   0.037
 554          LS       0      79       0       0      98       0
 555          UK      44  0.0100    0.38      23
 556          UK     172  0.0100    0.10      77
 557          RK     965  0.0038    0.02            TRAP      23     1.0
 558          RK    1064  0.0033    0.02            TRAP      45     1.0

 559          KK  050090 COMBINE
 560          HC       3

 561          KK  050100    FROM  050090
 562          RK     609  0.0028   0.013            CIRC     4.5

 563          KK  050100   BASIN
 564          BA   0.045
 565          LS       0      79       0       0      98       0
 566          UK      20  0.0100    0.40       7
 567          UK     200  0.0100    0.10      93
 568          RK     505  0.0033    0.02            TRAP      30     1.0
 569          RK    1727  0.0038    0.02            TRAP      23     1.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 570          KK  050100 COMBINE
 571          HC       2

 572          KK  050110    FROM  050100
 573          RK     692  0.0058   0.013            CIRC     4.0

 574          KK  050910   BASIN
 575          BA   0.012
 576          LS       0      79       0       0      98       0
 577          UK     170  0.0100    0.32      26
 578          UK     200  0.0100    0.10      74
 579          RK     837  0.0038    0.02            TRAP      38     1.0

 580          KK  050650    FROM  050910
 581          RK     751  0.0045   0.013            DEEP     5.0

 582          KK  050650   BASIN
 583          BA   0.019
 584          LS       0      79       0       0      98       0
 585          UK      29  0.0100    0.40      16
 586          UK     200  0.0100    0.10      84
 587          RK     598  0.0033    0.02            TRAP      23     1.0
 588          RK     566  0.0038    0.02            TRAP      90     1.0

 589          KK  050650 COMBINE
 590          HC       2

 591          KK  050660    FROM  050650
 592          RK     648  0.0027   0.013            CIRC     7.5

 593          KK  050660   BASIN
 594          BA   0.018
 595          LS       0      79       0       0      98       0
 596          UK      20  0.0100    0.40      15
 597          UK     200  0.0100    0.10      85
 598          RK     578  0.0033    0.02            TRAP      49     1.0
 599          RK     582  0.0038    0.02            TRAP      90     1.0

 600          KK  050660 COMBINE
 601          HC       2

 602          KK  050110    FROM  050660
 603          RK     458  0.0027   0.013            CIRC     7.5

 604          KK  050110   BASIN
 605          BA   0.010
 606          LS       0      79       0       0      98       0
 607          UK      20  0.0100    0.40      15
 608          UK     200  0.0100    0.10      85
 609          RK     587  0.0033    0.02            TRAP      46     1.0
 610          RK     406  0.0038    0.02            TRAP      77     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 611          KK  050110 COMBINE
 612          HC       3

 613          KK  050120    FROM  050110
 614          RK     888  0.0027   0.013              CIRC     7.5

 615          KK  051010   BASIN
 616          BA   0.023
 617          LS       0      79       0       0      98       0
 618          UK     200  0.0100    0.30      28
 619          UK     200  0.0100    0.10      72
 620          RK     517  0.0033    0.02            TRAP      30     1.0
 621          RK     822  0.0038    0.02            TRAP      30     1.0

 622          KK  1010ST STORAGE
 623          RS       1    STOR
 624          SV       0    0.20    0.70    1.49    1.49
 625          SE      58      59      60      61      62
 626          SQ       0    0.01    0.01    0.01    0.01
 627          ST      61     800     3.0     1.5

 628          KK  051020    FROM  051010
 629          RK     948  0.0033   0.017            TRAP    60.0       1

 630          KK  051110   BASIN
 631          BA   0.025
 632          LS       0      79       0       0      98       0
 633          UK      20  0.0100    0.40      10
 634          UK     200  0.0100    0.10      90
 635          RK     326  0.0038    0.02            TRAP       9     1.0
 636          RK    1382  0.0033    0.02            TRAP      19     1.0

 637          KK  051020    FROM  051110
 638          RK     541  0.0038   0.017            TRAP    33.0       1

 639          KK  051020   BASIN
 640          BA   0.027
 641          LS       0      79       0       0      98       0
 642          UK      64  0.0100    0.37      22
 643          UK     174  0.0100    0.10      78
 644          RK     409  0.0038    0.02            TRAP      26     1.0
 645          RK    1595  0.0033    0.02            TRAP      60     1.0

 646          KK  051020 COMBINE
 647          HC       3

 648          KK  051030    FROM  051020
 649          RK     694  0.0033   0.017            TRAP    60.0       1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  650         KK  051210   BASIN
  651         BA   0.008
  652         LS       0      79       0       0      98       0
  653         UK      20  0.0100    0.40      15
  654         UK     200  0.0100    0.10      85
  655         RK     682  0.0038    0.02            TRAP       9     1.0

  656         KK  051030    FROM  051210
  657         RK     241  0.0038   0.017            TRAP    60.0       1

  658         KK  051310   BASIN
  659         BA   0.003
  660         LS       0      79       0       0      98       0
  661         UK      20  0.0100    0.40       6
  662         UK     200  0.0100    0.10      94
  663         RK     544  0.0033    0.02            TRAP      18     1.0

  664         KK  051320    FROM  051310
  665         RK     333  0.0038   0.017            TRAP    60.0       1

  666         KK  051320   BASIN
  667         BA   0.009
  668         LS       0      79       0       0      98       0
  669         UK      20  0.0100    0.40       7
  670         UK     200  0.0100    0.10      93
  671         RK     254  0.0038    0.02            TRAP       9     1.0
  672         RK     543  0.0033    0.02            TRAP      18     1.0

  673         KK  051320 COMBINE
  674         HC       2

  675         KK  051030    FROM  051320
  676         RK     960  0.0038   0.017            TRAP    60.0       1

  677         KK  051030   BASIN
  678         BA   0.031
  679         LS       0      79       0       0      98       0
  680         UK      28  0.0100    0.39      13
  681         UK     190  0.0100    0.10      87
  682         RK    2532  0.0033    0.02            TRAP      49     1.0

  683         KK  051030 COMBINE
  684         HC       4

  685         KK  051040    FROM  051030
  686         RK    1501  0.0033   0.017            TRAP    60.0       1

  687         KK  051040   BASIN
  688         BA   0.036
  689         LS       0      79       0       0      98       0
  690         UK     105  0.0100    0.34      39
  691         UK     102  0.0100    0.10      61
  692         RK    1159  0.0038    0.02            TRAP      45     1.0
  693         RK    1501  0.0033    0.02            TRAP      65     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 694          KK  051040 COMBINE
 695          HC       2

 696          KK  050120    FROM  051040
 697          RK    1222   0.003   0.013            TRAP       8

 698          KK  050120   BASIN
 699          BA   0.039
 700          LS       0      79       0       0      98       0
 701          UK      24  0.0100    0.40      14
 702          UK     195  0.0100    0.10      86
 703          RK     763  0.0038    0.02            TRAP      23     1.0
 704          RK    1114  0.0033    0.02            TRAP      90     1.0

 705          KK  050120 COMBINE
 706          HC       3

 707          KK  050130    FROM  050120
 708          RK    1265  0.0027   0.013            DEEP     7.0

 709          KK  050130   BASIN
 710          BA   0.096
 711          LS       0      79       0       0      98       0
 712          UK      45  0.0100    0.38      15
 713          UK     171  0.0100    0.10      85
 714          RK    1905  0.0038    0.02            TRAP      71     1.0
 715          RK    1212  0.0033    0.02            TRAP      71     1.0

 716          KK  050130 COMBINE
 717          HC       2

 718          KK  050140    FROM  050130
 719          RK    1319  0.0027   0.013            DEEP     7.0

 720          KK  050140   BASIN
 721          BA   0.086
 722          LS       0      79       0       0      98       0
 723          UK      94  0.0100    0.35      25
 724          UK     154  0.0100    0.10      75
 725          RK    1224  0.0038    0.02            TRAP       9     1.0
 726          RK    1267  0.0033    0.02            TRAP      79     1.0

 727          KK  050140 COMBINE
 728          HC       2

 729          KK  050150    FROM  050140
 730          RK    1252  0.0006   0.013            DEEP     5.0

 731          KK  050150   BASIN
 732          BA   0.011
 733          LS       0      79       0       0      98       0
 734          UK     159  0.0100    0.30      57
 735          UK      57  0.0100    0.10      43
 736          RK    1202  0.0033    0.02            TRAP      60     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 737          KK  050150 COMBINE
 738          HC       2
              *
              * Thomas Rd Outfall to Indian Bend Wash
              *

 739          KK  050160    FROM  050150
 740          RK     332  0.0048   0.013            DEEP     6.0
              *
              * Notice:
              * This document, together with the concepts and designs presented herein, as an
              * instrument of service, is intended for the specific purpose and client for
              * which it was prepared.  Reuse of and improper reliance on this document
              * without written authorization and adaptation by Kimley-Horn and Associates,
              * Inc. shall be without liability to Kimley-Horn and Associates, Inc.
              *
 741          ZZ
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
LINE       (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

NO.        (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

 12       070808
              .
              .
 20           .-------->  808OUT
 19        808PP
              V
              V
 23       070610
              .
              .
 25           .      070610
              .          .
              .          .
 32           .          .-------->  610OUT
 31           .       610PP
              .          .
              .          .
 35       070610............
              V
              V
 37       070508
              .
              .
 39           .      070508
              .          .
              .          .
 46           .          .-------->  508OUT
 45           .       508PP
              .          .
              .          .
 49       070508............
              V
              V
 51       070010
              .
              .
 53           .      070010
              .          .
              .          .
 60           .          .-------->  010OUT
 59           .       010PP
              .          .
              .          .
 63       070010............
              V
              V
 65       070210
              .
              .
 67           .      070209
              .          V
              .          V
 73           .      070210
              .          .
              .          .
 75           .          .      070210
              .          .          .
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 81           .      070210............
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          .          .
          .          .
 84       .          .-------> 210OUT
 83       .      210PP
          .          .
          .          .
 87   070210............
          V
          V
 89   050005
          .
          .
 91       .      050005
          .          .
          .          .
 98       .          .-------> 005OUT
 97       .      005PP
          .          .
          .          .
103       .          .          .<-------  010OUT
101       .          .     070010
          .          .          V
          .          .          V
104       .          .     070020
          .          .          V
          .          .          V
106       .          .     070030
          .          .          .
          .          .          .
108       .          .          .     070030
          .          .          .          .
          .          .          .          .
114       .          .     070030............
          .          .          V
          .          .          V
116       .          .     070040
          .          .          .
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120       .          .          .          .<-------  210OUT
118       .          .          .     070210
          .          .          .          V
          .          .          .          V
121       .          .          .     070220
          .          .          .          V
          .          .          .          V
123       .          .          .     070040
          .          .          .          .
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125       .          .          .          .     070040
          .          .          .          .          .
          .          .          .          .          .
131       .          .     070040........................
          .          .          V
          .          .          V
133       .          .     070050
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135       .          .          .     070050
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142       .          .     070050............
          .          .          V
          .          .          V
144       .          .     070060
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146          .          .          .      070310
             .          .          .          V
             .          .          .          V
153          .          .          .      070060
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155          .          .          .          .      070060
             .          .          .          .          .
             .          .          .          .          .
161          .          .     070060.......................
             .          .          V
             .          .          V
163          .          .     070070
             .          .          .
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165          .          .          .      070070
             .          .          .          .
             .          .          .          .
171          .          .          .          .      070080
             .          .          .          .          .
             .          .          .          .          .
177          .          .     070080.......................
             .          .          V
             .          .          V
179          .          .      07Det
             .          .          .
             .          .          .
185          .          .          .-------->  07Qspl
184          .          .     07Qpip
             .          .          V
             .          .          V
188          .          .     070420
             .          .          .
             .          .          .
190          .          .          .      070410
             .          .          .          V
             .          .          .          V
196          .          .          .      070420
             .          .          .          .
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198          .          .          .          .      070420
             .          .          .          .          .
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204          .          .     070420.......................
             .          .          V
             .          .          V
206          .          .     210005
             .          .          .
             .          .          .
208          .          .          .      210005
             .          .          .          .
             .          .          .          .
215          .          .     210005............
             .          .          V
             .          .          V
217          .          .     050030
             .          .          .
             .          .          .
221          .          .          .          .<-------  005OUT
219          .          .          .      050005
             .          .          .          V
             .          .          .          V
222          .          .          .      050010
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224          .          .          .          .      050010
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231             .           .           .     050010............
                .           .           .         V
                .           .           .         V
233             .           .           .     050020
                .           .           .           .
                .           .           .           .
235             .           .           .           .     050210
                .           .           .           .         V
                .           .           .           .         V
242             .           .           .           .      210ST
                .           .           .           .         V
                .           .           .           .         V
248             .           .           .           .     050020
                .           .           .           .           .
                .           .           .           .           .
250             .           .           .           .           .     050020
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                .           .           .           .           .           .
256             .           .           .     050020.......................
                .           .           .         V
                .           .           .         V
258             .           .           .     050030
                .           .           .           .
                .           .           .           .
260             .           .           .           .     050030
                .           .           .           .         V
                .           .           .           .         V
267             .           .           .           .      030ST
                .           .           .           .           .
                .           .           .           .           .
273             .           .     050030........................
                .           .         V
                .           .         V
275             .           .     050305
                .           .         V
                .           .         V
277             .           .     050050
                .           .           .
                .           .           .
279             .           .           .     050040
                .           .           .         V
                .           .           .         V
286             .           .           .     40STOR
                .           .           .         V
                .           .           .         V
291             .           .           .     050050
                .           .           .           .
                .           .           .           .
293             .           .           .           .     050310
                .           .           .           .           .
                .           .           .           .           .
300             .           .           .           .           .     050065
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306             .           .           .           .           .           .     050060
                .           .           .           .           .           .           .
                .           .           .           .           .           .           .
312             .           .     050050.............................................
                .           .         V
                .           .         V
314             .           .      05Det
                .           .           .
                .           .           .
320             .           .           .-------->  05Qspl
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319          .          .     05Qpip
             .          .          .
             .          .          .
323          .          .          .     050062
             .          .          .          V
             .          .          .          V
330          .          .          .     050610
             .          .          .          .
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332          .          .          .          .     050610
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339          .          .     050610.......................
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             .          .          V
341          .          .     050620
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343          .          .          .     050620
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350          .          .     050620............
             .          .          V
             .          .          V
352          .          .     050630
             .          .          .
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354          .          .          .     050630
             .          .          .          .
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361          .          .     050630............
             .          .          V
             .          .          V
363          .          .     050640
             .          .          .
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365          .          .          .     050710
             .          .          .          V
             .          .          .          V
371          .          .          .     050720
             .          .          .          .
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373          .          .          .          .     050720
             .          .          .          .          .
             .          .          .          .          .
380          .          .          .     050720............
             .          .          .          V
             .          .          .          V
382          .          .          .     050640
             .          .          .          .
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384          .          .          .          .     050640
             .          .          .          .          .
             .          .          .          .          .
391          .          .     050640.......................
             .          .          V
             .          .          V
393          .          .     051510
             .          .          .
             .          .          .
395          .          .          .     050810
             .          .          .          V
             .          .          .          V
402          .          .          .     051510
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404          .          .          .          .      051510
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411          .          .     051510.......................
             .          .          V
             .          .          V
413          .          .     051520
             .          .          .
             .          .          .
415          .          .          .     051520
             .          .          .          .
             .          .          .          .
422          .          .     051520............
             .          .          .
             .          .          .
425          .          .          .-------->    05EX
424          .          .      05NEW
             .          .          V
             .          .          V
428          .          .     051410
             .          .          .
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430          .          .          .     051410
             .          .          .          .
             .          .          .          .
437          .          .     051410............
             .          .          V
             .          .          V
439          .          .     051420
             .          .          .
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442          .          .          .          .<-------    05EX
441          .          .          .     051520
             .          .          .          .
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443          .          .          .          .      051610
             .          .          .          .          V
             .          .          .          .          V
450          .          .          .          .      051520
             .          .          .          .          .
             .          .          .          .          .
452          .          .          .          .          .      051710
             .          .          .          .          .          V
             .          .          .          .          .          V
459          .          .          .          .          .      051520
             .          .          .          .          .          .
             .          .          .          .          .          .
461          .          .          .     051520........................
             .          .          .          V
             .          .          .          V
463          .          .          .     051530
             .          .          .          .
             .          .          .          .
465          .          .          .          .      051530
             .          .          .          .          .
             .          .          .          .          .
472          .          .          .     051530............
             .          .          .          V
             .          .          .          V
474          .          .          .     051540
             .          .          .          .
             .          .          .          .
476          .          .          .          .      051810
             .          .          .          .          V
             .          .          .          .          V
483          .          .          .          .      051540
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485             .         .         .         .         .     051540
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492             .         .         .   051540.......................
                .         .         .       V
                .         .         .       V
494             .         .         .   051550
                .         .         .       V
                .         .         .       V
496             .         .         .   051560
                .         .         .         .
                .         .         .         .
498             .         .         .         .   051560
                .         .         .         .         .
                .         .         .         .         .
504             .         .         .   051560............
                .         .         .       V
                .         .         .       V
506             .         .         .   051570
                .         .         .         .
                .         .         .         .
509             .         .         .         .<-------  05Qspl
508             .         .         .         .   05Qspl
                .         .         .         .       V
                .         .         .         .       V
510             .         .         .         .   050060
                .         .         .         .       V
                .         .         .         .       V
512             .         .         .         .   050070
                .         .         .         .         .
                .         .         .         .         .
514             .         .         .         .         .     050410
                .         .         .         .         .         V
                .         .         .         .         .         V
521             .         .         .         .         .     050070
                .         .         .         .         .         .
                .         .         .         .         .         .
523             .         .         .         .         .         .     050070
                .         .         .         .         .         .         .
                .         .         .         .         .         .         .
529             .         .         .         .   050070........................
                .         .         .         .       V
                .         .         .         .       V
531             .         .         .         .   050080
                .         .         .         .         .
                .         .         .         .         .
533             .         .         .         .         .     050080
                .         .         .         .         .         .
                .         .         .         .         .         .
539             .         .         .         .   050080............
                .         .         .         .       V
                .         .         .         .       V
541             .         .         .         .   050090
                .         .         .         .         .
                .         .         .         .         .
543             .         .         .         .         .     050510
                .         .         .         .         .         V
                .         .         .         .         .         V
550             .         .         .         .         .     050090
                .         .         .         .         .         .
                .         .         .         .         .         .
552             .         .         .         .         .         .     050090
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559  .    .    .    .  050090.......................
     .    .    .    .      V
     .    .    .    .      V
561  .    .    .    .  050100
     .    .    .    .      .
     .    .    .    .      .
563  .    .    .    .      .      050100
     .    .    .    .      .          .
     .    .    .    .      .          .
570  .    .    .    .  050100............
     .    .    .    .      V
     .    .    .    .      V
572  .    .    .    .  050110
     .    .    .    .      .
     .    .    .    .      .
574  .    .    .    .      .      050910
     .    .    .    .      .          V
     .    .    .    .      .          V
580  .    .    .    .      .      050650
     .    .    .    .      .          .
     .    .    .    .      .          .
582  .    .    .    .      .          .      050650
     .    .    .    .      .          .          .
     .    .    .    .      .          .          .
589  .    .    .    .      .      050650............
     .    .    .    .      .          V
     .    .    .    .      .          V
591  .    .    .    .      .      050660
     .    .    .    .      .          .
     .    .    .    .      .          .
593  .    .    .    .      .          .      050660
     .    .    .    .      .          .          .
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600  .    .    .    .      .      050660............
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602  .    .    .    .      .      050110
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604  .    .    .    .      .          .      050110
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611  .    .    .    .  050110.......................
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613  .    .    .    .  050120
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     .    .    .    .      .
615  .    .    .    .      .      051010
     .    .    .    .      .          V
     .    .    .    .      .          V
622  .    .    .    .      .      1010ST
     .    .    .    .      .          V
     .    .    .    .      .          V
628  .    .    .    .      .      051020
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630  .    .    .    .      .          .      051110
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     .    .    .    .      .          .          V
637  .    .    .    .      .          .      051020
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639  .    .    .    .      .          .          .      051020
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646   .   .   .   .   .   051020.......................
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648   .   .   .   .   .   051030
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650   .   .   .   .   .       .   051210
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656   .   .   .   .   .       .   051030
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658   .   .   .   .   .       .       .   051310
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664   .   .   .   .   .       .       .   051320
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666   .   .   .   .   .       .       .       .   051320
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673   .   .   .   .   .       .       .   051320............
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675   .   .   .   .   .       .       .   051030
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677   .   .   .   .   .       .       .       .   051030
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683   .   .   .   .   .   051030.......................................
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685   .   .   .   .   .   051040
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687   .   .   .   .   .       .   051040
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694   .   .   .   .   .   051040............
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      .   .   .   .   .       V
696   .   .   .   .   .   050120
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698   .   .   .   .   .       .   050120
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705   .   .   .   .   050120........................
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      .   .   .   .       V
707   .   .   .   .   050130
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709   .   .   .   .   .   050130
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716   .   .   .   .   050130............
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      .   .   .   .       V
718   .   .   .   .   050140
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720   .   .   .   .   .   050140
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727          .          .          .          .      050140............
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729          .          .          .          .      050150
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731          .          .          .          .           .      050150
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737          .          .          .          .      050150............
             .          .          .          .           V
             .          .          .          .           V
739          .          .          .          .      050160
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***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1343001471 HMVersion: 6.33 Data File: altb610.hc1

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*                                      *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            MAY   1991                *
*         VERSION 4.0.1E               *
*                                      *
* RUN DATE  12/18/1997  TIME  09:04:24 *
*                                      *
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
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*****************************************************************************
STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
SCOTTSDALE - TEMPE - PHOENIX
*****************************************************************************

Kimley-Horn and Associates, Inc.

10-Year, 6-Hour Storm Event
11/97

11 IO        OUTPUT CONTROL VARIABLES
                 IPRNT          5  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                  NMIN          2  MINUTES IN COMPUTATION INTERVAL
                 IDATE      1   0  STARTING DATE
                 ITIME       0000  STARTING TIME
                    NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                NDDATE      1   0  ENDING DATE
                NDTIME       0958  ENDING TIME
                 ICENT         19  CENTURY MARK

            COMPUTATION INTERVAL    0.03 HOURS
                 TOTAL TIME BASE    9.97 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
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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	070808	12.	3.43	2.	1.	1.	0.02		
DIVERSION TO	808OUT	0.	3.43	0.	0.	0.	0.02		
HYDROGRAPH AT	808PP	12.	3.43	2.	1.	1.	0.02		
ROUTED TO	070610	12.	3.43	2.	1.	1.	0.02		
HYDROGRAPH AT	070610	5.	3.43	1.	0.	0.	0.01		
DIVERSION TO	610OUT	0.	3.40	0.	0.	0.	0.01		
HYDROGRAPH AT	610PP	5.	3.40	1.	0.	0.	0.01		
2 COMBINED AT	070610	17.	3.43	3.	2.	2.	0.02		
ROUTED TO	070508	17.	3.43	3.	2.	2.	0.02		
HYDROGRAPH AT	070508	4.	3.50	1.	0.	0.	0.01		
DIVERSION TO	508OUT	0.	3.50	0.	0.	0.	0.01		
HYDROGRAPH AT	508PP	4.	3.50	1.	0.	0.	0.01		
2 COMBINED AT	070508	21.	3.47	3.	2.	2.	0.03		
ROUTED TO	070010	21.	3.47	3.	2.	2.	0.03		
HYDROGRAPH AT	070010	7.	3.43	1.	1.	1.	0.01		
DIVERSION TO	010OUT	0.	3.43	0.	0.	0.	0.01		
HYDROGRAPH AT	010PP	6.	3.43	1.	1.	1.	0.01		
2 COMBINED AT	070010	27.	3.47	4.	3.	3.	0.04		
ROUTED TO	070210	27.	3.47	4.	3.	3.	0.04		
HYDROGRAPH AT	070209	12.	3.47	2.	1.	1.	0.02		
ROUTED TO	070210	12.	3.47	2.	1.	1.	0.02		
HYDROGRAPH AT	070210	5.	3.47	1.	0.	0.	0.01		
2 COMBINED AT	070210	17.	3.47	3.	2.	2.	0.03		
DIVERSION TO	210OUT	0.	3.43	0.	0.	0.	0.03		
HYDROGRAPH AT	210PP	17.	3.43	3.	2.	2.	0.03		
2 COMBINED AT	070210	44.	3.47	7.	4.	4.	0.07		
ROUTED TO	050005	44.	3.47	7.	4.	4.	0.07		
HYDROGRAPH AT	050005	21.	3.53	3.	2.	2.	0.04		
DIVERSION TO	005OUT	0.	3.53	0.	0.	0.	0.04		

HYDROGRAPH AT	005PP	21.	3.53	3.	2.	2.	0.04		
HYDROGRAPH AT	070010	0.	3.37	0.	0.	0.	0.00		
ROUTED TO	070020	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070030	0.	3.67	0.	0.	0.	0.00		
HYDROGRAPH AT	070030	5.	3.07	1.	0.	0.	0.00		
2 COMBINED AT	070030	5.	3.07	1.	0.	0.	0.00		
ROUTED TO	070040	5.	3.10	1.	0.	0.	0.00		
HYDROGRAPH AT	070210	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070220	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070040	0.	3.77	0.	0.	0.	0.00		
HYDROGRAPH AT	070040	5.	3.20	1.	0.	0.	0.01		
3 COMBINED AT	070040	9.	3.13	1.	1.	1.	0.01		
ROUTED TO	070050	9.	3.17	1.	1.	1.	0.01		
HYDROGRAPH AT	070050	24.	3.07	2.	1.	1.	0.02		
2 COMBINED AT	070050	30.	3.10	4.	2.	2.	0.03		
ROUTED TO	070060	30.	3.13	4.	2.	2.	0.03		
HYDROGRAPH AT	070310	30.	3.07	3.	2.	2.	0.02		
ROUTED TO	070060	30.	3.10	3.	2.	2.	0.02		
HYDROGRAPH AT	070060	25.	3.10	3.	2.	2.	0.02		
3 COMBINED AT	070060	84.	3.10	9.	6.	6.	0.07		
ROUTED TO	070070	82.	3.13	9.	6.	6.	0.07		
HYDROGRAPH AT	070070	42.	3.07	4.	3.	3.	0.03		
HYDROGRAPH AT	070080	52.	3.13	4.	2.	2.	0.02		
3 COMBINED AT	070080	168.	3.13	17.	10.	10.	0.12		
ROUTED TO	07Det	46.	3.67	17.	10.	10.	0.12	69.95	3.67
DIVERSION TO	07Qspl	0.	3.67	0.	0.	0.	0.12		
HYDROGRAPH AT	07Qpip	46.	3.67	17.	10.	10.	0.12		
ROUTED TO	070420	46.	3.67	17.	10.	10.	0.12		
HYDROGRAPH AT	070410	17.	3.13	2.	1.	1.	0.01		
ROUTED TO	070420	17.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	070420	5.	3.20	0.	0.	0.	0.00		
3 COMBINED AT	070420	59.	3.20	19.	12.	12.	0.14		
ROUTED TO	210005	59.	3.20	19.	12.	12.	0.14		

HYDROGRAPH AT	210005	13.	3.23	1.	1.	1.	0.01		
2 COMBINED AT	210005	72.	3.23	20.	12.	12.	0.15		
ROUTED TO	050030	72.	3.23	20.	12.	12.	0.15		
HYDROGRAPH AT	050005	0.	3.40	0.	0.	0.	0.00		
ROUTED TO	050010	0.	4.63	0.	0.	0.	0.00		
HYDROGRAPH AT	050010	96.	3.13	8.	5.	5.	0.07		
2 COMBINED AT	050010	96.	3.13	8.	5.	5.	0.07		
ROUTED TO	050020	93.	3.17	8.	5.	5.	0.07		
HYDROGRAPH AT	050210	100.	3.13	8.	5.	5.	0.05		
ROUTED TO	210ST	0.	5.53	0.	0.	0.	0.05	0.55	9.97
ROUTED TO	050020	0.	4.73	0.	0.	0.	0.05		
HYDROGRAPH AT	050020	13.	3.17	1.	1.	1.	0.01		
3 COMBINED AT	050020	106.	3.17	10.	6.	6.	0.13		
ROUTED TO	050030	103.	3.20	10.	6.	6.	0.13		
HYDROGRAPH AT	050030	54.	3.10	3.	2.	2.	0.02		
ROUTED TO	030ST	20.	3.27	2.	1.	1.	0.02	68.13	3.27
3 COMBINED AT	050030	190.	3.20	32.	20.	20.	0.30		
ROUTED TO	050305	188.	3.20	32.	20.	20.	0.30		
ROUTED TO	050050	186.	3.27	32.	20.	20.	0.30		
HYDROGRAPH AT	050040	105.	3.20	12.	7.	7.	0.10		
ROUTED TO	40STOR	37.	3.67	12.	7.	7.	0.10	61.58	3.67
ROUTED TO	050050	37.	3.67	12.	7.	7.	0.10		
HYDROGRAPH AT	050310	75.	3.13	6.	4.	4.	0.04		
HYDROGRAPH AT	050065	37.	3.07	2.	1.	1.	0.01		
HYDROGRAPH AT	050060	53.	3.17	5.	3.	3.	0.03		
5 COMBINED AT	050050	341.	3.23	58.	35.	35.	0.48		
ROUTED TO	05Det	71.	4.70	55.	36.	36.	0.48	54.77	4.70
DIVERSION TO	05Qspl	0.	4.70	0.	0.	0.	0.48		
HYDROGRAPH AT	05Qpip	71.	4.70	55.	36.	36.	0.48		
HYDROGRAPH AT	050062	40.	3.07	2.	1.	1.	0.01		
ROUTED TO	050610	38.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	050610	99.	3.17	10.	6.	6.	0.08		
3 COMBINED AT	050610	173.	3.17	67.	43.	43.	0.58		

ROUTED TO	050620	172.	3.17	67.	43.	43.	0.58
HYDROGRAPH AT	050620	111.	3.17	12.	7.	7.	0.10
2 COMBINED AT	050620	283.	3.17	78.	50.	50.	0.67
ROUTED TO	050630	279.	3.20	78.	50.	50.	0.67
HYDROGRAPH AT	050630	120.	3.13	9.	6.	6.	0.06
2 COMBINED AT	050630	376.	3.17	87.	56.	56.	0.74
ROUTED TO	050640	375.	3.20	87.	56.	56.	0.74
HYDROGRAPH AT	050710	11.	3.13	1.	1.	1.	0.00
ROUTED TO	050720	11.	3.17	1.	1.	1.	0.00
HYDROGRAPH AT	050720	54.	3.20	5.	3.	3.	0.03
2 COMBINED AT	050720	64.	3.20	6.	3.	3.	0.03
ROUTED TO	050640	63.	3.20	6.	3.	3.	0.03
HYDROGRAPH AT	050640	65.	3.20	6.	3.	3.	0.03
3 COMBINED AT	050640	503.	3.20	98.	63.	63.	0.80
ROUTED TO	051510	498.	3.20	98.	63.	63.	0.80
HYDROGRAPH AT	050810	25.	3.17	2.	1.	1.	0.01
ROUTED TO	051510	25.	3.20	2.	1.	1.	0.01
HYDROGRAPH AT	051510	21.	3.13	2.	1.	1.	0.01
3 COMBINED AT	051510	541.	3.20	102.	65.	65.	0.82
ROUTED TO	051520	533.	3.20	102.	65.	65.	0.82
HYDROGRAPH AT	051520	43.	3.17	4.	2.	2.	0.02
2 COMBINED AT	051520	572.	3.20	105.	67.	67.	0.85
DIVERSION TO	05EX	240.	3.20	93.	60.	60.	0.85
HYDROGRAPH AT	05NEW	332.	3.20	13.	8.	8.	0.85
ROUTED TO	051410	324.	3.27	13.	8.	8.	0.85
HYDROGRAPH AT	051410	178.	3.13	13.	8.	8.	0.07
2 COMBINED AT	051410	445.	3.23	26.	16.	16.	0.92
ROUTED TO	051420	440.	3.27	26.	16.	16.	0.92
HYDROGRAPH AT	051520	240.	3.10	93.	60.	60.	0.00
HYDROGRAPH AT	051610	39.	3.17	3.	2.	2.	0.02
ROUTED TO	051520	39.	3.17	3.	2.	2.	0.02
HYDROGRAPH AT	051710	8.	3.17	1.	0.	0.	0.00
ROUTED TO	051520	8.	3.17	1.	0.	0.	0.00

3 COMBINED AT	051520	286.	3.17	97.	62.	62.	0.03
ROUTED TO	051530	286.	3.20	97.	62.	62.	0.03
HYDROGRAPH AT	051530	92.	3.17	7.	4.	4.	0.04
2 COMBINED AT	051530	375.	3.17	104.	66.	66.	0.07
ROUTED TO	051540	373.	3.17	104.	66.	66.	0.07
HYDROGRAPH AT	051810	12.	3.13	1.	1.	1.	0.00
ROUTED TO	051540	12.	3.13	1.	1.	1.	0.00
HYDROGRAPH AT	051540	9.	3.13	1.	0.	0.	0.00
3 COMBINED AT	051540	392.	3.17	105.	67.	67.	0.08
ROUTED TO	051550	390.	3.17	105.	67.	67.	0.08
ROUTED TO	051560	388.	3.20	105.	67.	67.	0.08
HYDROGRAPH AT	051560	10.	3.17	1.	1.	1.	0.01
2 COMBINED AT	051560	398.	3.20	106.	68.	68.	0.08
ROUTED TO	051570	398.	3.20	106.	68.	68.	0.08
HYDROGRAPH AT	05Qspl	0.	3.50	0.	0.	0.	0.00
ROUTED TO	050060	0.	4.23	0.	0.	0.	0.00
ROUTED TO	050070	0.	5.60	0.	0.	0.	0.00
HYDROGRAPH AT	050410	86.	3.13	7.	4.	4.	0.04
ROUTED TO	050070	84.	3.13	7.	4.	4.	0.04
HYDROGRAPH AT	050070	179.	3.17	15.	9.	9.	0.08
3 COMBINED AT	050070	261.	3.17	22.	13.	13.	0.13
ROUTED TO	050080	255.	3.20	22.	13.	13.	0.13
HYDROGRAPH AT	050080	23.	3.13	2.	1.	1.	0.02
2 COMBINED AT	050080	275.	3.17	24.	15.	15.	0.15
ROUTED TO	050090	275.	3.20	24.	15.	15.	0.15
HYDROGRAPH AT	050510	78.	3.17	7.	4.	4.	0.05
ROUTED TO	050090	78.	3.17	7.	4.	4.	0.05
HYDROGRAPH AT	050090	76.	3.17	6.	4.	4.	0.04
3 COMBINED AT	050090	425.	3.17	37.	23.	23.	0.24
ROUTED TO	050100	418.	3.20	37.	23.	23.	0.24
HYDROGRAPH AT	050100	106.	3.13	8.	5.	5.	0.05
2 COMBINED AT	050100	521.	3.17	46.	28.	28.	0.28
ROUTED TO	050110	516.	3.20	46.	28.	28.	0.28

HYDROGRAPH AT	050910	23.	3.13	2.	1.	1.	0.01		
ROUTED TO	050650	22.	3.17	2.	1.	1.	0.01		
HYDROGRAPH AT	050650	42.	3.13	3.	2.	2.	0.02		
2 COMBINED AT	050650	64.	3.13	5.	3.	3.	0.03		
ROUTED TO	050660	64.	3.17	5.	3.	3.	0.03		
HYDROGRAPH AT	050660	40.	3.17	3.	2.	2.	0.02		
2 COMBINED AT	050660	104.	3.17	8.	5.	5.	0.05		
ROUTED TO	050110	103.	3.17	8.	5.	5.	0.05		
HYDROGRAPH AT	050110	22.	3.17	2.	1.	1.	0.01		
3 COMBINED AT	050110	635.	3.20	56.	34.	34.	0.34		
ROUTED TO	050120	635.	3.20	56.	34.	34.	0.34		
HYDROGRAPH AT	051010	42.	3.13	4.	2.	2.	0.02		
ROUTED TO	1010ST	3.	4.23	1.	0.	0.	0.02	61.01	4.23
ROUTED TO	051020	3.	4.43	1.	0.	0.	0.02		
HYDROGRAPH AT	051110	58.	3.13	5.	3.	3.	0.03		
ROUTED TO	051020	57.	3.17	5.	3.	3.	0.03		
HYDROGRAPH AT	051020	49.	3.20	4.	3.	3.	0.03		
3 COMBINED AT	051020	106.	3.17	10.	6.	6.	0.08		
ROUTED TO	051030	105.	3.20	10.	6.	6.	0.08		
HYDROGRAPH AT	051210	19.	3.10	1.	1.	1.	0.01		
ROUTED TO	051030	19.	3.13	1.	1.	1.	0.01		
HYDROGRAPH AT	051310	7.	3.13	1.	0.	0.	0.00		
ROUTED TO	051320	7.	3.17	1.	0.	0.	0.00		
HYDROGRAPH AT	051320	22.	3.13	2.	1.	1.	0.01		
2 COMBINED AT	051320	29.	3.13	2.	1.	1.	0.01		
ROUTED TO	051030	29.	3.20	2.	1.	1.	0.01		
HYDROGRAPH AT	051030	57.	3.20	5.	3.	3.	0.03		
4 COMBINED AT	051030	206.	3.20	19.	11.	11.	0.13		
ROUTED TO	051040	203.	3.23	19.	11.	11.	0.13		
HYDROGRAPH AT	051040	54.	3.20	5.	3.	3.	0.04		
2 COMBINED AT	051040	253.	3.23	24.	14.	14.	0.16		
ROUTED TO	050120	249.	3.23	24.	14.	14.	0.16		
HYDROGRAPH AT	050120	86.	3.17	7.	4.	4.	0.04		

3 COMBINED AT	050120	942.	3.20	86.	52.	52.	0.54
ROUTED TO	050130	932.	3.23	86.	52.	52.	0.54
HYDROGRAPH AT	050130	199.	3.17	17.	10.	10.	0.10
2 COMBINED AT	050130	1111.	3.23	103.	62.	62.	0.64
ROUTED TO	050140	1110.	3.23	103.	62.	62.	0.64
HYDROGRAPH AT	050140	175.	3.13	14.	8.	8.	0.09
2 COMBINED AT	050140	1237.	3.23	117.	71.	71.	0.72
ROUTED TO	050150	1220.	3.27	117.	71.	71.	0.72
HYDROGRAPH AT	050150	12.	3.17	1.	1.	1.	0.01
2 COMBINED AT	050150	1229.	3.27	118.	71.	71.	0.74
ROUTED TO	050160	1228.	3.27	118.	71.	71.	0.74

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
070808	MANE	0.73	12.39	206.77	1.00	2.00	12.37	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9191E+00 OUTFLOW=0.9057E+00 BASIN STORAGE=0.9232E-02 PERCENT ERROR= 0.5

070610	MANE	0.18	11.99	206.43	1.00	2.00	11.99	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9031E+00 EXCESS=0.0000E+00 OUTFLOW=0.9031E+00 BASIN STORAGE=0.5171E-04 PERCENT ERROR= 0.0

070610	MANE	0.47	5.12	206.50	1.00	2.00	5.11	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3785E+00 OUTFLOW=0.3729E+00 BASIN STORAGE=0.3754E-02 PERCENT ERROR= 0.5

070508	MANE	0.27	16.98	206.55	1.00	2.00	16.98	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1275E+01 EXCESS=0.0000E+00 OUTFLOW=0.1275E+01 BASIN STORAGE=0.1197E-03 PERCENT ERROR= 0.0

070508	MANE	0.71	4.42	210.48	0.83	2.00	4.40	210.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3592E+00 OUTFLOW=0.3530E+00 BASIN STORAGE=0.4247E-02 PERCENT ERROR= 0.5

070010	MANE	0.18	20.97	207.86	0.95	2.00	20.97	208.00	0.95

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1624E+01 EXCESS=0.0000E+00 OUTFLOW=0.1624E+01 BASIN STORAGE=0.9866E-04 PERCENT ERROR= 0.0

070010	MANE	1.09	6.53	206.99	1.00	2.00	6.50	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4866E+00 OUTFLOW=0.4794E+00 BASIN STORAGE=0.5001E-02 PERCENT ERROR= 0.4

070210	MANE	0.11	27.45	208.01	0.96	2.00	27.45	208.00	0.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2103E+01 EXCESS=0.0000E+00 OUTFLOW=0.2103E+01 BASIN STORAGE=0.7125E-04 PERCENT ERROR= 0.0

070209	MANE	0.46	11.88	206.50	0.94	2.00	11.86	208.00	0.94

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9154E+00 OUTFLOW=0.9007E+00 BASIN STORAGE=0.1018E-01 PERCENT ERROR= 0.5

070210	MANE	0.36	11.85	207.78	0.94	2.00	11.85	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9005E+00 EXCESS=0.0000E+00 OUTFLOW=0.9004E+00 BASIN STORAGE=0.1804E-03 PERCENT ERROR= 0.0

070210	MANE	0.70	5.27	207.97	0.94	2.00	5.27	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4069E+00 OUTFLOW=0.4004E+00 BASIN STORAGE=0.4546E-02 PERCENT ERROR= 0.5

050005	MANE	0.50	44.43	208.32	0.95	2.00	44.42	208.00	0.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3403E+01 EXCESS=0.0000E+00 OUTFLOW=0.3403E+01 BASIN STORAGE=0.5932E-03 PERCENT ERROR= 0.0

050005	MANE	1.25	20.70	210.86	0.83	2.00	20.62	212.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1706E+01 OUTFLOW=0.1674E+01 BASIN STORAGE=0.2220E-01 PERCENT ERROR= 0.5

070020	MANE	0.45	0.01	207.04	-1.00	2.00	0.01	208.00	-1.00
070030	MANE	2.00	0.01	222.25	-1.00	2.00	0.01	222.00	-1.00
070030	MANE	0.85	5.34	184.06	1.17	2.00	5.33	184.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2515E+00 OUTFLOW=0.2501E+00 BASIN STORAGE=0.1024E-02 PERCENT ERROR= 0.2

070040	MANE	0.43	5.26	184.66	1.18	2.00	5.07	186.00	1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2507E+00 EXCESS=0.0000E+00 OUTFLOW=0.2508E+00 BASIN STORAGE=0.9675E-04 PERCENT ERROR= 0.0

070220	MANE	0.31	0.12	208.48	-1.00	2.00	0.10	208.00	-1.00
070040	MANE	1.94	0.13	225.41	-1.00	2.00	0.11	226.00	-1.00
070040	MANE	2.00	4.95	192.74	1.14	2.00	4.92	192.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3678E+00 OUTFLOW=0.3632E+00 BASIN STORAGE=0.3287E-02 PERCENT ERROR= 0.3

070050	MANE	1.40	8.63	189.86	1.15	2.00	8.62	190.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6163E+00 EXCESS=0.0000E+00 OUTFLOW=0.6150E+00 BASIN STORAGE=0.8373E-03 PERCENT ERROR= 0.1

070050	MANE	0.78	24.29	184.85	1.21	2.00	23.78	184.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1166E+01 OUTFLOW=0.1159E+01 BASIN STORAGE=0.5169E-02 PERCENT ERROR= 0.2

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070060  MANE        0.97     29.75    187.77      1.19      2.00     29.61    188.00        1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1774E+01 EXCESS=0.0000E+00 OUTFLOW=0.1775E+01 BASIN STORAGE=0.6068E-03 PERCENT ERROR=  -0.1

070310  MANE        0.76     30.67    184.48      1.21      2.00     30.08    184.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1490E+01 OUTFLOW=0.1481E+01 BASIN STORAGE=0.6574E-02 PERCENT ERROR=   0.2

070060  MANE        0.74     29.98    185.96      1.21      2.00     29.98    186.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1481E+01 EXCESS=0.0000E+00 OUTFLOW=0.1482E+01 BASIN STORAGE=0.3630E-03 PERCENT ERROR=  -0.1

070060  MANE        1.23     25.91    185.60      1.21      2.00     25.47    186.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1296E+01 OUTFLOW=0.1288E+01 BASIN STORAGE=0.5563E-02 PERCENT ERROR=   0.1

070070  MANE        0.67     82.61    187.81      1.20      2.00     82.33    188.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4545E+01 EXCESS=0.0000E+00 OUTFLOW=0.4545E+01 BASIN STORAGE=0.2515E-02 PERCENT ERROR=  -0.1

070070  MANE        0.94     42.52    184.23      1.21      2.00     42.12    184.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2073E+01 OUTFLOW=0.2061E+01 BASIN STORAGE=0.8684E-02 PERCENT ERROR=   0.2

070080  MANE        1.20     51.89    187.39      1.72      2.00     51.60    188.00        1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1932E+01 OUTFLOW=0.1925E+01 BASIN STORAGE=0.3459E-02 PERCENT ERROR=   0.2

070420  MANE        0.57     45.74    220.82      1.28      2.00     45.74    220.00        1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8494E+01 EXCESS=0.0000E+00 OUTFLOW=0.8494E+01 BASIN STORAGE=0.1546E-02 PERCENT ERROR=   0.0

070410  MANE        1.87     17.40    187.32      1.36      2.00     17.33    188.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8003E+00 OUTFLOW=0.7949E+00 BASIN STORAGE=0.3259E-02 PERCENT ERROR=   0.3

070420  MANE        0.32     17.31    188.65      1.35      2.00     16.89    188.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7944E+00 EXCESS=0.0000E+00 OUTFLOW=0.7946E+00 BASIN STORAGE=0.2700E-03 PERCENT ERROR=  -0.1

070420  MANE        2.00      4.86    190.82      1.49      2.00      4.84    192.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2409E+00 OUTFLOW=0.2387E+00 BASIN STORAGE=0.1374E-02 PERCENT ERROR=   0.3
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210005  MANE        0.26     59.21    192.44      1.29      2.00     59.12    192.00        1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9526E+01 EXCESS=0.0000E+00 OUTFLOW=0.9525E+01 BASIN STORAGE=0.7249E-03 PERCENT ERROR=   0.0

210005  MANE        2.00     13.06    194.11      1.48      2.00     13.04    194.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6370E+00 OUTFLOW=0.6324E+00 BASIN STORAGE=0.3350E-02 PERCENT ERROR=   0.2

050030  MANE        0.82     71.80    194.69      1.30      2.00     71.78    194.00        1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1016E+02 EXCESS=0.0000E+00 OUTFLOW=0.1016E+02 BASIN STORAGE=0.2660E-02 PERCENT ERROR=   0.0

050010  MANE        2.00      0.01    283.63     -1.00      2.00      0.01    282.00       -1.00

050010  MANE        1.33     96.72    187.31      1.20      2.00     95.85    188.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4245E+01 OUTFLOW=0.4215E+01 BASIN STORAGE=0.2301E-01 PERCENT ERROR=   0.2

050020  MANE        1.39     93.12    190.07      1.20      2.00     92.86    190.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4220E+01 EXCESS=0.0000E+00 OUTFLOW=0.4213E+01 BASIN STORAGE=0.6933E-02 PERCENT ERROR=   0.0

050210  MANE        0.98     99.92    188.76      1.46      2.00     99.54    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4226E+01 OUTFLOW=0.4205E+01 BASIN STORAGE=0.1724E-01 PERCENT ERROR=   0.1

050020  MANE        2.00      0.01    599.05      0.00      2.00      0.01    598.00        0.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2856E-02 EXCESS=0.0000E+00 OUTFLOW=0.2431E-02 BASIN STORAGE=0.4309E-03 PERCENT ERROR=  -0.2

050020  MANE        2.00     12.86    189.95      1.32      2.00     12.85    190.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6373E+00 OUTFLOW=0.6317E+00 BASIN STORAGE=0.4033E-02 PERCENT ERROR=   0.2

050030  MANE        0.37    105.06    190.65      0.70      2.00    103.35    192.00        0.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4844E+01 EXCESS=0.0000E+00 OUTFLOW=0.4844E+01 BASIN STORAGE=0.2094E-02 PERCENT ERROR=   0.0

050030  MANE        1.39     54.49    185.60      1.63      2.00     53.61    186.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1742E+01 OUTFLOW=0.1739E+01 BASIN STORAGE=0.2044E-02 PERCENT ERROR=   0.0
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050305  MANE        0.22    189.38    192.40      1.03      2.00    188.41    192.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1613E+02 BASIN STORAGE=0.4682E-03 PERCENT ERROR=   0.0

050050  MANE        1.14    187.38    195.07      1.02      2.00    185.84    196.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1611E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.1

050040  MANE        1.85    106.07    192.81      1.08      2.00    105.50    192.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5976E+01 OUTFLOW=0.5901E+01 BASIN STORAGE=0.5232E-01 PERCENT ERROR=   0.4

050050  MANE        0.14     36.67    220.33      1.09      2.00     36.67    220.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5915E+01 EXCESS=0.0000E+00 OUTFLOW=0.5930E+01 BASIN STORAGE=-.2270E-01 PERCENT ERROR=   0.1

050310  MANE        0.92     75.75    188.93      1.46      2.00     75.20    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3209E+01 OUTFLOW=0.3190E+01 BASIN STORAGE=0.1452E-01 PERCENT ERROR=   0.1

050065  MANE        0.57     37.43    184.88      1.63      2.00     36.96    184.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1294E-02 PERCENT ERROR=   0.0

050060  MANE        2.00     52.72    191.87      1.56      2.00     52.58    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2427E+01 OUTFLOW=0.2408E+01 BASIN STORAGE=0.1081E-01 PERCENT ERROR=   0.3

050062  MANE        0.98     40.00    184.01      1.63      2.00     39.98    184.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1174E-02 PERCENT ERROR=   0.0

050610  MANE        2.00     38.54    187.67      1.65      2.00     38.37    188.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1219E+01 EXCESS=0.0000E+00 OUTFLOW=0.1228E+01 BASIN STORAGE=0.2229E-02 PERCENT ERROR=  -1.0

050610  MANE        1.46    101.00    189.46      1.10      2.00     99.04    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4801E+01 OUTFLOW=0.4760E+01 BASIN STORAGE=0.2964E-01 PERCENT ERROR=   0.2

050620  MANE        0.58    172.55    190.62      1.16      2.00    171.92    190.00        1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3566E+02 EXCESS=0.0000E+00 OUTFLOW=0.3565E+02 BASIN STORAGE=-.6676E-02 PERCENT ERROR=   0.0
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050620  MANE        2.00    111.40    190.17      1.10      2.00    110.58    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5867E+01 OUTFLOW=0.5804E+01 BASIN STORAGE=0.4209E-01 PERCENT ERROR=   0.4

050630  MANE        0.67    280.79    191.23      1.15      2.00    279.07    192.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4146E+02 EXCESS=0.0000E+00 OUTFLOW=0.4146E+02 BASIN STORAGE=-.8065E-02 PERCENT ERROR=   0.0

050630  MANE        1.37    120.14    187.99      1.40      2.00    120.11    188.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4642E+01 OUTFLOW=0.4618E+01 BASIN STORAGE=0.1773E-01 PERCENT ERROR=   0.1

050640  MANE        0.65    375.16    191.75      1.17      2.00    374.73    192.00        1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4607E+02 EXCESS=0.0000E+00 OUTFLOW=0.4607E+02 BASIN STORAGE=-.5648E-02 PERCENT ERROR=   0.0

050710  MANE        1.41     11.04    187.86      1.63      2.00     11.03    188.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4355E+00 OUTFLOW=0.4336E+00 BASIN STORAGE=0.1041E-02 PERCENT ERROR=   0.2

050720  MANE        0.26     11.00    188.46      1.63      2.00     10.77    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4340E+00 EXCESS=0.0000E+00 OUTFLOW=0.4340E+00 BASIN STORAGE=0.1446E-04 PERCENT ERROR=   0.0

050720  MANE        2.00     54.40    190.79      1.60      2.00     53.82    192.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2400E+01 OUTFLOW=0.2385E+01 BASIN STORAGE=0.8781E-02 PERCENT ERROR=   0.3

050640  MANE        0.31     63.52    192.28      1.60      2.00     63.46    192.00        1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2816E+01 EXCESS=0.0000E+00 OUTFLOW=0.2816E+01 BASIN STORAGE=0.1211E-03 PERCENT ERROR=   0.0

050640  MANE        1.50     65.19    191.21      1.62      2.00     64.77    192.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2787E+01 OUTFLOW=0.2769E+01 BASIN STORAGE=0.9847E-02 PERCENT ERROR=   0.3

051510  MANE        0.38    500.53    192.36      1.21      2.00    497.89    192.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5165E+02 EXCESS=0.0000E+00 OUTFLOW=0.5165E+02 BASIN STORAGE=-.2091E-02 PERCENT ERROR=   0.0

050810  MANE        1.74     25.55    189.14      1.56      2.00     25.37    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1088E+01 OUTFLOW=0.1080E+01 BASIN STORAGE=0.3609E-02 PERCENT ERROR=   0.4
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051510  MANE        0.59     25.29    191.22      1.56      2.00     24.71    192.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1079E+01 EXCESS=0.0000E+00 OUTFLOW=0.1080E+01 BASIN STORAGE=0.1186E-03 PERCENT ERROR=  -0.1

051510  MANE        1.18     21.27    188.57      1.59      2.00     21.15    188.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8506E+00 OUTFLOW=0.8466E+00 BASIN STORAGE=0.2308E-02 PERCENT ERROR=   0.2

051520  MANE        0.29    539.88    192.58      1.22      2.00    532.76    192.00        1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5358E+02 EXCESS=0.0000E+00 OUTFLOW=0.5358E+02 BASIN STORAGE=-.2029E-02 PERCENT ERROR=   0.0

051520  MANE        1.21     43.16    189.81      1.48      2.00     42.92    190.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1831E+01 OUTFLOW=0.1819E+01 BASIN STORAGE=0.8303E-02 PERCENT ERROR=   0.2

051410  MANE        1.30    327.55    195.42      0.14      2.00    323.57    196.00        0.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6215E+01 EXCESS=0.0000E+00 OUTFLOW=0.6256E+01 BASIN STORAGE=0.3424E-04 PERCENT ERROR=  -0.7

051410  MANE        1.05    179.25    188.68      1.70      2.00    178.08    188.00        1.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6562E+01 OUTFLOW=0.6544E+01 BASIN STORAGE=0.1382E-01 PERCENT ERROR=   0.1

051420  MANE        0.71    440.53    195.91      0.26      2.00    439.79    196.00        0.26

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1281E+02 EXCESS=0.0000E+00 OUTFLOW=0.1283E+02 BASIN STORAGE=0.7492E-03 PERCENT ERROR=  -0.2

051610  MANE        1.22     39.29    190.01      1.50      2.00     39.29    190.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1686E+01 OUTFLOW=0.1676E+01 BASIN STORAGE=0.7637E-02 PERCENT ERROR=   0.2

051520  MANE        0.40     39.05    190.64      1.50      2.00     38.52    190.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1676E+01 EXCESS=0.0000E+00 OUTFLOW=0.1676E+01 BASIN STORAGE=0.1288E-03 PERCENT ERROR=   0.0

051710  MANE        0.65      7.88    188.76      1.51      2.00      7.77    190.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3240E+00 OUTFLOW=0.3224E+00 BASIN STORAGE=0.1233E-02 PERCENT ERROR=   0.1

051520  MANE        0.60      7.76    190.34      1.51      2.00      7.75    190.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3226E+00 EXCESS=0.0000E+00 OUTFLOW=0.3227E+00 BASIN STORAGE=0.3447E-04 PERCENT ERROR=   0.0
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051530  MANE        0.60    285.99    191.63     38.39      2.00    285.77    192.00       38.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5118E+02 EXCESS=0.0000E+00 OUTFLOW=0.5119E+02 BASIN STORAGE=-.3246E-02 PERCENT ERROR=   0.0

051530  MANE        0.97     92.52    188.84      1.63      2.00     91.53    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3570E+01 OUTFLOW=0.3558E+01 BASIN STORAGE=0.8718E-02 PERCENT ERROR=   0.1

051540  MANE        0.35    374.43    190.61     15.55      2.00    373.34    190.00       15.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5473E+02 EXCESS=0.0000E+00 OUTFLOW=0.5472E+02 BASIN STORAGE=-.6405E-03 PERCENT ERROR=   0.0

051810  MANE        0.51     11.76    187.31      1.62      2.00     11.63    188.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4321E+00 OUTFLOW=0.4306E+00 BASIN STORAGE=0.7745E-03 PERCENT ERROR=   0.2

051540  MANE        0.23     11.60    188.25      1.61      2.00     11.57    188.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4304E+00 EXCESS=0.0000E+00 OUTFLOW=0.4304E+00 BASIN STORAGE=0.8082E-05 PERCENT ERROR=   0.0

051540  MANE        0.78      9.52    187.16      1.62      2.00      9.38    188.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3457E+00 OUTFLOW=0.3447E+00 BASIN STORAGE=0.6075E-03 PERCENT ERROR=   0.1

051550  MANE        0.22    391.95    190.39     13.88      2.00    389.96    190.00       13.88

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5551E+02 EXCESS=0.0000E+00 OUTFLOW=0.5550E+02 BASIN STORAGE=-.3459E-03 PERCENT ERROR=   0.0

051560  MANE        0.37    389.64    190.87     13.88      2.00    388.37    192.00       13.88

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5551E+02 EXCESS=0.0000E+00 OUTFLOW=0.5550E+02 BASIN STORAGE=-.2934E-03 PERCENT ERROR=   0.0

051560  MANE        2.00     10.16    189.32      1.22      2.00     10.12    190.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5231E+00 OUTFLOW=0.5186E+00 BASIN STORAGE=0.3077E-02 PERCENT ERROR=   0.3

051570  MANE        0.22    397.76    192.11     12.66      2.00    397.65    192.00       12.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5602E+02 EXCESS=0.0000E+00 OUTFLOW=0.5602E+02 BASIN STORAGE=-.2616E-03 PERCENT ERROR=   0.0

050060  MANE        2.14      0.00    310.71     -1.00      2.00      0.00    310.00       -1.00

050070  MANE        2.00      0.00    386.64     -1.00      2.00      0.00    388.00       -1.00
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050410  MANE        1.19     86.35    188.28      1.50      2.00     85.86    188.00        1.50

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3292E+01 OUTFLOW=0.3282E+01 BASIN STORAGE=0.8189E-02 PERCENT ERROR=   0.1

050070  MANE        0.23     85.55    188.55      1.50      2.00     84.16    188.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3283E+01 EXCESS=0.0000E+00 OUTFLOW=0.3283E+01 BASIN STORAGE=0.6196E-03 PERCENT ERROR=   0.0

050070  MANE        1.93    179.57    191.46      1.71      2.00    178.68    190.00        1.71

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7713E+01 OUTFLOW=0.7660E+01 BASIN STORAGE=0.2368E-01 PERCENT ERROR=   0.4

050080  MANE        0.65    259.42    191.30      1.64      2.00    255.21    192.00        1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1094E+02 EXCESS=0.0000E+00 OUTFLOW=0.1095E+02 BASIN STORAGE=0.1051E-02 PERCENT ERROR=   0.0

050080  MANE        2.00     23.10    188.63      1.05      2.00     22.80    188.00        1.05

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1188E+01 OUTFLOW=0.1178E+01 BASIN STORAGE=0.6871E-02 PERCENT ERROR=   0.3

050090  MANE        0.20    275.19    190.45      1.56      2.00    274.65    192.00        1.56

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1212E+02 EXCESS=0.0000E+00 OUTFLOW=0.1212E+02 BASIN STORAGE=0.3567E-03 PERCENT ERROR=   0.0

050510  MANE        1.50     79.77    189.39      1.20      2.00     78.01    190.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3494E+01 OUTFLOW=0.3470E+01 BASIN STORAGE=0.1608E-01 PERCENT ERROR=   0.2

050090  MANE        0.36     77.94    190.15      1.21      2.00     77.93    190.00        1.21

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.3472E+01 EXCESS=0.0000E+00 OUTFLOW=0.3472E+01 BASIN STORAGE=0.2389E-03 PERCENT ERROR=   0.0

050090  MANE        1.25     77.07    188.97      1.53      2.00     75.95    190.00        1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3021E+01 OUTFLOW=0.3011E+01 BASIN STORAGE=0.7900E-02 PERCENT ERROR=   0.1

050100  MANE        0.38    423.07    190.90      1.47      2.00    418.37    192.00        1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1861E+02 EXCESS=0.0000E+00 OUTFLOW=0.1861E+02 BASIN STORAGE=0.9550E-03 PERCENT ERROR=   0.0

050100  MANE        1.41    108.52    189.10      1.73      2.00    106.25    188.00        1.73

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4163E+01 OUTFLOW=0.4146E+01 BASIN STORAGE=0.1006E-01 PERCENT ERROR=   0.2
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050110  MANE        0.37    519.58    190.75      1.51      2.00    515.68    192.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2276E+02 EXCESS=0.0000E+00 OUTFLOW=0.2276E+02 BASIN STORAGE=0.9270E-03 PERCENT ERROR=   0.0

050910  MANE        1.31     23.03    188.42      1.48      2.00     22.96    188.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9556E+00 OUTFLOW=0.9500E+00 BASIN STORAGE=0.3772E-02 PERCENT ERROR=   0.2

050650  MANE        0.59     22.75    189.42      1.49      2.00     22.40    190.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9505E+00 EXCESS=0.0000E+00 OUTFLOW=0.9510E+00 BASIN STORAGE=0.1686E-03 PERCENT ERROR=  -0.1

050650  MANE        1.08     42.51    189.15      1.61      2.00     42.09    188.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1642E+01 OUTFLOW=0.1635E+01 BASIN STORAGE=0.4128E-02 PERCENT ERROR=   0.1

050660  MANE        0.40     64.17    188.91      1.56      2.00     64.01    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2586E+01 EXCESS=0.0000E+00 OUTFLOW=0.2587E+01 BASIN STORAGE=0.1732E-03 PERCENT ERROR=   0.0

050660  MANE        1.09     40.63    189.41      1.63      2.00     40.15    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1568E+01 OUTFLOW=0.1561E+01 BASIN STORAGE=0.4593E-02 PERCENT ERROR=   0.1

050110  MANE        0.33    103.61    190.49      1.59      2.00    103.11    190.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4148E+01 EXCESS=0.0000E+00 OUTFLOW=0.4148E+01 BASIN STORAGE=0.1792E-03 PERCENT ERROR=   0.0

050110  MANE        0.83     22.36    189.40      1.63      2.00     22.20    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8709E+00 OUTFLOW=0.8674E+00 BASIN STORAGE=0.2426E-02 PERCENT ERROR=   0.1

050120  MANE        0.49    634.96    191.76      1.53      2.00    634.65    192.00        1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2779E+02 EXCESS=0.0000E+00 OUTFLOW=0.2778E+02 BASIN STORAGE=0.1753E-02 PERCENT ERROR=   0.0

051010  MANE        0.97     42.42    188.52      1.46      2.00     42.04    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1800E+01 OUTFLOW=0.1791E+01 BASIN STORAGE=0.7795E-02 PERCENT ERROR=   0.1

051020  MANE        0.67      3.11    265.08      0.26      2.00      2.99    266.00        0.26

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3015E+00 EXCESS=0.0000E+00 OUTFLOW=0.3157E+00 BASIN STORAGE=0.5736E-02 PERCENT ERROR=  -6.6
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051110  MANE        1.37     58.08    189.39      1.69      2.00     57.87    188.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2262E+01 OUTFLOW=0.2252E+01 BASIN STORAGE=0.4880E-02 PERCENT ERROR=   0.2

051020  MANE        0.61     57.59    189.70      1.69      2.00     57.44    190.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2251E+01 EXCESS=0.0000E+00 OUTFLOW=0.2253E+01 BASIN STORAGE=0.9481E-03 PERCENT ERROR=  -0.1

051020  MANE        2.00     49.67    190.64      1.53      2.00     48.95    192.00        1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2223E+01 OUTFLOW=0.2207E+01 BASIN STORAGE=0.7967E-02 PERCENT ERROR=   0.4

051030  MANE        0.81    104.97    192.11      1.19      2.00    104.89    192.00        1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4771E+01 EXCESS=0.0000E+00 OUTFLOW=0.4769E+01 BASIN STORAGE=0.5335E-02 PERCENT ERROR=  -0.1

051210  MANE        0.80     18.89    187.30      1.63      2.00     18.53    186.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6967E+00 OUTFLOW=0.6948E+00 BASIN STORAGE=0.1161E-02 PERCENT ERROR=   0.1

051030  MANE        0.56     18.53    187.14      1.63      2.00     18.52    188.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6952E+00 EXCESS=0.0000E+00 OUTFLOW=0.6956E+00 BASIN STORAGE=0.2385E-03 PERCENT ERROR=  -0.1

051310  MANE        1.04      7.34    186.96      1.74      2.00      7.31    188.00        1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2796E+00 OUTFLOW=0.2789E+00 BASIN STORAGE=0.5135E-03 PERCENT ERROR=   0.1

051320  MANE        0.97      7.27    190.02      1.74      2.00      7.27    190.00        1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2788E+00 EXCESS=0.0000E+00 OUTFLOW=0.2788E+00 BASIN STORAGE=0.2282E-03 PERCENT ERROR=  -0.1

051320  MANE        0.83     22.31    187.99      1.73      2.00     22.31    188.00        1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8327E+00 OUTFLOW=0.8298E+00 BASIN STORAGE=0.1460E-02 PERCENT ERROR=   0.2

051030  MANE        1.59     28.76    191.91      1.73      2.00     28.67    192.00        1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1109E+01 EXCESS=0.0000E+00 OUTFLOW=0.1108E+01 BASIN STORAGE=0.1690E-02 PERCENT ERROR=   0.0

051030  MANE        2.00     57.28    191.92      1.65      2.00     57.27    192.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2742E+01 OUTFLOW=0.2721E+01 BASIN STORAGE=0.1172E-01 PERCENT ERROR=   0.3
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051040  MANE        1.27    203.72    195.03      1.38      2.00    202.74    194.00        1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9295E+01 EXCESS=0.0000E+00 OUTFLOW=0.9273E+01 BASIN STORAGE=0.1724E-01 PERCENT ERROR=   0.0

051040  MANE        2.00     54.49    191.52      1.32      2.00     53.60    192.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2549E+01 OUTFLOW=0.2529E+01 BASIN STORAGE=0.1339E-01 PERCENT ERROR=   0.3

050120  MANE        0.45    251.35    194.72      1.37      2.00    248.58    194.00        1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1180E+02 EXCESS=0.0000E+00 OUTFLOW=0.1180E+02 BASIN STORAGE=0.7552E-02 PERCENT ERROR=   0.0

050120  MANE        1.54     86.49    189.92      1.64      2.00     86.34    190.00        1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3423E+01 OUTFLOW=0.3405E+01 BASIN STORAGE=0.1024E-01 PERCENT ERROR=   0.2

050130  MANE        0.54    937.92    192.96      1.49      2.00    931.69    194.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4300E+02 EXCESS=0.0000E+00 OUTFLOW=0.4301E+02 BASIN STORAGE=0.6972E-02 PERCENT ERROR=   0.0

050130  MANE        1.18    201.77    190.75      1.62      2.00    198.78    190.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8359E+01 OUTFLOW=0.8308E+01 BASIN STORAGE=0.2944E-01 PERCENT ERROR=   0.3

050140  MANE        0.54   1109.81    194.50      1.51      2.00   1109.53    194.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5131E+02 EXCESS=0.0000E+00 OUTFLOW=0.5132E+02 BASIN STORAGE=0.8452E-02 PERCENT ERROR=   0.0

050140  MANE        1.29    176.46    189.02      1.50      2.00    174.88    188.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6905E+01 OUTFLOW=0.6874E+01 BASIN STORAGE=0.1865E-01 PERCENT ERROR=   0.2

050150  MANE        0.71   1235.23    195.35      1.51      2.00   1219.93    196.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5818E+02 EXCESS=0.0000E+00 OUTFLOW=0.5821E+02 BASIN STORAGE=0.1570E-01 PERCENT ERROR=  -0.1

050150  MANE        2.00     11.57    190.40      1.09      2.00     11.50    190.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6446E+00 OUTFLOW=0.6376E+00 BASIN STORAGE=0.4975E-02 PERCENT ERROR=   0.3

050160  MANE        0.17   1228.14    195.93      1.50      2.00   1227.86    196.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5882E+02 EXCESS=0.0000E+00 OUTFLOW=0.5881E+02 BASIN STORAGE=0.1974E-02 PERCENT ERROR=   0.0
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SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 210ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	0.00	1.00	1.00
STORAGE	0.	8.	8.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	0.55	0.00	4.	0.	0.00	9.97	0.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 030ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	65.00	68.00	68.00
STORAGE	0.	1.	1.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	68.13	0.13	1.	20.	6.87	3.27	0.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 1010ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	58.00	61.00	61.00
STORAGE	0.	1.	1.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	61.01	0.01	1.	3.	5.80	4.23	0.00

*** NORMAL END OF HEC-1 ***

Alternative C: Scottsdale Road Diversion

- HEC-1 - 10 year, 6 hr storm (altc610.out)

HEC1 S/N: 1343001471 HMVersion: 6.33 Data File: altc610.hc1

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****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             MAY   1991               *
*          VERSION 4.0.1E              *
*                                      *
* RUN DATE  12/19/1997  TIME  09:50:08 *
*                                      *
****************************************
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*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
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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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::::::::::::::::::::::::::::::::::::::::
:::                                  :::
:::  Full Microcomputer Implementation :::
:::                by                :::
:::       Haestad Methods, Inc.      :::
:::                                  :::
::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

              * ***************************************************************************
              * This is ALTERNATIVE C hydrology for Change Order #2
              *
              * - This model is based on the Recommended Plan - Part A for the Osborn Road
              *     Outfall with the following changes:
              *         Osborn Road Outfall has been modified to include a junction structure
              *         at Scottsdale Road.  The structure diverts primary runoff south along
              *         Scottsdale Road in the existing storm drain which ties in to a
              *         proposed storm drain at Earll Drive, running east to Indian Bend Wash.
              *         The excess runoff at the Scottsdale Road junction structure is
              *         conveyed east along Osborn Road in a proposed storm drain that ties in
              *         to the existing storm drain at Civic Center Boulevard.
              *
              *
    1         ID    ***************************************************************************
    2         ID    STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
    3         ID    SCOTTSDALE - TEMPE - PHOENIX
    4         ID    ***************************************************************************
    5         ID
    6         ID    Kimley-Horn and Associates, Inc.
    7         ID    KVL Consultants, Inc.
    8         ID
    9         ID    10-Year, 6-Hour Storm Event
   10         ID    10/97
              *
              *DIAGRAM
   11         IT       2                     300
   12         IO       5

   13         KK  070808   BASIN
   14         BA   0.017
   15         PH       0       0    0.50    0.97    1.61    1.76    1.86    2.05
   16         LS       0      88       0       0      98       0
   17         UK     300  0.0100    0.20      99
   18         UK     100  0.0100    0.10       1
   19         RK    1600   0.214    0.03            TRAP       2     3.5
              *
              * The 10 year flows are diverted into a proposed storm drain along Oak Street.
              * In storm events greater than the 10 yr, the remaining flow will follow its
              * natural course across and sheet flow across Oak Street to the north.
              *

   20         KK   808PP  Divert 10-year flows into storm drain
   21         DT  808OUT
   22         DI       0      12      13      15      50     100
   23         DQ       0    0.01       1       3      38      88

   24         KK  070610 FROM  070808
   25         RK     240  0.0066   0.013            CIRC    3.00
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  26          KK  070610   BASIN
  27          BA   0.007
  28          LS       0      88       0       0      98       0
  29          UK     300  0.0100    0.20      99
  30          UK     100  0.0100    0.10       1
  31          RK     500   0.054    0.03            TRAP       2     3.5

  32          KK   610PP  Divert 10-year flows into storm drain
  33          DT  610OUT
  34          DI       0       5       6      10      50     100
  35          DQ       0     .01       1       5      45      95

  36          KK  070610 COMBINE
  37          HC       2

  38          KK  070508    FROM  070610
  39          RK     420  0.0066   0.013            CIRC    3.00

  40          KK  070508   BASIN
  41          BA   0.008
  42          LS       0      85       0       0      98       0
  43          UK     300  0.0100    0.20      99
  44          UK     100  0.0100    0.10       1
  45          RK     600   0.048    0.03            TRAP       9     1.0

  46          KK   508PP  Divert 10-year flows into storm drain
  47          DT  508OUT
  48          DI       0       4       5      15      50     100
  49          DQ       0     .01       1      11      46      96

  50          KK  070508 COMBINE
  51          HC       2

  52          KK  070010    FROM  070508
  53          RK     270  0.0066   0.013            CIRC    3.00

  54          KK  070010   BASIN
  55          BA   0.009
  56          LS       0      88       0       0      98       0
  57          UK     300  0.0100    0.20      99
  58          UK     100  0.0100    0.10       1
  59          RK    1200   0.042    0.03            TRAP       2     3.5

  60          KK   010PP  Divert 10-year flows into storm drain
  61          DT  010OUT
  62          DI       0       7      10      15      50     100
  63          DQ       0     .01       3       8      43      93

  64          KK  070010 COMBINE
  65          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  66          KK  070210    FROM  070010
  67          RK     120  0.0033   0.013            CIRC    3.00

  68          KK  070209   BASIN
  69          BA   0.018
  70          LS       0      87       0       0      98       0
  71          UK     300  0.0100    0.20      99
  72          UK     100  0.0100    0.10       1
  73          RK    1200   0.252    0.03            TRAP       2     3.5

  74          KK  070210    FROM  070209
  75          RK     750   0.252   0.013            TRAP      10       1

  76          KK  070210   BASIN
  77          BA   0.008
  78          LS       0      87       0       0      98       0
  79          UK     300  0.0100    0.20      99
  80          UK     100  0.0100    0.10       1
  81          RK     600   0.043    0.03            TRAP       2     3.5

  82          KK  070210 COMBINE
  83          HC       2

  84          KK   210PP  Divert 10-year flows into storm drain
  85          DT  210OUT
  86          DI       0      17      20      30      50     100
  87          DQ       0     .01       3      13      33      83

  88          KK  070210 COMBINE
  89          HC       2

  90          KK  050005   FROM 070210
  91          RK     950   0.008   0.013            CIRC    3.00

  92          KK  050005   BASIN
  93          BA   0.038
  94          LS       0      85       0       0      98       0
  95          UK     300  0.0100    0.20      99
  96          UK     100  0.0100    0.10       1
  97          RK    1650    0.09    0.03            TRAP      30     1.0

  98          KK   005PP  Divert 10-year flows into storm drain
  99          DT  005OUT
 100          DI       0      21      22     100     150     200
 101          DQ       0     .01       1      79     129     179
              *
              * The start of the Osborn Road outfall hydrology
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 102          KK  070010
 103          KM    Retrieve overland flows at CP 070010
 104          DR  010OUT

 105          KK  070020    FROM  070010
 106          RK     178  0.0131   0.013            CIRC     1.0

 107          KK  070030    FROM  070020
 108          RK     520  0.0146   0.025            TRAP     9.0       1

 109          KK  070030   BASIN
 110          BA   0.004
 111          LS       0      85       0       0      98       0
 112          UK     150  0.0100    0.30      65
 113          UK      50  0.0100    0.10      35
 114          RK     522  0.0146    0.03            TRAP       2     3.5

 115          KK  070030 COMBINE
 116          HC       2

 117          KK  070040    FROM  070030
 118          RK     177  0.0146   0.017            TRAP    54.8       1

 119          KK  070210
 120          KM    Retrieve overland flows at CP 070210
 121          DR  210OUT

 122          KK  070220    FROM  070210
 123          RK     164  0.0131   0.013            CIRC     1.0

 124          KK  070040    FROM  070220
 125          RK     723  0.0146   0.017            TRAP    54.8       1

 126          KK  070040   BASIN
 127          BA   0.006
 128          LS       0      86       0       0      98       0
 129          UK     181  0.0100    0.28      72
 130          UK      60  0.0100    0.10      28
 131          RK    1946  0.0146    0.02            TRAP      30     1.0

 132          KK  070040 COMBINE
 133          HC       3

 134          KK  070050    FROM  070040
 135          RK     878  0.0146   0.025            TRAP    20.0     1.0

 136          KK  070050   BASIN
 137          BA   0.018
 138          LS       0      86       0       0      98       0
 139          UK     150  0.0100    0.30      65
 140          UK      50  0.0100    0.10      35
 141          RK     290  0.0058    0.02            TRAP      11     1.0
 142          RK     981  0.0146    0.02            TRAP      11     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 143          KK  070050 COMBINE
 144          HC       2

 145          KK  070060    FROM  070050
 146          RK     872  0.0058   0.025            TRAP     1.0     1.0

 147          KK  070310   BASIN
 148          BA   0.023
 149          LS       0      86       0       0      98       0
 150          UK     150  0.0100    0.30      65
 151          UK      50  0.0100    0.10      35
 152          RK     278  0.0058    0.02            TRAP      11     1.0
 153          RK     986  0.0146    0.02            TRAP      11     1.0

 154          KK  070060    FROM  070310
 155          RK     745  0.0058   0.025            TRAP     1.0     1.0

 156          KK  070060   BASIN
 157          BA   0.020
 158          LS       0      86       0       0      98       0
 159          UK     150  0.0100    0.30      65
 160          UK      50  0.0100    0.10      35
 161          RK    1096  0.0058    0.03            TRAP       2     1.0

 162          KK  070060 COMBINE
 163          HC       3

 164          KK  070070    FROM  070060
 165          RK     726  0.0146   0.025            TRAP    30.0     1.0

 166          KK  070070   BASIN
 167          BA   0.032
 168          LS       0      86       0       0      98       0
 169          UK     150  0.0100    0.30      65
 170          UK      50  0.0100    0.10      35
 171          RK    1209  0.0146    0.03            TRAP       2     1.0

 172          KK  070080   BASIN
 173          BA   0.021
 174          LS       0      83       0       0      98       0
 175          UK      29  0.0100    0.39       9
 176          UK     189  0.0100    0.10      91
 177          RK    1257  0.0058    0.02            TRAP      30     1.0

 178          KK  070080 COMBINE
 179          HC       3

 180          KK   07Det   Detention basin at Marriott's Brighton Gardens
 181          RS       1    STOR
 182          SV       0    0.78    1.64    2.65    3.84    5.21    6.77    6.77
 183          SE      66      67      68      69      70      71      72      73
 184          SQ       0      12      36      42      46      48      52     355
              *
              * Marriott's Brighton Gardens outfall - 07Qpip is the outflow in the storm drain
              * 07Qspl is the flow overtopping the basin
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 185          KK  07Qpip
 186          DT  07Qspl
 187          DI       0      71     112     172     245     329     420     518     623
 188          DQ       0     0.1      26      72     132     204     285     374     471

 189          KK  070420   FROM 07Qpip
 190          RK    1000   0.005   0.013            CIRC     3.0

 191          KK  070410   BASIN
 192          BA   0.011
 193          LS       0      84       0       0      98       0
 194          UK     144  0.0100    0.32      44
 195          UK     121  0.0100    0.10      56
 196          RK    1816  0.0146    0.02            TRAP      23     1.0

 197          KK  070420    FROM  070410
 198          RK     183  0.0058   0.017            TRAP    52.5       1

 199          KK  070420   BASIN
 200          BA   0.003
 201          LS       0      79       0       0      98       0
 202          UK     177  0.0100    0.31      25
 203          UK     200  0.0100    0.10      75
 204          RK    1046  0.0058    0.02            TRAP      49     1.0

 205          KK  070420 COMBINE
 206          HC       3

 207          KK  210005  FROM 070420
 208          RK     450   0.005   0.013            CIRC     3.5

 209          KK  210005   BASIN
 210          BA   0.008
 211          LS       0      79       0       0      98       0
 212          UK      94  0.0100    0.34      26
 213          UK     116  0.0100    0.10      74
 214          RK     523  0.0032    0.02            TRAP      38     1.0
 215          RK    1250  0.0020    0.02            TRAP      45     1.0

 216          KK  210005 COMBINE
 217          HC       2

 218          KK  050030   FROM 210005
 219          RK    1600   0.005   0.013            CIRC       4

 220          KK  050005
 221          KM    Retrieve overland flows at CP 050005
 222          DR  005OUT
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 223          KK  050010   FROM 050005
 224          RK    1300   0.015    0.02            TRAP      35       1

 225          KK  050010   BASIN
 226          BA   0.066
 227          LS       0      81       0       0      98       0
 228          UK     144  0.0100    0.30      52
 229          UK      57  0.0100    0.10      48
 230          RK    1189  0.0033    0.02            TRAP      30     1.0
 231          RK    1197  0.0038    0.02            TRAP      60     1.0

 232          KK  050010   COMBINE
 233          HC       2

 234          KK  050020    FROM  050010
 235          RK    1370  0.0038   0.017            TRAP    37.5       1

 236          KK  050210   BASIN
 237          BA   0.054
 238          LS       0      79       0       0      98       0
 239          UK     200  0.0100    0.30      28
 240          UK     200  0.0100    0.10      72
 241          RK     564  0.0038    0.02            TRAP      23     1.0
 242          RK    1199  0.0033    0.02            TRAP      23     1.0

 243          KK   210ST STORAGE
 244          RS       1    STOR
 245          SV    0.00    7.72    7.72
 246          SE    0.00    1.00    2.00
 247          SQ    0.00    0.01    0.01
 248          ST     1.0     500     3.0     1.5

 249          KK  050020    FROM  050210
 250          RK     278  0.0033   0.017            TRAP    60.0       1

 251          KK  050020   BASIN
 252          BA   0.009
 253          LS       0      79       0       0      98       0
 254          UK     166  0.0100    0.30      39
 255          UK      98  0.0100    0.10      61
 256          RK    1304  0.0038    0.02            TRAP      60     1.0

 257          KK  050020 COMBINE
 258          HC       3

 259          KK  050030    FROM  050020
 260          RK     347  0.0038   0.017            TRAP    37.5       1

 261          KK  050030   BASIN
 262          BA   0.020
 263          LS       0      79       0       0      98       0
 264          UK     150  0.0100    0.30      15
 265          UK      50  0.0100    0.10      85
 266          RK     278  0.0038    0.02            TRAP       9     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 267          RK    1468  0.0033    0.02            TRAP       9     1.0
              *
              * Scottsdale Executive Villas natural storage in parking lot
              *

 268          KK   030ST STORAGE
 269          RS       1    STOR
 270          SV       0    0.01    0.06    0.62    2.72    2.72
 271          SE      65      66      67      68      69      70
 272          SQ    0.00    0.01    0.01    0.01    0.01    0.01
 273          ST      68     150     3.0     1.5

 274          KK  050030 COMBINE
 275          HC       3

 276          KK  050305   FROM 050030
 277          RK     150   0.002   0.013            CIRC     5.5

 278          KK  050050   FROM 050305
 279          RK    1500   0.001   0.013            TRAP       9     1.0

 280          KK  050040   BASIN
 281          BA   0.102
 282          LS       0      79       0       0      98       0
 283          UK     150  0.0100    0.30      57
 284          UK      50  0.0100    0.10      43
 285          RK    2230  0.0038    0.02            TRAP      38     1.0
 286          RK    2654  0.0038    0.02            TRAP      38     1.0

 287          KK  40STOR  Storage on west side of cross-cut canal
 288          RS       1
 289          SV       0       0       0       0     2.6    13.5    13.5
 290          SE      58      59      60      61      62      63      64
 291          SQ       0      10      22      32      40      50      55

 292          KK  050050    FROM  050040
 293          RK     491  0.0334   0.013            CIRC     2.5

 294          KK  050310   BASIN
 295          BA   0.041
 296          LS       0      79       0       0      98       0
 297          UK     200  0.0100    0.30      28
 298          UK     200  0.0100    0.10      72
 299          RK     816  0.0033    0.02            TRAP      30     1.0
 300          RK     848  0.0038    0.02            TRAP      30     1.0

 301          KK  050065   BASIN
 302          BA   0.014
 303          LS       0      79       0       0      98       0
 304          UK     100    0.01     0.3      15
 305          UK     100    0.01     0.1      85
 306          RK     500   0.005   0.012            TRAP      60       1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 307          KK  050060   BASIN
 308          BA   0.029
 309          LS       0      79       0       0      98       0
 310          UK     105    0.01     0.3      20
 311          UK     160    0.01     0.1      80
 312          RK    1300  0.0038    0.03            TRAP     100     1.0
              *
              * Flows combined from 050040, 050305, 050310, 050060 and 050065 into Paiute
              * Park detention basin
              *

 313          KK  050050 COMBINE
 314          HC       5

 315          KK   05Det  Storage
 316          RS       1    STOR
 317          SV       0    0.64    2.37    5.14    8.40    11.7    15.1    18.5    22.1    22.1
 318          SE      49      50      51      52      53      54      55      56      57      58
 319          SQ     4.5      22      37      47      56      65      73      81      88     156
              *
              * Paiute Park outfall - 05Qpip is the outflow in the storm drain
              * 05Qspl is the flow overtopping the basin
              *
              *
              * Overflows to CP 050060
              *

 320          KK  05Qpip
 321          DT  05Qspl
 322          DI       0     160     382     780    1292    1897
 323          DQ       0    0.01     212     600    1102    1697
              *
              * Begin storm drain system in Osborn Road
              *

 324          KK  050062   BASIN
 325          BA   0.006
 326          BA   0.014
 327          LS       0      79       0       0      98       0
 328          UK     100    0.01     0.3      15
 329          UK      50    0.01     0.1      85
 330          RK     900   0.005   0.012            TRAP      60       1

 331          KK  050610   FROM 050062
 332          RK    1500   0.003   0.013            TRAP      60       1

 333          KK  050610   BASIN
 334          BA   0.081
 335          LS       0      79       0       0      98       0
 336          UK     130  0.0100    0.32      56
 337          UK      70  0.0100    0.10      44
 338          RK    1450  0.0038    0.02            TRAP      45     1.0
 339          RK    1240  0.0033    0.02            TRAP      60     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 340          KK  050610    COMBINE
 341          HC       3

 342          KK  050620    FROM  050610
 343          RK    1050  0.0037   0.013            CIRC       6

 344          KK  050620   BASIN
 345          BA   0.099
 346          LS       0      79       0       0      98       0
 347          UK     147  0.0100    0.30      56
 348          UK      53  0.0100    0.10      44
 349          RK     940  0.0033    0.02            TRAP      41     1.0
 350          RK    2545  0.0038    0.02            TRAP      60     1.0

 351          KK  050620 COMBINE
 352          HC       2

 353          KK  050630    FROM  050620
 354          RK    1251  0.0016   0.013            CIRC       7

 355          KK  050630   BASIN
 356          BA   0.062
 357          LS       0      79       0       0      98       0
 358          UK     138  0.0100    0.31      33
 359          UK      64  0.0100    0.10      67
 360          RK    1205  0.0038    0.02            TRAP      41     1.0
 361          RK    1348  0.0033    0.02            TRAP      60     1.0

 362          KK  050630 COMBINE
 363          HC       2

 364          KK  050640    FROM  050630
 365          RK    1315  0.0016   0.013            CIRC       8

 366          KK  050710   BASIN
 367          BA   0.005
 368          LS       0      79       0       0      98       0
 369          UK      21  0.0100    0.40      15
 370          UK     200  0.0100    0.10      85
 371          RK     610  0.0038    0.02            TRAP      55     1.0

 372          KK  050720    FROM  050710
 373          RK     316  0.0045   0.013            CIRC     5.5

 374          KK  050720   BASIN
 375          BA   0.028
 376          LS       0      79       0       0      98       0
 377          UK      57  0.0100    0.38      17
 378          UK     188  0.0100    0.10      83
 379          RK     580  0.0038    0.02            TRAP      45     1.0
 380          RK    1594  0.0033    0.02            TRAP      55     1.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          KK  050720   COMBINE
 382          HC       2

 383          KK  050640    FROM  050720
 384          RK     422  0.0045   0.013            CIRC     5.5

 385          KK  050640   BASIN
 386          BA   0.032
 387          LS       0      79       0       0      98       0
 388          UK      64  0.0100    0.37      15
 389          UK     149  0.0100    0.10      85
 390          RK    1605  0.0038    0.02            TRAP      41     1.0
 391          RK    1168  0.0033    0.02            TRAP      60     1.0

 392          KK  050640 COMBINE
 393          HC       3
              *
              * Divert flow out (05cc) to proposed pipe from Scottsdale Rd (050640) to Civic
              * Center Blvd (051520) where it enters the existing storm drain system.  The
              * primary flow (05SC) is conveyed south on Scottsdale Rd to Earll to Indian Bend
              * Wash.
              *

 394          KK    05SC
 395          DT    05CC
 396          DI       0   153.1    1000
 397          DQ       0     153     153

 398          KK  050650   FROM 050640
 399          RK     626   0.003   0.013            CIRC       6

 400          KK  050910   BASIN
 401          BA   0.012
 402          LS       0      79       0       0      98       0
 403          UK     170  0.0100    0.32      26
 404          UK     200  0.0100    0.10      74
 405          RK     837  0.0038    0.02            TRAP      38     1.0

 406          KK  050650    FROM  050910
 407          RK     751  0.0045   0.013            DEEP     5.0

 408          KK  050650   BASIN
 409          BA   0.019
 410          LS       0      79       0       0      98       0
 411          UK      29  0.0100    0.40      16
 412          UK     200  0.0100    0.10      84
 413          RK     598  0.0033    0.02            TRAP      23     1.0
 414          RK     566  0.0038    0.02            TRAP      90     1.0
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 415          KK  050650 COMBINE
 416          HC       3

 417          KK  050660    FROM  050650
 418          RK     626   0.003   0.013            CIRC       6

 419          KK  050660   BASIN
 420          BA   0.018
 421          LS       0      79       0       0      98       0
 422          UK      20  0.0100    0.40      15
 423          UK     200  0.0100    0.10      85
 424          RK     578  0.0033    0.02            TRAP      49     1.0
 425          RK     582  0.0038    0.02            TRAP      90     1.0

 426          KK  050660 COMBINE
 427          HC       2

 428          KK  051410   FROM 050660
 429          RK    2640  0.0033   0.013            TRAP      11

 430          KK  051410   BASIN
 431          BA   0.072
 432          LS       0      79       0       0      98       0
 433          UK      64  0.0100    0.37       9
 434          UK     150  0.0100    0.10      91
 435          RK    1170  0.0033    0.02            TRAP      38     1.0
 436          RK    1180  0.0038    0.02            TRAP      55     1.0

 437          KK  051410    COMBINE
 438          HC       2
              *
              * EARLL DR OUTFALL TO INDIAN BEND WASH
              *

 439          KK  051420    FROM  051410
 440          RK    1460  0.0033   0.013            TRAP      12
              *
              * RETRIEVE FLOW AT SCOTTSDALE AND OSBORN ROADS TO BE CONVEYED EAST
              *

 441          KK  050640
 442          DR    05CC

 443          KK  051510   FROM 050640
 444          RK     800  0.0034   0.013            CIRC     5.5

 445          KK  050810   BASIN
 446          BA   0.013
 447          LS       0      79       0       0      98       0
 448          UK      88  0.0100    0.36      20
 449          UK     200  0.0100    0.10      80
 450          RK     164  0.0033    0.02            TRAP      28     1.0
 451          RK    1031  0.0038    0.02            TRAP      55     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 452          KK  051510    FROM  050810
 453          RK     705  0.0025   0.013            CIRC     4.0

 454          KK  051510   BASIN
 455          BA   0.010
 456          LS       0      79       0       0      98       0
 457          UK      59  0.0100    0.38      18
 458          UK     200  0.0100    0.10      82
 459          RK     139  0.0038    0.02            TRAP      41     1.0
 460          RK     521  0.0033    0.02            TRAP      71     1.0

 461          KK  051510    COMBINE
 462          HC       3

 463          KK  051520    FROM  051510
 464          RK     680  0.0034   0.013            CIRC     6.5

 465          KK  051610   BASIN
 466          BA   0.021
 467          LS       0      79       0       0      98       0
 468          UK     165  0.0100    0.32      25
 469          UK     200  0.0100    0.10      75
 470          RK     624  0.0038    0.02            TRAP      41     1.0
 471          RK     792  0.0033    0.02            TRAP      60     1.0

 472          KK  051520    FROM  051610
 473          RK     601  0.0047   0.013            CIRC     5.0

 474          KK  051710   BASIN
 475          BA   0.004
 476          LS       0      79       0       0      98       0
 477          UK     146  0.0100    0.33      24
 478          UK     200  0.0100    0.10      76
 479          RK     515  0.0038    0.02            TRAP      30     1.0
 480          RK     287  0.0033    0.02            TRAP      30     1.0

 481          KK  051520    FROM  051710
 482          RK     567  0.0032   0.013            CIRC     4.0

 483          KK  051520   BASIN
 484          BA   0.023
 485          LS       0      79       0       0      98       0
 486          UK     179  0.0100    0.31      26
 487          UK     198  0.0100    0.10      74
 488          RK     473  0.0038    0.02            TRAP      60     1.0
 489          RK     704  0.0033    0.02            TRAP      71     1.0

 490          KK  051520 COMBINE
 491          HC       4
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 492          KK  051530    FROM  051520
 493          RK     926   0.001   0.013            CIRC     9.5

 494          KK  051530   BASIN
 495          BA   0.041
 496          LS       0      79       0       0      98       0
 497          UK      26  0.0100    0.40      15
 498          UK     193  0.0100    0.10      85
 499          RK     889  0.0038    0.02            TRAP      38     1.0
 500          RK     860  0.0033    0.02            TRAP      60     1.0

 501          KK  051530 COMBINE
 502          HC       2

 503          KK  051540    FROM  051530
 504          RK     360   0.001   0.013            CIRC     9.5

 505          KK  051810   BASIN
 506          BA   0.005
 507          LS       0      79       0       0      98       0
 508          UK      23  0.0100    0.40      16
 509          UK     196  0.0100    0.10      84
 510          RK     272  0.0033    0.02            TRAP      19     1.0
 511          RK     272  0.0038    0.02            TRAP      30     1.0

 512          KK  051540    FROM  051810
 513          RK     218  0.0045   0.013            CIRC     4.5

 514          KK  051540   BASIN
 515          BA   0.004
 516          LS       0      79       0       0      98       0
 517          UK      44  0.0100    0.38      16
 518          UK     172  0.0100    0.10      84
 519          RK     233  0.0038    0.02            TRAP      12     1.0
 520          RK     265  0.0033    0.02            TRAP      60     1.0

 521          KK  051540 COMBINE
 522          HC       3

 523          KK  051550    FROM  051540
 524          RK     273   0.001   0.013            CIRC     9.5

 525          KK  051560    FROM  051550
 526          RK     800  0.0038   0.013            CIRC     6.0

 527          KK  051560   BASIN
 528          BA   0.008
 529          LS       0      79       0       0      98       0
 530          UK     116  0.0100    0.33      47
 531          UK      89  0.0100    0.10      53
 532          RK    1126  0.0033    0.02            TRAP      60     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 533          KK  051560 COMBINE
 534          HC       2
              *
              * Osborn Rd outfall to Indian Bend Wash
              *

 535          KK  051570    FROM  051560
 536          RK     228   0.003   0.013            CIRC     7.0
              *
              * Begin Thomas Rd outfall
              *

 537          KK  05Qspl  Retrieve spill from Paiute Park detention basin
 538          DR  05Qspl

 539          KK  050060    Qspl FROM  05Det
 540          RK     500   0.002   0.027            TRAP       5       1

 541          KK  050070    FROM  050060
 542          RK    1429  0.0033   0.030            TRAP     5.0     1.0

 543          KK  050410   BASIN
 544          BA   0.041
 545          LS       0      79       0       0      98       0
 546          UK      77  0.0100    0.36      25
 547          UK     137  0.0100    0.10      75
 548          RK     694  0.0038    0.02            TRAP      38     1.0
 549          RK    1177  0.0033    0.02            TRAP      38     1.0

 550          KK  050070    FROM  050410
 551          RK     187  0.0038   0.017            TRAP    60.0       1

 552          KK  050070   BASIN
 553          BA   0.084
 554          LS       0      79       0       0      98       0
 555          UK      22  0.0100    0.40       8
 556          UK     198  0.0100    0.10      92
 557          RK    3223  0.0038    0.02            TRAP      38     1.0

 558          KK  050070 COMBINE
 559          HC       3

 560          KK  050080    FROM  050070
 561          RK    1112  0.0027   0.013            CIRC     4.5

 562          KK  050080   BASIN
 563          BA   0.021
 564          LS       0      79       0       0      98       0
 565          UK     132  0.0100    0.31      60
 566          UK      71  0.0100    0.10      40
 567          RK    1365  0.0033    0.02            TRAP      38     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 568          KK  050080 COMBINE
 569          HC       2

 570          KK  050090    FROM  050080
 571          RK     416  0.0052   0.013            CIRC     4.0

 572          KK  050510   BASIN
 573          BA   0.054
 574          LS       0      79       0       0      98       0
 575          UK     109  0.0100    0.33      48
 576          UK      97  0.0100    0.10      52
 577          RK    1096  0.0038    0.02            TRAP      41     1.0
 578          RK    1304  0.0033    0.02            TRAP      41     1.0

 579          KK  050090    FROM  050510
 580          RK     626  0.0052   0.013            CIRC     4.0

 581          KK  050090   BASIN
 582          BA   0.037
 583          LS       0      79       0       0      98       0
 584          UK      44  0.0100    0.38      23
 585          UK     172  0.0100    0.10      77
 586          RK     965  0.0038    0.02            TRAP      23     1.0
 587          RK    1064  0.0033    0.02            TRAP      45     1.0

 588          KK  050090 COMBINE
 589          HC       3

 590          KK  050100    FROM  050090
 591          RK     609  0.0028   0.013            CIRC     4.5

 592          KK  050100   BASIN
 593          BA   0.045
 594          LS       0      79       0       0      98       0
 595          UK      20  0.0100    0.40       7
 596          UK     200  0.0100    0.10      93
 597          RK     505  0.0033    0.02            TRAP      30     1.0
 598          RK    1727  0.0038    0.02            TRAP      23     1.0

 599          KK  050100 COMBINE
 600          HC       2

 601          KK  050110    FROM  050100
 602          RK     692  0.0058   0.013            CIRC     4.0

 603          KK  050110   BASIN
 604          BA   0.010
 605          LS       0      79       0       0      98       0
 606          UK      20  0.0100    0.40      15
 607          UK     200  0.0100    0.10      85
 608          RK     587  0.0033    0.02            TRAP      46     1.0
 609          RK     406  0.0038    0.02            TRAP      77     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 610          KK  050110 COMBINE
 611          HC       2

 612          KK  050120    FROM  050110
 613          RK     888  0.0027   0.013            CIRC     7.5

 614          KK  051010   BASIN
 615          BA   0.023
 616          LS       0      79       0       0      98       0
 617          UK     200  0.0100    0.30      28
 618          UK     200  0.0100    0.10      72
 619          RK     517  0.0033    0.02            TRAP      30     1.0
 620          RK     822  0.0038    0.02            TRAP      30     1.0

 621          KK  1010ST STORAGE
 622          RS       1    STOR
 623          SV       0    0.20    0.70    1.49    1.49
 624          SE      58      59      60      61      62
 625          SQ       0    0.01    0.01    0.01    0.01
 626          ST      61     800     3.0     1.5

 627          KK  051020    FROM  051010
 628          RK     948  0.0033   0.017            TRAP    60.0       1

 629          KK  051110   BASIN
 630          BA   0.025
 631          LS       0      79       0       0      98       0
 632          UK      20  0.0100    0.40      10
 633          UK     200  0.0100    0.10      90
 634          RK     326  0.0038    0.02            TRAP       9     1.0
 635          RK    1382  0.0033    0.02            TRAP      19     1.0

 636          KK  051020    FROM  051110
 637          RK     541  0.0038   0.017            TRAP    33.0       1

 638          KK  051020   BASIN
 639          BA   0.027
 640          LS       0      79       0       0      98       0
 641          UK      64  0.0100    0.37      22
 642          UK     174  0.0100    0.10      78
 643          RK     409  0.0038    0.02            TRAP      26     1.0
 644          RK    1595  0.0033    0.02            TRAP      60     1.0

 645          KK  051020 COMBINE
 646          HC       3

 647          KK  051030    FROM  051020
 648          RK     694  0.0033   0.017            TRAP    60.0       1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 649          KK  051210   BASIN
 650          BA   0.008
 651          LS       0      79       0       0      98       0
 652          UK      20  0.0100    0.40      15
 653          UK     200  0.0100    0.10      85
 654          RK     682  0.0038    0.02            TRAP       9     1.0

 655          KK  051030    FROM  051210
 656          RK     241  0.0038   0.017            TRAP    60.0       1

 657          KK  051310   BASIN
 658          BA   0.003
 659          LS       0      79       0       0      98       0
 660          UK      20  0.0100    0.40       6
 661          UK     200  0.0100    0.10      94
 662          RK     544  0.0033    0.02            TRAP      18     1.0

 663          KK  051320    FROM  051310
 664          RK     333  0.0038   0.017            TRAP    60.0       1

 665          KK  051320   BASIN
 666          BA   0.009
 667          LS       0      79       0       0      98       0
 668          UK      20  0.0100    0.40       7
 669          UK     200  0.0100    0.10      93
 670          RK     254  0.0038    0.02            TRAP       9     1.0
 671          RK     543  0.0033    0.02            TRAP      18     1.0

 672          KK  051320 COMBINE
 673          HC       2

 674          KK  051030    FROM  051320
 675          RK     960  0.0038   0.017            TRAP    60.0       1

 676          KK  051030   BASIN
 677          BA   0.031
 678          LS       0      79       0       0      98       0
 679          UK      28  0.0100    0.39      13
 680          UK     190  0.0100    0.10      87
 681          RK    2532  0.0033    0.02            TRAP      49     1.0

 682          KK  051030 COMBINE
 683          HC       4

 684          KK  051040    FROM  051030
 685          RK    1501  0.0033   0.017            TRAP    60.0       1

 686          KK  051040   BASIN
 687          BA   0.036
 688          LS       0      79       0       0      98       0
 689          UK     105  0.0100    0.34      39
 690          UK     102  0.0100    0.10      61
 691          RK    1159  0.0038    0.02            TRAP      45     1.0
 692          RK    1501  0.0033    0.02            TRAP      65     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 693          KK  051040 COMBINE
 694          HC       2

 695          KK  050120    FROM  051040
 696          RK    1222   0.003   0.013            TRAP       8

 697          KK  050120   BASIN
 698          BA   0.039
 699          LS       0      79       0       0      98       0
 700          UK      24  0.0100    0.40      14
 701          UK     195  0.0100    0.10      86
 702          RK     763  0.0038    0.02            TRAP      23     1.0
 703          RK    1114  0.0033    0.02            TRAP      90     1.0

 704          KK  050120 COMBINE
 705          HC       3

 706          KK  050130    FROM  050120
 707          RK    1265  0.0027   0.013            DEEP     7.0

 708          KK  050130   BASIN
 709          BA   0.096
 710          LS       0      79       0       0      98       0
 711          UK      45  0.0100    0.38      15
 712          UK     171  0.0100    0.10      85
 713          RK    1905  0.0038    0.02            TRAP      71     1.0
 714          RK    1212  0.0033    0.02            TRAP      71     1.0

 715          KK  050130 COMBINE
 716          HC       2

 717          KK  050140    FROM  050130
 718          RK    1319  0.0027   0.013            DEEP     7.0

 719          KK  050140   BASIN
 720          BA   0.086
 721          LS       0      79       0       0      98       0
 722          UK      94  0.0100    0.35      25
 723          UK     154  0.0100    0.10      75
 724          RK    1224  0.0038    0.02            TRAP       9     1.0
 725          RK    1267  0.0033    0.02            TRAP      79     1.0

 726          KK  050140 COMBINE
 727          HC       2

 728          KK  050150    FROM  050140
 729          RK    1252  0.0006   0.013            DEEP     5.0

 730          KK  050150   BASIN
 731          BA   0.011
 732          LS       0      79       0       0      98       0
 733          UK     159  0.0100    0.30      57
 734          UK      57  0.0100    0.10      43
 735          RK    1202  0.0033    0.02            TRAP      60     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 736          KK  050150 COMBINE
 737          HC       2
              *
              * Thomas Rd Outfall to Indian Bend Wash
              *

 738          KK  050160    FROM  050150
 739          RK     332  0.0048   0.013            DEEP     6.0
              *
              * Notice:
              * This document, together with the concepts and designs presented herein, as an
              * instrument of service, is intended for the specific purpose and client for
              * which it was prepared.  Reuse of and improper reliance on this document
              * without written authorization and adaptation by Kimley-Horn and Associates,
              * Inc. shall be without liability to Kimley-Horn and Associates, Inc.
              *
 740          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

 13       070808
               .
               .
 21            .-------->  808OUT
 20        808PP
               V
               V
 24       070610
               .
               .
 26            .      070610
               .           .
               .           .
 33            .           .-------->  610OUT
 32            .       610PP
               .           .
               .           .
 36       070610............
               V
               V
 38       070508
               .
               .
 40            .      070508
               .           .
               .           .
 47            .           .-------->  508OUT
 46            .       508PP
               .           .
               .           .
 50       070508............
               V
               V
 52       070010
               .
               .
 54            .      070010
               .           .
               .           .
 61            .           .-------->  010OUT
 60            .       010PP
               .           .
               .           .
 64       070010............
               V
               V
 66       070210
               .
               .
 68            .      070209
               .           V
               .           V
 74            .      070210
               .           .
               .           .
 76            .           .      070210
               .           .           .
               .           .           .
 82            .      070210............
```

```
          .           .
          .           .
 85       .           .-------> 210OUT
 84       .       210PP
          .           .
          .           .
 88   070210............
          V
          V
 90   050005
          .
          .
 92       .       050005
          .           .
          .           .
 99       .           .-------> 005OUT
 98       .       005PP
          .           .
          .           .
104       .           .           .<-------  010OUT
102       .           .      070010
          .           .           V
          .           .           V
105       .           .      070020
          .           .           V
          .           .           V
107       .           .      070030
          .           .           .
          .           .           .
109       .           .           .      070030
          .           .           .           .
          .           .           .           .
115       .           .      070030............
          .           .           V
          .           .           V
117       .           .      070040
          .           .           .
          .           .           .
121       .           .           .           .<-------  210OUT
119       .           .           .      070210
          .           .           .           V
          .           .           .           V
122       .           .           .      070220
          .           .           .           V
          .           .           .           V
124       .           .           .      070040
          .           .           .           .
          .           .           .           .
126       .           .           .           .      070040
          .           .           .           .           .
          .           .           .           .           .
132       .           .      070040........................
          .           .           V
          .           .           V
134       .           .      070050
          .           .           .
          .           .           .
136       .           .           .      070050
          .           .           .           .
          .           .           .           .
143       .           .      070050............
          .           .           V
          .           .           V
145       .           .      070060
          .           .           .
          .           .           .
```

```
147          .          .          .      070310
             .          .          .          V
             .          .          .          V
154          .          .          .      070060
             .          .          .          .
             .          .          .          .
156          .          .          .          .      070060
             .          .          .          .          .
             .          .          .          .          .
162          .          .     070060........................
             .          .          V
             .          .          V
164          .          .     070070
             .          .          .
             .          .          .
166          .          .          .      070070
             .          .          .          .
             .          .          .          .
172          .          .          .          .      070080
             .          .          .          .          .
             .          .          .          .          .
178          .          .     070080........................
             .          .          V
             .          .          V
180          .          .      07Det
             .          .          .
             .          .          .
186          .          .          .-------->  07Qspl
185          .          .     07Qpip
             .          .          V
             .          .          V
189          .          .     070420
             .          .          .
             .          .          .
191          .          .          .      070410
             .          .          .          V
             .          .          .          V
197          .          .          .      070420
             .          .          .          .
             .          .          .          .
199          .          .          .          .      070420
             .          .          .          .          .
             .          .          .          .          .
205          .          .     070420........................
             .          .          V
             .          .          V
207          .          .     210005
             .          .          .
             .          .          .
209          .          .          .      210005
             .          .          .          .
             .          .          .          .
216          .          .     210005............
             .          .          V
             .          .          V
218          .          .     050030
             .          .          .
             .          .          .
222          .          .          .          .<-------  005OUT
220          .          .          .      050005
             .          .          .          V
             .          .          .          V
223          .          .          .      050010
             .          .          .          .
             .          .          .          .
225          .          .          .          .      050010
```

```
                .         .         .         .         .
                .         .         .         .         .
232             .         .         .   050010............
                .         .         .       V
                .         .         .       V
234             .         .         .   050020
                .         .         .       .
                .         .         .       .
236             .         .         .       .     050210
                .         .         .       .         V
                .         .         .       .         V
243             .         .         .       .      210ST
                .         .         .       .         V
                .         .         .       .         V
249             .         .         .       .     050020
                .         .         .       .         .
                .         .         .       .         .
251             .         .         .       .         .     050020
                .         .         .       .         .         .
                .         .         .       .         .         .
257             .         .         .   050020.......................
                .         .         .       V
                .         .         .       V
259             .         .         .   050030
                .         .         .       .
                .         .         .       .
261             .         .         .       .     050030
                .         .         .       .         V
                .         .         .       .         V
268             .         .         .       .      030ST
                .         .         .       .         .
                .         .         .       .         .
274             .         .   050030.......................
                .         .         V
                .         .         V
276             .         .   050305
                .         .         V
                .         .         V
278             .         .   050050
                .         .         .
                .         .         .
280             .         .         .   050040
                .         .         .       V
                .         .         .       V
287             .         .         .   40STOR
                .         .         .       V
                .         .         .       V
292             .         .         .   050050
                .         .         .       .
                .         .         .       .
294             .         .         .       .     050310
                .         .         .       .         .
                .         .         .       .         .
301             .         .         .       .         .     050065
                .         .         .       .         .         .
                .         .         .       .         .         .
307             .         .         .       .         .         .     050060
                .         .         .       .         .         .         .
                .         .         .       .         .         .         .
313             .         .   050050.............................................
                .         .         V
                .         .         V
315             .         .    05Det
                .         .         .
                .         .         .
321             .         .         .-------> 05Qspl
```

```
320          .          .      05Qpip
             .          .          .
             .          .          .
324          .          .          .      050062
             .          .          .          V
             .          .          .          V
331          .          .          .      050610
             .          .          .          .
             .          .          .          .
333          .          .          .          .      050610
             .          .          .          .          .
             .          .          .          .          .
340          .          .      050610.......................
             .          .          V
             .          .          V
342          .          .      050620
             .          .          .
             .          .          .
344          .          .          .      050620
             .          .          .          .
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351          .          .      050620............
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353          .          .      050630
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355          .          .          .      050630
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362          .          .      050630............
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364          .          .      050640
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366          .          .          .      050710
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372          .          .          .      050720
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374          .          .          .          .      050720
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381          .          .          .      050720............
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383          .          .          .      050640
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385          .          .          .          .      050640
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392          .          .      050640.......................
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395          .          .          .-------->    05CC
394          .          .        05SC
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398          .          .      050650
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400          .          .          .      050910
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406              .         .         .    050650
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408              .         .         .         .    050650
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415              .         .    050650.......................
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417              .         .    050660
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419              .         .         .    050660
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426              .         .    050660............
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428              .         .    051410
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430              .         .         .    051410
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437              .         .    051410............
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439              .         .    051420
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442              .         .         .         .<-------    05CC
441              .         .         .    050640
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443              .         .         .    051510
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445              .         .         .         .    050810
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454              .         .         .         .         .    051510
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461              .         .         .    051510.......................
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463              .         .         .    051520
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472              .         .         .         .    051520
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474              .         .         .         .         .    051710
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481              .         .         .         .         .    051520
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490             .         .         .   051520.....................................
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501             .         .         .   051530............
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503             .         .         .   051540
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505             .         .         .         .     051810
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512             .         .         .         .     051540
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521             .         .         .   051540........................
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523             .         .         .   051550
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525             .         .         .   051560
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527             .         .         .         .     051560
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533             .         .         .   051560............
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535             .         .         .   051570
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538             .         .         .         .         .<-------  05Qspl
537             .         .         .         .     05Qspl
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539             .         .         .         .     050060
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541             .         .         .         .     050070
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543             .         .         .         .         .     050410
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550             .         .         .         .         .     050070
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558             .         .         .         .     050070........................
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568   .   .   .   .   050080............
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570   .   .   .   .   050090
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572   .   .   .   .       .   050510
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579   .   .   .   .       .   050090
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588   .   .   .   .   050090........................
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590   .   .   .   .   050100
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599   .   .   .   .   050100............
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610   .   .   .   .   050110............
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612   .   .   .   .   050120
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614   .   .   .   .       .   051010
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621   .   .   .   .       .   1010ST
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627   .   .   .   .       .   051020
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629   .   .   .   .       .       .   051110
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636   .   .   .   .       .       .   051020
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645   .   .   .   .       .   051020........................
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647          .         .         .         .         .    051030
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693          .         .         .         .         .    051040............
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695          .         .         .         .         .    050120
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704          .         .         .         .    050120........................
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706          .         .         .         .    050130
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708          .         .         .         .         .    050130
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715          .         .         .         .    050130............
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717          .         .         .         .    050140
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719          .         .         .         .         .    050140
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726          .         .         .         .    050140............
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728          .          .          .          .      050150
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730          .          .          .          .          .      050150
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736          .          .          .          .      050150............
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738          .          .          .          .      050160
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1343001471 HMVersion: 6.33 Data File: altc610.hc1

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****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*              MAY   1991              *                    *   HYDROLOGIC ENGINEERING CENTER      *
*           VERSION 4.0.1E             *                    *         609 SECOND STREET            *
*                                      *                    *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  12/19/1997  TIME  09:50:08 *                    *          (916) 756-1104              *
*                                      *                    *                                      *
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                         STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
                         SCOTTSDALE - TEMPE - PHOENIX
                         ****************************************************************************

                         Kimley-Horn and Associates, Inc.
                         KVL Consultants, Inc.

                         10-Year, 6-Hour Storm Event
                         10/97

 12 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           2  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1    0  ENDING DATE
                     NDTIME        0958  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL    0.03 HOURS
                      TOTAL TIME BASE    9.97 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

        *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT


        *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT


        *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT
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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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	070808	12.	3.43	2.	1.	1.	0.02		
DIVERSION TO	808OUT	0.	3.43	0.	0.	0.	0.02		
HYDROGRAPH AT	808PP	12.	3.43	2.	1.	1.	0.02		
ROUTED TO	070610	12.	3.43	2.	1.	1.	0.02		
HYDROGRAPH AT	070610	5.	3.43	1.	0.	0.	0.01		
DIVERSION TO	610OUT	0.	3.40	0.	0.	0.	0.01		
HYDROGRAPH AT	610PP	5.	3.40	1.	0.	0.	0.01		
2 COMBINED AT	070610	17.	3.43	3.	2.	2.	0.02		
ROUTED TO	070508	17.	3.43	3.	2.	2.	0.02		
HYDROGRAPH AT	070508	4.	3.50	1.	0.	0.	0.01		
DIVERSION TO	508OUT	0.	3.50	0.	0.	0.	0.01		
HYDROGRAPH AT	508PP	4.	3.50	1.	0.	0.	0.01		
2 COMBINED AT	070508	21.	3.47	3.	2.	2.	0.03		
ROUTED TO	070010	21.	3.47	3.	2.	2.	0.03		
HYDROGRAPH AT	070010	7.	3.43	1.	1.	1.	0.01		
DIVERSION TO	010OUT	0.	3.43	0.	0.	0.	0.01		
HYDROGRAPH AT	010PP	6.	3.43	1.	1.	1.	0.01		
2 COMBINED AT	070010	27.	3.47	4.	3.	3.	0.04		
ROUTED TO	070210	27.	3.47	4.	3.	3.	0.04		
HYDROGRAPH AT	070209	12.	3.47	2.	1.	1.	0.02		
ROUTED TO	070210	12.	3.47	2.	1.	1.	0.02		
HYDROGRAPH AT	070210	5.	3.47	1.	0.	0.	0.01		
2 COMBINED AT	070210	17.	3.47	3.	2.	2.	0.03		
DIVERSION TO	210OUT	0.	3.43	0.	0.	0.	0.03		
HYDROGRAPH AT	210PP	17.	3.43	3.	2.	2.	0.03		
2 COMBINED AT	070210	44.	3.47	7.	4.	4.	0.07		
ROUTED TO	050005	44.	3.47	7.	4.	4.	0.07		
HYDROGRAPH AT	050005	21.	3.53	3.	2.	2.	0.04		
DIVERSION TO	005OUT	0.	3.53	0.	0.	0.	0.04		

HYDROGRAPH AT	005PP	21.	3.53	3.	2.	2.	0.04		
HYDROGRAPH AT	070010	0.	3.37	0.	0.	0.	0.00		
ROUTED TO	070020	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070030	0.	3.67	0.	0.	0.	0.00		
HYDROGRAPH AT	070030	5.	3.07	1.	0.	0.	0.00		
2 COMBINED AT	070030	5.	3.07	1.	0.	0.	0.00		
ROUTED TO	070040	5.	3.10	1.	0.	0.	0.00		
HYDROGRAPH AT	070210	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070220	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070040	0.	3.77	0.	0.	0.	0.00		
HYDROGRAPH AT	070040	5.	3.20	1.	0.	0.	0.01		
3 COMBINED AT	070040	9.	3.13	1.	1.	1.	0.01		
ROUTED TO	070050	9.	3.17	1.	1.	1.	0.01		
HYDROGRAPH AT	070050	24.	3.07	2.	1.	1.	0.02		
2 COMBINED AT	070050	30.	3.10	4.	2.	2.	0.03		
ROUTED TO	070060	30.	3.13	4.	2.	2.	0.03		
HYDROGRAPH AT	070310	30.	3.07	3.	2.	2.	0.02		
ROUTED TO	070060	30.	3.10	3.	2.	2.	0.02		
HYDROGRAPH AT	070060	25.	3.10	3.	2.	2.	0.02		
3 COMBINED AT	070060	84.	3.10	9.	6.	6.	0.07		
ROUTED TO	070070	82.	3.13	9.	6.	6.	0.07		
HYDROGRAPH AT	070070	42.	3.07	4.	3.	3.	0.03		
HYDROGRAPH AT	070080	52.	3.13	4.	2.	2.	0.02		
3 COMBINED AT	070080	168.	3.13	17.	10.	10.	0.12		
ROUTED TO	07Det	46.	3.67	17.	10.	10.	0.12	69.95	3.67
DIVERSION TO	07Qspl	0.	3.67	0.	0.	0.	0.12		
HYDROGRAPH AT	07Qpip	46.	3.67	17.	10.	10.	0.12		
ROUTED TO	070420	46.	3.67	17.	10.	10.	0.12		
HYDROGRAPH AT	070410	17.	3.13	2.	1.	1.	0.01		
ROUTED TO	070420	17.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	070420	5.	3.20	0.	0.	0.	0.00		
3 COMBINED AT	070420	59.	3.20	19.	12.	12.	0.14		
ROUTED TO	210005	59.	3.20	19.	12.	12.	0.14		

HYDROGRAPH AT	210005	13.	3.23	1.	1.	1.	0.01		
2 COMBINED AT	210005	72.	3.23	20.	12.	12.	0.15		
ROUTED TO	050030	72.	3.23	20.	12.	12.	0.15		
HYDROGRAPH AT	050005	0.	3.40	0.	0.	0.	0.00		
ROUTED TO	050010	0.	4.63	0.	0.	0.	0.00		
HYDROGRAPH AT	050010	96.	3.13	8.	5.	5.	0.07		
2 COMBINED AT	050010	96.	3.13	8.	5.	5.	0.07		
ROUTED TO	050020	93.	3.17	8.	5.	5.	0.07		
HYDROGRAPH AT	050210	100.	3.13	8.	5.	5.	0.05		
ROUTED TO	210ST	0.	5.53	0.	0.	0.	0.05	0.55	9.97
ROUTED TO	050020	0.	4.73	0.	0.	0.	0.05		
HYDROGRAPH AT	050020	13.	3.17	1.	1.	1.	0.01		
3 COMBINED AT	050020	106.	3.17	10.	6.	6.	0.13		
ROUTED TO	050030	103.	3.20	10.	6.	6.	0.13		
HYDROGRAPH AT	050030	54.	3.10	3.	2.	2.	0.02		
ROUTED TO	030ST	20.	3.27	2.	1.	1.	0.02	68.13	3.27
3 COMBINED AT	050030	190.	3.20	32.	20.	20.	0.30		
ROUTED TO	050305	188.	3.20	32.	20.	20.	0.30		
ROUTED TO	050050	186.	3.27	32.	20.	20.	0.30		
HYDROGRAPH AT	050040	105.	3.20	12.	7.	7.	0.10		
ROUTED TO	40STOR	37.	3.67	12.	7.	7.	0.10	61.58	3.67
ROUTED TO	050050	37.	3.67	12.	7.	7.	0.10		
HYDROGRAPH AT	050310	75.	3.13	6.	4.	4.	0.04		
HYDROGRAPH AT	050065	37.	3.07	2.	1.	1.	0.01		
HYDROGRAPH AT	050060	53.	3.17	5.	3.	3.	0.03		
5 COMBINED AT	050050	341.	3.23	58.	35.	35.	0.48		
ROUTED TO	05Det	71.	4.70	55.	36.	36.	0.48	54.77	4.70
DIVERSION TO	05Qspl	0.	4.70	0.	0.	0.	0.48		
HYDROGRAPH AT	05Qpip	71.	4.70	55.	36.	36.	0.48		
HYDROGRAPH AT	050062	40.	3.07	2.	1.	1.	0.01		
ROUTED TO	050610	38.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	050610	99.	3.17	10.	6.	6.	0.08		
3 COMBINED AT	050610	173.	3.17	67.	43.	43.	0.58		

ROUTED TO	050620	172.	3.17	67.	43.	43.	0.58
HYDROGRAPH AT	050620	111.	3.17	12.	7.	7.	0.10
2 COMBINED AT	050620	283.	3.17	78.	50.	50.	0.67
ROUTED TO	050630	280.	3.20	78.	50.	50.	0.67
HYDROGRAPH AT	050630	120.	3.13	9.	6.	6.	0.06
2 COMBINED AT	050630	374.	3.20	87.	56.	56.	0.74
ROUTED TO	050640	374.	3.20	87.	56.	56.	0.74
HYDROGRAPH AT	050710	11.	3.13	1.	1.	1.	0.00
ROUTED TO	050720	11.	3.17	1.	1.	1.	0.00
HYDROGRAPH AT	050720	54.	3.20	5.	3.	3.	0.03
2 COMBINED AT	050720	64.	3.20	6.	3.	3.	0.03
ROUTED TO	050640	63.	3.20	6.	3.	3.	0.03
HYDROGRAPH AT	050640	65.	3.20	6.	3.	3.	0.03
3 COMBINED AT	050640	502.	3.20	98.	63.	63.	0.80
DIVERSION TO	05CC	153.	3.20	81.	53.	53.	0.80
HYDROGRAPH AT	05SC	349.	3.20	17.	10.	10.	0.80
ROUTED TO	050650	341.	3.20	17.	10.	10.	0.80
HYDROGRAPH AT	050910	23.	3.13	2.	1.	1.	0.01
ROUTED TO	050650	22.	3.17	2.	1.	1.	0.01
HYDROGRAPH AT	050650	42.	3.13	3.	2.	2.	0.02
3 COMBINED AT	050650	399.	3.20	22.	13.	13.	0.83
ROUTED TO	050660	390.	3.23	22.	13.	13.	0.83
HYDROGRAPH AT	050660	40.	3.17	3.	2.	2.	0.02
2 COMBINED AT	050660	426.	3.20	25.	15.	15.	0.85
ROUTED TO	051410	424.	3.23	25.	15.	15.	0.85
HYDROGRAPH AT	051410	178.	3.13	13.	8.	8.	0.07
2 COMBINED AT	051410	550.	3.23	38.	23.	23.	0.92
ROUTED TO	051420	547.	3.23	38.	23.	23.	0.92
HYDROGRAPH AT	050640	153.	3.07	81.	53.	53.	0.00
ROUTED TO	051510	153.	3.10	81.	53.	53.	0.00
HYDROGRAPH AT	050810	25.	3.17	2.	1.	1.	0.01
ROUTED TO	051510	25.	3.20	2.	1.	1.	0.01
HYDROGRAPH AT	051510	21.	3.13	2.	1.	1.	0.01

3 COMBINED AT	051510	198.	3.17	85.	55.	55.	0.02
ROUTED TO	051520	197.	3.17	85.	55.	55.	0.02
HYDROGRAPH AT	051610	39.	3.17	3.	2.	2.	0.02
ROUTED TO	051520	39.	3.17	3.	2.	2.	0.02
HYDROGRAPH AT	051710	8.	3.17	1.	0.	0.	0.00
ROUTED TO	051520	8.	3.17	1.	0.	0.	0.00
HYDROGRAPH AT	051520	43.	3.17	4.	2.	2.	0.02
4 COMBINED AT	051520	287.	3.17	93.	60.	60.	0.07
ROUTED TO	051530	284.	3.20	93.	60.	60.	0.07
HYDROGRAPH AT	051530	92.	3.17	7.	4.	4.	0.04
2 COMBINED AT	051530	373.	3.17	100.	64.	64.	0.11
ROUTED TO	051540	369.	3.20	100.	64.	64.	0.11
HYDROGRAPH AT	051810	12.	3.13	1.	1.	1.	0.00
ROUTED TO	051540	12.	3.13	1.	1.	1.	0.00
HYDROGRAPH AT	051540	9.	3.13	1.	0.	0.	0.00
3 COMBINED AT	051540	387.	3.17	101.	65.	65.	0.12
ROUTED TO	051550	385.	3.20	101.	65.	65.	0.12
ROUTED TO	051560	385.	3.20	101.	65.	65.	0.12
HYDROGRAPH AT	051560	10.	3.17	1.	1.	1.	0.01
2 COMBINED AT	051560	394.	3.20	102.	66.	66.	0.13
ROUTED TO	051570	393.	3.20	102.	66.	66.	0.13
HYDROGRAPH AT	05Qspl	0.	3.50	0.	0.	0.	0.00
ROUTED TO	050060	0.	4.23	0.	0.	0.	0.00
ROUTED TO	050070	0.	5.60	0.	0.	0.	0.00
HYDROGRAPH AT	050410	86.	3.13	7.	4.	4.	0.04
ROUTED TO	050070	84.	3.13	7.	4.	4.	0.04
HYDROGRAPH AT	050070	179.	3.17	15.	9.	9.	0.08
3 COMBINED AT	050070	261.	3.17	22.	13.	13.	0.13
ROUTED TO	050080	255.	3.20	22.	13.	13.	0.13
HYDROGRAPH AT	050080	23.	3.13	2.	1.	1.	0.02
2 COMBINED AT	050080	275.	3.17	24.	15.	15.	0.15
ROUTED TO	050090	275.	3.20	24.	15.	15.	0.15
HYDROGRAPH AT	050510	78.	3.17	7.	4.	4.	0.05

ROUTED TO	050090	78.	3.17	7.	4.	4.	0.05		
HYDROGRAPH AT	050090	76.	3.17	6.	4.	4.	0.04		
3 COMBINED AT	050090	425.	3.17	37.	23.	23.	0.24		
ROUTED TO	050100	418.	3.20	37.	23.	23.	0.24		
HYDROGRAPH AT	050100	106.	3.13	8.	5.	5.	0.05		
2 COMBINED AT	050100	521.	3.17	46.	28.	28.	0.28		
ROUTED TO	050110	516.	3.20	46.	28.	28.	0.28		
HYDROGRAPH AT	050110	22.	3.17	2.	1.	1.	0.01		
2 COMBINED AT	050110	536.	3.20	47.	29.	29.	0.29		
ROUTED TO	050120	535.	3.20	47.	29.	29.	0.29		
HYDROGRAPH AT	051010	42.	3.13	4.	2.	2.	0.02		
ROUTED TO	1010ST	3.	4.23	1.	0.	0.	0.02	61.01	4.23
ROUTED TO	051020	3.	4.43	1.	0.	0.	0.02		
HYDROGRAPH AT	051110	58.	3.13	5.	3.	3.	0.03		
ROUTED TO	051020	57.	3.17	5.	3.	3.	0.03		
HYDROGRAPH AT	051020	49.	3.20	4.	3.	3.	0.03		
3 COMBINED AT	051020	106.	3.17	10.	6.	6.	0.08		
ROUTED TO	051030	105.	3.20	10.	6.	6.	0.08		
HYDROGRAPH AT	051210	19.	3.10	1.	1.	1.	0.01		
ROUTED TO	051030	19.	3.13	1.	1.	1.	0.01		
HYDROGRAPH AT	051310	7.	3.13	1.	0.	0.	0.00		
ROUTED TO	051320	7.	3.17	1.	0.	0.	0.00		
HYDROGRAPH AT	051320	22.	3.13	2.	1.	1.	0.01		
2 COMBINED AT	051320	29.	3.13	2.	1.	1.	0.01		
ROUTED TO	051030	29.	3.20	2.	1.	1.	0.01		
HYDROGRAPH AT	051030	57.	3.20	5.	3.	3.	0.03		
4 COMBINED AT	051030	206.	3.20	19.	11.	11.	0.13		
ROUTED TO	051040	203.	3.23	19.	11.	11.	0.13		
HYDROGRAPH AT	051040	54.	3.20	5.	3.	3.	0.04		
2 COMBINED AT	051040	253.	3.23	24.	14.	14.	0.16		
ROUTED TO	050120	249.	3.23	24.	14.	14.	0.16		
HYDROGRAPH AT	050120	86.	3.17	7.	4.	4.	0.04		
3 COMBINED AT	050120	842.	3.20	78.	47.	47.	0.49		

ROUTED TO	050130	837.	3.23	78.	47.	47.	0.49
HYDROGRAPH AT	050130	199.	3.17	17.	10.	10.	0.10
2 COMBINED AT	050130	1016.	3.23	95.	57.	57.	0.59
ROUTED TO	050140	1011.	3.23	95.	57.	57.	0.59
HYDROGRAPH AT	050140	175.	3.13	14.	8.	8.	0.09
2 COMBINED AT	050140	1139.	3.23	108.	66.	66.	0.68
ROUTED TO	050150	1123.	3.27	108.	66.	66.	0.68
HYDROGRAPH AT	050150	12.	3.17	1.	1.	1.	0.01
2 COMBINED AT	050150	1132.	3.27	110.	66.	66.	0.69
ROUTED TO	050160	1131.	3.27	110.	66.	66.	0.69

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
070808	MANE	0.73	12.39	206.77	1.00	2.00	12.37	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9191E+00 OUTFLOW=0.9057E+00 BASIN STORAGE=0.9232E-02 PERCENT ERROR= 0.5

070610	MANE	0.18	11.99	206.43	1.00	2.00	11.99	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9031E+00 EXCESS=0.0000E+00 OUTFLOW=0.9031E+00 BASIN STORAGE=0.5171E-04 PERCENT ERROR= 0.0

070610	MANE	0.47	5.12	206.50	1.00	2.00	5.11	206.00	1.00

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3785E+00 OUTFLOW=0.3729E+00 BASIN STORAGE=0.3754E-02 PERCENT ERROR= 0.5

070508	MANE	0.27	16.98	206.55	1.00	2.00	16.98	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1275E+01 EXCESS=0.0000E+00 OUTFLOW=0.1275E+01 BASIN STORAGE=0.1197E-03 PERCENT ERROR= 0.0

070508	MANE	0.71	4.42	210.48	0.83	2.00	4.40	210.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3592E+00 OUTFLOW=0.3530E+00 BASIN STORAGE=0.4247E-02 PERCENT ERROR= 0.5

070010	MANE	0.18	20.97	207.86	0.95	2.00	20.97	208.00	0.95

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1624E+01 EXCESS=0.0000E+00 OUTFLOW=0.1624E+01 BASIN STORAGE=0.9866E-04 PERCENT ERROR= 0.0

070010	MANE	1.09	6.53	206.99	1.00	2.00	6.50	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4866E+00 OUTFLOW=0.4794E+00 BASIN STORAGE=0.5001E-02 PERCENT ERROR= 0.4

070210	MANE	0.11	27.45	208.01	0.96	2.00	27.45	208.00	0.96

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.2103E+01 EXCESS=0.0000E+00 OUTFLOW=0.2103E+01 BASIN STORAGE=0.7125E-04 PERCENT ERROR= 0.0

070209	MANE	0.46	11.88	206.50	0.94	2.00	11.86	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9154E+00 OUTFLOW=0.9007E+00 BASIN STORAGE=0.1018E-01 PERCENT ERROR= 0.5

070210	MANE	0.36	11.85	207.78	0.94	2.00	11.85	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9005E+00 EXCESS=0.0000E+00 OUTFLOW=0.9004E+00 BASIN STORAGE=0.1804E-03 PERCENT ERROR= 0.0

070210	MANE	0.70	5.27	207.97	0.94	2.00	5.27	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4069E+00 OUTFLOW=0.4004E+00 BASIN STORAGE=0.4546E-02 PERCENT ERROR= 0.5

050005	MANE	0.50	44.43	208.32	0.95	2.00	44.42	208.00	0.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3403E+01 EXCESS=0.0000E+00 OUTFLOW=0.3403E+01 BASIN STORAGE=0.5932E-03 PERCENT ERROR= 0.0

050005	MANE	1.25	20.70	210.86	0.83	2.00	20.62	212.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1706E+01 OUTFLOW=0.1674E+01 BASIN STORAGE=0.2220E-01 PERCENT ERROR= 0.5

070020	MANE	0.45	0.01	207.04	-1.00	2.00	0.01	208.00	-1.00
070030	MANE	2.00	0.01	222.25	-1.00	2.00	0.01	222.00	-1.00
070030	MANE	0.85	5.34	184.06	1.17	2.00	5.33	184.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2515E+00 OUTFLOW=0.2501E+00 BASIN STORAGE=0.1024E-02 PERCENT ERROR= 0.2

070040	MANE	0.43	5.26	184.66	1.18	2.00	5.07	186.00	1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2507E+00 EXCESS=0.0000E+00 OUTFLOW=0.2508E+00 BASIN STORAGE=0.9675E-04 PERCENT ERROR= 0.0

070220	MANE	0.31	0.12	208.48	-1.00	2.00	0.10	208.00	-1.00
070040	MANE	1.94	0.13	225.41	-1.00	2.00	0.11	226.00	-1.00
070040	MANE	2.00	4.95	192.74	1.14	2.00	4.92	192.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3678E+00 OUTFLOW=0.3632E+00 BASIN STORAGE=0.3287E-02 PERCENT ERROR= 0.3

070050	MANE	1.40	8.63	189.86	1.15	2.00	8.62	190.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6163E+00 EXCESS=0.0000E+00 OUTFLOW=0.6150E+00 BASIN STORAGE=0.8373E-03 PERCENT ERROR= 0.1

070050	MANE	0.78	24.29	184.85	1.21	2.00	23.78	184.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1166E+01 OUTFLOW=0.1159E+01 BASIN STORAGE=0.5169E-02 PERCENT ERROR= 0.2

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070060  MANE        0.97     29.75    187.77      1.19      2.00     29.61    188.00        1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1774E+01 EXCESS=0.0000E+00 OUTFLOW=0.1775E+01 BASIN STORAGE=0.6068E-03 PERCENT ERROR=  -0.1

070310  MANE        0.76     30.67    184.48      1.21      2.00     30.08    184.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1490E+01 OUTFLOW=0.1481E+01 BASIN STORAGE=0.6574E-02 PERCENT ERROR=   0.2

070060  MANE        0.74     29.98    185.96      1.21      2.00     29.98    186.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1481E+01 EXCESS=0.0000E+00 OUTFLOW=0.1482E+01 BASIN STORAGE=0.3630E-03 PERCENT ERROR=  -0.1

070060  MANE        1.23     25.91    185.60      1.21      2.00     25.47    186.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1296E+01 OUTFLOW=0.1288E+01 BASIN STORAGE=0.5563E-02 PERCENT ERROR=   0.1

070070  MANE        0.67     82.61    187.81      1.20      2.00     82.33    188.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4545E+01 EXCESS=0.0000E+00 OUTFLOW=0.4545E+01 BASIN STORAGE=0.2515E-02 PERCENT ERROR=  -0.1

070070  MANE        0.94     42.52    184.23      1.21      2.00     42.12    184.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2073E+01 OUTFLOW=0.2061E+01 BASIN STORAGE=0.8684E-02 PERCENT ERROR=   0.2

070080  MANE        1.20     51.89    187.39      1.72      2.00     51.60    188.00        1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1932E+01 OUTFLOW=0.1925E+01 BASIN STORAGE=0.3459E-02 PERCENT ERROR=   0.2

070420  MANE        0.57     45.74    220.82      1.28      2.00     45.74    220.00        1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8494E+01 EXCESS=0.0000E+00 OUTFLOW=0.8494E+01 BASIN STORAGE=0.1546E-02 PERCENT ERROR=   0.0

070410  MANE        1.87     17.40    187.32      1.36      2.00     17.33    188.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8003E+00 OUTFLOW=0.7949E+00 BASIN STORAGE=0.3259E-02 PERCENT ERROR=   0.3

070420  MANE        0.32     17.31    188.65      1.35      2.00     16.89    188.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7944E+00 EXCESS=0.0000E+00 OUTFLOW=0.7946E+00 BASIN STORAGE=0.2700E-03 PERCENT ERROR=  -0.1

070420  MANE        2.00      4.86    190.82      1.49      2.00      4.84    192.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2409E+00 OUTFLOW=0.2387E+00 BASIN STORAGE=0.1374E-02 PERCENT ERROR=   0.3
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210005  MANE        0.26     59.21    192.44      1.29      2.00     59.12    192.00        1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9526E+01 EXCESS=0.0000E+00 OUTFLOW=0.9525E+01 BASIN STORAGE=0.7249E-03 PERCENT ERROR=   0.0

210005  MANE        2.00     13.06    194.11      1.48      2.00     13.04    194.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6370E+00 OUTFLOW=0.6324E+00 BASIN STORAGE=0.3350E-02 PERCENT ERROR=   0.2

050030  MANE        0.82     71.80    194.69      1.30      2.00     71.78    194.00        1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1016E+02 EXCESS=0.0000E+00 OUTFLOW=0.1016E+02 BASIN STORAGE=0.2660E-02 PERCENT ERROR=   0.0

050010  MANE        2.00      0.01    283.63     -1.00      2.00      0.01    282.00       -1.00

050010  MANE        1.33     96.72    187.31      1.20      2.00     95.85    188.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4245E+01 OUTFLOW=0.4215E+01 BASIN STORAGE=0.2301E-01 PERCENT ERROR=   0.2

050020  MANE        1.39     93.12    190.07      1.20      2.00     92.86    190.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4220E+01 EXCESS=0.0000E+00 OUTFLOW=0.4213E+01 BASIN STORAGE=0.6933E-02 PERCENT ERROR=   0.0

050210  MANE        0.98     99.92    188.76      1.46      2.00     99.54    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4226E+01 OUTFLOW=0.4205E+01 BASIN STORAGE=0.1724E-01 PERCENT ERROR=   0.1

050020  MANE        2.00      0.01    599.05      0.00      2.00      0.01    598.00        0.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2856E-02 EXCESS=0.0000E+00 OUTFLOW=0.2431E-02 BASIN STORAGE=0.4309E-03 PERCENT ERROR=  -0.2

050020  MANE        2.00     12.86    189.95      1.32      2.00     12.85    190.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6373E+00 OUTFLOW=0.6317E+00 BASIN STORAGE=0.4033E-02 PERCENT ERROR=   0.2

050030  MANE        0.37    105.06    190.65      0.70      2.00    103.35    192.00        0.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4844E+01 EXCESS=0.0000E+00 OUTFLOW=0.4844E+01 BASIN STORAGE=0.2094E-02 PERCENT ERROR=   0.0

050030  MANE        1.39     54.49    185.60      1.63      2.00     53.61    186.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1742E+01 OUTFLOW=0.1739E+01 BASIN STORAGE=0.2044E-02 PERCENT ERROR=   0.0
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050305  MANE        0.22    189.38    192.40      1.03      2.00    188.41    192.00        1.03

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1613E+02 BASIN STORAGE=0.4682E-03 PERCENT ERROR=   0.0

050050  MANE        1.14    187.38    195.07      1.02      2.00    185.84    196.00        1.02

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1611E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.1

050040  MANE        1.85    106.07    192.81      1.08      2.00    105.50    192.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5976E+01 OUTFLOW=0.5901E+01 BASIN STORAGE=0.5232E-01 PERCENT ERROR=   0.4

050050  MANE        0.14     36.67    220.33      1.09      2.00     36.67    220.00        1.09

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.5915E+01 EXCESS=0.0000E+00 OUTFLOW=0.5930E+01 BASIN STORAGE=-.2270E-01 PERCENT ERROR=   0.1

050310  MANE        0.92     75.75    188.93      1.46      2.00     75.20    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3209E+01 OUTFLOW=0.3190E+01 BASIN STORAGE=0.1452E-01 PERCENT ERROR=   0.1

050065  MANE        0.57     37.43    184.88      1.63      2.00     36.96    184.00        1.63

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1294E-02 PERCENT ERROR=   0.0

050060  MANE        2.00     52.72    191.87      1.56      2.00     52.58    190.00        1.56

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2427E+01 OUTFLOW=0.2408E+01 BASIN STORAGE=0.1081E-01 PERCENT ERROR=   0.3

050062  MANE        0.98     40.00    184.01      1.63      2.00     39.98    184.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1174E-02 PERCENT ERROR=   0.0

050610  MANE        2.00     38.54    187.67      1.65      2.00     38.37    188.00        1.65

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1219E+01 EXCESS=0.0000E+00 OUTFLOW=0.1228E+01 BASIN STORAGE=0.2229E-02 PERCENT ERROR=  -1.0

050610  MANE        1.46    101.00    189.46      1.10      2.00     99.04    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4801E+01 OUTFLOW=0.4760E+01 BASIN STORAGE=0.2964E-01 PERCENT ERROR=   0.2

050620  MANE        0.58    172.55    190.62      1.16      2.00    171.92    190.00        1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3566E+02 EXCESS=0.0000E+00 OUTFLOW=0.3565E+02 BASIN STORAGE=-.6676E-02 PERCENT ERROR=   0.0
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050620  MANE        2.00    111.40    190.17      1.10      2.00    110.58    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5867E+01 OUTFLOW=0.5804E+01 BASIN STORAGE=0.4209E-01 PERCENT ERROR=   0.4

050630  MANE        0.82    280.65    191.76      1.15      2.00    279.52    192.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4146E+02 EXCESS=0.0000E+00 OUTFLOW=0.4146E+02 BASIN STORAGE=-.8841E-02 PERCENT ERROR=   0.0

050630  MANE        1.37    120.14    187.99      1.40      2.00    120.11    188.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4642E+01 OUTFLOW=0.4618E+01 BASIN STORAGE=0.1773E-01 PERCENT ERROR=   0.1

050640  MANE        0.72    374.01    192.73      1.17      2.00    373.98    192.00        1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4607E+02 EXCESS=0.0000E+00 OUTFLOW=0.4608E+02 BASIN STORAGE=-.7449E-02 PERCENT ERROR=   0.0

050710  MANE        1.41     11.04    187.86      1.63      2.00     11.03    188.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4355E+00 OUTFLOW=0.4336E+00 BASIN STORAGE=0.1041E-02 PERCENT ERROR=   0.2

050720  MANE        0.26     11.00    188.46      1.63      2.00     10.77    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4340E+00 EXCESS=0.0000E+00 OUTFLOW=0.4340E+00 BASIN STORAGE=0.1446E-04 PERCENT ERROR=   0.0

050720  MANE        2.00     54.40    190.79      1.60      2.00     53.82    192.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2400E+01 OUTFLOW=0.2385E+01 BASIN STORAGE=0.8781E-02 PERCENT ERROR=   0.3

050640  MANE        0.31     63.52    192.28      1.60      2.00     63.46    192.00        1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2816E+01 EXCESS=0.0000E+00 OUTFLOW=0.2816E+01 BASIN STORAGE=0.1211E-03 PERCENT ERROR=   0.0

050640  MANE        1.50     65.19    191.21      1.62      2.00     64.77    192.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2787E+01 OUTFLOW=0.2769E+01 BASIN STORAGE=0.9847E-02 PERCENT ERROR=   0.3

050650  MANE        0.29    348.27    192.63      0.19      2.00    341.00    192.00        0.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8255E+01 EXCESS=0.0000E+00 OUTFLOW=0.8267E+01 BASIN STORAGE=-.3391E-05 PERCENT ERROR=  -0.1

050910  MANE        1.31     23.03    188.42      1.48      2.00     22.96    188.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9556E+00 OUTFLOW=0.9500E+00 BASIN STORAGE=0.3772E-02 PERCENT ERROR=   0.2
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050650  MANE        0.59     22.75    189.42      1.49      2.00     22.40    190.00        1.49

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.9505E+00 EXCESS=0.0000E+00 OUTFLOW=0.9510E+00 BASIN STORAGE=0.1686E-03 PERCENT ERROR=  -0.1

050650  MANE        1.08     42.51    189.15      1.61      2.00     42.09    188.00        1.61

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1642E+01 OUTFLOW=0.1635E+01 BASIN STORAGE=0.4128E-02 PERCENT ERROR=   0.1

050660  MANE        0.32    397.33    192.78      0.24      2.00    390.18    194.00        0.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1086E+02 EXCESS=0.0000E+00 OUTFLOW=0.1086E+02 BASIN STORAGE=0.1478E-03 PERCENT ERROR=   0.0

050660  MANE        1.09     40.63    189.41      1.63      2.00     40.15    190.00        1.63

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1568E+01 OUTFLOW=0.1561E+01 BASIN STORAGE=0.4593E-02 PERCENT ERROR=   0.1

051410  MANE        0.79    425.07    193.59      0.27      2.00    424.31    194.00        0.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1243E+02 EXCESS=0.0000E+00 OUTFLOW=0.1243E+02 BASIN STORAGE=0.5654E-02 PERCENT ERROR=   0.0

051410  MANE        1.05    179.25    188.68      1.70      2.00    178.08    188.00        1.70

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6562E+01 OUTFLOW=0.6544E+01 BASIN STORAGE=0.1382E-01 PERCENT ERROR=   0.1

051420  MANE        0.38    548.86    194.65      0.39      2.00    546.85    194.00        0.39

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1898E+02 EXCESS=0.0000E+00 OUTFLOW=0.1899E+02 BASIN STORAGE=0.5938E-02 PERCENT ERROR=  -0.1

051510  MANE        0.41    153.00    184.88     -1.00      2.00    153.00    186.00       -1.00

050810  MANE        1.74     25.55    189.14      1.56      2.00     25.37    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1088E+01 OUTFLOW=0.1080E+01 BASIN STORAGE=0.3609E-02 PERCENT ERROR=   0.4

051510  MANE        0.59     25.29    191.22      1.56      2.00     24.71    192.00        1.56

ONTINUITY SUMMARY (AC-FT) - INFLOW=0.1079E+01 EXCESS=0.0000E+00 OUTFLOW=0.1080E+01 BASIN STORAGE=0.1186E-03 PERCENT ERROR=  -0.1

051510  MANE        1.18     21.27    188.57      1.59      2.00     21.15    188.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8506E+00 OUTFLOW=0.8466E+00 BASIN STORAGE=0.2308E-02 PERCENT ERROR=   0.2

051520  MANE        0.46    197.76    190.54     36.94      2.00    197.34    190.00       36.94
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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4531E+02 EXCESS=0.0000E+00 OUTFLOW=0.4531E+02 BASIN STORAGE=-.1631E-02 PERCENT ERROR= 0.0

051610	MANE	1.22	39.29	190.01	1.50	2.00	39.29	190.00	1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1686E+01 OUTFLOW=0.1676E+01 BASIN STORAGE=0.7637E-02 PERCENT ERROR= 0.2

051520	MANE	0.40	39.05	190.64	1.50	2.00	38.52	190.00	1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1676E+01 EXCESS=0.0000E+00 OUTFLOW=0.1676E+01 BASIN STORAGE=0.1288E-03 PERCENT ERROR= 0.0

051710	MANE	0.65	7.88	188.76	1.51	2.00	7.77	190.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3240E+00 OUTFLOW=0.3224E+00 BASIN STORAGE=0.1233E-02 PERCENT ERROR= 0.1

051520	MANE	0.60	7.76	190.34	1.51	2.00	7.75	190.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3226E+00 EXCESS=0.0000E+00 OUTFLOW=0.3227E+00 BASIN STORAGE=0.3447E-04 PERCENT ERROR= 0.0

051520	MANE	1.21	43.16	189.81	1.48	2.00	42.92	190.00	1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1831E+01 OUTFLOW=0.1819E+01 BASIN STORAGE=0.8303E-02 PERCENT ERROR= 0.2

051530	MANE	0.62	285.89	191.38	12.97	2.00	284.20	192.00	12.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4913E+02 EXCESS=0.0000E+00 OUTFLOW=0.4912E+02 BASIN STORAGE=-.1900E-02 PERCENT ERROR= 0.0

051530	MANE	0.97	92.52	188.84	1.63	2.00	91.53	190.00	1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3570E+01 OUTFLOW=0.3558E+01 BASIN STORAGE=0.8718E-02 PERCENT ERROR= 0.1

051540	MANE	0.35	372.00	190.72	8.82	2.00	368.65	192.00	8.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5267E+02 EXCESS=0.0000E+00 OUTFLOW=0.5266E+02 BASIN STORAGE=-.3276E-03 PERCENT ERROR= 0.0

051810	MANE	0.51	11.76	187.31	1.62	2.00	11.63	188.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4321E+00 OUTFLOW=0.4306E+00 BASIN STORAGE=0.7745E-03 PERCENT ERROR= 0.2

051540	MANE	0.23	11.60	188.25	1.61	2.00	11.57	188.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4304E+00 EXCESS=0.0000E+00 OUTFLOW=0.4304E+00 BASIN STORAGE=0.8082E-05 PERCENT ERROR= 0.0

051540	MANE	0.78	9.52	187.16	1.62	2.00	9.38	188.00	1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3457E+00 OUTFLOW=0.3447E+00 BASIN STORAGE=0.6075E-03 PERCENT ERROR= 0.1

051550	MANE	0.22	387.02	190.52	8.28	2.00	385.34	192.00	8.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5344E+02 EXCESS=0.0000E+00 OUTFLOW=0.5344E+02 BASIN STORAGE=-.1270E-03 PERCENT ERROR= 0.0

051560	MANE	0.37	384.72	192.17	8.28	2.00	384.53	192.00	8.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5344E+02 EXCESS=0.0000E+00 OUTFLOW=0.5344E+02 BASIN STORAGE=0.1534E-03 PERCENT ERROR= 0.0

051560	MANE	2.00	10.16	189.32	1.22	2.00	10.12	190.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5231E+00 OUTFLOW=0.5186E+00 BASIN STORAGE=0.3077E-02 PERCENT ERROR= 0.3

051570	MANE	0.22	393.54	192.12	7.84	2.00	393.11	192.00	7.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5396E+02 EXCESS=0.0000E+00 OUTFLOW=0.5396E+02 BASIN STORAGE=-.1547E-03 PERCENT ERROR= 0.0

050060	MANE	2.14	0.00	310.71	-1.00	2.00	0.00	310.00	-1.00
050070	MANE	2.00	0.00	386.64	-1.00	2.00	0.00	388.00	-1.00
050410	MANE	1.19	86.35	188.28	1.50	2.00	85.86	188.00	1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3292E+01 OUTFLOW=0.3282E+01 BASIN STORAGE=0.8189E-02 PERCENT ERROR= 0.1

050070	MANE	0.23	85.55	188.55	1.50	2.00	84.16	188.00	1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3283E+01 EXCESS=0.0000E+00 OUTFLOW=0.3283E+01 BASIN STORAGE=0.6196E-03 PERCENT ERROR= 0.0

050070	MANE	1.93	179.57	191.46	1.71	2.00	178.68	190.00	1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7713E+01 OUTFLOW=0.7660E+01 BASIN STORAGE=0.2368E-01 PERCENT ERROR= 0.4

050080	MANE	0.65	259.42	191.30	1.64	2.00	255.21	192.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1094E+02 EXCESS=0.0000E+00 OUTFLOW=0.1095E+02 BASIN STORAGE=0.1051E-02 PERCENT ERROR= 0.0

050080	MANE	2.00	23.10	188.63	1.05	2.00	22.80	188.00	1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1188E+01 OUTFLOW=0.1178E+01 BASIN STORAGE=0.6871E-02 PERCENT ERROR= 0.3

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050090  MANE        0.20    275.19    190.45      1.56      2.00    274.65    192.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1212E+02 EXCESS=0.0000E+00 OUTFLOW=0.1212E+02 BASIN STORAGE=0.3567E-03 PERCENT ERROR=   0.0

050510  MANE        1.50     79.77    189.39      1.20      2.00     78.01    190.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3494E+01 OUTFLOW=0.3470E+01 BASIN STORAGE=0.1608E-01 PERCENT ERROR=   0.2

050090  MANE        0.36     77.94    190.15      1.21      2.00     77.93    190.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3472E+01 EXCESS=0.0000E+00 OUTFLOW=0.3472E+01 BASIN STORAGE=0.2389E-03 PERCENT ERROR=   0.0

050090  MANE        1.25     77.07    188.97      1.53      2.00     75.95    190.00        1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3021E+01 OUTFLOW=0.3011E+01 BASIN STORAGE=0.7900E-02 PERCENT ERROR=   0.1

050100  MANE        0.38    423.07    190.90      1.47      2.00    418.37    192.00        1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1861E+02 EXCESS=0.0000E+00 OUTFLOW=0.1861E+02 BASIN STORAGE=0.9550E-03 PERCENT ERROR=   0.0

050100  MANE        1.41    108.52    189.10      1.73      2.00    106.25    188.00        1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4163E+01 OUTFLOW=0.4146E+01 BASIN STORAGE=0.1006E-01 PERCENT ERROR=   0.2

050110  MANE        0.37    519.58    190.75      1.51      2.00    515.68    192.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2276E+02 EXCESS=0.0000E+00 OUTFLOW=0.2276E+02 BASIN STORAGE=0.9270E-03 PERCENT ERROR=   0.0

050110  MANE        0.83     22.36    189.40      1.63      2.00     22.20    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8709E+00 OUTFLOW=0.8674E+00 BASIN STORAGE=0.2426E-02 PERCENT ERROR=   0.1

050120  MANE        0.48    534.85    192.29      1.52      2.00    534.51    192.00        1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2364E+02 EXCESS=0.0000E+00 OUTFLOW=0.2364E+02 BASIN STORAGE=0.1561E-02 PERCENT ERROR=   0.0

051010  MANE        0.97     42.42    188.52      1.46      2.00     42.04    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1800E+01 OUTFLOW=0.1791E+01 BASIN STORAGE=0.7795E-02 PERCENT ERROR=   0.1

051020  MANE        0.67      3.11    265.08      0.26      2.00      2.99    266.00        0.26

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3015E+00 EXCESS=0.0000E+00 OUTFLOW=0.3157E+00 BASIN STORAGE=0.5736E-02 PERCENT ERROR=  -6.6
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051110  MANE        1.37     58.08    189.39      1.69      2.00     57.87    188.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2262E+01 OUTFLOW=0.2252E+01 BASIN STORAGE=0.4880E-02 PERCENT ERROR=   0.2

051020  MANE        0.61     57.59    189.70      1.69      2.00     57.44    190.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2251E+01 EXCESS=0.0000E+00 OUTFLOW=0.2253E+01 BASIN STORAGE=0.9481E-03 PERCENT ERROR=  -0.1

051020  MANE        2.00     49.67    190.64      1.53      2.00     48.95    192.00        1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2223E+01 OUTFLOW=0.2207E+01 BASIN STORAGE=0.7967E-02 PERCENT ERROR=   0.4

051030  MANE        0.81    104.97    192.11      1.19      2.00    104.89    192.00        1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4771E+01 EXCESS=0.0000E+00 OUTFLOW=0.4769E+01 BASIN STORAGE=0.5335E-02 PERCENT ERROR=  -0.1

051210  MANE        0.80     18.89    187.30      1.63      2.00     18.53    186.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6967E+00 OUTFLOW=0.6948E+00 BASIN STORAGE=0.1161E-02 PERCENT ERROR=   0.1

051030  MANE        0.56     18.53    187.14      1.63      2.00     18.52    188.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6952E+00 EXCESS=0.0000E+00 OUTFLOW=0.6956E+00 BASIN STORAGE=0.2385E-03 PERCENT ERROR=  -0.1

051310  MANE        1.04      7.34    186.96      1.74      2.00      7.31    188.00        1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2796E+00 OUTFLOW=0.2789E+00 BASIN STORAGE=0.5135E-03 PERCENT ERROR=   0.1

051320  MANE        0.97      7.27    190.02      1.74      2.00      7.27    190.00        1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2788E+00 EXCESS=0.0000E+00 OUTFLOW=0.2788E+00 BASIN STORAGE=0.2282E-03 PERCENT ERROR=  -0.1

051320  MANE        0.83     22.31    187.99      1.73      2.00     22.31    188.00        1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8327E+00 OUTFLOW=0.8298E+00 BASIN STORAGE=0.1460E-02 PERCENT ERROR=   0.2

051030  MANE        1.59     28.76    191.91      1.73      2.00     28.67    192.00        1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1109E+01 EXCESS=0.0000E+00 OUTFLOW=0.1108E+01 BASIN STORAGE=0.1690E-02 PERCENT ERROR=   0.0

051030  MANE        2.00     57.28    191.92      1.65      2.00     57.27    192.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2742E+01 OUTFLOW=0.2721E+01 BASIN STORAGE=0.1172E-01 PERCENT ERROR=   0.3
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051040  MANE        1.27    203.72    195.03      1.38      2.00    202.74    194.00        1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9295E+01 EXCESS=0.0000E+00 OUTFLOW=0.9273E+01 BASIN STORAGE=0.1724E-01 PERCENT ERROR=   0.0

051040  MANE        2.00     54.49    191.52      1.32      2.00     53.60    192.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2549E+01 OUTFLOW=0.2529E+01 BASIN STORAGE=0.1339E-01 PERCENT ERROR=   0.3

050120  MANE        0.45    251.35    194.72      1.37      2.00    248.58    194.00        1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1180E+02 EXCESS=0.0000E+00 OUTFLOW=0.1180E+02 BASIN STORAGE=0.7552E-02 PERCENT ERROR=   0.0

050120  MANE        1.54     86.49    189.92      1.64      2.00     86.34    190.00        1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3423E+01 OUTFLOW=0.3405E+01 BASIN STORAGE=0.1024E-01 PERCENT ERROR=   0.2

050130  MANE        0.56    840.43    193.22      1.48      2.00    836.56    194.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3885E+02 EXCESS=0.0000E+00 OUTFLOW=0.3885E+02 BASIN STORAGE=0.6703E-02 PERCENT ERROR=   0.0

050130  MANE        1.18    201.77    190.75      1.62      2.00    198.78    190.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8359E+01 OUTFLOW=0.8308E+01 BASIN STORAGE=0.2944E-01 PERCENT ERROR=   0.3

050140  MANE        0.62   1012.85    194.58      1.50      2.00   1011.49    194.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4716E+02 EXCESS=0.0000E+00 OUTFLOW=0.4716E+02 BASIN STORAGE=0.8044E-02 PERCENT ERROR=   0.0

050140  MANE        1.29    176.46    189.02      1.50      2.00    174.88    188.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6905E+01 OUTFLOW=0.6874E+01 BASIN STORAGE=0.1865E-01 PERCENT ERROR=   0.2

050150  MANE        0.85   1130.59    195.32      1.50      2.00   1123.38    196.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5402E+02 EXCESS=0.0000E+00 OUTFLOW=0.5404E+02 BASIN STORAGE=0.1500E-01 PERCENT ERROR=  -0.1

050150  MANE        2.00     11.57    190.40      1.09      2.00     11.50    190.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6446E+00 OUTFLOW=0.6376E+00 BASIN STORAGE=0.4975E-02 PERCENT ERROR=   0.3

050160  MANE        0.17   1130.95    196.07      1.49      2.00   1130.84    196.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5467E+02 EXCESS=0.0000E+00 OUTFLOW=0.5467E+02 BASIN STORAGE=0.1897E-02 PERCENT ERROR=   0.0
```

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 210ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	0.00	1.00	1.00
STORAGE	0.	8.	8.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	0.55	0.00	4.	0.	0.00	9.97	0.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 030ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	65.00	68.00	68.00
STORAGE	0.	1.	1.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	68.13	0.13	1.	20.	6.87	3.27	0.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 1010ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	58.00	61.00	61.00
STORAGE	0.	1.	1.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	61.01	0.01	1.	3.	5.80	4.23	0.00

*** NORMAL END OF HEC-1 ***

Alternative D: 71st Street Diversion

- HEC-1 - 10 year, 6 hr storm (altd610.out)

```
****************************************
*                                      *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            MAY   1991                *
*         VERSION 4.0.1E               *
*                                      *
* RUN DATE  12/18/1997  TIME  09:30:48 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET            *
*      DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
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
```

```
::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
:::                                    :::
:::  Full Microcomputer Implementation :::
:::                by                  :::
:::        Haestad Methods, Inc.       :::
:::                                    :::
::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

              * ***************************************************************************
              * This is ALTERNATIVE D hydrology for Change Order #2
              *
              * - This model is based on the Recommended Plan - Part A for the Osborn Road
              *     Outfall with the following changes:
              *         Osborn Road Outfall has been modified to include a storm drain in
              *         Osborn Road running from the Paiute Basin to 71st Street, south on
              *         71st Street to Earll Drive and east on Earll Dr. to Indian Bend Wash.
              *         Use of the existing storm drain in Osborn Road for excess runoff has
              *         not been included in this model, since the benefit of this alternative
              *         is the elimination of any construction activities in Osborn Road east
              *         of Scottsdale Road.
              *
              *
    1         ID    ***************************************************************************
    2         ID    STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
    3         ID    SCOTTSDALE - TEMPE - PHOENIX
    4         ID    ***************************************************************************
    5         ID
    6         ID    Kimley-Horn and Associates, Inc.
    7         ID    KVL Consultants, Inc.
    8         ID
    9         ID    10-Year, 6-Hour Storm Event
   10         ID    10/97
              *
              *DIAGRAM
   11         IT       2                     300
   12         IO       5

   13         KK  070808   BASIN
   14         BA   0.017
   15         PH       0       0    0.50    0.97    1.61    1.76    1.86    2.05
   16         LS       0      88       0       0      98       0
   17         UK     300  0.0100    0.20      99
   18         UK     100  0.0100    0.10       1
   19         RK    1600   0.214    0.03            TRAP       2     3.5
              *
              * The 10 year flows are diverted into a proposed storm drain along Oak Street.
              * In storm events greater than the 10 yr, the remaining flow will follow its
              * natural course across and sheet flow across Oak Street to the north.
              *

   20         KK   808PP  Divert 10-year flows into storm drain
   21         DT  808OUT
   22         DI       0      12      13      15      50     100
   23         DQ       0    0.01       1       3      38      88

   24         KK  070610 FROM  070808
   25         RK     240  0.0066   0.013            CIRC    3.00
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  26          KK  070610   BASIN
  27          BA   0.007
  28          LS       0      88       0       0      98       0
  29          UK     300  0.0100    0.20      99
  30          UK     100  0.0100    0.10       1
  31          RK     500   0.054    0.03            TRAP       2     3.5

  32          KK   610PP  Divert 10-year flows into storm drain
  33          DT  610OUT
  34          DI       0       5       6      10      50     100
  35          DQ       0     .01       1       5      45      95

  36          KK  070610 COMBINE
  37          HC       2

  38          KK  070508    FROM  070610
  39          RK     420  0.0066   0.013            CIRC    3.00

  40          KK  070508   BASIN
  41          BA   0.008
  42          LS       0      85       0       0      98       0
  43          UK     300  0.0100    0.20      99
  44          UK     100  0.0100    0.10       1
  45          RK     600   0.048    0.03            TRAP       9     1.0

  46          KK   508PP  Divert 10-year flows into storm drain
  47          DT  508OUT
  48          DI       0       4       5      15      50     100
  49          DQ       0     .01       1      11      46      96

  50          KK  070508 COMBINE
  51          HC       2

  52          KK  070010    FROM  070508
  53          RK     270  0.0066   0.013            CIRC    3.00

  54          KK  070010   BASIN
  55          BA   0.009
  56          LS       0      88       0       0      98       0
  57          UK     300  0.0100    0.20      99
  58          UK     100  0.0100    0.10       1
  59          RK    1200   0.042    0.03            TRAP       2     3.5

  60          KK   010PP  Divert 10-year flows into storm drain
  61          DT  010OUT
  62          DI       0       7      10      15      50     100
  63          DQ       0     .01       3       8      43      93

  64          KK  070010 COMBINE
  65          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  66          KK  070210    FROM  070010
  67          RK     120  0.0033   0.013            CIRC    3.00

  68          KK  070209   BASIN
  69          BA   0.018
  70          LS       0      87       0       0      98       0
  71          UK     300  0.0100    0.20      99
  72          UK     100  0.0100    0.10       1
  73          RK    1200   0.252    0.03            TRAP       2     3.5

  74          KK  070210    FROM  070209
  75          RK     750   0.252   0.013            TRAP      10       1

  76          KK  070210   BASIN
  77          BA   0.008
  78          LS       0      87       0       0      98       0
  79          UK     300  0.0100    0.20      99
  80          UK     100  0.0100    0.10       1
  81          RK     600   0.043    0.03            TRAP       2     3.5

  82          KK  070210 COMBINE
  83          HC       2

  84          KK   210PP  Divert 10-year flows into storm drain
  85          DT  210OUT
  86          DI       0      17      20      30      50     100
  87          DQ       0     .01       3      13      33      83

  88          KK  070210 COMBINE
  89          HC       2

  90          KK  050005   FROM 070210
  91          RK     950   0.008   0.013            CIRC    3.00

  92          KK  050005   BASIN
  93          BA   0.038
  94          LS       0      85       0       0      98       0
  95          UK     300  0.0100    0.20      99
  96          UK     100  0.0100    0.10       1
  97          RK    1650    0.09    0.03            TRAP      30     1.0

  98          KK   005PP  Divert 10-year flows into storm drain
  99          DT  005OUT
 100          DI       0      21      22     100     150     200
 101          DQ       0     .01       1      79     129     179
              *
              * The start of the Osborn Road outfall hydrology
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 102          KK  070010
 103          KM    Retrieve overland flows at CP 070010
 104          DR  010OUT

 105          KK  070020    FROM  070010
 106          RK     178  0.0131   0.013            CIRC     1.0

 107          KK  070030    FROM  070020
 108          RK     520  0.0146   0.025            TRAP     9.0       1

 109          KK  070030   BASIN
 110          BA   0.004
 111          LS       0      85       0       0      98       0
 112          UK     150  0.0100    0.30      65
 113          UK      50  0.0100    0.10      35
 114          RK     522  0.0146    0.03            TRAP       2     3.5

 115          KK  070030 COMBINE
 116          HC       2

 117          KK  070040    FROM  070030
 118          RK     177  0.0146   0.017            TRAP    54.8       1

 119          KK  070210
 120          KM    Retrieve overland flows at CP 070210
 121          DR  210OUT

 122          KK  070220    FROM  070210
 123          RK     164  0.0131   0.013            CIRC     1.0

 124          KK  070040    FROM  070220
 125          RK     723  0.0146   0.017            TRAP    54.8       1

 126          KK  070040   BASIN
 127          BA   0.006
 128          LS       0      86       0       0      98       0
 129          UK     181  0.0100    0.28      72
 130          UK      60  0.0100    0.10      28
 131          RK    1946  0.0146    0.02            TRAP      30     1.0

 132          KK  070040 COMBINE
 133          HC       3

 134          KK  070050    FROM  070040
 135          RK     878  0.0146   0.025            TRAP    20.0     1.0

 136          KK  070050   BASIN
 137          BA   0.018
 138          LS       0      86       0       0      98       0
 139          UK     150  0.0100    0.30      65
 140          UK      50  0.0100    0.10      35
 141          RK     290  0.0058    0.02            TRAP      11     1.0
 142          RK     981  0.0146    0.02            TRAP      11     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 143          KK  070050 COMBINE
 144          HC       2

 145          KK  070060    FROM  070050
 146          RK     872  0.0058   0.025            TRAP     1.0     1.0

 147          KK  070310   BASIN
 148          BA   0.023
 149          LS       0      86       0       0      98       0
 150          UK     150  0.0100    0.30      65
 151          UK      50  0.0100    0.10      35
 152          RK     278  0.0058    0.02            TRAP      11     1.0
 153          RK     986  0.0146    0.02            TRAP      11     1.0

 154          KK  070060    FROM  070310
 155          RK     745  0.0058   0.025            TRAP     1.0     1.0

 156          KK  070060   BASIN
 157          BA   0.020
 158          LS       0      86       0       0      98       0
 159          UK     150  0.0100    0.30      65
 160          UK      50  0.0100    0.10      35
 161          RK    1096  0.0058    0.03            TRAP       2     1.0

 162          KK  070060 COMBINE
 163          HC       3

 164          KK  070070    FROM  070060
 165          RK     726  0.0146   0.025            TRAP    30.0     1.0

 166          KK  070070   BASIN
 167          BA   0.032
 168          LS       0      86       0       0      98       0
 169          UK     150  0.0100    0.30      65
 170          UK      50  0.0100    0.10      35
 171          RK    1209  0.0146    0.03            TRAP       2     1.0

 172          KK  070080   BASIN
 173          BA   0.021
 174          LS       0      83       0       0      98       0
 175          UK      29  0.0100    0.39       9
 176          UK     189  0.0100    0.10      91
 177          RK    1257  0.0058    0.02            TRAP      30     1.0

 178          KK  070080 COMBINE
 179          HC       3

 180          KK   07Det   Detention basin at Marriott's Brighton Gardens
 181          RS       1    STOR
 182          SV       0    0.78    1.64    2.65    3.84    5.21    6.77    6.77
 183          SE      66      67      68      69      70      71      72      73
 184          SQ       0      12      36      42      46      48      52     355
              *
              * Marriott's Brighton Gardens outfall - 07Qpip is the outflow in the storm drain
              * 07Qspl is the flow overtopping the basin
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 185          KK  07Qpip
 186          DT  07Qspl
 187          DI       0      71     112     172     245     329     420     518     623
 188          DQ       0     0.1      26      72     132     204     285     374     471

 189          KK  070420   FROM 07Qpip
 190          RK    1000   0.005   0.013            CIRC     3.0

 191          KK  070410   BASIN
 192          BA   0.011
 193          LS       0      84       0       0      98       0
 194          UK     144  0.0100    0.32      44
 195          UK     121  0.0100    0.10      56
 196          RK    1816  0.0146    0.02            TRAP      23     1.0

 197          KK  070420    FROM  070410
 198          RK     183  0.0058   0.017            TRAP    52.5       1

 199          KK  070420   BASIN
 200          BA   0.003
 201          LS       0      79       0       0      98       0
 202          UK     177  0.0100    0.31      25
 203          UK     200  0.0100    0.10      75
 204          RK    1046  0.0058    0.02            TRAP      49     1.0

 205          KK  070420 COMBINE
 206          HC       3

 207          KK  210005  FROM 070420
 208          RK     450   0.005   0.013            CIRC     3.5

 209          KK  210005   BASIN
 210          BA   0.008
 211          LS       0      79       0       0      98       0
 212          UK      94  0.0100    0.34      26
 213          UK     116  0.0100    0.10      74
 214          RK     523  0.0032    0.02            TRAP      38     1.0
 215          RK    1250  0.0020    0.02            TRAP      45     1.0

 216          KK  210005 COMBINE
 217          HC       2

 218          KK  050030   FROM 210005
 219          RK    1600   0.005   0.013            CIRC       4

 220          KK  050005
 221          KM    Retrieve overland flows at CP 050005
 222          DR  005OUT
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 223          KK  050010   FROM 050005
 224          RK    1300   0.015    0.02            TRAP      35       1

 225          KK  050010   BASIN
 226          BA   0.066
 227          LS       0      81       0       0      98       0
 228          UK     144  0.0100    0.30      52
 229          UK      57  0.0100    0.10      48
 230          RK    1189  0.0033    0.02            TRAP      30     1.0
 231          RK    1197  0.0038    0.02            TRAP      60     1.0

 232          KK  050010   COMBINE
 233          HC       2

 234          KK  050020    FROM  050010
 235          RK    1370  0.0038   0.017            TRAP    37.5       1

 236          KK  050210   BASIN
 237          BA   0.054
 238          LS       0      79       0       0      98       0
 239          UK     200  0.0100    0.30      28
 240          UK     200  0.0100    0.10      72
 241          RK     564  0.0038    0.02            TRAP      23     1.0
 242          RK    1199  0.0033    0.02            TRAP      23     1.0

 243          KK   210ST STORAGE
 244          RS       1    STOR
 245          SV    0.00    7.72    7.72
 246          SE    0.00    1.00    2.00
 247          SQ    0.00    0.01    0.01
 248          ST     1.0     500     3.0     1.5

 249          KK  050020    FROM  050210
 250          RK     278  0.0033   0.017            TRAP    60.0       1

 251          KK  050020   BASIN
 252          BA   0.009
 253          LS       0      79       0       0      98       0
 254          UK     166  0.0100    0.30      39
 255          UK      98  0.0100    0.10      61
 256          RK    1304  0.0038    0.02            TRAP      60     1.0

 257          KK  050020 COMBINE
 258          HC       3

 259          KK  050030    FROM  050020
 260          RK     347  0.0038   0.017            TRAP    37.5       1

 261          KK  050030   BASIN
 262          BA   0.020
 263          LS       0      79       0       0      98       0
 264          UK     150  0.0100    0.30      15
 265          UK      50  0.0100    0.10      85
 266          RK     278  0.0038    0.02            TRAP       9     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 267          RK    1468  0.0033    0.02            TRAP       9     1.0
              *
              * Scottsdale Executive Villas natural storage in parking lot
              *

 268          KK   030ST STORAGE
 269          RS       1    STOR
 270          SV       0    0.01    0.06    0.62    2.72    2.72
 271          SE      65      66      67      68      69      70
 272          SQ    0.00    0.01    0.01    0.01    0.01    0.01
 273          ST      68     150     3.0     1.5

 274          KK  050030 COMBINE
 275          HC       3

 276          KK  050305   FROM 050030
 277          RK     150   0.002   0.013            CIRC     5.5

 278          KK  050050   FROM 050305
 279          RK    1500   0.001   0.013            TRAP       9     1.0

 280          KK  050040   BASIN
 281          BA   0.102
 282          LS       0      79       0       0      98       0
 283          UK     150  0.0100    0.30      57
 284          UK      50  0.0100    0.10      43
 285          RK    2230  0.0038    0.02            TRAP      38     1.0
 286          RK    2654  0.0038    0.02            TRAP      38     1.0

 287          KK  40STOR  Storage on west side of cross-cut canal
 288          RS       1
 289          SV       0       0       0       0     2.6    13.5    13.5
 290          SE      58      59      60      61      62      63      64
 291          SQ       0      10      22      32      40      50      55

 292          KK  050050    FROM  050040
 293          RK     491  0.0334   0.013            CIRC     2.5

 294          KK  050310   BASIN
 295          BA   0.041
 296          LS       0      79       0       0      98       0
 297          UK     200  0.0100    0.30      28
 298          UK     200  0.0100    0.10      72
 299          RK     816  0.0033    0.02            TRAP      30     1.0
 300          RK     848  0.0038    0.02            TRAP      30     1.0

 301          KK  050065   BASIN
 302          BA   0.014
 303          LS       0      79       0       0      98       0
 304          UK     100    0.01     0.3      15
 305          UK     100    0.01     0.1      85
 306          RK     500   0.005   0.012            TRAP      60       1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 307          KK  050060   BASIN
 308          BA   0.029
 309          LS       0      79       0       0      98       0
 310          UK     105    0.01     0.3      20
 311          UK     160    0.01     0.1      80
 312          RK    1300  0.0038    0.03            TRAP     100     1.0
              *
              * Flows combined from 050040, 050305, 050310, 050060 and 050065 into Paiute
              * Park detention basin
              *

 313          KK  050050 COMBINE
 314          HC       5

 315          KK   05Det  Storage
 316          RS       1    STOR
 317          SV       0    0.64    2.37    5.14    8.40    11.7    15.1    18.5    22.1    22.1
 318          SE      49      50      51      52      53      54      55      56      57      58
 319          SQ     4.5      22      37      47      56      65      73      81      88     156
              *
              * Paiute Park outfall - 05Qpip is the outflow in the storm drain
              * 05Qspl is the flow overtopping the basin
              *
              *
              * Overflows to CP 050060
              *

 320          KK  05Qpip
 321          DT  05Qspl
 322          DI       0     160     382     780    1292    1897
 323          DQ       0    0.01     212     600    1102    1697
              *
              * Begin storm drain system in Osborn Road
              *

 324          KK  050062   BASIN
 325          BA   0.006
 326          BA   0.014
 327          LS       0      79       0       0      98       0
 328          UK     100    0.01     0.3      15
 329          UK      50    0.01     0.1      85
 330          RK     900   0.005   0.012            TRAP      60       1

 331          KK  050610   FROM 050062
 332          RK    1500   0.003   0.013            TRAP      60       1

 333          KK  050610   BASIN
 334          BA   0.081
 335          LS       0      79       0       0      98       0
 336          UK     130  0.0100    0.32      56
 337          UK      70  0.0100    0.10      44
 338          RK    1450  0.0038    0.02            TRAP      45     1.0
 339          RK    1240  0.0033    0.02            TRAP      60     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 340          KK  050610    COMBINE
 341          HC       3

 342          KK  050620    FROM  050610
 343          RK    1050  0.0037   0.013            CIRC       6

 344          KK  050620   BASIN
 345          BA   0.099
 346          LS       0      79       0       0      98       0
 347          UK     147  0.0100    0.30      56
 348          UK      53  0.0100    0.10      44
 349          RK     940  0.0033    0.02            TRAP      41     1.0
 350          RK    2545  0.0038    0.02            TRAP      60     1.0

 351          KK  050620 COMBINE
 352          HC       2

 353          KK  050630    FROM  050620
 354          RK    1440  0.0028   0.013            CIRC       7

 355          KK  050630   BASIN
 356          BA   0.062
 357          LS       0      79       0       0      98       0
 358          UK     138  0.0100    0.31      33
 359          UK      64  0.0100    0.10      67
 360          RK    1205  0.0038    0.02            TRAP      41     1.0
 361          RK    1348  0.0033    0.02            TRAP      60     1.0

 362          KK  050630 COMBINE
 363          HC       2

 364          KK  050660    FROM  050630
 365          RK    2600  0.0015   0.013            CIRC       7

 366          KK  050710   BASIN
 367          BA   0.005
 368          LS       0      79       0       0      98       0
 369          UK      21  0.0100    0.40      15
 370          UK     200  0.0100    0.10      85
 371          RK     610  0.0038    0.02            TRAP      55     1.0

 372          KK  050720    FROM  050710
 373          RK     316  0.0045   0.013            CIRC     5.5

 374          KK  050720   BASIN
 375          BA   0.028
 376          LS       0      79       0       0      98       0
 377          UK      57  0.0100    0.38      17
 378          UK     188  0.0100    0.10      83
 379          RK     580  0.0038    0.02            TRAP      45     1.0
 380          RK    1594  0.0033    0.02            TRAP      55     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          KK  050720   COMBINE
 382          HC       2

 383          KK  050640    FROM  050720
 384          RK     422  0.0045   0.013            CIRC     5.5

 385          KK  050810   BASIN
 386          BA   0.013
 387          LS       0      79       0       0      98       0
 388          UK      88  0.0100    0.36      20
 389          UK     200  0.0100    0.10      80
 390          RK     164  0.0033    0.02            TRAP      28     1.0
 391          RK    1031  0.0038    0.02            TRAP      55     1.0

 392          KK  050640    FROM  050810
 393          RK     705  0.0025   0.013            CIRC     4.0

 394          KK  050640   BASIN
 395          BA   0.032
 396          LS       0      79       0       0      98       0
 397          UK      64  0.0100    0.37      15
 398          UK     149  0.0100    0.10      85
 399          RK    1605  0.0038    0.02            TRAP      41     1.0
 400          RK    1168  0.0033    0.02            TRAP      60     1.0

 401          KK  050640 COMBINE
 402          HC       3

 403          KK  050650   FROM 050640
 404          RK     700  0.0029   0.013            CIRC       6

 405          KK  050910   BASIN
 406          BA   0.012
 407          LS       0      79       0       0      98       0
 408          UK     170  0.0100    0.32      26
 409          UK     200  0.0100    0.10      74
 410          RK     837  0.0038    0.02            TRAP      38     1.0

 411          KK  050650    FROM  050910
 412          RK     751  0.0045   0.013            DEEP     5.0

 413          KK  050650   BASIN
 414          BA   0.019
 415          LS       0      79       0       0      98       0
 416          UK      29  0.0100    0.40      16
 417          UK     200  0.0100    0.10      84
 418          RK     598  0.0033    0.02            TRAP      23     1.0
 419          RK     566  0.0038    0.02            TRAP      90     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 420          KK  050650 COMBINE
 421          HC       3

 422          KK  050660    FROM  050650
 423          RK     648  0.0027   0.013            CIRC     7.5

 424          KK  050660   BASIN
 425          BA   0.018
 426          LS       0      79       0       0      98       0
 427          UK      20  0.0100    0.40      15
 428          UK     200  0.0100    0.10      85
 429          RK     578  0.0033    0.02            TRAP      49     1.0
 430          RK     582  0.0038    0.02            TRAP      90     1.0

 431          KK  050660 COMBINE
 432          HC       3

 433          KK  051410   FROM 050660
 434          RK    2640  0.0015   0.013            TRAP      14

 435          KK  051410   BASIN
 436          BA   0.072
 437          LS       0      79       0       0      98       0
 438          UK      64  0.0100    0.37       9
 439          UK     150  0.0100    0.10      91
 440          RK    1170  0.0033    0.02            TRAP      38     1.0
 441          RK    1180  0.0038    0.02            TRAP      55     1.0

 442          KK  051410    COMBINE
 443          HC       2
              *
              * EARLL DR OUTFALL TO INDIAN BEND WASH
              *

 444          KK  051420    FROM  051410
 445          RK    1460  0.0015   0.013            TRAP      14
              *
              * FLOW IN BASIN 05 EAST OF 71ST STREET FOLLOWS DRAINAGE PATHS OF EXISTING
              * CONDITIONS MODEL IN THIS ALTERNATIVE - FLOWS IN THIS SECTION ARE NORTH OF
              * OSBORN RD WITH THE EXCEPTION OF BASIN 051710 AND FLOW NATURALLY TO THE EAST
              *

 446          KK  051510   BASIN
 447          BA   0.010
 448          LS       0      79       0       0      98       0
 449          UK      59  0.0100    0.38      18
 450          UK     200  0.0100    0.10      82
 451          RK     139  0.0038    0.02            TRAP      41     1.0
 452          RK     521  0.0033    0.02            TRAP      71     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 453          KK  051520    FROM  051510
 454          RK     680  0.0028   0.013            CIRC     9.5

 455          KK  051610   BASIN
 456          BA   0.021
 457          LS       0      79       0       0      98       0
 458          UK     165  0.0100    0.32      25
 459          UK     200  0.0100    0.10      75
 460          RK     624  0.0038    0.02            TRAP      41     1.0
 461          RK     792  0.0033    0.02            TRAP      60     1.0

 462          KK  051520    FROM  051610
 463          RK     601  0.0047   0.013            CIRC     5.0

 464          KK  051710   BASIN
 465          BA   0.004
 466          LS       0      79       0       0      98       0
 467          UK     146  0.0100    0.33      24
 468          UK     200  0.0100    0.10      76
 469          RK     515  0.0038    0.02            TRAP      30     1.0
 470          RK     287  0.0033    0.02            TRAP      30     1.0

 471          KK  051520    FROM  051710
 472          RK     567  0.0032   0.013            CIRC     4.0

 473          KK  051520   BASIN
 474          BA   0.023
 475          LS       0      79       0       0      98       0
 476          UK     179  0.0100    0.31      26
 477          UK     198  0.0100    0.10      74
 478          RK     473  0.0038    0.02            TRAP      60     1.0
 479          RK     704  0.0033    0.02            TRAP      71     1.0

 480          KK  051520 COMBINE
 481          HC       4

 482          KK  051530    FROM  051520
 483          RK     926   0.001   0.013            CIRC     9.5

 484          KK  051530   BASIN
 485          BA   0.041
 486          LS       0      79       0       0      98       0
 487          UK      26  0.0100    0.40      15
 488          UK     193  0.0100    0.10      85
 489          RK     889  0.0038    0.02            TRAP      38     1.0
 490          RK     860  0.0033    0.02            TRAP      60     1.0

 491          KK  051530 COMBINE
 492          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 493          KK  051540    FROM  051530
 494          RK     360   0.001   0.013            CIRC     9.5

 495          KK  051810   BASIN
 496          BA   0.005
 497          LS       0      79       0       0      98       0
 498          UK      23  0.0100    0.40      16
 499          UK     196  0.0100    0.10      84
 500          RK     272  0.0033    0.02            TRAP      19     1.0
 501          RK     272  0.0038    0.02            TRAP      30     1.0

 502          KK  051540    FROM  051810
 503          RK     218  0.0045   0.013            CIRC     4.5

 504          KK  051540   BASIN
 505          BA   0.004
 506          LS       0      79       0       0      98       0
 507          UK      44  0.0100    0.38      16
 508          UK     172  0.0100    0.10      84
 509          RK     233  0.0038    0.02            TRAP      12     1.0
 510          RK     265  0.0033    0.02            TRAP      60     1.0

 511          KK  051540 COMBINE
 512          HC       3

 513          KK  051550    FROM  051540
 514          RK     273   0.001   0.013            CIRC     9.5

 515          KK  051560    FROM  051550
 516          RK     800  0.0038   0.013            CIRC     6.0

 517          KK  051560   BASIN
 518          BA   0.008
 519          LS       0      79       0       0      98       0
 520          UK     116  0.0100    0.33      47
 521          UK      89  0.0100    0.10      53
 522          RK    1126  0.0033    0.02            TRAP      60     1.0

 523          KK  051560 COMBINE
 524          HC       2
              *
              * Osborn Rd outfall to Indian Bend Wash
              *

 525          KK  051570    FROM  051560
 526          RK     228   0.003   0.013            CIRC     7.0
              *
              * Begin Thomas Rd outfall
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

527           KK  05Qspl  Retrieve spill from Paiute Park detention basin
528           DR  05Qspl

529           KK  050060    Qspl FROM  05Det
530           RK     500   0.002   0.027            TRAP       5       1

531           KK  050070    FROM  050060
532           RK    1429  0.0033   0.030            TRAP     5.0     1.0

533           KK  050410   BASIN
534           BA   0.041
535           LS       0      79       0       0      98       0
536           UK      77  0.0100    0.36      25
537           UK     137  0.0100    0.10      75
538           RK     694  0.0038    0.02            TRAP      38     1.0
539           RK    1177  0.0033    0.02            TRAP      38     1.0

540           KK  050070    FROM  050410
541           RK     187  0.0038   0.017            TRAP    60.0       1

542           KK  050070   BASIN
543           BA   0.084
544           LS       0      79       0       0      98       0
545           UK      22  0.0100    0.40       8
546           UK     198  0.0100    0.10      92
547           RK    3223  0.0038    0.02            TRAP      38     1.0

548           KK  050070 COMBINE
549           HC       3

550           KK  050080    FROM  050070
551           RK    1112  0.0027   0.013            CIRC     4.5

552           KK  050080   BASIN
553           BA   0.021
554           LS       0      79       0       0      98       0
555           UK     132  0.0100    0.31      60
556           UK      71  0.0100    0.10      40
557           RK    1365  0.0033    0.02            TRAP      38     1.0

558           KK  050080 COMBINE
559           HC       2

560           KK  050090    FROM  050080
561           RK     416  0.0052   0.013            CIRC     4.0

562           KK  050510   BASIN
563           BA   0.054
564           LS       0      79       0       0      98       0
565           UK     109  0.0100    0.33      48
566           UK      97  0.0100    0.10      52
567           RK    1096  0.0038    0.02            TRAP      41     1.0
568           RK    1304  0.0033    0.02            TRAP      41     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  569         KK  050090    FROM  050510
  570         RK     626  0.0052   0.013            CIRC     4.0

  571         KK  050090   BASIN
  572         BA   0.037
  573         LS       0      79       0       0      98       0
  574         UK      44  0.0100    0.38      23
  575         UK     172  0.0100    0.10      77
  576         RK     965  0.0038    0.02            TRAP      23     1.0
  577         RK    1064  0.0033    0.02            TRAP      45     1.0

  578         KK  050090 COMBINE
  579         HC       3

  580         KK  050100    FROM  050090
  581         RK     609  0.0028   0.013            CIRC     4.5

  582         KK  050100   BASIN
  583         BA   0.045
  584         LS       0      79       0       0      98       0
  585         UK      20  0.0100    0.40       7
  586         UK     200  0.0100    0.10      93
  587         RK     505  0.0033    0.02            TRAP      30     1.0
  588         RK    1727  0.0038    0.02            TRAP      23     1.0

  589         KK  050100 COMBINE
  590         HC       2

  591         KK  050110    FROM  050100
  592         RK     692  0.0058   0.013            CIRC     4.0

  593         KK  050110   BASIN
  594         BA   0.010
  595         LS       0      79       0       0      98       0
  596         UK      20  0.0100    0.40      15
  597         UK     200  0.0100    0.10      85
  598         RK     587  0.0033    0.02            TRAP      46     1.0
  599         RK     406  0.0038    0.02            TRAP      77     1.0

  600         KK  050110 COMBINE
  601         HC       2

  602         KK  050120    FROM  050110
  603         RK     888  0.0027   0.013            CIRC     7.5

  604         KK  051010   BASIN
  605         BA   0.023
  606         LS       0      79       0       0      98       0
  607         UK     200  0.0100    0.30      28
  608         UK     200  0.0100    0.10      72
  609         RK     517  0.0033    0.02            TRAP      30     1.0
  610         RK     822  0.0038    0.02            TRAP      30     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 611          KK  1010ST STORAGE
 612          RS       1    STOR
 613          SV       0    0.20    0.70    1.49    1.49
 614          SE      58      59      60      61      62
 615          SQ       0    0.01    0.01    0.01    0.01
 616          ST      61     800     3.0     1.5

 617          KK  051020    FROM  051010
 618          RK     948  0.0033   0.017            TRAP    60.0       1

 619          KK  051110   BASIN
 620          BA   0.025
 621          LS       0      79       0       0      98       0
 622          UK      20  0.0100    0.40      10
 623          UK     200  0.0100    0.10      90
 624          RK     326  0.0038    0.02            TRAP       9     1.0
 625          RK    1382  0.0033    0.02            TRAP      19     1.0

 626          KK  051020    FROM  051110
 627          RK     541  0.0038   0.017            TRAP    33.0       1

 628          KK  051020   BASIN
 629          BA   0.027
 630          LS       0      79       0       0      98       0
 631          UK      64  0.0100    0.37      22
 632          UK     174  0.0100    0.10      78
 633          RK     409  0.0038    0.02            TRAP      26     1.0
 634          RK    1595  0.0033    0.02            TRAP      60     1.0

 635          KK  051020 COMBINE
 636          HC       3

 637          KK  051030    FROM  051020
 638          RK     694  0.0033   0.017            TRAP    60.0       1

 639          KK  051210   BASIN
 640          BA   0.008
 641          LS       0      79       0       0      98       0
 642          UK      20  0.0100    0.40      15
 643          UK     200  0.0100    0.10      85
 644          RK     682  0.0038    0.02            TRAP       9     1.0

 645          KK  051030    FROM  051210
 646          RK     241  0.0038   0.017            TRAP    60.0       1

 647          KK  051310   BASIN
 648          BA   0.003
 649          LS       0      79       0       0      98       0
 650          UK      20  0.0100    0.40       6
 651          UK     200  0.0100    0.10      94
 652          RK     544  0.0033    0.02            TRAP      18     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 653          KK  051320    FROM  051310
 654          RK     333  0.0038   0.017            TRAP    60.0       1

 655          KK  051320   BASIN
 656          BA   0.009
 657          LS       0      79       0       0      98       0
 658          UK      20  0.0100    0.40       7
 659          UK     200  0.0100    0.10      93
 660          RK     254  0.0038    0.02            TRAP       9     1.0
 661          RK     543  0.0033    0.02            TRAP      18     1.0

 662          KK  051320 COMBINE
 663          HC       2

 664          KK  051030    FROM  051320
 665          RK     960  0.0038   0.017            TRAP    60.0       1

 666          KK  051030   BASIN
 667          BA   0.031
 668          LS       0      79       0       0      98       0
 669          UK      28  0.0100    0.39      13
 670          UK     190  0.0100    0.10      87
 671          RK    2532  0.0033    0.02            TRAP      49     1.0

 672          KK  051030 COMBINE
 673          HC       4

 674          KK  051040    FROM  051030
 675          RK    1501  0.0033   0.017            TRAP    60.0       1

 676          KK  051040   BASIN
 677          BA   0.036
 678          LS       0      79       0       0      98       0
 679          UK     105  0.0100    0.34      39
 680          UK     102  0.0100    0.10      61
 681          RK    1159  0.0038    0.02            TRAP      45     1.0
 682          RK    1501  0.0033    0.02            TRAP      65     1.0

 683          KK  051040 COMBINE
 684          HC       2

 685          KK  050120    FROM  051040
 686          RK    1222   0.003   0.013            TRAP       8

 687          KK  050120   BASIN
 688          BA   0.039
 689          LS       0      79       0       0      98       0
 690          UK      24  0.0100    0.40      14
 691          UK     195  0.0100    0.10      86
 692          RK     763  0.0038    0.02            TRAP      23     1.0
 693          RK    1114  0.0033    0.02            TRAP      90     1.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

694           KK  050120 COMBINE
695           HC       3

696           KK  050130    FROM  050120
697           RK    1265  0.0027   0.013            DEEP     7.0

698           KK  050130   BASIN
699           BA   0.096
700           LS       0      79       0       0      98       0
701           UK      45  0.0100    0.38      15
702           UK     171  0.0100    0.10      85
703           RK    1905  0.0038    0.02            TRAP      71     1.0
704           RK    1212  0.0033    0.02            TRAP      71     1.0

705           KK  050130 COMBINE
706           HC       2

707           KK  050140    FROM  050130
708           RK    1319  0.0027   0.013            DEEP     7.0

709           KK  050140   BASIN
710           BA   0.086
711           LS       0      79       0       0      98       0
712           UK      94  0.0100    0.35      25
713           UK     154  0.0100    0.10      75
714           RK    1224  0.0038    0.02            TRAP       9     1.0
715           RK    1267  0.0033    0.02            TRAP      79     1.0

716           KK  050140 COMBINE
717           HC       2

718           KK  050150    FROM  050140
719           RK    1252  0.0006   0.013            DEEP     5.0

720           KK  050150   BASIN
721           BA   0.011
722           LS       0      79       0       0      98       0
723           UK     159  0.0100    0.30      57
724           UK      57  0.0100    0.10      43
725           RK    1202  0.0033    0.02            TRAP      60     1.0

726           KK  050150 COMBINE
727           HC       2
              *
              * Thomas Rd Outfall to Indian Bend Wash
              *

728           KK  050160    FROM  050150
729           RK     332  0.0048   0.013            DEEP     6.0
              *
              * Notice:
              * This document, together with the concepts and designs presented herein, as an
              * instrument of service, is intended for the specific purpose and client for
              * which it was prepared.  Reuse of and improper reliance on this document
              * without written authorization and adaptation by Kimley-Horn and Associates,
              * Inc. shall be without liability to Kimley-Horn and Associates, Inc.
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 730          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
NPUT
LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

 13       070808
               .
               .
 21            .-------->  808OUT
 20        808PP
               V
               V
 24       070610
               .
               .
 26            .      070610
               .           .
               .           .
 33            .           .-------->  610OUT
 32            .       610PP
               .           .
               .           .
 36       070610............
               V
               V
 38       070508
               .
               .
 40            .      070508
               .           .
               .           .
 47            .           .-------->  508OUT
 46            .       508PP
               .           .
               .           .
 50       070508............
               V
               V
 52       070010
               .
               .
 54            .      070010
               .           .
               .           .
 61            .           .-------->  010OUT
 60            .       010PP
               .           .
               .           .
 64       070010............
               V
               V
 66       070210
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 68            .      070209
               .           V
               .           V
 74            .      070210
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 76            .           .      070210
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 82            .      070210............
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 85       .          .-------> 210OUT
 84       .      210PP
          .          .
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 88   070210............
          V
          V
 90   050005
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 92       .      050005
          .          .
          .          .
 99       .          .-------> 005OUT
 98       .      005PP
          .          .
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104       .          .          .<-------  010OUT
102       .          .     070010
          .          .          V
          .          .          V
105       .          .     070020
          .          .          V
          .          .          V
107       .          .     070030
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109       .          .          .      070030
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115       .          .     070030............
          .          .          V
          .          .          V
117       .          .     070040
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121       .          .          .          .<-------  210OUT
119       .          .          .      070210
          .          .          .          V
          .          .          .          V
122       .          .          .      070220
          .          .          .          V
          .          .          .          V
124       .          .          .      070040
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126       .          .          .          .      070040
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132       .          .     070040........................
          .          .          V
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134       .          .     070050
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136       .          .          .      070050
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143       .          .     070050............
          .          .          V
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145       .          .     070060
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147          .          .          .     070310
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             .          .          .          V
154          .          .          .     070060
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156          .          .          .          .     070060
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162          .          .     070060.......................
             .          .          V
             .          .          V
164          .          .     070070
             .          .          .
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166          .          .          .     070070
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172          .          .          .          .     070080
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178          .          .     070080.......................
             .          .          V
             .          .          V
180          .          .      07Det
             .          .          .
             .          .          .
186          .          .          .-------> 07Qspl
185          .          .     07Qpip
             .          .          V
             .          .          V
189          .          .     070420
             .          .          .
             .          .          .
191          .          .          .     070410
             .          .          .          V
             .          .          .          V
197          .          .          .     070420
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199          .          .          .          .     070420
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205          .          .     070420.......................
             .          .          V
             .          .          V
207          .          .     210005
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209          .          .          .     210005
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216          .          .     210005............
             .          .          V
             .          .          V
218          .          .     050030
             .          .          .
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222          .          .          .          .<------- 005OUT
220          .          .          .     050005
             .          .          .          V
             .          .          .          V
223          .          .          .     050010
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225          .          .          .          .     050010
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232                                       050010............
                                                  V
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234                                       050020
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236                                                 .     050210
                                                    .         V
                                                    .         V
243                                                 .      210ST
                                                    .         V
                                                    .         V
249                                                 .     050020
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251                                                 .          .     050020
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257                                       050020.......................
                                                  V
                                                  V
259                                       050030
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261                                                 .     050030
                                                    .         V
                                                    .         V
268                                                 .      030ST
                                                    .          .
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274                                 050030......................
                                          V
                                          V
276                                 050305
                                          V
                                          V
278                                 050050
                                          .
                                          .
280                                       050040
                                                  V
                                                  V
287                                       40STOR
                                                  V
                                                  V
292                                       050050
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294                                                 .     050310
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301                                                 .          .     050065
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307                                                 .          .          .     050060
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313                                 050050.............................................
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                                          V
315                                  05Det
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321                                       .-------> 05Qspl
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320          .          .      05Qpip
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324          .          .          .      050062
             .          .          .          V
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331          .          .          .      050610
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333          .          .          .          .      050610
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340          .          .      050610.......................
             .          .          V
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342          .          .      050620
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344          .          .          .      050620
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351          .          .      050620............
             .          .          V
             .          .          V
353          .          .      050630
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355          .          .          .      050630
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362          .          .      050630............
             .          .          V
             .          .          V
364          .          .      050660
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366          .          .          .      050710
             .          .          .          V
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372          .          .          .      050720
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374          .          .          .          .      050720
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381          .          .          .      050720............
             .          .          .          V
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383          .          .          .      050640
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385          .          .          .          .      050810
             .          .          .          .          V
             .          .          .          .          V
392          .          .          .          .      050640
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394          .          .          .          .          .      050640
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401          .          .          .      050640.......................
             .          .          .          V
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403          .          .          .      050650
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405   .   .   .   .   050910
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411   .   .   .   .   050650
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413   .   .   .   .       .   050650
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420   .   .   .   050650.......................
      .   .   .       V
      .   .   .       V
422   .   .   .   050660
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424   .   .   .   .   050660
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431   .   .   050660.......................
      .   .       V
      .   .       V
433   .   .   051410
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435   .   .   .   051410
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442   .   .   051410............
      .   .       V
      .   .       V
444   .   .   051420
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446   .   .   .   051510
      .   .   .       V
      .   .   .       V
453   .   .   .   051520
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455   .   .   .   .   051610
      .   .   .   .       V
      .   .   .   .       V
462   .   .   .   .   051520
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      .   .   .   .       .
464   .   .   .   .   .   051710
      .   .   .   .   .       V
      .   .   .   .   .       V
471   .   .   .   .   .   051520
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473   .   .   .   .   .   .       051520
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480   .   .   .   051520.................................
      .   .   .       V
      .   .   .       V
482   .   .   .   051530
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484   .   .   .   .   051530
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491   .   .   .   051530............
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493          .          .          .     051540
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495          .          .          .          .     051810
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502          .          .          .          .     051540
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504          .          .          .          .          .     051540
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511          .          .          .     051540.......................
             .          .          .          V
             .          .          .          V
513          .          .          .     051550
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             .          .          .          V
515          .          .          .     051560
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517          .          .          .          .     051560
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523          .          .          .     051560............
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525          .          .          .     051570
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528          .          .          .          .          .<-------  05Qspl
527          .          .          .          .     05Qspl
             .          .          .          .          V
             .          .          .          .          V
529          .          .          .          .     050060
             .          .          .          .          V
             .          .          .          .          V
531          .          .          .          .     050070
             .          .          .          .          .
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533          .          .          .          .          .     050410
             .          .          .          .          .          V
             .          .          .          .          .          V
540          .          .          .          .          .     050070
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542          .          .          .          .          .          .     050070
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548          .          .          .          .     050070.......................
             .          .          .          .          V
             .          .          .          .          V
550          .          .          .          .     050080
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552          .          .          .          .          .     050080
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558          .          .          .          .     050080............
             .          .          .          .          V
             .          .          .          .          V
560          .          .          .          .     050090
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562          .          .          .          .          .     050510
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569                                           050090
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571                                               .     050090
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578                                       050090.......................
                                              V
                                              V
580                                       050100
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582                                           .     050100
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589                                       050100............
                                              V
                                              V
591                                       050110
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593                                           .     050110
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600                                       050110............
                                              V
                                              V
602                                       050120
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604                                           .     051010
                                              .        V
                                              .        V
611                                           .     1010ST
                                              .        V
                                              .        V
617                                           .     051020
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619                                           .        .     051110
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626                                           .        .     051020
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628                                           .        .        .     051020
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635                                           .     051020.......................
                                              .        V
                                              .        V
637                                           .     051030
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639                                           .        .     051210
                                              .        .        V
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645                                           .        .     051030
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647                                           .        .        .     051310
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653                                           .        .        .     051320
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655                                                                  051320
662                                                        051320............
                                                                V
                                                                V
664                                                        051030
666                                                                  051030
672                                   051030.................................
                                          V
                                          V
674                                   051040
676                                                051040
683                                   051040............
                                          V
                                          V
685                                   050120
687                                                050120
694                          050120........................
                                 V
                                 V
696                          050130
698                                   050130
705                          050130............
                                 V
                                 V
707                          050140
709                                   050140
716                          050140............
                                 V
                                 V
718                          050150
720                                   050150
726                          050150............
                                 V
                                 V
728                          050160
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1343001471 HMVersion: 6.33 Data File: altd610.hc1

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****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             MAY   1991               *
*          VERSION 4.0.1E              *
*                                      *
*  RUN DATE  12/18/1997  TIME  09:30:48 *
*                                      *
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
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                    ***************************************************************************
                    STP-PAPAGO REGIONAL FLOOD CONTROL PROJECT
                    SCOTTSDALE - TEMPE - PHOENIX
                    ***************************************************************************

                    Kimley-Horn and Associates, Inc.
                    KVL Consultants, Inc.

                    10-Year, 6-Hour Storm Event
                    10/97

 12 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT           HYDROGRAPH TIME DATA
                      NMIN           2  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      1    0  ENDING DATE
                    NDTIME        0958  ENDING TIME
                     ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL     0.03 HOURS
                    TOTAL TIME BASE     9.97 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

       *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT


       *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT


       *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT
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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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	070808	12.	3.43	2.	1.	1.	0.02		
DIVERSION TO	808OUT	0.	3.43	0.	0.	0.	0.02		
HYDROGRAPH AT	808PP	12.	3.43	2.	1.	1.	0.02		
ROUTED TO	070610	12.	3.43	2.	1.	1.	0.02		
HYDROGRAPH AT	070610	5.	3.43	1.	0.	0.	0.01		
DIVERSION TO	610OUT	0.	3.40	0.	0.	0.	0.01		
HYDROGRAPH AT	610PP	5.	3.40	1.	0.	0.	0.01		
2 COMBINED AT	070610	17.	3.43	3.	2.	2.	0.02		
ROUTED TO	070508	17.	3.43	3.	2.	2.	0.02		
HYDROGRAPH AT	070508	4.	3.50	1.	0.	0.	0.01		
DIVERSION TO	508OUT	0.	3.50	0.	0.	0.	0.01		
HYDROGRAPH AT	508PP	4.	3.50	1.	0.	0.	0.01		
2 COMBINED AT	070508	21.	3.47	3.	2.	2.	0.03		
ROUTED TO	070010	21.	3.47	3.	2.	2.	0.03		
HYDROGRAPH AT	070010	7.	3.43	1.	1.	1.	0.01		
DIVERSION TO	010OUT	0.	3.43	0.	0.	0.	0.01		
HYDROGRAPH AT	010PP	6.	3.43	1.	1.	1.	0.01		
2 COMBINED AT	070010	27.	3.47	4.	3.	3.	0.04		
ROUTED TO	070210	27.	3.47	4.	3.	3.	0.04		
HYDROGRAPH AT	070209	12.	3.47	2.	1.	1.	0.02		
ROUTED TO	070210	12.	3.47	2.	1.	1.	0.02		
HYDROGRAPH AT	070210	5.	3.47	1.	0.	0.	0.01		
2 COMBINED AT	070210	17.	3.47	3.	2.	2.	0.03		
DIVERSION TO	210OUT	0.	3.43	0.	0.	0.	0.03		
HYDROGRAPH AT	210PP	17.	3.43	3.	2.	2.	0.03		
2 COMBINED AT	070210	44.	3.47	7.	4.	4.	0.07		
ROUTED TO	050005	44.	3.47	7.	4.	4.	0.07		
HYDROGRAPH AT	050005	21.	3.53	3.	2.	2.	0.04		
DIVERSION TO	005OUT	0.	3.53	0.	0.	0.	0.04		

HYDROGRAPH AT	005PP	21.	3.53	3.	2.	2.	0.04		
HYDROGRAPH AT	070010	0.	3.37	0.	0.	0.	0.00		
ROUTED TO	070020	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070030	0.	3.67	0.	0.	0.	0.00		
HYDROGRAPH AT	070030	5.	3.07	1.	0.	0.	0.00		
2 COMBINED AT	070030	5.	3.07	1.	0.	0.	0.00		
ROUTED TO	070040	5.	3.10	1.	0.	0.	0.00		
HYDROGRAPH AT	070210	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070220	0.	3.47	0.	0.	0.	0.00		
ROUTED TO	070040	0.	3.77	0.	0.	0.	0.00		
HYDROGRAPH AT	070040	5.	3.20	1.	0.	0.	0.01		
3 COMBINED AT	070040	9.	3.13	1.	1.	1.	0.01		
ROUTED TO	070050	9.	3.17	1.	1.	1.	0.01		
HYDROGRAPH AT	070050	24.	3.07	2.	1.	1.	0.02		
2 COMBINED AT	070050	30.	3.10	4.	2.	2.	0.03		
ROUTED TO	070060	30.	3.13	4.	2.	2.	0.03		
HYDROGRAPH AT	070310	30.	3.07	3.	2.	2.	0.02		
ROUTED TO	070060	30.	3.10	3.	2.	2.	0.02		
HYDROGRAPH AT	070060	25.	3.10	3.	2.	2.	0.02		
3 COMBINED AT	070060	84.	3.10	9.	6.	6.	0.07		
ROUTED TO	070070	82.	3.13	9.	6.	6.	0.07		
HYDROGRAPH AT	070070	42.	3.07	4.	3.	3.	0.03		
HYDROGRAPH AT	070080	52.	3.13	4.	2.	2.	0.02		
3 COMBINED AT	070080	168.	3.13	17.	10.	10.	0.12		
ROUTED TO	07Det	46.	3.67	17.	10.	10.	0.12	69.95	3.67
DIVERSION TO	07Qspl	0.	3.67	0.	0.	0.	0.12		
HYDROGRAPH AT	07Qpip	46.	3.67	17.	10.	10.	0.12		
ROUTED TO	070420	46.	3.67	17.	10.	10.	0.12		
HYDROGRAPH AT	070410	17.	3.13	2.	1.	1.	0.01		
ROUTED TO	070420	17.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	070420	5.	3.20	0.	0.	0.	0.00		
3 COMBINED AT	070420	59.	3.20	19.	12.	12.	0.14		
ROUTED TO	210005	59.	3.20	19.	12.	12.	0.14		

HYDROGRAPH AT	210005	13.	3.23	1.	1.	1.	0.01		
2 COMBINED AT	210005	72.	3.23	20.	12.	12.	0.15		
ROUTED TO	050030	72.	3.23	20.	12.	12.	0.15		
HYDROGRAPH AT	050005	0.	3.40	0.	0.	0.	0.00		
ROUTED TO	050010	0.	4.63	0.	0.	0.	0.00		
HYDROGRAPH AT	050010	96.	3.13	8.	5.	5.	0.07		
2 COMBINED AT	050010	96.	3.13	8.	5.	5.	0.07		
ROUTED TO	050020	93.	3.17	8.	5.	5.	0.07		
HYDROGRAPH AT	050210	100.	3.13	8.	5.	5.	0.05		
ROUTED TO	210ST	0.	5.53	0.	0.	0.	0.05	0.55	9.97
ROUTED TO	050020	0.	4.73	0.	0.	0.	0.05		
HYDROGRAPH AT	050020	13.	3.17	1.	1.	1.	0.01		
3 COMBINED AT	050020	106.	3.17	10.	6.	6.	0.13		
ROUTED TO	050030	103.	3.20	10.	6.	6.	0.13		
HYDROGRAPH AT	050030	54.	3.10	3.	2.	2.	0.02		
ROUTED TO	030ST	20.	3.27	2.	1.	1.	0.02	68.13	3.27
3 COMBINED AT	050030	190.	3.20	32.	20.	20.	0.30		
ROUTED TO	050305	188.	3.20	32.	20.	20.	0.30		
ROUTED TO	050050	186.	3.27	32.	20.	20.	0.30		
HYDROGRAPH AT	050040	105.	3.20	12.	7.	7.	0.10		
ROUTED TO	40STOR	37.	3.67	12.	7.	7.	0.10	61.58	3.67
ROUTED TO	050050	37.	3.67	12.	7.	7.	0.10		
HYDROGRAPH AT	050310	75.	3.13	6.	4.	4.	0.04		
HYDROGRAPH AT	050065	37.	3.07	2.	1.	1.	0.01		
HYDROGRAPH AT	050060	53.	3.17	5.	3.	3.	0.03		
5 COMBINED AT	050050	341.	3.23	58.	35.	35.	0.48		
ROUTED TO	05Det	71.	4.70	55.	36.	36.	0.48	54.77	4.70
DIVERSION TO	05Qspl	0.	4.70	0.	0.	0.	0.48		
HYDROGRAPH AT	05Qpip	71.	4.70	55.	36.	36.	0.48		
HYDROGRAPH AT	050062	40.	3.07	2.	1.	1.	0.01		
ROUTED TO	050610	38.	3.13	2.	1.	1.	0.01		
HYDROGRAPH AT	050610	99.	3.17	10.	6.	6.	0.08		
3 COMBINED AT	050610	173.	3.17	67.	43.	43.	0.58		

ROUTED TO	050620	172.	3.17	67.	43.	43.	0.58
HYDROGRAPH AT	050620	111.	3.17	12.	7.	7.	0.10
2 COMBINED AT	050620	283.	3.17	78.	50.	50.	0.67
ROUTED TO	050630	279.	3.20	78.	50.	50.	0.67
HYDROGRAPH AT	050630	120.	3.13	9.	6.	6.	0.06
2 COMBINED AT	050630	376.	3.17	87.	56.	56.	0.74
ROUTED TO	050660	373.	3.23	87.	56.	56.	0.74
HYDROGRAPH AT	050710	11.	3.13	1.	1.	1.	0.00
ROUTED TO	050720	11.	3.17	1.	1.	1.	0.00
HYDROGRAPH AT	050720	54.	3.20	5.	3.	3.	0.03
2 COMBINED AT	050720	64.	3.20	6.	3.	3.	0.03
ROUTED TO	050640	63.	3.20	6.	3.	3.	0.03
HYDROGRAPH AT	050810	25.	3.17	2.	1.	1.	0.01
ROUTED TO	050640	25.	3.20	2.	1.	1.	0.01
HYDROGRAPH AT	050640	65.	3.20	6.	3.	3.	0.03
3 COMBINED AT	050640	153.	3.20	13.	8.	8.	0.08
ROUTED TO	050650	151.	3.20	13.	8.	8.	0.08
HYDROGRAPH AT	050910	23.	3.13	2.	1.	1.	0.01
ROUTED TO	050650	22.	3.17	2.	1.	1.	0.01
HYDROGRAPH AT	050650	42.	3.13	3.	2.	2.	0.02
3 COMBINED AT	050650	209.	3.20	19.	11.	11.	0.11
ROUTED TO	050660	208.	3.20	19.	11.	11.	0.11
HYDROGRAPH AT	050660	40.	3.17	3.	2.	2.	0.02
3 COMBINED AT	050660	606.	3.23	108.	69.	69.	0.86
ROUTED TO	051410	603.	3.23	108.	69.	69.	0.86
HYDROGRAPH AT	051410	178.	3.13	13.	8.	8.	0.07
2 COMBINED AT	051410	729.	3.23	121.	77.	77.	0.94
ROUTED TO	051420	718.	3.23	121.	77.	77.	0.94
HYDROGRAPH AT	051510	21.	3.13	2.	1.	1.	0.01
ROUTED TO	051520	21.	3.17	2.	1.	1.	0.01
HYDROGRAPH AT	051610	39.	3.17	3.	2.	2.	0.02
ROUTED TO	051520	39.	3.17	3.	2.	2.	0.02
HYDROGRAPH AT	051710	8.	3.17	1.	0.	0.	0.00

ROUTED TO	051520	8.	3.17	1.	0.	0.	0.00
HYDROGRAPH AT	051520	43.	3.17	4.	2.	2.	0.02
4 COMBINED AT	051520	110.	3.17	9.	6.	6.	0.06
ROUTED TO	051530	108.	3.20	9.	6.	6.	0.06
HYDROGRAPH AT	051530	92.	3.17	7.	4.	4.	0.04
2 COMBINED AT	051530	197.	3.17	17.	10.	10.	0.10
ROUTED TO	051540	193.	3.17	17.	10.	10.	0.10
HYDROGRAPH AT	051810	12.	3.13	1.	1.	1.	0.00
ROUTED TO	051540	12.	3.13	1.	1.	1.	0.00
HYDROGRAPH AT	051540	9.	3.13	1.	0.	0.	0.00
3 COMBINED AT	051540	212.	3.17	18.	11.	11.	0.11
ROUTED TO	051550	210.	3.20	18.	11.	11.	0.11
ROUTED TO	051560	209.	3.20	18.	11.	11.	0.11
HYDROGRAPH AT	051560	10.	3.17	1.	1.	1.	0.01
2 COMBINED AT	051560	219.	3.20	19.	12.	12.	0.12
ROUTED TO	051570	218.	3.20	19.	12.	12.	0.12
HYDROGRAPH AT	05Qspl	0.	3.50	0.	0.	0.	0.00
ROUTED TO	050060	0.	4.23	0.	0.	0.	0.00
ROUTED TO	050070	0.	5.60	0.	0.	0.	0.00
HYDROGRAPH AT	050410	86.	3.13	7.	4.	4.	0.04
ROUTED TO	050070	84.	3.13	7.	4.	4.	0.04
HYDROGRAPH AT	050070	179.	3.17	15.	9.	9.	0.08
3 COMBINED AT	050070	261.	3.17	22.	13.	13.	0.13
ROUTED TO	050080	255.	3.20	22.	13.	13.	0.13
HYDROGRAPH AT	050080	23.	3.13	2.	1.	1.	0.02
2 COMBINED AT	050080	275.	3.17	24.	15.	15.	0.15
ROUTED TO	050090	275.	3.20	24.	15.	15.	0.15
HYDROGRAPH AT	050510	78.	3.17	7.	4.	4.	0.05
ROUTED TO	050090	78.	3.17	7.	4.	4.	0.05
HYDROGRAPH AT	050090	76.	3.17	6.	4.	4.	0.04
3 COMBINED AT	050090	425.	3.17	37.	23.	23.	0.24
ROUTED TO	050100	418.	3.20	37.	23.	23.	0.24
HYDROGRAPH AT	050100	106.	3.13	8.	5.	5.	0.05

2 COMBINED AT	050100	521.	3.17	46.	28.	28.	0.28		
ROUTED TO	050110	516.	3.20	46.	28.	28.	0.28		
HYDROGRAPH AT	050110	22.	3.17	2.	1.	1.	0.01		
2 COMBINED AT	050110	536.	3.20	47.	29.	29.	0.29		
ROUTED TO	050120	535.	3.20	47.	29.	29.	0.29		
HYDROGRAPH AT	051010	42.	3.13	4.	2.	2.	0.02		
ROUTED TO	1010ST	3.	4.23	1.	0.	0.	0.02	61.01	4.23
ROUTED TO	051020	3.	4.43	1.	0.	0.	0.02		
HYDROGRAPH AT	051110	58.	3.13	5.	3.	3.	0.03		
ROUTED TO	051020	57.	3.17	5.	3.	3.	0.03		
HYDROGRAPH AT	051020	49.	3.20	4.	3.	3.	0.03		
3 COMBINED AT	051020	106.	3.17	10.	6.	6.	0.08		
ROUTED TO	051030	105.	3.20	10.	6.	6.	0.08		
HYDROGRAPH AT	051210	19.	3.10	1.	1.	1.	0.01		
ROUTED TO	051030	19.	3.13	1.	1.	1.	0.01		
HYDROGRAPH AT	051310	7.	3.13	1.	0.	0.	0.00		
ROUTED TO	051320	7.	3.17	1.	0.	0.	0.00		
HYDROGRAPH AT	051320	22.	3.13	2.	1.	1.	0.01		
2 COMBINED AT	051320	29.	3.13	2.	1.	1.	0.01		
ROUTED TO	051030	29.	3.20	2.	1.	1.	0.01		
HYDROGRAPH AT	051030	57.	3.20	5.	3.	3.	0.03		
4 COMBINED AT	051030	206.	3.20	19.	11.	11.	0.13		
ROUTED TO	051040	203.	3.23	19.	11.	11.	0.13		
HYDROGRAPH AT	051040	54.	3.20	5.	3.	3.	0.04		
2 COMBINED AT	051040	253.	3.23	24.	14.	14.	0.16		
ROUTED TO	050120	249.	3.23	24.	14.	14.	0.16		
HYDROGRAPH AT	050120	86.	3.17	7.	4.	4.	0.04		
3 COMBINED AT	050120	842.	3.20	78.	47.	47.	0.49		
ROUTED TO	050130	837.	3.23	78.	47.	47.	0.49		
HYDROGRAPH AT	050130	199.	3.17	17.	10.	10.	0.10		
2 COMBINED AT	050130	1016.	3.23	95.	57.	57.	0.59		
ROUTED TO	050140	1011.	3.23	95.	57.	57.	0.59		
HYDROGRAPH AT	050140	175.	3.13	14.	8.	8.	0.09		

2 COMBINED AT	050140	1139.	3.23	108.	66.	66.	0.68
ROUTED TO	050150	1123.	3.27	108.	66.	66.	0.68
HYDROGRAPH AT	050150	12.	3.17	1.	1.	1.	0.01
2 COMBINED AT	050150	1132.	3.27	110.	66.	66.	0.69
ROUTED TO	050160	1131.	3.27	110.	66.	66.	0.69

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
070808	MANE	0.73	12.39	206.77	1.00	2.00	12.37	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9191E+00 OUTFLOW=0.9057E+00 BASIN STORAGE=0.9232E-02 PERCENT ERROR= 0.5

070610	MANE	0.18	11.99	206.43	1.00	2.00	11.99	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9031E+00 EXCESS=0.0000E+00 OUTFLOW=0.9031E+00 BASIN STORAGE=0.5171E-04 PERCENT ERROR= 0.0

070610	MANE	0.47	5.12	206.50	1.00	2.00	5.11	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3785E+00 OUTFLOW=0.3729E+00 BASIN STORAGE=0.3754E-02 PERCENT ERROR= 0.5

070508	MANE	0.27	16.98	206.55	1.00	2.00	16.98	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1275E+01 EXCESS=0.0000E+00 OUTFLOW=0.1275E+01 BASIN STORAGE=0.1197E-03 PERCENT ERROR= 0.0

070508	MANE	0.71	4.42	210.48	0.83	2.00	4.40	210.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3592E+00 OUTFLOW=0.3530E+00 BASIN STORAGE=0.4247E-02 PERCENT ERROR= 0.5

070010	MANE	0.18	20.97	207.86	0.95	2.00	20.97	208.00	0.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1624E+01 EXCESS=0.0000E+00 OUTFLOW=0.1624E+01 BASIN STORAGE=0.9866E-04 PERCENT ERROR= 0.0

070010	MANE	1.09	6.53	206.99	1.00	2.00	6.50	206.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4866E+00 OUTFLOW=0.4794E+00 BASIN STORAGE=0.5001E-02 PERCENT ERROR= 0.4

070210	MANE	0.11	27.45	208.01	0.96	2.00	27.45	208.00	0.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2103E+01 EXCESS=0.0000E+00 OUTFLOW=0.2103E+01 BASIN STORAGE=0.7125E-04 PERCENT ERROR= 0.0

070209	MANE	0.46	11.88	206.50	0.94	2.00	11.86	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9154E+00 OUTFLOW=0.9007E+00 BASIN STORAGE=0.1018E-01 PERCENT ERROR= 0.5

070210	MANE	0.36	11.85	207.78	0.94	2.00	11.85	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9005E+00 EXCESS=0.0000E+00 OUTFLOW=0.9004E+00 BASIN STORAGE=0.1804E-03 PERCENT ERROR= 0.0

070210	MANE	0.70	5.27	207.97	0.94	2.00	5.27	208.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4069E+00 OUTFLOW=0.4004E+00 BASIN STORAGE=0.4546E-02 PERCENT ERROR= 0.5

050005	MANE	0.50	44.43	208.32	0.95	2.00	44.42	208.00	0.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3403E+01 EXCESS=0.0000E+00 OUTFLOW=0.3403E+01 BASIN STORAGE=0.5932E-03 PERCENT ERROR= 0.0

050005	MANE	1.25	20.70	210.86	0.83	2.00	20.62	212.00	0.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1706E+01 OUTFLOW=0.1674E+01 BASIN STORAGE=0.2220E-01 PERCENT ERROR= 0.5

070020	MANE	0.45	0.01	207.04	-1.00	2.00	0.01	208.00	-1.00
070030	MANE	2.00	0.01	222.25	-1.00	2.00	0.01	222.00	-1.00
070030	MANE	0.85	5.34	184.06	1.17	2.00	5.33	184.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2515E+00 OUTFLOW=0.2501E+00 BASIN STORAGE=0.1024E-02 PERCENT ERROR= 0.2

070040	MANE	0.43	5.26	184.66	1.18	2.00	5.07	186.00	1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2507E+00 EXCESS=0.0000E+00 OUTFLOW=0.2508E+00 BASIN STORAGE=0.9675E-04 PERCENT ERROR= 0.0

070220	MANE	0.31	0.12	208.48	-1.00	2.00	0.10	208.00	-1.00
070040	MANE	1.94	0.13	225.41	-1.00	2.00	0.11	226.00	-1.00
070040	MANE	2.00	4.95	192.74	1.14	2.00	4.92	192.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3678E+00 OUTFLOW=0.3632E+00 BASIN STORAGE=0.3287E-02 PERCENT ERROR= 0.3

070050	MANE	1.40	8.63	189.86	1.15	2.00	8.62	190.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6163E+00 EXCESS=0.0000E+00 OUTFLOW=0.6150E+00 BASIN STORAGE=0.8373E-03 PERCENT ERROR= 0.1

070050	MANE	0.78	24.29	184.85	1.21	2.00	23.78	184.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1166E+01 OUTFLOW=0.1159E+01 BASIN STORAGE=0.5169E-02 PERCENT ERROR= 0.2

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070060  MANE        0.97     29.75    187.77      1.19      2.00     29.61    188.00        1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1774E+01 EXCESS=0.0000E+00 OUTFLOW=0.1775E+01 BASIN STORAGE=0.6068E-03 PERCENT ERROR=  -0.1

070310  MANE        0.76     30.67    184.48      1.21      2.00     30.08    184.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1490E+01 OUTFLOW=0.1481E+01 BASIN STORAGE=0.6574E-02 PERCENT ERROR=   0.2

070060  MANE        0.74     29.98    185.96      1.21      2.00     29.98    186.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1481E+01 EXCESS=0.0000E+00 OUTFLOW=0.1482E+01 BASIN STORAGE=0.3630E-03 PERCENT ERROR=  -0.1

070060  MANE        1.23     25.91    185.60      1.21      2.00     25.47    186.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1296E+01 OUTFLOW=0.1288E+01 BASIN STORAGE=0.5563E-02 PERCENT ERROR=   0.1

070070  MANE        0.67     82.61    187.81      1.20      2.00     82.33    188.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4545E+01 EXCESS=0.0000E+00 OUTFLOW=0.4545E+01 BASIN STORAGE=0.2515E-02 PERCENT ERROR=  -0.1

070070  MANE        0.94     42.52    184.23      1.21      2.00     42.12    184.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2073E+01 OUTFLOW=0.2061E+01 BASIN STORAGE=0.8684E-02 PERCENT ERROR=   0.2

070080  MANE        1.20     51.89    187.39      1.72      2.00     51.60    188.00        1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1932E+01 OUTFLOW=0.1925E+01 BASIN STORAGE=0.3459E-02 PERCENT ERROR=   0.2

070420  MANE        0.57     45.74    220.82      1.28      2.00     45.74    220.00        1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8494E+01 EXCESS=0.0000E+00 OUTFLOW=0.8494E+01 BASIN STORAGE=0.1546E-02 PERCENT ERROR=   0.0

070410  MANE        1.87     17.40    187.32      1.36      2.00     17.33    188.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8003E+00 OUTFLOW=0.7949E+00 BASIN STORAGE=0.3259E-02 PERCENT ERROR=   0.3

070420  MANE        0.32     17.31    188.65      1.35      2.00     16.89    188.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7944E+00 EXCESS=0.0000E+00 OUTFLOW=0.7946E+00 BASIN STORAGE=0.2700E-03 PERCENT ERROR=  -0.1

070420  MANE        2.00      4.86    190.82      1.49      2.00      4.84    192.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2409E+00 OUTFLOW=0.2387E+00 BASIN STORAGE=0.1374E-02 PERCENT ERROR=   0.3
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210005  MANE        0.26     59.21    192.44      1.29      2.00     59.12    192.00        1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9526E+01 EXCESS=0.0000E+00 OUTFLOW=0.9525E+01 BASIN STORAGE=0.7249E-03 PERCENT ERROR=   0.0

210005  MANE        2.00     13.06    194.11      1.48      2.00     13.04    194.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6370E+00 OUTFLOW=0.6324E+00 BASIN STORAGE=0.3350E-02 PERCENT ERROR=   0.2

050030  MANE        0.82     71.80    194.69      1.30      2.00     71.78    194.00        1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1016E+02 EXCESS=0.0000E+00 OUTFLOW=0.1016E+02 BASIN STORAGE=0.2660E-02 PERCENT ERROR=   0.0

050010  MANE        2.00      0.01    283.63     -1.00      2.00      0.01    282.00       -1.00

050010  MANE        1.33     96.72    187.31      1.20      2.00     95.85    188.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4245E+01 OUTFLOW=0.4215E+01 BASIN STORAGE=0.2301E-01 PERCENT ERROR=   0.2

050020  MANE        1.39     93.12    190.07      1.20      2.00     92.86    190.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4220E+01 EXCESS=0.0000E+00 OUTFLOW=0.4213E+01 BASIN STORAGE=0.6933E-02 PERCENT ERROR=   0.0

050210  MANE        0.98     99.92    188.76      1.46      2.00     99.54    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4226E+01 OUTFLOW=0.4205E+01 BASIN STORAGE=0.1724E-01 PERCENT ERROR=   0.1

050020  MANE        2.00      0.01    599.05      0.00      2.00      0.01    598.00        0.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2856E-02 EXCESS=0.0000E+00 OUTFLOW=0.2431E-02 BASIN STORAGE=0.4309E-03 PERCENT ERROR=  -0.2

050020  MANE        2.00     12.86    189.95      1.32      2.00     12.85    190.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6373E+00 OUTFLOW=0.6317E+00 BASIN STORAGE=0.4033E-02 PERCENT ERROR=   0.2

050030  MANE        0.37    105.06    190.65      0.70      2.00    103.35    192.00        0.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4844E+01 EXCESS=0.0000E+00 OUTFLOW=0.4844E+01 BASIN STORAGE=0.2094E-02 PERCENT ERROR=   0.0

050030  MANE        1.39     54.49    185.60      1.63      2.00     53.61    186.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1742E+01 OUTFLOW=0.1739E+01 BASIN STORAGE=0.2044E-02 PERCENT ERROR=   0.0
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050305  MANE        0.22    189.38    192.40      1.03      2.00    188.41    192.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1613E+02 BASIN STORAGE=0.4682E-03 PERCENT ERROR=   0.0

050050  MANE        1.14    187.38    195.07      1.02      2.00    185.84    196.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1614E+02 EXCESS=0.0000E+00 OUTFLOW=0.1611E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.1

050040  MANE        1.85    106.07    192.81      1.08      2.00    105.50    192.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5976E+01 OUTFLOW=0.5901E+01 BASIN STORAGE=0.5232E-01 PERCENT ERROR=   0.4

050050  MANE        0.14     36.67    220.33      1.09      2.00     36.67    220.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5915E+01 EXCESS=0.0000E+00 OUTFLOW=0.5930E+01 BASIN STORAGE=-.2270E-01 PERCENT ERROR=   0.1

050310  MANE        0.92     75.75    188.93      1.46      2.00     75.20    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3209E+01 OUTFLOW=0.3190E+01 BASIN STORAGE=0.1452E-01 PERCENT ERROR=   0.1

050065  MANE        0.57     37.43    184.88      1.63      2.00     36.96    184.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1294E-02 PERCENT ERROR=   0.0

050060  MANE        2.00     52.72    191.87      1.56      2.00     52.58    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2427E+01 OUTFLOW=0.2408E+01 BASIN STORAGE=0.1081E-01 PERCENT ERROR=   0.3

050062  MANE        0.98     40.00    184.01      1.63      2.00     39.98    184.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1219E+01 OUTFLOW=0.1218E+01 BASIN STORAGE=0.1174E-02 PERCENT ERROR=   0.0

050610  MANE        2.00     38.54    187.67      1.65      2.00     38.37    188.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1219E+01 EXCESS=0.0000E+00 OUTFLOW=0.1228E+01 BASIN STORAGE=0.2229E-02 PERCENT ERROR=  -1.0

050610  MANE        1.46    101.00    189.46      1.10      2.00     99.04    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4801E+01 OUTFLOW=0.4760E+01 BASIN STORAGE=0.2964E-01 PERCENT ERROR=   0.2

050620  MANE        0.58    172.55    190.62      1.16      2.00    171.92    190.00        1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3566E+02 EXCESS=0.0000E+00 OUTFLOW=0.3565E+02 BASIN STORAGE=-.6676E-02 PERCENT ERROR=   0.0
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050620  MANE        2.00    111.40    190.17      1.10      2.00    110.58    190.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5867E+01 OUTFLOW=0.5804E+01 BASIN STORAGE=0.4209E-01 PERCENT ERROR=   0.4

050630  MANE        0.67    280.79    191.23      1.15      2.00    279.07    192.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4146E+02 EXCESS=0.0000E+00 OUTFLOW=0.4146E+02 BASIN STORAGE=-.8065E-02 PERCENT ERROR=   0.0

050630  MANE        1.37    120.14    187.99      1.40      2.00    120.11    188.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4642E+01 OUTFLOW=0.4618E+01 BASIN STORAGE=0.1773E-01 PERCENT ERROR=   0.1

050660  MANE        1.43    374.15    193.84      1.17      2.00    373.18    194.00        1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4607E+02 EXCESS=0.0000E+00 OUTFLOW=0.4607E+02 BASIN STORAGE=-.1426E-01 PERCENT ERROR=   0.0

050710  MANE        1.41     11.04    187.86      1.63      2.00     11.03    188.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4355E+00 OUTFLOW=0.4336E+00 BASIN STORAGE=0.1041E-02 PERCENT ERROR=   0.2

050720  MANE        0.26     11.00    188.46      1.63      2.00     10.77    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4340E+00 EXCESS=0.0000E+00 OUTFLOW=0.4340E+00 BASIN STORAGE=0.1446E-04 PERCENT ERROR=   0.0

050720  MANE        2.00     54.40    190.79      1.60      2.00     53.82    192.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2400E+01 OUTFLOW=0.2385E+01 BASIN STORAGE=0.8781E-02 PERCENT ERROR=   0.3

050640  MANE        0.31     63.52    192.28      1.60      2.00     63.46    192.00        1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2816E+01 EXCESS=0.0000E+00 OUTFLOW=0.2816E+01 BASIN STORAGE=0.1211E-03 PERCENT ERROR=   0.0

050810  MANE        1.74     25.55    189.14      1.56      2.00     25.37    190.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1088E+01 OUTFLOW=0.1080E+01 BASIN STORAGE=0.3609E-02 PERCENT ERROR=   0.4

050640  MANE        0.59     25.29    191.22      1.56      2.00     24.71    192.00        1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1079E+01 EXCESS=0.0000E+00 OUTFLOW=0.1080E+01 BASIN STORAGE=0.1186E-03 PERCENT ERROR=  -0.1

050640  MANE        1.50     65.19    191.21      1.62      2.00     64.77    192.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2787E+01 OUTFLOW=0.2769E+01 BASIN STORAGE=0.9847E-02 PERCENT ERROR=   0.3
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050650  MANE        0.36    152.63    192.62      1.60      2.00    151.24    192.00        1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6664E+01 EXCESS=0.0000E+00 OUTFLOW=0.6666E+01 BASIN STORAGE=0.4829E-03 PERCENT ERROR=   0.0

050910  MANE        1.31     23.03    188.42      1.48      2.00     22.96    188.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.9556E+00 OUTFLOW=0.9500E+00 BASIN STORAGE=0.3772E-02 PERCENT ERROR=   0.2

050650  MANE        0.59     22.75    189.42      1.49      2.00     22.40    190.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9505E+00 EXCESS=0.0000E+00 OUTFLOW=0.9510E+00 BASIN STORAGE=0.1686E-03 PERCENT ERROR=  -0.1

050650  MANE        1.08     42.51    189.15      1.61      2.00     42.09    188.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1642E+01 OUTFLOW=0.1635E+01 BASIN STORAGE=0.4128E-02 PERCENT ERROR=   0.1

050660  MANE        0.39    208.41    192.44      1.59      2.00    207.56    192.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9252E+01 EXCESS=0.0000E+00 OUTFLOW=0.9252E+01 BASIN STORAGE=0.5649E-03 PERCENT ERROR=   0.0

050660  MANE        1.09     40.63    189.41      1.63      2.00     40.15    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1568E+01 OUTFLOW=0.1561E+01 BASIN STORAGE=0.4593E-02 PERCENT ERROR=   0.1

051410  MANE        0.86    605.41    194.48      1.23      2.00    603.40    194.00        1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5686E+02 EXCESS=0.0000E+00 OUTFLOW=0.5677E+02 BASIN STORAGE=0.3856E-02 PERCENT ERROR=   0.1

051410  MANE        1.05    179.25    188.68      1.70      2.00    178.08    188.00        1.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6562E+01 OUTFLOW=0.6544E+01 BASIN STORAGE=0.1382E-01 PERCENT ERROR=   0.1

051420  MANE        0.52    726.12    194.97      1.27      2.00    718.05    194.00        1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6332E+02 EXCESS=0.0000E+00 OUTFLOW=0.6331E+02 BASIN STORAGE=0.9070E-02 PERCENT ERROR=   0.0

051510  MANE        1.18     21.27    188.57      1.59      2.00     21.15    188.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8506E+00 OUTFLOW=0.8466E+00 BASIN STORAGE=0.2308E-02 PERCENT ERROR=   0.2

051520  MANE        0.48     21.10    189.09      1.59      2.00     20.78    190.00        1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8469E+00 EXCESS=0.0000E+00 OUTFLOW=0.8473E+00 BASIN STORAGE=0.6409E-04 PERCENT ERROR=  -0.1
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051610 MANE 1.22 39.29 190.01 1.50 2.00 39.29 190.00 1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1686E+01 OUTFLOW=0.1676E+01 BASIN STORAGE=0.7637E-02 PERCENT ERROR= 0.2

051520 MANE 0.40 39.05 190.64 1.50 2.00 38.52 190.00 1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1676E+01 EXCESS=0.0000E+00 OUTFLOW=0.1676E+01 BASIN STORAGE=0.1288E-03 PERCENT ERROR= 0.0

051710 MANE 0.65 7.88 188.76 1.51 2.00 7.77 190.00 1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3240E+00 OUTFLOW=0.3224E+00 BASIN STORAGE=0.1233E-02 PERCENT ERROR= 0.1

051520 MANE 0.60 7.76 190.34 1.51 2.00 7.75 190.00 1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3226E+00 EXCESS=0.0000E+00 OUTFLOW=0.3227E+00 BASIN STORAGE=0.3447E-04 PERCENT ERROR= 0.0

051520 MANE 1.21 43.16 189.81 1.48 2.00 42.92 190.00 1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1831E+01 OUTFLOW=0.1819E+01 BASIN STORAGE=0.8303E-02 PERCENT ERROR= 0.2

051530 MANE 0.84 108.66 191.82 1.51 2.00 108.11 192.00 1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4665E+01 EXCESS=0.0000E+00 OUTFLOW=0.4667E+01 BASIN STORAGE=0.7364E-03 PERCENT ERROR= 0.0

051530 MANE 0.97 92.52 188.84 1.63 2.00 91.53 190.00 1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3570E+01 OUTFLOW=0.3558E+01 BASIN STORAGE=0.8718E-02 PERCENT ERROR= 0.1

051540 MANE 0.32 196.66 190.63 1.56 2.00 193.17 190.00 1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8225E+01 EXCESS=0.0000E+00 OUTFLOW=0.8225E+01 BASIN STORAGE=0.4014E-03 PERCENT ERROR= 0.0

051810 MANE 0.51 11.76 187.31 1.62 2.00 11.63 188.00 1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4321E+00 OUTFLOW=0.4306E+00 BASIN STORAGE=0.7745E-03 PERCENT ERROR= 0.2

051540 MANE 0.23 11.60 188.25 1.61 2.00 11.57 188.00 1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4304E+00 EXCESS=0.0000E+00 OUTFLOW=0.4304E+00 BASIN STORAGE=0.8082E-05 PERCENT ERROR= 0.0

051540 MANE 0.78 9.52 187.16 1.62 2.00 9.38 188.00 1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3457E+00 OUTFLOW=0.3447E+00 BASIN STORAGE=0.6075E-03 PERCENT ERROR= 0.1

051550 MANE 0.26 211.93 190.50 1.56 2.00 209.74 192.00 1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9003E+01 EXCESS=0.0000E+00 OUTFLOW=0.9003E+01 BASIN STORAGE=0.3191E-03 PERCENT ERROR= 0.0

051560 MANE 0.47 209.33 192.15 1.56 2.00 209.28 192.00 1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9006E+01 EXCESS=0.0000E+00 OUTFLOW=0.9006E+01 BASIN STORAGE=0.5953E-03 PERCENT ERROR= 0.0

051560 MANE 2.00 10.16 189.32 1.22 2.00 10.12 190.00 1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5231E+00 OUTFLOW=0.5186E+00 BASIN STORAGE=0.3077E-02 PERCENT ERROR= 0.3

051570 MANE 0.23 218.35 192.07 1.54 2.00 218.10 192.00 1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9527E+01 EXCESS=0.0000E+00 OUTFLOW=0.9527E+01 BASIN STORAGE=0.1972E-03 PERCENT ERROR= 0.0

050060 MANE 2.14 0.00 310.71 -1.00 2.00 0.00 310.00 -1.00

050070 MANE 2.00 0.00 386.64 -1.00 2.00 0.00 388.00 -1.00

050410 MANE 1.19 86.35 188.28 1.50 2.00 85.86 188.00 1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3292E+01 OUTFLOW=0.3282E+01 BASIN STORAGE=0.8189E-02 PERCENT ERROR= 0.1

050070 MANE 0.23 85.55 188.55 1.50 2.00 84.16 188.00 1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3283E+01 EXCESS=0.0000E+00 OUTFLOW=0.3283E+01 BASIN STORAGE=0.6196E-03 PERCENT ERROR= 0.0

050070 MANE 1.93 179.57 191.46 1.71 2.00 178.68 190.00 1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7713E+01 OUTFLOW=0.7660E+01 BASIN STORAGE=0.2368E-01 PERCENT ERROR= 0.4

050080 MANE 0.65 259.42 191.30 1.64 2.00 255.21 192.00 1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1094E+02 EXCESS=0.0000E+00 OUTFLOW=0.1095E+02 BASIN STORAGE=0.1051E-02 PERCENT ERROR= 0.0

050080 MANE 2.00 23.10 188.63 1.05 2.00 22.80 188.00 1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1188E+01 OUTFLOW=0.1178E+01 BASIN STORAGE=0.6871E-02 PERCENT ERROR= 0.3

050090 MANE 0.20 275.19 190.45 1.56 2.00 274.65 192.00 1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1212E+02 EXCESS=0.0000E+00 OUTFLOW=0.1212E+02 BASIN STORAGE=0.3567E-03 PERCENT ERROR= 0.0

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050510  MANE        1.50     79.77    189.39      1.20      2.00     78.01    190.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3494E+01 OUTFLOW=0.3470E+01 BASIN STORAGE=0.1608E-01 PERCENT ERROR=   0.2

050090  MANE        0.36     77.94    190.15      1.21      2.00     77.93    190.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3472E+01 EXCESS=0.0000E+00 OUTFLOW=0.3472E+01 BASIN STORAGE=0.2389E-03 PERCENT ERROR=   0.0

050090  MANE        1.25     77.07    188.97      1.53      2.00     75.95    190.00        1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3021E+01 OUTFLOW=0.3011E+01 BASIN STORAGE=0.7900E-02 PERCENT ERROR=   0.1

050100  MANE        0.38    423.07    190.90      1.47      2.00    418.37    192.00        1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1861E+02 EXCESS=0.0000E+00 OUTFLOW=0.1861E+02 BASIN STORAGE=0.9550E-03 PERCENT ERROR=   0.0

050100  MANE        1.41    108.52    189.10      1.73      2.00    106.25    188.00        1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4163E+01 OUTFLOW=0.4146E+01 BASIN STORAGE=0.1006E-01 PERCENT ERROR=   0.2

050110  MANE        0.37    519.58    190.75      1.51      2.00    515.68    192.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2276E+02 EXCESS=0.0000E+00 OUTFLOW=0.2276E+02 BASIN STORAGE=0.9270E-03 PERCENT ERROR=   0.0

050110  MANE        0.83     22.36    189.40      1.63      2.00     22.20    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8709E+00 OUTFLOW=0.8674E+00 BASIN STORAGE=0.2426E-02 PERCENT ERROR=   0.1

050120  MANE        0.48    534.85    192.29      1.52      2.00    534.51    192.00        1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2364E+02 EXCESS=0.0000E+00 OUTFLOW=0.2364E+02 BASIN STORAGE=0.1561E-02 PERCENT ERROR=   0.0

051010  MANE        0.97     42.42    188.52      1.46      2.00     42.04    188.00        1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1800E+01 OUTFLOW=0.1791E+01 BASIN STORAGE=0.7795E-02 PERCENT ERROR=   0.1

051020  MANE        0.67      3.11    265.08      0.26      2.00      2.99    266.00        0.26

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3015E+00 EXCESS=0.0000E+00 OUTFLOW=0.3157E+00 BASIN STORAGE=0.5736E-02 PERCENT ERROR=  -6.6

051110  MANE        1.37     58.08    189.39      1.69      2.00     57.87    188.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2262E+01 OUTFLOW=0.2252E+01 BASIN STORAGE=0.4880E-02 PERCENT ERROR=   0.2
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051020  MANE        0.61    57.59   189.70     1.69     2.00    57.44   190.00       1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2251E+01 EXCESS=0.0000E+00 OUTFLOW=0.2253E+01 BASIN STORAGE=0.9481E-03 PERCENT ERROR=  -0.1

051020  MANE        2.00    49.67   190.64     1.53     2.00    48.95   192.00       1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2223E+01 OUTFLOW=0.2207E+01 BASIN STORAGE=0.7967E-02 PERCENT ERROR=   0.4

051030  MANE        0.81   104.97   192.11     1.19     2.00   104.89   192.00       1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4771E+01 EXCESS=0.0000E+00 OUTFLOW=0.4769E+01 BASIN STORAGE=0.5335E-02 PERCENT ERROR=  -0.1

051210  MANE        0.80    18.89   187.30     1.63     2.00    18.53   186.00       1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6967E+00 OUTFLOW=0.6948E+00 BASIN STORAGE=0.1161E-02 PERCENT ERROR=   0.1

051030  MANE        0.56    18.53   187.14     1.63     2.00    18.52   188.00       1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6952E+00 EXCESS=0.0000E+00 OUTFLOW=0.6956E+00 BASIN STORAGE=0.2385E-03 PERCENT ERROR=  -0.1

051310  MANE        1.04     7.34   186.96     1.74     2.00     7.31   188.00       1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2796E+00 OUTFLOW=0.2789E+00 BASIN STORAGE=0.5135E-03 PERCENT ERROR=   0.1

051320  MANE        0.97     7.27   190.02     1.74     2.00     7.27   190.00       1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2788E+00 EXCESS=0.0000E+00 OUTFLOW=0.2788E+00 BASIN STORAGE=0.2282E-03 PERCENT ERROR=  -0.1

051320  MANE        0.83    22.31   187.99     1.73     2.00    22.31   188.00       1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8327E+00 OUTFLOW=0.8298E+00 BASIN STORAGE=0.1460E-02 PERCENT ERROR=   0.2

051030  MANE        1.59    28.76   191.91     1.73     2.00    28.67   192.00       1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1109E+01 EXCESS=0.0000E+00 OUTFLOW=0.1108E+01 BASIN STORAGE=0.1690E-02 PERCENT ERROR=   0.0

051030  MANE        2.00    57.28   191.92     1.65     2.00    57.27   192.00       1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2742E+01 OUTFLOW=0.2721E+01 BASIN STORAGE=0.1172E-01 PERCENT ERROR=   0.3

051040  MANE        1.27   203.72   195.03     1.38     2.00   202.74   194.00       1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9295E+01 EXCESS=0.0000E+00 OUTFLOW=0.9273E+01 BASIN STORAGE=0.1724E-01 PERCENT ERROR=   0.0
```

```
051040  MANE        2.00    54.49   191.52     1.32     2.00    53.60   192.00       1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2549E+01 OUTFLOW=0.2529E+01 BASIN STORAGE=0.1339E-01 PERCENT ERROR=   0.3

050120  MANE        0.45   251.35   194.72     1.37     2.00   248.58   194.00       1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1180E+02 EXCESS=0.0000E+00 OUTFLOW=0.1180E+02 BASIN STORAGE=0.7552E-02 PERCENT ERROR=   0.0

050120  MANE        1.54    86.49   189.92     1.64     2.00    86.34   190.00       1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.3423E+01 OUTFLOW=0.3405E+01 BASIN STORAGE=0.1024E-01 PERCENT ERROR=   0.2

050130  MANE        0.56   840.43   193.22     1.48     2.00   836.56   194.00       1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3885E+02 EXCESS=0.0000E+00 OUTFLOW=0.3885E+02 BASIN STORAGE=0.6703E-02 PERCENT ERROR=   0.0

050130  MANE        1.18   201.77   190.75     1.62     2.00   198.78   190.00       1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8359E+01 OUTFLOW=0.8308E+01 BASIN STORAGE=0.2944E-01 PERCENT ERROR=   0.3

050140  MANE        0.62  1012.85   194.58     1.50     2.00  1011.49   194.00       1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4716E+02 EXCESS=0.0000E+00 OUTFLOW=0.4716E+02 BASIN STORAGE=0.8044E-02 PERCENT ERROR=   0.0

050140  MANE        1.29   176.46   189.02     1.50     2.00   174.88   188.00       1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6905E+01 OUTFLOW=0.6874E+01 BASIN STORAGE=0.1865E-01 PERCENT ERROR=   0.2

050150  MANE        0.85  1130.59   195.32     1.50     2.00  1123.38   196.00       1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5402E+02 EXCESS=0.0000E+00 OUTFLOW=0.5404E+02 BASIN STORAGE=0.1500E-01 PERCENT ERROR=  -0.1

050150  MANE        2.00    11.57   190.40     1.09     2.00    11.50   190.00       1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6446E+00 OUTFLOW=0.6376E+00 BASIN STORAGE=0.4975E-02 PERCENT ERROR=   0.3

050160  MANE        0.17  1130.95   196.07     1.49     2.00  1130.84   196.00       1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5467E+02 EXCESS=0.0000E+00 OUTFLOW=0.5467E+02 BASIN STORAGE=0.1897E-02 PERCENT ERROR=   0.0
```

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 210ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	0.00	1.00	1.00
STORAGE	0.	8.	8.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	0.55	0.00	4.	0.	0.00	9.97	0.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 030ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	65.00	68.00	68.00
STORAGE	0.	1.	1.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	68.13	0.13	1.	20.	6.87	3.27	0.00

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION 1010ST
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	58.00	61.00	61.00
STORAGE	0.	1.	1.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	61.01	0.01	1.	3.	5.80	4.23	0.00

** NORMAL END OF HEC-1 ***

Appendix C: Hydraulic Models

Alternative A: Osborn Park Storage

Existing System, IBW to 115' East of Miller Rd. (osbexta.out)

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STORM DRAIN ANALYSIS PLUS

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 Version □□□□□
 Serial Number □□□□□□□□

 Nov 20, 1997  14:31:15

 Input file : OSBEXTA.DAT
 Output file: OSBEXTA.OUT

                                INPUT FILE LISTING

 T1 STP Papago - 091131.00 - Existing Storm Drain
 T2 Osborn Road Storm Drain - Indian Bend Wash to Miller Road.
 T3 2 YR 6 HR Storm Event
 SO    1000.00 216.60  1        .013                223.60
 R     1038.87 216.70  1        .013
 R     1109.07 216.89  1        .013                                  40.13
 JX    1227.66 217.22  1  2     .013     1.0        219.80            90.00
 R     1261.66 217.29  1        .013                                        13.17
 R     1365.66 217.50  1        .013                                         9.44
 R     1642.66 218.07  1        .013                                         9.40
 R     1848.47 218.49  1        .013                                         5.77
 R     2195.13 219.20  1        .013                                        10.02  1
 R     2210.97 219.23  3        .013
 R     2365.37 219.86  3        .013
 SH                    3
                                                                   SP
                                WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
  CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
  CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH              DROP

  CD      1    4                      7.00
  CD      2    4                      3.50
  CD      3    3      0        .00    5.00     8.00    .00   .00   .00

                              WATER SURFACE PROFILE - TITLE CARD LISTING
 HEADING LINE NO 1 IS -
                                STP Papago - 091131.00 - Existing Storm Drain
 HEADING LINE NO 2 IS -
                                Osborn Road Storm Drain - Indian Bend Wash to Miller Road.
 HEADING LINE NO 3 IS -
                                2 YR 6 HR Storm Event

                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
  ELEMENT NO   1 IS A SYSTEM OUTLET      *        *      *
                     U/S DATA   STATION    INVERT  SECT                                W S ELEV
                                1000.00   216.60    1                                   223.60
  ELEMENT NO   2 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                1038.87   216.70    1          .013                        .00    .00     .00      0
  ELEMENT NO   3 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                1109.07   216.89    1          .013                        .00  40.13     .00      0
  ELEMENT NO   4 IS A JUNCTION           *        *      *                  *                    *          *
                     U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3      Q4   INVERT-3 INVERT-4  PHI 3   PHI 4
                                1227.66   217.22    1     2     0   .013     1.0      .0   219.80      .00  90.00     .00
  ELEMENT NO   5 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                1261.66   217.29    1          .013                        .00    .00   13.17      0
  ELEMENT NO   6 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                1365.66   217.50    1          .013                        .00    .00    9.44      0
  ELEMENT NO   7 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                1642.66   218.07    1          .013                        .00    .00    9.40      0
  ELEMENT NO   8 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                1848.47   218.49    1          .013                        .00    .00    5.77      0
  ELEMENT NO   9 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                2195.13   219.20    1          .013                        .00    .00   10.02      1
 WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
  ELEMENT NO  10 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                2210.97   219.23    3          .013                        .00    .00     .00      0
  ELEMENT NO  11 IS A REACH              *        *      *
                     U/S DATA   STATION    INVERT  SECT          N                     RADIUS  ANGLE  ANG PT  MAN H
                                2365.37   219.86    3          .013                        .00    .00     .00      0
  ELEMENT NO  12 IS A SYSTEM HEADWORKS                   *                  *
                     U/S DATA   STATION    INVERT  SECT                                W S ELEV
                                2365.37   219.86    3                                     .00

                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
 NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

 ** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
```

using T.O.P. — adequate? Check w/ AA

84"

42"

60"

1195' of 84" pipe

170' of ~~60" pipe~~ 8'x5' box

WATER SURFACE PROFILE LISTING
STP Papago - 091131.00 - Existing Storm Drain
Osborn Road Storm Drain - Indian Bend Wash to Miller Road.
2 YR 6 HR Storm Event

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
1000.00	216.60	7.00	223.60	451.0	11.72	2.13	225.73	.00	5.58		7.00	.00	.00	0	.00
38.87	.00257					.00498	.19			7.00			.00		
1038.87	216.70	7.09	223.79	451.0	11.72	2.13	225.93	.00	5.58		7.00	.00	.00	0	.00
70.20	.00271					.00498	.35			7.00			.00		
1109.07	216.89	7.54	224.43	451.0	11.72	2.13	226.56	.00	5.58		7.00	.00	.00	0	.00
JUNCT STR	.00278					.00497	.59						.00		
1227.66	217.22	7.82	225.04	450.0	11.69	2.12	227.16	.00	5.57		7.00	.00	.00	0	.00
34.00	.00206					.00496	.17			7.00			.00		
1261.66	217.29	8.01	225.30	450.0	11.69	2.12	227.42	.00	5.57		7.00	.00	.00	0	.00
104.00	.00202					.00496	.52			7.00			.00		
1365.66	217.50	8.38	225.88	450.0	11.69	2.12	228.01	.00	5.57		7.00	.00	.00	0	.00
277.00	.00206					.00496	1.37			7.00			.00		
1642.66	218.07	9.25	227.32	450.0	11.69	2.12	229.45	.00	5.57		7.00	.00	.00	0	.00
205.81	.00204					.00496	1.02			7.00			.00		
1848.47	218.49	9.89	228.38	450.0	11.69	2.12	230.51	.00	5.57		7.00	.00	.00	0	.00
346.66	.00205					.00496	1.72			7.00			.00		
2195.13	219.20	11.08	230.28	450.0	11.32	1.99	232.27	.00	4.62		5.00	8.00	.00	0	.00
15.84	.00189					.00557	.09			5.00			.00		
2210.97	219.23	11.14	230.37	450.0	11.32	1.99	232.36	.00	4.62		5.00	8.00	.00	0	.00
154.40	.00408					.00557	.86			4.63			.00		
2365.37	219.86	11.37	231.23	450.0	11.32	1.99	233.22	.00	4.62		5.00	8.00	.00	0	.00

Paiute Park to 115' East of Miller Rd. (osbco2a1.out)

STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
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Version □□□□□
Serial Number □□□□□□□□

Nov 21, 1997 9:34:14

Input file : osbco2a1.dat
Output file: osbco2a1.out

INPUT FILE LISTING

T1 STP Papago - 091131.00 CO#2 Alternative A -
T2 Osborn Road Storm Drain- Miller Rd. to Paiute Park-
T3 6 HR 10 YR Storm — 114" pipe

SO	2385.37	219.88	1					231.23				
R	2436.82	219.93	1		.013	79'				19.56		
R	2464.89	219.96	1									
TS	2484.89	223.98	2		.013							
JX	2503.78	224.00	2	8 9	.013	6.0	7.0	223.29	223.29	90.00	90.00	
R	2509.89	224.01	2		.013							
TS	2529.89	220.02	1		.013							
R	3000.00	220.49	1		.013							1
JX	3155.73	220.65	1	21	.013	65.0	1220'	228.59		90.00		
R	3500.00	220.99	1		.013							1
JX	3632.77	221.13	1	5	.013	76.0		230.39		90.00		
R	3750.00	221.24	1		.013							
TS	3800.00	221.38	18		.013							
R	3825.00	221.46	18		.013							
R	3832.29	221.48	18		.013							
R	3850.00	221.53	18		.013							
TS	3900.00	221.67	1		.013	732'						
R	4632.00	223.72	1		.013							2
TS	4690.00	223.88	18		.013							
JX	4700.00	223.91	18	10 7	.013	25.0	13.0	224.41	224.41	90.00	90.00	
R	4714.44	223.95	18		.013							
R	4740.00	224.06	18		.013							
TS	4790.00	224.28	1		.013	374'						
R	4899.45	224.76	1		.013						4.96	
R	5093.70	225.62	1		.013						4.96	1
JX	5124.13	225.75	1	4	.013	127.0		229.30		90.00		
R	5163.70	225.92	1		.013							
TS	5185.70	226.02	3		.013							
R	5217.47	226.16	3		.013						5.00	
R	5409.00	227.00	3		.013							
R	5606.38	227.47	3		.013						4.26	1
R	6400.00	229.36	3		.013							1
JX	6439.00	229.45	3	8	.013	94.0		231.20		90.00		
TS	6449.00	229.48	24		.013							
R	7250.00	231.75	24		.013							2
R	7700.00	239.39	24		.013							1
JX	7741.00	240.09	24	20	.013	109.0		241.09		90.00		
TS	7751.00	240.26	5		.013							
R	8100.00	240.78	5		.013							1
R	8139.55	240.83	5		.013							
R	8179.00	240.88	5		.013						5.00	
TS	8179.55	240.89	22		.013							
R	8210.55	240.94	22		.013							
TS	8250.55	241.09	5		.013							
R	8439.44	241.79	5		.013						5.00	
R	8700.00	242.76	5		.013							1
JX	8759.00	242.98	5	10	.013	103.0		243.48		90.00		
TS	8774.00	243.04	20		.013							
R	8948.07	243.68	20		.013							
R	9000.00	243.88	20		.013					34.02		
TS	9025.00	243.97	23		.013							
R	9055.00	244.08	23		.013					12.73		
TS	9075.00	244.37	20		.013							
R	9160.13	245.58	20		.013					43.25		
R	9793.42	248.01	20		.013							2

Totals

Pipe/Box	Lf
114"	2405
96"	1253
84"	2187
72"	937
60"	1280
5.5 x 5.5	25
5 x 9	100
8.5 x 3	31
3.5 x 5	30

2405' 114" pipe
25' of 5.5' x 9.5' BOX
50' of 5' x 9' Box
50' of 5' x 9' Box
1253' of 96" pipe
1292' +1195' of 84" pipe
428' 72"
31' of 3' x 8.5' box
509' of 72" pipe
226' +170 of 60" pipe
30' of 3.5' x 5' box
884' of 60" pipe

```
R     9934.27 248.56 20       .013                                  90.33
R     9958.83 248.65 20       .013
SH                   20
                                                                   SP
                                   WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH              DROP

 CD      1    4                      9.50
 CD      2    3      0        .00    5.50    9.50    .00   .00   .00
 CD      3    4                      8.00
 CD      4    4                      5.50
 CD      5    4                      6.00
 CD      7    4                      2.00
 CD      8    4                      4.50
 CD      9    4                      3.50
 CD     10    4                      4.00
 CD     15    4                      3.00
 CD     18    3      0        .00    5.00    9.00    .00   .00   .00
 CD     20    4                      5.00
 CD     21    4                      1.50
 CD     22    3      0        .00    3.00    8.50    .00   .00   .00
 CD     23    3      0        .00    3.50    5.00    .00   .00   .00
 CD     24    4                      7.00

                              WATER SURFACE PROFILE - TITLE CARD LISTING
HEADING LINE NO 1 IS -
                                STP Papago - 091131.00 CO#2 Alternative A -
HEADING LINE NO 2 IS -
                                Osborn Road Storm Drain- Miller Rd. to Paiute Park-
HEADING LINE NO 3 IS -
                                6 HR 10 YR Storm

                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   1 IS A SYSTEM OUTLET      *        *      *
                    U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                                2385.37  219.88    1                                      231.23
 ELEMENT NO   2 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2436.82  219.93    1              .013                                  .00  19.56    .00     0
 ELEMENT NO   3 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2464.89  219.96    1              .014                                  .00    .00    .00     0
 ELEMENT NO   4 IS A TRANSITION         *        *      *
                    U/S DATA   STATION    INVERT  SECT              N
                                2484.89  223.98    2              .013
 ELEMENT NO   5 IS A JUNCTION           *        *      *      *              *                *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                2503.78  224.00    2     8     9   .013     6.0      7.0   223.29   223.29  90.00   90.00
 ELEMENT NO   6 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2509.89  224.01    2              .013                                  .00    .00    .00     0
 ELEMENT NO   7 IS A TRANSITION         *        *      *
                    U/S DATA   STATION    INVERT  SECT              N
                                2529.89  220.02    1              .013
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 ELEMENT NO   8 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3000.00  220.49    1              .013                                  .00    .00    .00     1
 ELEMENT NO   9 IS A JUNCTION           *        *      *      *              *                *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                3155.73  220.65    1    21     0   .013    65.0       .0   228.59      .00  90.00     .00
 ELEMENT NO  10 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3500.00  220.99    1              .013                                  .00    .00    .00     1
 ELEMENT NO  11 IS A JUNCTION           *        *      *      *              *                *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                3632.77  221.13    1     5     0   .013    76.0       .0   230.39      .00  90.00     .00

                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  12 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3750.00  221.24    1              .013                                  .00    .00    .00     0
 ELEMENT NO  13 IS A TRANSITION         *        *      *
                    U/S DATA   STATION    INVERT  SECT              N
                                3800.00  221.38   18              .013
 ELEMENT NO  14 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3825.00  221.46   18              .013                                  .00    .00    .00     0
 ELEMENT NO  15 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3832.29  221.48   18              .013                                  .00    .00    .00     0
 ELEMENT NO  16 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3850.00  221.53   18              .013                                  .00    .00    .00     0
 ELEMENT NO  17 IS A TRANSITION         *        *      *
                    U/S DATA   STATION    INVERT  SECT              N
                                3900.00  221.67    1              .013
 ELEMENT NO  18 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                4632.00  223.72    1              .013                                  .00    .00    .00     2
 ELEMENT NO  19 IS A TRANSITION         *        *      *
                    U/S DATA   STATION    INVERT  SECT              N
                                4690.00  223.88   18              .013
 ELEMENT NO  20 IS A JUNCTION           *        *      *      *              *                *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                4700.00  223.91   18    10     7   .013    25.0      13.0   224.41   224.41  90.00   90.00
 ELEMENT NO  21 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                4714.44  223.95   18              .013                                  .00    .00    .00     0
 ELEMENT NO  22 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                4740.00  224.06   18              .013                                  .00    .00    .00     0
 ELEMENT NO  23 IS A TRANSITION         *        *      *
                    U/S DATA   STATION    INVERT  SECT              N
                                4790.00  224.28    1              .013

                              WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  24 IS A REACH              *        *      *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                4899.45  224.76    1              .013                                  .00    .00   4.96     0
 ELEMENT NO  25 IS A REACH              *        *      *
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                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           5093.70  225.62    1                .013                                          .00    .00    4.96     1
ELEMENT NO  26 IS A JUNCTION    *          *     *      *                 *                     *                *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2    N      Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                           5124.13  225.75    1     4     0    .013   127.0          .0   229.30      .00  90.00     .00
ELEMENT NO  27 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           5163.70  225.92    1                .013                                          .00    .00     .00     0
ELEMENT NO  28 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           5185.70  226.02    3                .013
ELEMENT NO  29 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           5217.47  226.16    3                .013                                          .00    .00    5.00     0
ELEMENT NO  30 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           5409.00  227.00    3                .013                                          .00    .00     .00     0
ELEMENT NO  31 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           5606.38  227.47    3                .013                                          .00    .00    4.26     1
ELEMENT NO  32 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           6400.00  229.36    3                .013                                          .00    .00     .00     1
ELEMENT NO  33 IS A JUNCTION    *          *     *      *                 *                     *                *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2    N      Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                           6439.00  229.45    3     8     0    .013    94.0          .0   231.20      .00  90.00     .00
ELEMENT NO  34 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           6449.00  229.48   24                .013

                     WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  35 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           7250.00  231.75   24                .013                                          .00    .00     .00     2
ELEMENT NO  36 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           7700.00  239.39   24                .013                                          .00    .00     .00     1
ELEMENT NO  37 IS A JUNCTION    *          *     *      *                 *                     *                *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2    N      Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                           7741.00  240.09   24    20     0    .013   109.0          .0   241.09      .00  90.00     .00
ELEMENT NO  38 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           7751.00  240.26    5                .013
ELEMENT NO  39 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           8100.00  240.78    5                .013                                          .00    .00     .00     1
ELEMENT NO  40 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           8139.55  240.83    5                .013                                          .00    .00     .00     0
ELEMENT NO  41 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           8179.00  240.88    5                .013                                          .00    .00    5.00     0
ELEMENT NO  42 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           8179.55  240.89   22                .013
ELEMENT NO  43 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           8210.55  240.94   22                .013                                          .00    .00     .00     0
ELEMENT NO  44 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           8250.55  241.09    5                .013
ELEMENT NO  45 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           8439.44  241.79    5                .013                                          .00    .00    5.00     0
ELEMENT NO  46 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           8700.00  242.76    5                .013                                          .00    .00     .00     1
ELEMENT NO  47 IS A JUNCTION    *          *     *      *                 *                     *                *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2    N      Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                           8759.00  242.98    5    10     0    .013   103.0          .0   243.48      .00  90.00     .00

                     WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  48 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           8774.00  243.04   20                .013
ELEMENT NO  49 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           8948.07  243.68   20                .013                                          .00    .00     .00     0
ELEMENT NO  50 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           9000.00  243.88   20                .013                                          .00  34.02     .00     0
ELEMENT NO  51 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           9025.00  243.97   23                .013
ELEMENT NO  52 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           9055.00  244.08   23                .013                                          .00  12.73     .00     0
ELEMENT NO  53 IS A TRANSITION  *          *     *
                U/S DATA   STATION    INVERT  SECT                N
                           9075.00  244.37   20                .013
ELEMENT NO  54 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           9160.13  245.58   20                .013                                          .00  43.25     .00     0
ELEMENT NO  55 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           9793.42  248.01   20                .013                                          .00    .00     .00     2
ELEMENT NO  56 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           9934.27  248.56   20                .013                                          .00  90.33     .00     0
ELEMENT NO  57 IS A REACH       *          *     *
                U/S DATA   STATION    INVERT  SECT                N                                       RADIUS  ANGLE  ANG PT  MAN H
                           9958.83  248.65   20                .013                                          .00    .00     .00     0
ELEMENT NO  58 IS A SYSTEM HEADWORKS             *                        *
                U/S DATA   STATION    INVERT  SECT                                       W S ELEV
                           9958.83  248.65   20                                               .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

                                              WATER SURFACE PROFILE LISTING
                    STP Papago - 091131.00 CO#2 Alternative A -
                    Osborn Road Storm Drain- Miller Rd. to Paiute Park-
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6 HR 10 YR Storm

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
2385.37	219.88	11.35	231.23	696.0	9.82	1.50	232.73	.00	6.44		9.50	.00	.00	0	.00
51.45	.00097					.00233	.12			9.50			.00		
2436.82	219.93	11.56	231.49	696.0	9.82	1.50	232.99	.00	6.44		9.50	.00	.00	0	.00
28.07	.00107					.00270	.08			9.50			.00		
2464.89	219.96	11.61	231.57	696.0	9.82	1.50	233.06	.00	6.44		9.50	.00	.00	0	.00
TRANS STR	.20100					.00446	.09						.00		
2484.89	223.98	6.65	230.63	696.0	13.38	2.78	233.41	.00	5.50		5.50	9.50	.00	0	.00
JUNCT STR	.00106					.00646	.12						.00		
2503.78	224.00	6.95	230.95	683.0	13.13	2.68	233.64	.00	5.44		5.50	9.50	.00	0	.00
6.11	.00164					.00634	.04			5.50			.00		
2509.89	224.01	6.98	230.99	683.0	13.13	2.68	233.67	.00	5.44		5.50	9.50	.00	0	.00
TRANS STR	-.19950					.00429	.09						.00		
2529.89	220.02	12.42	232.44	683.0	9.64	1.44	233.88	.00	6.38		9.50	.00	.00	0	.00
470.11	.00100					.00224	1.05			9.50			.00		
3000.00	220.49	13.08	233.57	683.0	9.64	1.44	235.01	.00	6.38		9.50	.00	.00	0	.00
JUNCT STR	.00103					.00204	.32						.00		
3155.73	220.65	13.76	234.41	618.0	8.72	1.18	235.59	.00	6.05		9.50	.00	.00	0	.00
344.27	.00099					.00184	.63			9.50			.00		
3500.00	220.99	14.11	235.10	618.0	8.72	1.18	236.28	.00	6.05		9.50	.00	.00	0	.00
JUNCT STR	.00105					.00162	.22						.00		
3632.77	221.13	14.73	235.86	542.0	7.65	.91	236.77	.00	5.66		9.50	.00	.00	0	.00
117.23	.00094					.00141	.17			9.50			.00		
3750.00	221.24	14.79	236.03	542.0	7.65	.91	236.93	.00	5.66		9.50	.00	.00	0	.00
TRANS STR	.00280					.00371	.19						.00		
3800.00	221.38	13.73	235.11	542.0	12.11	2.28	237.39	.00	4.83		5.00	9.00	.00	0	.00
25.00	.00320					.00601	.15			5.00			.00		
3825.00	221.46	13.80	235.26	542.0	12.11	2.28	237.54	.00	4.83		5.00	9.00	.00	0	.00
7.29	.00274					.00601	.04			5.00			.00		
3832.29	221.48	13.83	235.31	542.0	12.11	2.28	237.59	.00	4.83		5.00	9.00	.00	0	.00
17.71	.00282					.00601	.11			5.00			.00		
3850.00	221.53	13.88	235.41	542.0	12.11	2.28	237.69	.00	4.83		5.00	9.00	.00	0	.00
TRANS STR	.00280					.00371	.19						.00		
3900.00	221.67	15.44	237.11	542.0	7.65	.91	238.02	.00	5.66		9.50	.00	.00	0	.00
732.00	.00280					.00141	1.03			5.91			.00		
4632.00	223.72	14.51	238.23	542.0	7.65	.91	239.14	.00	5.66		9.50	.00	.00	0	.00
TRANS STR	.00276					.00371	.22						.00		
4690.00	223.88	13.47	237.35	542.0	12.11	2.28	239.63	.00	4.83		5.00	9.00	.00	0	.00
JUNCT STR	.00300					.00560	.06						.00		
4700.00	223.91	14.11	238.02	504.0	11.26	1.97	240.00	.00	4.60		5.00	9.00	.00	0	.00
14.44	.00277					.00520	.08			5.00			.00		
4714.44	223.95	14.15	238.10	504.0	11.26	1.97	240.07	.00	4.60		5.00	9.00	.00	0	.00
25.56	.00430					.00520	.13			4.39			.00		
4740.00	224.06	14.17	238.23	504.0	11.26	1.97	240.20	.00	4.60		5.00	9.00	.00	0	.00
TRANS STR	.00440					.00321	.16						.00		
4790.00	224.28	15.42	239.70	504.0	7.11	.79	240.48	.00	5.45		9.50	.00	.00	0	.00
109.45	.00439					.00122	.13			4.90			.00		
4899.45	224.76	15.08	239.84	504.0	7.11	.79	240.63	.00	5.45		9.50	.00	.00	0	.00
194.25	.00443					.00122	.24			4.89			.00		
5093.70	225.62	14.51	240.13	504.0	7.11	.79	240.92	.00	5.45		9.50	.00	.00	0	.00
JUNCT STR	.00427					.00095	.03						.00		
5124.13	225.75	15.10	240.85	377.0	5.32	.44	241.29	.00	4.68		9.50	.00	.00	0	.00
39.57	.00430					.00068	.03			4.17			.00		
5163.70	225.92	14.96	240.88	377.0	5.32	.44	241.32	.00	4.68		9.50	.00	.00	0	.00
TRANS STR	.00455					.00120	.03						.00		
5185.70	226.02	14.54	240.56	377.0	7.50	.87	241.43	.00	4.93		8.00	.00	.00	0	.00
31.77	.00441					.00171	.05			4.57			.00		
5217.47	226.16	14.47	240.63	377.0	7.50	.87	241.50	.00	4.93		8.00	.00	.00	0	.00
191.53	.00439					.00171	.33			4.58			.00		
5409.00	227.00	13.95	240.95	377.0	7.50	.87	241.83	.00	4.93		8.00	.00	.00	0	.00
197.38	.00238					.00171	.34			5.65			.00		
5606.38	227.47	13.88	241.35	377.0	7.50	.87	242.22	.00	4.93		8.00	.00	.00	0	.00
793.62	.00238					.00171	1.36			5.65			.00		
6400.00	229.36	13.39	242.75	377.0	7.50	.87	243.62	.00	4.93		8.00	.00	.00	0	.00
JUNCT STR	.00231					.00134	.05						.00		
6439.00	229.45	14.11	243.56	283.0	5.63	.49	244.06	.00	4.24		8.00	.00	.00	0	.00
TRANS STR	.00300					.00146	.01						.00		
6449.00	229.48	13.82	243.30	283.0	7.35	.84	244.14	.00	4.42		7.00	.00	.00	0	.00
801.00	.00283					.00196	1.57			4.88			.00		
7250.00	231.75	13.21	244.96	283.0	7.35	.84	245.80	.00	4.42		7.00	.00	.00	0	.00
415.85	.01698					.00195	.81			2.81			.00		
7665.85	238.81	7.00	245.81	283.0	7.35	.84	246.65	.00	4.42		7.00	.00	.00	0	.00
34.15	.01698					.00183	.06			2.81			.00		
7700.00	239.39	6.41	245.80	283.0	7.66	.91	246.71	.00	4.42		7.00	.00	.00	0	.00
JUNCT STR	.01707					.00119	.05						.00		
7741.00	240.09	6.90	246.99	174.0	4.54	.32	247.31	.00	3.43		7.00	.00	.00	0	.00
TRANS STR	.01700					.00118	.01						.00		
7751.00	240.26	6.52	246.78	174.0	6.15	.59	247.37	.00	3.60		6.00	.00	.00	0	.00
349.00	.00149					.00169	.59			5.38			.00		
8100.00	240.78	6.62	247.40	174.0	6.15	.59	247.99	.00	3.60		6.00	.00	.00	0	.00
39.55	.00126					.00169	.07			6.00			.00		
8139.55	240.83	6.64	247.47	174.0	6.15	.59	248.06	.00	3.60		6.00	.00	.00	0	.00
39.45	.00127					.00169	.07			6.00			.00		
8179.00	240.88	6.67	247.55	174.0	6.15	.59	248.13	.00	3.60		6.00	.00	.00	0	.00
TRANS STR	.01818					.00245	.00						.00		
8179.55	240.89	6.54	247.43	174.0	6.89	.74	248.16	.00	2.35		3.00	8.50	.00	0	.00
31.00	.00161					.00321	.10			3.00			.00		
8210.55	240.94	6.59	247.53	174.0	6.89	.74	248.26	.00	2.35		3.00	8.50	.00	0	.00
TRANS STR	.00375					.00245	.10						.00		
8250.55	241.09	6.70	247.79	174.0	6.15	.59	248.38	.00	3.60		6.00	.00	.00	0	.00
188.89	.00371					.00169	.32			3.61			.00		
8439.44	241.79	6.33	248.12	174.0	6.15	.59	248.71	.00	3.60		6.00	.00	.00	0	.00
170.25	.00372					.00168	.29			3.61			.00		
8609.69	242.42	6.00	248.42	174.0	6.15	.59	249.01	.00	3.60		6.00	.00	.00	0	.00
90.31	.00372					.00157	.14			3.61			.00		
8700.00	242.76	5.79	248.55	174.0	6.22	.60	249.15	.00	3.60		6.00	.00	.00	0	.00
JUNCT STR	.00373					.00088	.05						.00		
8759.00	242.98	6.62	249.60	71.0	2.51	.10	249.70	.00	2.25		6.00	.00	.00	0	.00
TRANS STR	.00400					.00051	.01						.00		
8774.00	243.04	6.49	249.53	71.0	3.62	.20	249.73	.00	2.38		5.00	.00	.00	0	.00
174.07	.00368					.00074	.13			2.35			.00		
8948.07	243.68	5.98	249.66	71.0	3.62	.20	249.86	.00	2.38		5.00	.00	.00	0	.00
51.93	.00385					.00074	.04			2.32			.00		
9000.00	243.88	5.84	249.72	71.0	3.62	.20	249.92	.00	2.38		5.00	.00	.00	0	.00
TRANS STR	.00360					.00101	.03						.00		
9025.00	243.97	5.73	249.70	71.0	4.12	.26	249.96	.00	1.84		3.50	5.00	.00	0	.00
30.00	.00367					.00127	.04			1.94			.00		
9055.00	244.08	5.67	249.75	71.0	4.12	.26	250.02	.00	1.84		3.50	5.00	.00	0	.00

TRANS STR	.01450					.00101	.02						.00		
9075.00	244.37	5.47	249.84	71.0	3.62	.20	250.04	.00	2.38		5.00	.00	.00	0	.00
36.33	.01421					.00074	.03			1.63			.00		
9111.33	244.89	5.00	249.89	71.0	3.62	.20	250.09	.00	2.38		5.00	.00	.00	0	.00
32.73	.01421					.00069	.02			1.63			.00		
9144.06	245.35	4.54	249.89	71.0	3.79	.22	250.11	.00	2.38		5.00	.00	.00	0	.00
16.07	.01421					.00067	.01			1.63			.00		
9160.13	245.58	4.30	249.88	71.0	3.95	.24	250.12	.00	2.38		5.00	.00	.00	0	.00
65.08	.00384					.00072	.05			2.32			.00		
9225.21	245.83	4.07	249.90	71.0	4.15	.27	250.17	.00	2.38		5.00	.00	.00	0	.00
55.91	.00384					.00079	.04			2.32			.00		
9281.12	246.04	3.88	249.92	71.0	4.35	.29	250.21	.00	2.38		5.00	.00	.00	0	.00
50.21	.00384					.00088	.04			2.32			.00		
9331.33	246.24	3.70	249.93	71.0	4.56	.32	250.26	.00	2.38		5.00	.00	.00	0	.00
45.36	.00384					.00098	.04			2.32			.00		
9376.69	246.41	3.54	249.95	71.0	4.78	.36	250.30	.00	2.38		5.00	.00	.00	0	.00
41.38	.00384					.00110	.05			2.32			.00		
9418.07	246.57	3.39	249.96	71.0	5.02	.39	250.35	.00	2.38		5.00	.00	.00	0	.00
38.71	.00384					.00123	.05			2.32			.00		
9456.77	246.72	3.25	249.96	71.0	5.26	.43	250.39	.00	2.38		5.00	.00	.00	0	.00
35.48	.00384					.00139	.05			2.32			.00		
9492.25	246.85	3.12	249.97	71.0	5.52	.47	250.44	.00	2.38		5.00	.00	.00	0	.00
33.28	.00384					.00156	.05			2.32			.00		
9525.53	246.98	2.99	249.98	71.0	5.79	.52	250.50	.00	2.38		5.00	.00	.00	0	.00
30.88	.00384					.00177	.05			2.32			.00		
9556.41	247.10	2.88	249.98	71.0	6.07	.57	250.55	.00	2.38		5.00	.00	.00	0	.00
28.68	.00384					.00200	.06			2.32			.00		
9585.09	247.21	2.77	249.98	71.0	6.37	.63	250.61	.00	2.38		5.00	.00	.00	0	.00
26.07	.00384					.00226	.06			2.32			.00		
9611.16	247.31	2.66	249.97	71.0	6.68	.69	250.67	.00	2.38		5.00	.00	.00	0	.00
23.40	.00384					.00257	.06			2.32			.00		
9634.55	247.40	2.56	249.96	71.0	7.00	.76	250.73	.00	2.38		5.00	.00	.00	0	.00
20.33	.00384					.00291	.06			2.32			.00		
9654.88	247.48	2.47	249.95	71.0	7.34	.84	250.79	.00	2.38		5.00	.00	.00	0	.00
6.47	.00384					.00318	.02			2.32			.00		
9661.35	247.50	2.43	249.94	71.0	7.48	.87	250.81	.00	2.38		5.00	.00	.00	0	.00
HYDRAULIC JUMP													.00		
9661.35	247.50	2.32	249.82	71.0	7.96	.98	250.81	.00	2.38		5.00	.00	.00	0	.00
98.09	.00384					.00384	.38			2.32			.00		
9759.45	247.88	2.32	250.20	71.0	7.96	.98	251.18	.00	2.38		5.00	.00	.00	0	.00
33.97	.00384					.00387	.13			2.32			.00		
9793.42	248.01	2.31	250.32	71.0	8.01	1.00	251.32	.00	2.38		5.00	.00	.00	0	.00
.00	.00384					.00390	.00			2.32			.00		
9793.42	248.01	2.31	250.32	71.0	8.01	1.00	251.32	.00	2.38		5.00	.00	.00	0	.00
111.94	.00390					.00390	.44			2.31			.00		
9905.36	248.45	2.31	250.76	71.0	8.01	1.00	251.75	.00	2.38		5.00	.00	.00	0	.00
28.91	.00390					.00379	.11			2.31			.00		
9934.27	248.56	2.35	250.91	71.0	7.82	.95	251.86	.00	2.38		5.00	.00	.00	0	.00
.00	.00390					.00367	.00			2.31			.00		
9934.27	248.56	2.35	250.91	71.0	7.82	.95	251.86	.00	2.38		5.00	.00	.00	0	.00
15.23	.00366					.00367	.06			2.35			.00		
9949.50	248.62	2.35	250.97	71.0	7.82	.95	251.92	.00	2.38		5.00	.00	.00	0	.00
9.33	.00366					.00360	.03			2.35			.00		
9958.83	248.65	2.38	251.03	71.0	7.71	.92	251.95	.00	2.38		5.00	.00	.00	0	.00

vs 254.37 of "old" design

— Upstream system should be re-evaluated given this new starting TW — may be cheaper!

— Mention lengths of smaller pipes.

Based upon this label, this doesn't join other junction box pipe ~~segments~~ at 115' east of miller rd. Mislabeled?

15' East of Miller Rd. to Osborn Park (osbco2a2.out)

```
STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
Portions Copyrighted by CIVILSOFT, 1986, 1987, 1989

Version □□□□□
Serial Number □□□□□□□□

Nov 21, 1997   9:58:10

Input file : osbco2a2.dat
Output file: osbco2a2.out
```

What's this based on? T.O.B. should be based on ponding depth.

```
                                INPUT FILE LISTING


T1 STP Papago - 091131.00 CO#2 Alternative A -
T2 Osborn Road Storm Drain-  Miller Rd. to Osborn Park
T3 6 HR 10 YR Storm -
SO   1000.00 226.00  2                    230.00
R    1500.00 227.00  2      .013
SH                   2
```

4' x 8'

```
                                                   SP
                        WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH                DROP

 CD      1    4                      5.00
 CD      2    3      0       .00      4.00    8.00    .00   .00   .00

                        WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
                          STP Papago - 091131.00 CO#2 Alternative A -
HEADING LINE NO 2 IS -
                          Osborn Road Storm Drain-  Miller Rd. to Osborn Park
HEADING LINE NO 3 IS -
                          6 HR 10 YR Storm -

                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   1 IS A SYSTEM OUTLET      *         *      *                                  W S ELEV
                     U/S DATA   STATION    INVERT  SECT                                     230.00
                                 1000.00  226.00    2
 ELEMENT NO   2 IS A REACH              *         *      *                                                RADIUS  ANGLE  ANG PT  MAN H
                     U/S DATA   STATION    INVERT  SECT              N                                     .00    .00     .00     0
                                 1500.00  227.00    2              .013
 ELEMENT NO   3 IS A SYSTEM HEADWORKS                  *                        *                  W S ELEV
                     U/S DATA   STATION    INVERT  SECT                                              .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

                                        WATER SURFACE PROFILE LISTING
                        STP Papago - 091131.00 CO#2 Alternative A -
                        Osborn Road Storm Drain-  Miller Rd. to Osborn Park
                        6 HR 10 YR Storm -
 STATION    INVERT   DEPTH    W.S.       Q       VEL     VEL     ENERGY   SUPER  CRITICAL          HGT/   BASE/    ZL   NO  AVBPR
            ELEV   OF FLOW   ELEV                        HEAD   GRD.EL.   ELEV   DEPTH                DIA    ID NO.        PIER
 L/ELEM      SO                                        SF AVE    HF                     NORM DEPTH                ZR
*****************************************************************************************************************************
  1000.00   226.00    4.00   230.00    246.0    7.75     .93   230.93    .00    3.09                 4.00    8.00   .00   0    .00
   500.00   .00200                                    .00316    1.58                        3.84                     .00
  1500.00   227.00    4.58   231.58    246.0    7.75     .93   232.51    .00    3.09                 4.00    8.00   .00   0    .00
```

This is higher than starting WSEL for segment from "115' east of Miller Rd. to Paiute Park"

– I don't think they are connected end to end.

Alternative B: Civic Center Diversion

Existing System, IBW to Civic Center Blvd. (osbext.out)

```
STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
Portions Copyrighted by CIVILSOFT, 1986, 1987, 1989

Version □□□□□
Serial Number □□□□□□□□

Dec 10, 1997  10:41:32

Input file : osbext.dat
Output file: osbext.out

                              INPUT FILE LISTING

T1 STP Papago - 091131.00 - Existing Storm Drain
T2 Osborn Road Storm Drain - Indian Bend Wash to Civic Center Blvd.
T3 10 YR 6 HR Storm Event
SO   1000.00 216.60  1                          223.60
R    1038.87 216.70  1      .013
R    1109.07 216.89  1      .013                              40.13
JX   1227.66 217.22  1  2   .013     1.0        219.80        90.00
R    1261.66 217.29  1      .013                                     13.17
R    1365.66 217.50  1      .013                                      9.44
R    1642.66 218.07  1      .013                                      9.40
R    1848.47 218.49  1      .013                                      5.77
R    2195.13 219.20  1      .013                                     10.02 1
R    2210.97 219.23  3      .013
R    2365.37 219.86  3      .013
R    2408.70 221.07  3      .013                                     11.43
R    2415.37 221.26  3      .013
JX   2484.39 223.19  3  4   .013    78.0        223.19        90.00
R    2545.37 223.75  3      .013                                           1
R    2835.37 226.42  5      .013                                     22.50
R    2911.14 227.12  5      .013                                     22.50 1
R    3091.14 228.11  5      .013
R    3611.14 230.71  5      .013                                     22.50 1
R    3686.91 231.23  5      .013                                     22.50
JX   3775.91 231.84  5  6   .013    38.0        229.22        44.39
JX   3800.91 232.01  5  7   .013    38.0        229.55         5.00
R    3837.91 232.27  5      .013                                           1
SH                   5                                   SP

                    WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR    INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH                DROP

 CD      1    4                      7.00
 CD      2    4                      3.50
 CD      3    3      0       .00     5.00    8.00    .00   .00   .00
 CD      4    4                      4.50
 CD      5    4                      6.00
 CD      6    4                      4.07
 CD      7    4                      5.00

                    WATER SURFACE PROFILE - TITLE CARD LISTING

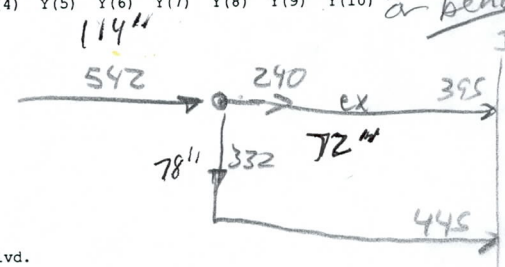
HEADING LINE NO 1 IS -
                    STP Papago - 091131.00 - Existing Storm Drain
HEADING LINE NO 2 IS -
                    Osborn Road Storm Drain - Indian Bend Wash to Civic Center Blvd.
HEADING LINE NO 3 IS -
                    10 YR 6 HR Storm Event

                    WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   1 IS A SYSTEM OUTLET      *         *      *                                W S ELEV
                U/S DATA   STATION    INVERT  SECT                                       223.60
                            1000.00   216.60    1
 ELEMENT NO   2 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00    .00     .00      0
                            1038.87   216.70    1        .013
 ELEMENT NO   3 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00  40.13     .00      0
                            1109.07   216.89    1        .013
 ELEMENT NO   4 IS A JUNCTION           *         *      *      *                 *                 *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4   INVERT-3 INVERT-4  PHI 3   PHI 4
                            1227.66   217.22    1     2     0  .013     1.0      .0   219.80      .00  90.00     .00
 ELEMENT NO   5 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00    .00   13.17      0
                            1261.66   217.29    1        .013
 ELEMENT NO   6 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00    .00    9.44      0
                            1365.66   217.50    1        .013
 ELEMENT NO   7 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00    .00    9.40      0
                            1642.66   218.07    1        .013
 ELEMENT NO   8 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00    .00    5.77      0
                            1848.47   218.49    1        .013
 ELEMENT NO   9 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00    .00   10.02      1
                            2195.13   219.20    1        .013
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
 ELEMENT NO  10 IS A REACH              *         *      *                                RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT          N                               .00    .00     .00      0
                            2210.97   219.23    3        .013
 ELEMENT NO  11 IS A REACH              *         *      *
```

1195' 84"
334' 60"
1003' 72"

Through discussion with JRR, losses would be < 0.1', negligible

For any alternative with "splits" at junctions, one should model as done & use highest HW as starting TW for upstream + hand calc'd junction loss! or bend



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                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2365.37   219.86    3              .013                                  .00    .00     .00      0
ELEMENT NO  12 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2408.70   221.07    3              .013                                  .00    .00   11.43      0

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  13 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2415.37   221.26    3              .013                                  .00    .00     .00      0
ELEMENT NO  14 IS A JUNCTION                *         *       *       *       *                 *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                2484.39   223.19    3     4     0  .013    78.0      .0   223.19     .00   90.00     .00
ELEMENT NO  15 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2545.37   223.75    3              .013                                  .00    .00     .00      1
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
ELEMENT NO  16 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2835.37   226.42    5              .013                                  .00    .00   22.50      0
ELEMENT NO  17 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                2911.14   227.12    5              .013                                  .00    .00   22.50      1
ELEMENT NO  18 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3091.14   228.11    5              .013                                  .00    .00     .00      0
ELEMENT NO  19 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3611.14   230.71    5              .013                                  .00    .00   22.50      1
ELEMENT NO  20 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3686.91   231.23    5              .013                                  .00    .00   22.50      0
ELEMENT NO  21 IS A JUNCTION                *         *       *       *       *                 *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                3775.91   231.84    5     6     0  .013    38.0      .0   229.22     .00   44.39     .00
ELEMENT NO  22 IS A JUNCTION                *         *       *       *       *                 *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                3800.91   232.01    5     7     0  .013    38.0      .0   229.55     .00    5.00     .00

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  23 IS A REACH                   *         *       *
                    U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                                3837.91   232.27    5              .013                                  .00    .00     .00      1
ELEMENT NO  24 IS A SYSTEM HEADWORKS                        *                       *
                    U/S DATA   STATION    INVERT  SECT                                        W S ELEV
                                3837.91   232.27    5                                             .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
```

WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 - Existing Storm Drain
Osborn Road Storm Drain - Indian Bend Wash to Civic Center Blvd.
10 YR 6 HR Storm Event

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
1000.00	216.60	7.00	223.60	395.0	10.26	1.64	225.24	.00	5.24		7.00	.00	.00	0	.00
38.87	.00257					.00382	.15			7.00			.00		
1038.87	216.70	7.05	223.75	395.0	10.26	1.64	225.39	.00	5.24		7.00	.00	.00	0	.00
70.20	.00271					.00382	.27			7.00			.00		
1109.07	216.89	7.35	224.24	395.0	10.26	1.64	225.87	.00	5.24		7.00	.00	.00	0	.00
JUNCT STR	.00278					.00381	.45						.00		
1227.66	217.22	7.48	224.70	394.0	10.24	1.63	226.33	.00	5.23		7.00	.00	.00	0	.00
34.00	.00206					.00380	.13			7.00			.00		
1261.66	217.29	7.61	224.90	394.0	10.24	1.63	226.53	.00	5.23		7.00	.00	.00	0	.00
104.00	.00202					.00380	.40			7.00			.00		
1365.66	217.50	7.85	225.35	394.0	10.24	1.63	226.98	.00	5.23		7.00	.00	.00	0	.00
277.00	.00206					.00380	1.05			7.00			.00		
1642.66	218.07	8.39	226.46	394.0	10.24	1.63	228.08	.00	5.23		7.00	.00	.00	0	.00
205.81	.00204					.00380	.78			7.00			.00		
1848.47	218.49	8.78	227.27	394.0	10.24	1.63	228.90	.00	5.23		7.00	.00	.00	0	.00
346.66	.00205					.00380	1.32			7.00			.00		
2195.13	219.20	9.52	228.72	394.0	9.91	1.53	230.25	.00	4.22		5.00	8.00	.00	0	.00
15.84	.00189					.00427	.07			5.00			.00		
2210.97	219.23	9.56	228.79	394.0	9.91	1.53	230.32	.00	4.22		5.00	8.00	.00	0	.00
154.40	.00408					.00427	.66			4.19			.00		
2365.37	219.86	9.59	229.45	394.0	9.91	1.53	230.98	.00	4.22		5.00	8.00	.00	0	.00
43.33	.02792					.00427	.18			2.09			.00		
2408.70	221.07	8.62	229.69	394.0	9.91	1.53	231.22	.00	4.22		5.00	8.00	.00	0	.00
6.67	.02848					.00427	.03			2.07			.00		
2415.37	221.26	8.46	229.72	394.0	9.91	1.53	231.25	.00	4.22		5.00	8.00	.00	0	.00
JUNCT STR	.02796					.00351	.24						.00		
2484.39	223.19	7.86	231.05	316.0	7.95	.98	232.03	.00	3.65		5.00	8.00	.00	0	.00
60.98	.00918					.00275	.17			2.64			.00		
2545.37	223.75	7.52	231.27	316.0	11.18	1.94	233.21	.00	4.85		6.00	.00	.00	0	.00
290.00	.00921					.00557	1.61			3.98			.00		
2835.37	226.42	6.61	233.03	316.0	11.18	1.94	234.97	.00	4.85		6.00	.00	.00	0	.00
75.77	.00924					.00557	.42			3.97			.00		
2911.14	227.12	6.57	233.69	316.0	11.18	1.94	235.63	.00	4.85		6.00	.00	.00	0	.00
180.00	.00550					.00557	1.00			4.95			.00		
3091.14	228.11	6.58	234.69	316.0	11.18	1.94	236.63	.00	4.85		6.00	.00	.00	0	.00
520.00	.00500					.00557	2.90			5.29			.00		
3611.14	230.71	7.12	237.83	316.0	11.18	1.94	239.77	.00	4.85		6.00	.00	.00	0	.00
75.77	.00686					.00557	.42			4.45			.00		
3686.91	231.23	7.16	238.39	316.0	11.18	1.94	240.34	.00	4.85		6.00	.00	.00	0	.00
JUNCT STR	.00685					.00494	.44						.00		
3775.91	231.84	7.78	239.62	278.0	9.83	1.50	241.13	.00	4.56		6.00	.00	.00	0	.00
JUNCT STR	.00680					.00376	.09						.00		
3800.91	232.01	8.39	240.40	240.0	8.49	1.12	241.52	.00	4.24		6.00	.00	.00	0	.00
37.00	.00703					.00321	.12			3.62			.00		
3837.91	232.27	8.31	240.58	240.0	8.49	1.12	241.70	.00	4.24		6.00	.00	.00	0	.00

Paiute Park to Civic Center Blvd. (osbco2b1.out)

STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
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Version □□□□□
Serial Number □□□□□□□□

Nov 18, 1997 14:46:31

Input file : osbco2b1.dat
Output file: osbco2b1.out

Do costs include transition sections?

Totals

INPUT FILE LISTING

```
T1 STP Papago - 091131.00 CO#2 Alternative B -
T2 Osborn Road Storm Drain-  Civic Center Blvd. to Paiute Park-
T3 6 HR 10 YR Storm - 39+00 OSB = 51+00 CCB
SO   3900.00 221.67  1       .013                    240.85
R    4632.00 223.72  1       .013                                          2
TS   4690.00 223.88 18       .013
JX   4700.00 223.91 18 10 7  .013    25.0    13.0 224.41 224.41 90.00 90.00
R    4714.44 223.95 18       .013
R    4740.00 224.06 18       .013
TS   4790.00 224.28  1       .013
R    4899.45 224.76  1       .013                                     4.96
R    5093.70 225.62  1       .013                                     4.96 1
JX   5124.13 225.75  1  4    .013   127.0          229.30        90.00
R    5163.70 225.92  1       .013
TS   5185.70 226.02  3       .013
R    5217.47 226.16  3       .013                                     5.00
R    5409.00 227.00  3       .013
R    5606.38 227.47  3       .013                                     4.26 1
R    6400.00 229.36  3       .013                                          1
JX   6439.00 229.45  3  8    .013    94.0          231.20        90.00
TS   6449.00 229.48 24       .013
R    7250.00 231.75 24       .013                                          2
R    7700.00 239.39 24       .013                                          1
JX   7741.00 240.09 24 20    .013   109.0          241.09        90.00
TS   7751.00 240.26  5       .013
R    8100.00 240.78  5       .013                                          1
R    8139.55 240.83  5       .013
R    8179.00 240.88  5       .013                                     5.00
TS   8179.55 240.89 22       .013
R    8210.55 240.94 22       .013
TS   8250.55 241.09  5       .013
R    8439.44 241.79  5       .013                                     5.00
R    8700.00 242.76  5       .013                                          1
JX   8759.00 242.98  5 10    .013   103.0          243.48        90.00
TS   8774.00 243.04 20       .013
R    8948.07 243.68 20       .013
R    9000.00 243.88 20       .013                                    34.02
TS   9025.00 243.97 23       .013
R    9055.00 244.08 23       .013                                    12.73
TS   9075.00 244.37 20       .013
R    9160.13 245.58 20       .013                                    43.25
R    9793.42 248.01 20       .013                                          2
R    9934.27 248.56 20       .013                                    90.33
R    9958.83 248.65 20       .013
SH                  20                                                  SP
```

732' 114"
50' 9' x 5'
374' 114"
1253' 96"
1292' 84"
428' 72"
31' 3' x 8.5'
508' 72"
226' 60"
30' 3.5' x 5'
884' 60"

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4			9.50														
CD	2	3	0	.00	5.50	9.50	.00	.00	.00										
CD	3	4			8.00														
CD	4	4			5.50														
CD	5	4			6.00														
CD	7	4			2.00														
CD	8	4			4.50														
CD	9	4			3.50														
CD	10	4			4.00														
CD	15	4			3.00														
CD	18	3	0	.00	5.00	9.00	.00	.00	.00										
CD	20	4			5.00														
CD	21	4			1.50														
CD	22	3	0	.00	3.00	8.50	.00	.00	.00										
CD	23	3	0	.00	3.50	5.00	.00	.00	.00										
CD	24	4			7.00														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - STP Papago - 091131.00 CO#2 Alternative B -

HEADING LINE NO 2 IS - Osborn Road Storm Drain- Civic Center Blvd. to Paiute Park-

HEADING LINE NO 3 IS - 6 HR 10 YR Storm - 39+00 OSB = 51+00 CCB

WATER SURFACE PROFILE - ELEMENT CARD LISTING

```
ELEMENT NO   1 IS A SYSTEM OUTLET      *         *     *                                  W S ELEV
                  U/S DATA   STATION    INVERT  SECT                                       240.85
                               3900.00  221.67    1
ELEMENT NO   2 IS A REACH              *         *     *                                                 RADIUS  ANGLE  ANG PT  MAN H
                  U/S DATA   STATION    INVERT  SECT              N                                       .00     .00     .00      2
                               4632.00  223.72    1            .013
ELEMENT NO   3 IS A TRANSITION         *         *     *
                  U/S DATA   STATION    INVERT  SECT              N
                               4690.00  223.88   18            .013
ELEMENT NO   4 IS A JUNCTION           *         *     *     *                 *                 *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               4700.00  223.91   18    10     7  .013    25.0     13.0   224.41   224.41  90.00   90.00
ELEMENT NO   5 IS A REACH              *         *     *
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                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                4714.44  223.95   18                 .013                                                    .00    .00     .00      0
ELEMENT NO    6 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                4740.00  224.06   18                 .013                                                    .00    .00     .00      0
ELEMENT NO    7 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                4790.00  224.28    1                 .013
ELEMENT NO    8 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                4899.45  224.76    1                 .013                                                    .00    .00    4.96      0
ELEMENT NO    9 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                5093.70  225.62    1                 .013                                                    .00    .00    4.96      1
ELEMENT NO   10 IS A JUNCTION        *          *      *      *                *                    *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2     N       Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                                5124.13  225.75    1     4     0     .013    127.0           .0   229.30      .00  90.00     .00
ELEMENT NO   11 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                5163.70  225.92    1                 .013                                                    .00    .00     .00      0
ELEMENT NO   12 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                5185.70  226.02    3                 .013

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO   13 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                5217.47  226.16    3                 .013                                                    .00    .00    5.00      0
ELEMENT NO   14 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                5409.00  227.00    3                 .013                                                    .00    .00     .00      0
ELEMENT NO   15 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                5606.38  227.47    3                 .013                                                    .00    .00    4.26      1
ELEMENT NO   16 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                6400.00  229.36    3                 .013                                                    .00    .00     .00      1
ELEMENT NO   17 IS A JUNCTION        *          *      *      *                *                    *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2     N       Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                                6439.00  229.45    3     8     0     .013     94.0           .0   231.20      .00  90.00     .00
ELEMENT NO   18 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                6449.00  229.48   24                 .013
ELEMENT NO   19 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                7250.00  231.75   24                 .013                                                    .00    .00     .00      2
ELEMENT NO   20 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                7700.00  239.39   24                 .013                                                    .00    .00     .00      1
ELEMENT NO   21 IS A JUNCTION        *          *      *      *                *                    *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2     N       Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                                7741.00  240.09   24    20     0     .013    109.0           .0   241.09      .00  90.00     .00
ELEMENT NO   22 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                7751.00  240.26    5                 .013
ELEMENT NO   23 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                8100.00  240.78    5                 .013                                                    .00    .00     .00      1

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO   24 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                8139.55  240.83    5                 .013                                                    .00    .00     .00      0
ELEMENT NO   25 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                8179.00  240.88    5                 .013                                                    .00    .00    5.00      0
ELEMENT NO   26 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                8179.55  240.89   22                 .013
ELEMENT NO   27 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                8210.55  240.94   22                 .013                                                    .00    .00     .00      0
ELEMENT NO   28 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                8250.55  241.09    5                 .013
ELEMENT NO   29 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                8439.44  241.79    5                 .013                                                    .00    .00    5.00      0
ELEMENT NO   30 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                8700.00  242.76    5                 .013                                                    .00    .00     .00      1
ELEMENT NO   31 IS A JUNCTION        *          *      *      *                *                    *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2     N       Q3        Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                                8759.00  242.98    5    10     0     .013    103.0           .0   243.48      .00  90.00     .00
ELEMENT NO   32 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                8774.00  243.04   20                 .013
ELEMENT NO   33 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                8948.07  243.68   20                 .013                                                    .00    .00     .00      0
ELEMENT NO   34 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                9000.00  243.88   20                 .013                                                    .00  34.02     .00      0
ELEMENT NO   35 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                9025.00  243.97   23                 .013

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO   36 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                9055.00  244.08   23                 .013                                                    .00  12.73     .00      0
ELEMENT NO   37 IS A TRANSITION      *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N
                                9075.00  244.37   20                 .013
ELEMENT NO   38 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                9160.13  245.58   20                 .013                                                    .00  43.25     .00      0
ELEMENT NO   39 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
                                9793.42  248.01   20                 .013                                                    .00    .00     .00      2
ELEMENT NO   40 IS A REACH           *          *      *
                    U/S DATA   STATION    INVERT  SECT                 N                                                  RADIUS  ANGLE  ANG PT  MAN H
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                                  9934.27  248.56   20              .013                                  .00  90.33     .00     0
ELEMENT NO  41 IS A REACH                 *        *     *
                U/S DATA   STATION    INVERT  SECT          N                                  RADIUS  ANGLE  ANG PT  MAN H
                                  9958.83  248.65   20              .013                                  .00    .00     .00     0
ELEMENT NO  42 IS A SYSTEM HEADWORKS                                     *
                U/S DATA   STATION    INVERT  SECT                                     W S ELEV
                                  9958.83  248.65   20                                        .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
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WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 CO#2 Alternative B -
Osborn Road Storm Drain- Civic Center Blvd. to Paiute Park-
6 HR 10 YR Storm - 39+00 OSB = 51+00 CCB

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
3900.00	221.67	19.18	240.85	542.0	7.65	.91	241.76	.00	5.66		9.50	.00	.00	0	.00
732.00	.00280					.00141	1.03			5.91			.00		
4632.00	223.72	18.25	241.97	542.0	7.65	.91	242.88	.00	5.66		9.50	.00	.00	0	.00
TRANS STR	.00276					.00371	.22						.00		
4690.00	223.88	17.21	241.09	542.0	12.11	2.28	243.37	.00	4.83		5.00	9.00	.00	0	.00
JUNCT STR	.00300					.00560	.06						.00		
4700.00	223.91	17.86	241.77	504.0	11.26	1.97	243.74	.00	4.60		5.00	9.00	.00	0	.00
14.44	.00277					.00520	.08			5.00			.00		
4714.44	223.95	17.89	241.84	504.0	11.26	1.97	243.81	.00	4.60		5.00	9.00	.00	0	.00
25.56	.00430					.00520	.13			4.39			.00		
4740.00	224.06	17.91	241.97	504.0	11.26	1.97	243.94	.00	4.60		5.00	9.00	.00	0	.00
TRANS STR	.00440					.00321	.16						.00		
4790.00	224.28	19.16	243.44	504.0	7.11	.79	244.22	.00	5.45		9.50	.00	.00	0	.00
109.45	.00439					.00122	.13			4.90			.00		
4899.45	224.76	18.82	243.58	504.0	7.11	.79	244.37	.00	5.45		9.50	.00	.00	0	.00
194.25	.00443					.00122	.24			4.89			.00		
5093.70	225.62	18.25	243.87	504.0	7.11	.79	244.66	.00	5.45		9.50	.00	.00	0	.00
JUNCT STR	.00427					.00095	.03						.00		
5124.13	225.75	18.85	244.60	377.0	5.32	.44	245.03	.00	4.68		9.50	.00	.00	0	.00
39.57	.00430					.00068	.03			4.17			.00		
5163.70	225.92	18.70	244.62	377.0	5.32	.44	245.06	.00	4.68		9.50	.00	.00	0	.00
TRANS STR	.00455					.00120	.03						.00		
5185.70	226.02	18.28	244.30	377.0	7.50	.87	245.18	.00	4.93		8.00	.00	.00	0	.00
31.77	.00441					.00171	.05			4.57			.00		
5217.47	226.16	18.21	244.37	377.0	7.50	.87	245.24	.00	4.93		8.00	.00	.00	0	.00
191.53	.00439					.00171	.33			4.58			.00		
5409.00	227.00	17.70	244.70	377.0	7.50	.87	245.57	.00	4.93		8.00	.00	.00	0	.00
197.38	.00238					.00171	.34			5.65			.00		
5606.38	227.47	17.62	245.09	377.0	7.50	.87	245.96	.00	4.93		8.00	.00	.00	0	.00
793.62	.00238					.00171	1.36			5.65			.00		
6400.00	229.36	17.13	246.49	377.0	7.50	.87	247.36	.00	4.93		8.00	.00	.00	0	.00
JUNCT STR	.00231					.00134	.05						.00		
6439.00	229.45	17.85	247.30	283.0	5.63	.49	247.80	.00	4.24		8.00	.00	.00	0	.00
TRANS STR	.00300					.00146	.01						.00		
6449.00	229.48	17.56	247.04	283.0	7.35	.84	247.88	.00	4.42		7.00	.00	.00	0	.00
801.00	.00283					.00196	1.57			4.88			.00		
7250.00	231.75	16.95	248.70	283.0	7.35	.84	249.54	.00	4.42		7.00	.00	.00	0	.00
450.00	.01698					.00196	.88			2.81			.00		
7700.00	239.39	10.23	249.62	283.0	7.35	.84	250.46	.00	4.42		7.00	.00	.00	0	.00
JUNCT STR	.01707					.00135	.06						.00		
7741.00	240.09	10.63	250.72	174.0	4.52	.32	251.04	.00	3.43		7.00	.00	.00	0	.00
TRANS STR	.01700					.00121	.01						.00		
7751.00	240.26	10.26	250.52	174.0	6.15	.59	251.11	.00	3.60		6.00	.00	.00	0	.00
349.00	.00149					.00169	.59			5.38			.00		
8100.00	240.78	10.36	251.14	174.0	6.15	.59	251.73	.00	3.60		6.00	.00	.00	0	.00
39.55	.00126					.00169	.07			6.00			.00		
8139.55	240.83	10.37	251.20	174.0	6.15	.59	251.79	.00	3.60		6.00	.00	.00	0	.00
39.45	.00127					.00169	.07			6.00			.00		
8179.00	240.88	10.40	251.28	174.0	6.15	.59	251.87	.00	3.60		6.00	.00	.00	0	.00
TRANS STR	.01818					.00245	.00						.00		
8179.55	240.89	10.27	251.16	174.0	6.89	.74	251.90	.00	2.35		3.00	8.50	.00	0	.00
31.00	.00161					.00321	.10			3.00			.00		
8210.55	240.94	10.32	251.26	174.0	6.89	.74	252.00	.00	2.35		3.00	8.50	.00	0	.00
TRANS STR	.00375					.00245	.10						.00		
8250.55	241.09	10.43	251.52	174.0	6.15	.59	252.11	.00	3.60		6.00	.00	.00	0	.00
188.89	.00371					.00169	.32			3.61			.00		
8439.44	241.79	10.06	251.85	174.0	6.15	.59	252.44	.00	3.60		6.00	.00	.00	0	.00
260.56	.00372					.00169	.44			3.61			.00		
8700.00	242.76	9.56	252.32	174.0	6.15	.59	252.91	.00	3.60		6.00	.00	.00	0	.00
JUNCT STR	.00373					.00098	.06						.00		
8759.00	242.98	10.38	253.36	71.0	2.51	.10	253.46	.00	2.25		6.00	.00	.00	0	.00
TRANS STR	.00400					.00051	.01						.00		
8774.00	243.04	10.24	253.28	71.0	3.62	.20	253.49	.00	2.38		5.00	.00	.00	0	.00
174.07	.00368					.00074	.13			2.35			.00		
8948.07	243.68	9.73	253.41	71.0	3.62	.20	253.62	.00	2.38		5.00	.00	.00	0	.00
51.93	.00385					.00074	.04			2.32			.00		
9000.00	243.88	9.60	253.48	71.0	3.62	.20	253.68	.00	2.38		5.00	.00	.00	0	.00
TRANS STR	.00360					.00101	.03						.00		
9025.00	243.97	9.48	253.45	71.0	4.12	.26	253.72	.00	1.84		3.50	5.00	.00	0	.00
30.00	.00367					.00127	.04			1.94			.00		
9055.00	244.08	9.43	253.51	71.0	4.12	.26	253.78	.00	1.84		3.50	5.00	.00	0	.00
TRANS STR	.01450					.00101	.02						.00		
9075.00	244.37	9.23	253.60	71.0	3.62	.20	253.80	.00	2.38		5.00	.00	.00	0	.00
85.13	.01421					.00074	.06			1.63			.00		
9160.13	245.58	8.11	253.69	71.0	3.62	.20	253.89	.00	2.38		5.00	.00	.00	0	.00
633.29	.00384					.00074	.47			2.32			.00		
9793.42	248.01	6.17	254.18	71.0	3.62	.20	254.38	.00	2.38		5.00	.00	.00	0	.00
140.85	.00390					.00074	.10			2.31			.00		
9934.27	248.56	5.77	254.33	71.0	3.62	.20	254.53	.00	2.38		5.00	.00	.00	0	.00
24.56	.00366					.00074	.02			2.35			.00		
9958.83	248.65	5.69	254.34	71.0	3.62	.20	254.55	.00	2.38		5.00	.00	.00	0	.00

IBW to Osborn Rd. at Civic Center Blvd. (osbco2b2.out)

STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
Portions Copyrighted by CIVILSOFT, 1986, 1987, 1989

Version □□□□□
Serial Number □□□□□□□□

Nov 19, 1997 17:10:46

Input file : OSBCO2B2.DAT
Output file: OSBCO2B2.OUT

INPUT FILE LISTING

1460' 84"
1370' 78"

```
T1 STP Papago - 091131.00 CO#2 Alternative B -
T2 Osborn Road Storm Drain-  IBW to Osborn Rd. along Civic Center Blvd.
T3 6 HR 10 YR Storm - 51+00 CCB = 39+00 OSB
SO   1000.00 213.40  1                          219.90
R    2450.00 216.30  1       .013
JX   2460.00 216.32  1  3    .013   113.0       217.82        90.00
R    3730.00 218.86  2       .013
R    3830.00 219.06  2       .013                              90.00
R    5100.00 221.60  2       .013
SH                   2                                        SP
```

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4			7.00														
CD	2	4			6.50														
CD	3	4			4.00														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
STP Papago - 091131.00 CO#2 Alternative B -

HEADING LINE NO 2 IS -
Osborn Road Storm Drain- IBW to Osborn Rd. along Civic Center Blvd.

HEADING LINE NO 3 IS -
6 HR 10 YR Storm - 51+00 CCB = 39+00 OSB

WATER SURFACE PROFILE - ELEMENT CARD LISTING

```
ELEMENT NO   1 IS A SYSTEM OUTLET      *          *      *                                    W S ELEV
                   U/S DATA   STATION    INVERT  SECT                                          219.90
                                1000.00  213.40    1
ELEMENT NO   2 IS A REACH              *          *      *                                 RADIUS  ANGLE  ANG PT  MAN H
                   U/S DATA   STATION    INVERT  SECT              N                          .00    .00     .00      0
                                2450.00  216.30    1            .013                                    *
ELEMENT NO   3 IS A JUNCTION           *          *      *      *          *                      *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                2460.00  216.32    1     3     0  .013   113.0       .0    217.82      .00   90.00     .00
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
ELEMENT NO   4 IS A REACH              *          *      *                                 RADIUS  ANGLE  ANG PT  MAN H
                   U/S DATA   STATION    INVERT  SECT              N                          .00    .00     .00      0
                                3730.00  218.86    2            .013
ELEMENT NO   5 IS A REACH              *          *      *                                 RADIUS  ANGLE  ANG PT  MAN H
                   U/S DATA   STATION    INVERT  SECT              N                          .00  90.00     .00      0
                                3830.00  219.06    2            .013
ELEMENT NO   6 IS A REACH              *          *      *                                 RADIUS  ANGLE  ANG PT  MAN H
                   U/S DATA   STATION    INVERT  SECT              N                          .00    .00     .00      0
                                5100.00  221.60    2            .013
ELEMENT NO   7 IS A SYSTEM HEADWORKS                  *                  *
                   U/S DATA   STATION    INVERT  SECT                                       W S ELEV
                                5100.00  221.60    2                                           .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING
```

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 CO#2 Alternative B -
Osborn Road Storm Drain- IBW to Osborn Rd. along Civic Center Blvd.
6 HR 10 YR Storm - 51+00 CCB = 39+00 OSB

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
1000.00	213.40	6.50	219.90	445.0	11.94	2.22	222.12	.00	5.55		7.00	.00	.00	0	.00
144.62	.00200					.00450	.65			7.00			.00		
1144.62	213.69	7.00	220.69	445.0	11.56	2.08	222.77	.00	5.55		7.00	.00	.00	0	.00
1305.38	.00200					.00483	6.30			7.00			.00		
2450.00	216.30	10.72	227.02	445.0	11.56	2.08	229.10	.00	5.55		7.00	.00	.00	0	.00
JUNCT STR	.00200					.00378	.04						.00		
2460.00	216.32	12.58	228.90	332.0	10.01	1.56	230.46	.00	4.89		6.50	.00	.00	0	.00
1270.00	.00200					.00401	5.09			6.50			.00		
3730.00	218.86	15.14	234.00	332.0	10.01	1.56	235.55	.00	4.89		6.50	.00	.00	0	.00
100.00	.00200					.00401	.40			6.50			.00		
3830.00	219.06	15.65	234.71	332.0	10.01	1.56	236.26	.00	4.89		6.50	.00	.00	0	.00
1270.00	.00200					.00401	5.09			6.50			.00		
5100.00	221.60	18.20	239.80	332.0	10.01	1.56	241.36	.00	4.89		6.50	.00	.00	0	.00

Alternative C: Scottsdale Road Diversion

Existing System, IBW to Civic Center Blvd. (osbext.out)

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STORM DRAIN ANALYSIS PLUS

Original version by Los Angeles County Public Works
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Version □□□□□
Serial Number □□□□□□□□

Dec 10, 1997  10:41:32

Input file : osbext.dat
Output file: osbext.out

                              INPUT FILE LISTING

T1 STP Papago - 091131.00 - Existing Storm Drain
T2 Osborn Road Storm Drain - Indian Bend Wash to Civic Center Blvd.
T3 10 YR 6 HR Storm Event
SO   1000.00 216.60  1                          223.60
R    1038.87 216.70  1      .013
R    1109.07 216.89  1      .013                                  40.13
JX   1227.66 217.22  1  2   .013     1.0        219.80            90.00
R    1261.66 217.29  1      .013                                          13.17
R    1365.66 217.50  1      .013                                           9.44
R    1642.66 218.07  1      .013                                           9.40
R    1848.47 218.49  1      .013                                           5.77
R    2195.13 219.20  1      .013                                          10.02 1
R    2210.97 219.23  3      .013
R    2365.37 219.86  3      .013
R    2408.70 221.07  3      .013                                          11.43
R    2415.37 221.26  3      .013
JX   2484.39 223.19  3  4   .013    78.0        223.19            90.00
R    2545.37 223.75  3      .013                                                1
R    2835.37 226.42  5      .013                                          22.50
R    2911.14 227.12  5      .013                                          22.50 1
R    3091.14 228.11  5      .013
R    3611.14 230.71  5      .013                                          22.50 1
R    3686.91 231.23  5      .013                                          22.50
JX   3775.91 231.84  5  6   .013    38.0        229.22            44.39
JX   3800.91 232.01  5  7   .013    38.0        229.55             5.00
R    3837.91 232.27  5      .013                                                1
SH                   5                                             SP

                    WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN  NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE PIERS   WIDTH    DIAMETER  WIDTH                DROP

 CD      1    4                     7.00
 CD      2    4                     3.50
 CD      3    3     0       .00     5.00    8.00   .00   .00   .00
 CD      4    4                     4.50
 CD      5    4                     6.00
 CD      6    4                     4.07
 CD      7    4                     5.00

                    WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
                      STP Papago - 091131.00 - Existing Storm Drain
HEADING LINE NO 2 IS -
                      Osborn Road Storm Drain - Indian Bend Wash to Civic Center Blvd.
HEADING LINE NO 3 IS -
                      10 YR 6 HR Storm Event

                    WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   1 IS A SYSTEM OUTLET      *         *     *                                    W S ELEV
                U/S DATA   STATION    INVERT  SECT                                          223.60
                            1000.00   216.60    1
 ELEMENT NO   2 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00    .00     .00      0
                            1038.87   216.70    1            .013
 ELEMENT NO   3 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00  40.13     .00      0
                            1109.07   216.89    1            .013
 ELEMENT NO   4 IS A JUNCTION           *         *     *     *     *     *     *     *     *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4   INVERT-3 INVERT-4  PHI 3   PHI 4
                            1227.66   217.22    1     2     0  .013    1.0      .0   219.80      .00  90.00     .00
 ELEMENT NO   5 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00    .00   13.17      0
                            1261.66   217.29    1            .013
 ELEMENT NO   6 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00    .00    9.44      0
                            1365.66   217.50    1            .013
 ELEMENT NO   7 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00    .00    9.40      0
                            1642.66   218.07    1            .013
 ELEMENT NO   8 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00    .00    5.77      0
                            1848.47   218.49    1            .013
 ELEMENT NO   9 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00    .00   10.02      1
                            2195.13   219.20    1            .013
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
 ELEMENT NO  10 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                              .00    .00     .00      0
                            2210.97   219.23    3            .013
 ELEMENT NO  11 IS A REACH              *         *     *                                    RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N
```

1195' 84"

335' 5' x 8'

1003' 72"

```
                                 2365.37  219.86    3                .013                                  .00    .00     .00     0
ELEMENT NO  12 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 2408.70  221.07    3                .013                                  .00    .00   11.43     0

                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  13 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 2415.37  221.26    3                .013                                  .00    .00     .00     0
ELEMENT NO  14 IS A JUNCTION             *        *    *    *       *       *       *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                 2484.39  223.19    3     4     0  .013    78.0      .0   223.19     .00   90.00     .00
ELEMENT NO  15 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 2545.37  223.75    3                .013                                  .00    .00     .00     1
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
ELEMENT NO  16 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 2835.37  226.42    5                .013                                  .00    .00   22.50     0
ELEMENT NO  17 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 2911.14  227.12    5                .013                                  .00    .00   22.50     1
ELEMENT NO  18 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 3091.14  228.11    5                .013                                  .00    .00     .00     0
ELEMENT NO  19 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 3611.14  230.71    5                .013                                  .00    .00   22.50     1
ELEMENT NO  20 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 3686.91  231.23    5                .013                                  .00    .00   22.50     0
ELEMENT NO  21 IS A JUNCTION             *        *    *    *       *       *       *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                 3775.91  231.84    5     6     0  .013    38.0      .0   229.22     .00   44.39     .00
ELEMENT NO  22 IS A JUNCTION             *        *    *    *       *       *       *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                 3800.91  232.01    5     7     0  .013    38.0      .0   229.55     .00    5.00     .00

                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  23 IS A REACH                *        *    *
                   U/S DATA   STATION    INVERT  SECT                N                                 RADIUS  ANGLE  ANG PT  MAN H
                                 3837.91  232.27    5                .013                                  .00    .00     .00     1
ELEMENT NO  24 IS A SYSTEM HEADWORKS                      *                                 *
                   U/S DATA   STATION    INVERT  SECT                                        W S ELEV
                                 3837.91  232.27    5                                            .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
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WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 - Existing Storm Drain
Osborn Road Storm Drain - Indian Bend Wash to Civic Center Blvd.
10 YR 6 HR Storm Event

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
1000.00	216.60	7.00	223.60	395.0	10.26	1.64	225.24	.00	5.24		7.00	.00	.00	0	.00
38.87	.00257					.00382	.15			7.00			.00		
1038.87	216.70	7.05	223.75	395.0	10.26	1.64	225.39	.00	5.24		7.00	.00	.00	0	.00
70.20	.00271					.00382	.27			7.00			.00		
1109.07	216.89	7.35	224.24	395.0	10.26	1.64	225.87	.00	5.24		7.00	.00	.00	0	.00
JUNCT STR	.00278					.00381	.45						.00		
1227.66	217.22	7.48	224.70	394.0	10.24	1.63	226.33	.00	5.23		7.00	.00	.00	0	.00
34.00	.00206					.00380	.13			7.00			.00		
1261.66	217.29	7.61	224.90	394.0	10.24	1.63	226.53	.00	5.23		7.00	.00	.00	0	.00
104.00	.00202					.00380	.40			7.00			.00		
1365.66	217.50	7.85	225.35	394.0	10.24	1.63	226.98	.00	5.23		7.00	.00	.00	0	.00
277.00	.00206					.00380	1.05			7.00			.00		
1642.66	218.07	8.39	226.46	394.0	10.24	1.63	228.08	.00	5.23		7.00	.00	.00	0	.00
205.81	.00204					.00380	.78			7.00			.00		
1848.47	218.49	8.78	227.27	394.0	10.24	1.63	228.90	.00	5.23		7.00	.00	.00	0	.00
346.66	.00205					.00380	1.32			7.00			.00		
2195.13	219.20	9.52	228.72	394.0	9.91	1.53	230.25	.00	4.22		5.00	8.00	.00	0	.00
15.84	.00189					.00427	.07			5.00			.00		
2210.97	219.23	9.56	228.79	394.0	9.91	1.53	230.32	.00	4.22		5.00	8.00	.00	0	.00
154.40	.00408					.00427	.66			4.19			.00		
2365.37	219.86	9.59	229.45	394.0	9.91	1.53	230.98	.00	4.22		5.00	8.00	.00	0	.00
43.33	.02792					.00427	.18			2.09			.00		
2408.70	221.07	8.62	229.69	394.0	9.91	1.53	231.22	.00	4.22		5.00	8.00	.00	0	.00
6.67	.02848					.00427	.03			2.07			.00		
2415.37	221.26	8.46	229.72	394.0	9.91	1.53	231.25	.00	4.22		5.00	8.00	.00	0	.00
JUNCT STR	.02796					.00351	.24						.00		
2484.39	223.19	7.86	231.05	316.0	7.95	.98	232.03	.00	3.65		5.00	8.00	.00	0	.00
60.98	.00918					.00275	.17			2.64			.00		
2545.37	223.75	7.52	231.27	316.0	11.18	1.94	233.21	.00	4.85		6.00	.00	.00	0	.00
290.00	.00921					.00557	1.61			3.98			.00		
2835.37	226.42	6.61	233.03	316.0	11.18	1.94	234.97	.00	4.85		6.00	.00	.00	0	.00
75.77	.00924					.00557	.42			3.97			.00		
2911.14	227.12	6.57	233.69	316.0	11.18	1.94	235.63	.00	4.85		6.00	.00	.00	0	.00
180.00	.00550					.00557	1.00			4.95			.00		
3091.14	228.11	6.58	234.69	316.0	11.18	1.94	236.63	.00	4.85		6.00	.00	.00	0	.00
520.00	.00500					.00557	2.90			5.29			.00		
3611.14	230.71	7.12	237.83	316.0	11.18	1.94	239.77	.00	4.85		6.00	.00	.00	0	.00
75.77	.00686					.00557	.42			4.45			.00		
3686.91	231.23	7.16	238.39	316.0	11.18	1.94	240.34	.00	4.85		6.00	.00	.00	0	.00
JUNCT STR	.00685					.00494	.44						.00		
3775.91	231.84	7.78	239.62	278.0	9.83	1.50	241.13	.00	4.56		6.00	.00	.00	0	.00
JUNCT STR	.00680					.00376	.09						.00		
3800.91	232.01	8.39	240.40	240.0	8.49	1.12	241.52	.00	4.24		6.00	.00	.00	0	.00
37.00	.00703					.00321	.12			3.62			.00		
3837.91	232.27	8.31	240.58	240.0	8.49	1.12	241.70	.00	4.24		6.00	.00	.00	0	.00

Paiute Park to Civic Center Blvd. (osbco2c1.out)

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STORM DRAIN ANALYSIS PLUS

 Original version by Los Angeles County Public Works
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 Version □□□□□
 Serial Number □□□□□□□□

 Dec  1, 1997  14:57:50

 Input file : osbco2c1.dat
 Output file: osbco2c1.out

                                INPUT FILE LISTING


 T1 STP Papago - 091131.00 CO#2 Alternative C -
 T2 Osborn Road Storm Drain-  Civic Center Blvd. to Paiute Park-
 T3 6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.
 SO   3900.00 232.00 25      .013                 240.85
 R    4690.00 234.65 25      .013                                                  2
 JX   4700.00 234.68 25 10 7 .013    25.0    19.0 234.68 234.68 90.00 90.00
 R    5120.00 236.10 25      .013
 JX   5124.13 236.12  1  4 5 .013   129.0  -349.0 236.12 236.12 90.00 90.00
 R    5163.70 236.18  1      .013
 TS   5185.70 236.22  3      .013
 R    5217.47 236.27  3      .013                                        5.00
 R    5409.00 236.57  3      .013
 R    5606.38 236.88  3      .013                                        4.26 1
 R    6400.00 238.13  3      .013                                             1
 JX   6439.00 238.19  3  8   .013    90.0         231.20        90.00
 TS   6449.00 238.20 24      .013
 R    7250.00 239.47 24      .013                                             2
 R    7700.00 240.18 24      .013                                             1
 JX   7741.00 240.24 24 20   .013   109.0         241.09        90.00
 TS   7751.00 240.26  5      .013
 R    8100.00 240.78  5      .013                                             1
 R    8139.55 240.83  5      .013
 R    8179.00 240.88  5      .013                                        5.00
 TS   8179.55 240.89 22      .013
 R    8210.55 240.94 22      .013
 TS   8250.55 241.09  5      .013
 R    8439.44 241.79  5      .013                                        5.00
 R    8700.00 242.76  5      .013                                             1
 JX   8759.00 242.98  5 10   .013   103.0         243.48        90.00
 TS   8774.00 243.04 20      .013
 R    8948.07 243.68 20      .013
 R    9000.00 243.88 20      .013                                       34.02
 TS   9025.00 243.97 23      .013
 R    9055.00 244.08 23      .013                                       12.73
 TS   9075.00 244.37 20      .013
 R    9160.13 245.58 20      .013                                       43.25
 R    9793.42 248.01 20      .013                                             2
 R    9934.27 248.56 20      .013                                       90.33
 R    9958.83 248.65 20      .013
 SH                  20                                                  SP
                                WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE   ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH                DROP

 CD      1    4                      9.50
 CD      2    3     0        .00     5.50    9.50   .00   .00   .00
 CD      3    4                      8.00
 CD      4    4                      5.50
 CD      5    4                      6.00
 CD      7    4                      2.00
 CD      8    4                      4.50
 CD      9    4                      3.50
 CD     10    4                      4.00
 CD     15    4                      3.00
 CD     18    3     0        .00     5.00    9.00   .00   .00   .00
 CD     20    4                      5.00
 CD     21    4                      1.50
 CD     22    3     0        .00     3.00    8.50   .00   .00   .00
 CD     23    3     0        .00     3.50    5.00   .00   .00   .00
 CD     24    4                      7.00
 CD     25    4                      5.50

                                WATER SURFACE PROFILE - TITLE CARD LISTING

 HEADING LINE NO 1 IS -
                                  STP Papago - 091131.00 CO#2 Alternative C -
 HEADING LINE NO 2 IS -
                                  Osborn Road Storm Drain-  Civic Center Blvd. to Paiute Park-
 HEADING LINE NO 3 IS -
                                  6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.

                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   1 IS A SYSTEM OUTLET      *        *        *                                  W S ELEV
                    U/S DATA   STATION    INVERT  SECT                                       240.85
                                3900.00   232.00   25
 ELEMENT NO   2 IS A REACH              *        *        *                N                                RADIUS  ANGLE  ANG PT  MAN H
                    U/S DATA   STATION    INVERT  SECT                     .013                               .00     .00    .00     2
                                4690.00   234.65   25
 ELEMENT NO   3 IS A JUNCTION           *        *        *        *                *                *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                4700.00   234.68   25    10     7   .013    25.0    19.0   234.68   234.68  90.00   90.00
 ELEMENT NO   4 IS A REACH              *        *        *                N                                RADIUS  ANGLE  ANG PT  MAN H
                    U/S DATA   STATION    INVERT  SECT                     .013                               .00     .00    .00     0
                                5120.00   236.10   25
 ELEMENT NO   5 IS A JUNCTION           *        *        *        *                *                *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                5124.13   236.12    1     4     5   .013   129.0  -349.0   236.12   236.12  90.00   90.00
 ELEMENT NO   6 IS A REACH              *        *        *                N                                RADIUS  ANGLE  ANG PT  MAN H
                    U/S DATA   STATION    INVERT  SECT
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                            5163.70  236.18    1                  .013                                      .00     .00      .00     0
ELEMENT NO    7 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            5185.70  236.22    3                  .013
ELEMENT NO    8 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            5217.47  236.27    3                  .013                                      .00     .00    5.00     0
ELEMENT NO    9 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            5409.00  236.57    3                  .013                                      .00     .00     .00     0
ELEMENT NO   10 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            5606.38  236.88    3                  .013                                      .00     .00    4.26     1
ELEMENT NO   11 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            6400.00  238.13    3                  .013                                      .00     .00     .00     1
ELEMENT NO   12 IS A JUNCTION       *           *      *      *                  *                    *           *
                 U/S DATA   STATION     INVERT   SECT LAT-1 LAT-2   N        Q3          Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                            6439.00  238.19    3      8     0   .013      90.0           .0   231.20       .00  90.00     .00

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO   13 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            6449.00  238.20   24                  .013
ELEMENT NO   14 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            7250.00  239.47   24                  .013                                      .00     .00     .00     2
ELEMENT NO   15 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            7700.00  240.18   24                  .013                                      .00     .00     .00     1
ELEMENT NO   16 IS A JUNCTION       *           *      *      *                  *                    *           *
                 U/S DATA   STATION     INVERT   SECT LAT-1 LAT-2   N        Q3          Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                            7741.00  240.24   24     20     0   .013     109.0           .0   241.09       .00  90.00     .00
ELEMENT NO   17 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            7751.00  240.26    5                  .013
ELEMENT NO   18 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            8100.00  240.78    5                  .013                                      .00     .00     .00     1
ELEMENT NO   19 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            8139.55  240.83    5                  .013                                      .00     .00     .00     0
ELEMENT NO   20 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            8179.00  240.88    5                  .013                                      .00     .00    5.00     0
ELEMENT NO   21 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            8179.55  240.89   22                  .013
ELEMENT NO   22 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            8210.55  240.94   22                  .013                                      .00     .00     .00     0
ELEMENT NO   23 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            8250.55  241.09    5                  .013
ELEMENT NO   24 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            8439.44  241.79    5                  .013                                      .00     .00    5.00     0

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO   25 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            8700.00  242.76    5                  .013                                      .00     .00     .00     1
ELEMENT NO   26 IS A JUNCTION       *           *      *      *                  *                    *           *
                 U/S DATA   STATION     INVERT   SECT LAT-1 LAT-2   N        Q3          Q4     INVERT-3 INVERT-4  PHI 3   PHI 4
                            8759.00  242.98    5     10     0   .013     103.0           .0   243.48       .00  90.00     .00
ELEMENT NO   27 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            8774.00  243.04   20                  .013
ELEMENT NO   28 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            8948.07  243.68   20                  .013                                      .00     .00     .00     0
ELEMENT NO   29 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            9000.00  243.88   20                  .013                                      .00   34.02     .00     0
ELEMENT NO   30 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            9025.00  243.97   23                  .013
ELEMENT NO   31 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            9055.00  244.08   23                  .013                                      .00   12.73     .00     0
ELEMENT NO   32 IS A TRANSITION     *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N
                            9075.00  244.37   20                  .013
ELEMENT NO   33 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            9160.13  245.58   20                  .013                                      .00   43.25     .00     0
ELEMENT NO   34 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            9793.42  248.01   20                  .013                                      .00     .00     .00     2
ELEMENT NO   35 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            9934.27  248.56   20                  .013                                      .00   90.33     .00     0
ELEMENT NO   36 IS A REACH          *           *      *
                 U/S DATA   STATION     INVERT   SECT                   N                                RADIUS  ANGLE  ANG PT  MAN H
                            9958.83  248.65   20                  .013                                      .00     .00     .00     0
ELEMENT NO   37 IS A SYSTEM HEADWORKS                  *                    *
                 U/S DATA   STATION     INVERT   SECT                                           W S ELEV
                            9958.83  248.65   20                                                     .00

                         WATER SURFACE PROFILE - ELEMENT CARD LISTING
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

                                              WATER SURFACE PROFILE LISTING
                  STP Papago - 091131.00 CO#2 Alternative C -
                  Osborn Road Storm Drain-  Civic Center Blvd. to Paiute Park-
                  6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.
 STATION    INVERT   DEPTH     W.S.        Q       VEL      VEL     ENERGY   SUPER  CRITICAL           HGT/   BASE/    ZL   NO  AVBPR
             ELEV   OF FLOW    ELEV                         HEAD   GRD.EL.   ELEV    DEPTH             DIA    ID NO.        PIER
 L/ELEM      SO                                            SF AVE     HF                  NORM DEPTH                   ZR
*******************************************************************************************************************************
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3900.00	232.00	8.85	240.85	197.0	8.29	1.07	241.92	.00	3.93		5.50	.00	.00	0	.00
790.00	.00335					.00344	2.72			4.57			.00		
4690.00	234.65	9.03	243.68	197.0	8.29	1.07	244.74	.00	3.93		5.50	.00	.00	0	.00
JUNCT STR	.00300					.00276	.03						.00		
4700.00	234.68	9.87	244.55	153.0	6.44	.64	245.20	.00	3.45		5.50	.00	.00	0	.00
420.00	.00338					.00208	.87			3.67			.00		
5120.00	236.10	9.32	245.42	153.0	6.44	.64	246.07	.00	3.45		5.50	.00	.00	0	.00
JUNCT STR	.00484					.00137	.01						.00		
5124.13	236.12	9.52	245.64	373.0	5.26	.43	246.07	.00	4.65		9.50	.00	.00	0	.00
27.11	.00152					.00067	.02			5.66			.00		
5151.24	236.16	9.50	245.66	373.0	5.26	.43	246.09	.00	4.65		9.50	.00	.00	0	.00
12.46	.00152					.00066	.01			5.66			.00		
5163.70	236.18	9.49	245.67	373.0	5.26	.43	246.10	.00	4.65		9.50	.00	.00	0	.00
TRANS STR	.00182					.00116	.03						.00		
5185.70	236.22	9.13	245.35	373.0	7.42	.86	246.21	.00	4.90		8.00	.00	.00	0	.00
31.77	.00157					.00167	.05			6.80			.00		
5217.47	236.27	9.15	245.42	373.0	7.42	.86	246.28	.00	4.90		8.00	.00	.00	0	.00
191.53	.00157					.00167	.32			6.83			.00		
5409.00	236.57	9.17	245.74	373.0	7.42	.86	246.60	.00	4.90		8.00	.00	.00	0	.00
197.38	.00157					.00167	.33			6.81			.00		
5606.38	236.88	9.25	246.13	373.0	7.42	.86	246.98	.00	4.90		8.00	.00	.00	0	.00
793.62	.00158					.00167	1.33			6.80			.00		

WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 CO#2 Alternative C -
Osborn Road Storm Drain- Civic Center Blvd. to Paiute Park-
6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
**********															
6400.00	238.13	9.37	247.50	373.0	7.42	.86	248.35	.00	4.90		8.00	.00	.00	0	.00
JUNCT STR	.00154					.00132	.05						.00		
6439.00	238.19	10.08	248.27	283.0	5.63	.49	248.77	.00	4.24		8.00	.00	.00	0	.00
TRANS STR	.00100					.00146	.01						.00		
6449.00	238.20	9.81	248.01	283.0	7.35	.84	248.85	.00	4.42		7.00	.00	.00	0	.00
801.00	.00159					.00196	1.57			7.00			.00		
7250.00	239.47	10.20	249.67	283.0	7.35	.84	250.51	.00	4.42		7.00	.00	.00	0	.00
450.00	.00158					.00196	.88			7.00			.00		
7700.00	240.18	10.41	250.59	283.0	7.35	.84	251.43	.00	4.42		7.00	.00	.00	0	.00
JUNCT STR	.00146					.00135	.06						.00		
7741.00	240.24	11.45	251.69	174.0	4.52	.32	252.01	.00	3.43		7.00	.00	.00	0	.00
TRANS STR	.00200					.00121	.01						.00		
7751.00	240.26	11.23	251.49	174.0	6.15	.59	252.08	.00	3.60		6.00	.00	.00	0	.00
349.00	.00149					.00169	.59			5.38			.00		
8100.00	240.78	11.33	252.11	174.0	6.15	.59	252.69	.00	3.60		6.00	.00	.00	0	.00
39.55	.00126					.00169	.07			6.00			.00		
8139.55	240.83	11.34	252.17	174.0	6.15	.59	252.76	.00	3.60		6.00	.00	.00	0	.00
39.45	.00127					.00169	.07			6.00			.00		
8179.00	240.88	11.37	252.25	174.0	6.15	.59	252.84	.00	3.60		6.00	.00	.00	0	.00
TRANS STR	.01818					.00245	.00						.00		
8179.55	240.89	11.24	252.13	174.0	6.89	.74	252.87	.00	2.35		3.00	8.50	.00	0	.00
31.00	.00161					.00321	.10			3.00			.00		
8210.55	240.94	11.29	252.23	174.0	6.89	.74	252.97	.00	2.35		3.00	8.50	.00	0	.00
TRANS STR	.00375					.00245	.10						.00		
8250.55	241.09	11.40	252.49	174.0	6.15	.59	253.08	.00	3.60		6.00	.00	.00	0	.00
188.89	.00371					.00169	.32			3.61			.00		
8439.44	241.79	11.03	252.82	174.0	6.15	.59	253.41	.00	3.60		6.00	.00	.00	0	.00
260.56	.00372					.00169	.44			3.61			.00		
8700.00	242.76	10.53	253.29	174.0	6.15	.59	253.88	.00	3.60		6.00	.00	.00	0	.00
JUNCT STR	.00373					.00098	.06						.00		
8759.00	242.98	11.35	254.33	71.0	2.51	.10	254.43	.00	2.25		6.00	.00	.00	0	.00
TRANS STR	.00400					.00051	.01						.00		
8774.00	243.04	11.21	254.25	71.0	3.62	.20	254.46	.00	2.38		5.00	.00	.00	0	.00
174.07	.00368					.00074	.13			2.35			.00		
8948.07	243.68	10.70	254.38	71.0	3.62	.20	254.59	.00	2.38		5.00	.00	.00	0	.00
51.93	.00385					.00074	.04			2.32			.00		
9000.00	243.88	10.57	254.45	71.0	3.62	.20	254.65	.00	2.38		5.00	.00	.00	0	.00
TRANS STR	.00360					.00101	.03						.00		
9025.00	243.97	10.45	254.42	71.0	4.12	.26	254.69	.00	1.84		3.50	5.00	.00	0	.00
30.00	.00367					.00127	.04			1.94			.00		
9055.00	244.08	10.40	254.48	71.0	4.12	.26	254.74	.00	1.84		3.50	5.00	.00	0	.00
TRANS STR	.01450					.00101	.02						.00		
9075.00	244.37	10.20	254.57	71.0	3.62	.20	254.77	.00	2.38		5.00	.00	.00	0	.00
85.13	.01421					.00074	.06			1.63			.00		

WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 CO#2 Alternative C -
Osborn Road Storm Drain- Civic Center Blvd. to Paiute Park-
6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
**********															
9160.13	245.58	9.08	254.66	71.0	3.62	.20	254.86	.00	2.38		5.00	.00	.00	0	.00
633.29	.00384					.00074	.47			2.32			.00		
9793.42	248.01	7.14	255.15	71.0	3.62	.20	255.35	.00	2.38		5.00	.00	.00	0	.00
140.85	.00390					.00074	.10			2.31			.00		
9934.27	248.56	6.74	255.30	71.0	3.62	.20	255.50	.00	2.38		5.00	.00	.00	0	.00
24.56	.00366					.00074	.02			2.35			.00		
9958.83	248.65	6.66	255.31	71.0	3.62	.20	255.52	.00	2.38		5.00	.00	.00	0	.00

IBW to Osborn Rd. at Scottsdale Rd. (osbco2c2.out)

Manning's n=0.011 for plastic slip-lining from published sources

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STORM DRAIN ANALYSIS PLUS

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Version □□□□□
Serial Number □□□□□□□□

Dec 10, 1997  10: 6:32

Input file : osbco2c2.dat
Output file: osbco2c2.out


                              INPUT FILE LISTING


T1 STP Papago - 091131.00 CO#2 Alternative C -
T2 Osborn Road Storm Drain-  IBW to Osborn Rd. along Scottsdale Rd.
T3 6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.
SO   1000.00 219.00  4                          224.00
BX   1000.00 219.00  5
R    2450.00 223.73  5      .013
JX   2460.00 223.76  5  2   .013   124.0        217.82        90.00
TS   2500.00 223.89  7      .013
R    3730.00 227.90  7      .013
R    3780.00 228.06  7      .013
JX   5050.00 232.21  7      .013    27.0
R    5150.00 232.52  7      .013                              90.00
BE   5150.00 232.52  6
TS   5200.00 232.67  3      .011
R    5700.00 234.16  3      .011
JX   5726.50 234.24  3      .011    50.0
R    6353.00 236.12  3      .011
SH                   3                                  SP
```

No pipe included here? Please include

Ditto. The angle of the connector should be included as well.

```
                    WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN  NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE PIERS   WIDTH    DIAMETER  WIDTH                DROP

 CD      1    4                     8.00
 CD      2    4                     4.00
 CD      3    4                     6.00
 CD      4    3     0       .00     5.00   12.75   .00   .00   .00
 CD      5    3     1       .75     5.00   12.75   .00   .00   .00
 CD      6    3     0       .00     5.00   11.75   .00   .00   .00
 CD      7    3     1       .75     5.00   11.75   .00   .00   .00

                    WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
                    STP Papago - 091131.00 CO#2 Alternative C -
HEADING LINE NO 2 IS -
                    Osborn Road Storm Drain-  IBW to Osborn Rd. along Scottsdale Rd.
HEADING LINE NO 3 IS -
                    6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.

                    WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO   1 IS A SYSTEM OUTLET      *        *     *                                W S ELEV
                U/S DATA   STATION    INVERT  SECT                                     224.00
                             1000.00  219.00    4
ELEMENT NO   2 IS A BRIDGE EXIT                    *
                U/S DATA   STATION    INVERT  SECT
                             1000.00  219.00    5
ELEMENT NO   3 IS A REACH              *        *     *                                 RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                        .00    .00     .00     0
                             2450.00  223.73    5            .013
ELEMENT NO   4 IS A JUNCTION           *        *     *     *        *                 *        *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             2460.00  223.76    5     2     0  .013   124.0      .0   217.82     .00   90.00     .00
ELEMENT NO   5 IS A TRANSITION         *        *     *
                U/S DATA   STATION    INVERT  SECT              N
                             2500.00  223.89    7            .013
ELEMENT NO   6 IS A REACH              *        *     *                                 RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                        .00    .00     .00     0
                             3730.00  227.90    7            .013
ELEMENT NO   7 IS A REACH              *        *     *                                 RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                        .00    .00     .00     0
                             3780.00  228.06    7            .013
ELEMENT NO   8 IS A JUNCTION           *        *     *     *        *                 *        *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             5050.00  232.21    7     0     0  .013    27.0      .0      .00     .00     .00     .00
ELEMENT NO   9 IS A REACH              *        *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS  ANGLE  ANG PT  MAN H
                             5150.00  232.52    7            .013                           .00  90.00     .00     0
ELEMENT NO  10 IS A BRIDGE ENTRANCE                *
                U/S DATA   STATION    INVERT  SECT             FP
                             5150.00  232.52    6           1.000
ELEMENT NO  11 IS A TRANSITION         *        *     *
                U/S DATA   STATION    INVERT  SECT              N
                             5200.00  232.67    3            .011

                    WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  12 IS A REACH              *        *     *                                 RADIUS  ANGLE  ANG PT  MAN H
                U/S DATA   STATION    INVERT  SECT              N                        .00    .00     .00     0
                             5700.00  234.16    3            .011
ELEMENT NO  13 IS A JUNCTION           *        *     *     *        *                 *        *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             5726.50  234.24    3     0     0  .011    50.0      .0      .00     .00     .00     .00
ELEMENT NO  14 IS A REACH              *        *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS  ANGLE  ANG PT  MAN H
                             6353.00  236.12    3            .011                           .00    .00     .00     0
```

```
ELEMENT NO  15 IS A SYSTEM HEADWORKS                    *                    *
                    U/S DATA   STATION    INVERT  SECT                                W S ELEV
                                 6353.00  236.12    3                                     .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

                                   WATER SURFACE PROFILE LISTING
                     STP Papago - 091131.00 CO#2 Alternative C -
                     Osborn Road Storm Drain-  IBW to Osborn Rd. along Scottsdale Rd.
                     6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.
 STATION     INVERT   DEPTH     W.S.        Q       VEL     VEL     ENERGY   SUPER  CRITICAL          HGT/   BASE/   ZL   NO  AVBPR
              ELEV  OF FLOW    ELEV                         HEAD    GRD.EL.  ELEV   DEPTH                DIA    ID NO.        PIER
 L/ELEM        SO                                         SF AVE    HF                     NORM DEPTH                ZR
*************************************************************************************************************************
   1000.00   219.00     5.00   224.00    550.0    8.66    1.17   225.17    .00     3.87                5.00   12.75  .00   0   .00
BRIDGE EXIT                                                                                                          .00
   1000.00   219.00     4.64   223.64    550.0    9.88    1.52   225.16    .00     4.03                5.00   12.75  .00   1   .75
    396.34    .00326                                     .00331     1.31                     4.69                    .00
   1396.34   220.29     4.69   224.98    550.0    9.77    1.48   226.47    .00     4.03                5.00   12.75  .00   1   .75
   1053.66    .00326                                     .00326     3.44                     4.69                    .00
   2450.00   223.73     4.69   228.42    550.0    9.77    1.48   229.90    .00     4.03                5.00   12.75  .00   1   .75
JUNCT STR     .00300                                     .00294      .03                                            .00
   2460.00   223.76     5.94   229.70    426.0    7.16     .80   230.49    .00     3.40                5.00   12.75  .00   1   .75
TRANS STR     .00325                                     .00296      .12                                            .00
   2500.00   223.89     5.80   229.69    426.0    7.82     .95   230.64    .00     3.60                5.00   11.75  .00   1   .75
   1230.00    .00326                                     .00330     4.06                     4.22                    .00
   3730.00   227.90     5.86   233.76    426.0    7.82     .95   234.71    .00     3.60                5.00   11.75  .00   1   .75
     50.00    .00320                                     .00330      .17                     4.25                    .00
   3780.00   228.06     5.86   233.92    426.0    7.82     .95   234.87    .00     3.60                5.00   11.75  .00   1   .75
JUNCT STR     .00327                                     .00310     3.94                                            .00
   5050.00   232.21     5.88   238.09    399.0    7.32     .83   238.93    .00     3.44                5.00   11.75  .00   1   .75
    100.00    .00310                                     .00290      .29                     4.09                    .00
   5150.00   232.52     6.03   238.55    399.0    7.32     .83   239.38    .00     3.44                5.00   11.75  .00   1   .75
BRIDGE ENTRANCE                                                                                                      .00
   5150.00   232.52     6.20   238.72    399.0    6.82     .72   239.44    .00     3.30                5.00   11.75  .00   0   .00
TRANS STR     .00300                                                                                                 .00
   5200.00   232.67     5.33   238.00    399.0   15.03    3.51   241.51    .00     5.33                6.00     .00  .00   0   .00
     33.66    .00298                                     .00559      .19                     6.00                    .00
   5233.66   232.77     5.74   238.51    399.0   14.33    3.19   241.70    .00     5.33                6.00     .00  .00   0   .00
     56.65    .00298                                     .00590      .33                     6.00                    .00
   5290.30   232.94     6.00   238.94    399.0   14.11    3.09   242.03    .00     5.33                6.00     .00  .00   0   .00
    409.70    .00298                                     .00632     2.59                     6.00                    .00
   5700.00   234.16     7.38   241.54    399.0   14.11    3.09   244.64    .00     5.33                6.00     .00  .00   0   .00
JUNCT STR     .00302                                     .00561      .15                                            .00
   5726.50   234.24     8.91   243.15    349.0   12.34    2.37   245.51    .00     5.06                6.00     .00  .00   0   .00
    626.50    .00300                                     .00486     3.05                     6.00                    .00
   6353.00   236.12    10.07   246.19    349.0   12.34    2.37   248.56    .00     5.06                6.00     .00  .00   0   .00
```

IBW to Osborn Rd. at Scottsdale Rd. (osbco2c3.out)

Manning's n=0.010 for "dirty" plastic slip-lining from Insituform Representative

If it's "dirty", why does it appear smoother

```
STORM DRAIN ANALYSIS PLUS

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Version □□□□□
Serial Number □□□□□□□□

Dec 10, 1997  10:10:41

Input file : osbco2c3.dat
Output file: osbco2c3.out
```

If this alt. were selected, a lining w/n ≤ 0.01 would be needed. Otherwise, the HGL would be ~~above~~ very near the ground at int. of Scottsdale Rd & Osborn

```
                                   INPUT FILE LISTING

T1 STP Papago - 091131.00 CO#2 Alternative C -
T2 Osborn Road Storm Drain-  IBW to Osborn Rd. along Scottsdale Rd.
T3 6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.
SO   1000.00 219.00  4                          224.00
BX   1000.00 219.00  5
R    2450.00 223.73  5       .013
JX   2460.00 223.76  5  2    .013   124.0      217.82        90.00
TS   2500.00 223.89  7       .013
R    3730.00 227.90  7       .013
R    3780.00 228.06  7       .013
JX   5050.00 232.21  7       .013    27.0
R    5150.00 232.52  7       .013                             90.00
BE   5150.00 232.52  6
TS   5200.00 232.67  3       .010
R    5700.00 234.16  3       .010
JX   5726.50 234.24  3       .010    50.0
R    6353.00 236.12  3       .010
SH                   3
                                                   SP
                                   WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH                DROP

 CD      1    4                      8.00
 CD      2    4                      4.00
 CD      3    4                      6.00
 CD      4    3     0       .00      5.00   12.75   .00   .00   .00
 CD      5    3     1       .75      5.00   12.75   .00   .00   .00
 CD      6    3     0       .00      5.00   11.75   .00   .00   .00
 CD      7    3     1       .75      5.00   11.75   .00   .00   .00

                                   WATER SURFACE PROFILE - TITLE CARD LISTING
HEADING LINE NO 1 IS -
                                   STP Papago - 091131.00 CO#2 Alternative C -
```

Hydraulic effect of lengths?

HEADING LINE NO 2 IS -
Osborn Road Storm Drain- IBW to Osborn Rd. along Scottsdale Rd.

HEADING LINE NO 3 IS -
6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.

WATER SURFACE PROFILE - ELEMENT CARD LISTING

```
ELEMENT NO   1 IS A SYSTEM OUTLET      *          *          *
                U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                             1000.00  219.00    4                                       224.00
ELEMENT NO   2 IS A BRIDGE EXIT                  *
                U/S DATA   STATION    INVERT  SECT
                             1000.00  219.00    5
ELEMENT NO   3 IS A REACH              *          *          *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             2450.00  223.73    5              .013                                  .00    .00     .00      0
ELEMENT NO   4 IS A JUNCTION           *          *          *          *          *          *          *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             2460.00  223.76    5     2     0  .013   124.0       .0   217.82      .00   90.00     .00
ELEMENT NO   5 IS A TRANSITION         *          *          *
                U/S DATA   STATION    INVERT  SECT              N
                             2500.00  223.89    7              .013
ELEMENT NO   6 IS A REACH              *          *          *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             3730.00  227.90    7              .013                                  .00    .00     .00      0
ELEMENT NO   7 IS A REACH              *          *          *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             3780.00  228.06    7              .013                                  .00    .00     .00      0
ELEMENT NO   8 IS A JUNCTION           *          *          *          *          *          *          *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             5050.00  232.21    7     0     0  .013    27.0       .0      .00      .00     .00     .00
ELEMENT NO   9 IS A REACH              *          *          *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             5150.00  232.52    7              .013                                  .00   90.00     .00      0
ELEMENT NO  10 IS A BRIDGE ENTRANCE                *
                U/S DATA   STATION    INVERT  SECT             FP
                             5150.00  232.52    6          1.000
ELEMENT NO  11 IS A TRANSITION         *          *          *
                U/S DATA   STATION    INVERT  SECT              N
                             5200.00  232.67    3              .010
```

WATER SURFACE PROFILE - ELEMENT CARD LISTING

```
ELEMENT NO  12 IS A REACH              *          *          *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             5700.00  234.16    3              .010                                  .00    .00     .00      0
ELEMENT NO  13 IS A JUNCTION           *          *          *          *          *          *          *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             5726.50  234.24    3     0     0  .010    50.0       .0      .00      .00     .00     .00
ELEMENT NO  14 IS A REACH              *          *          *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             6353.00  236.12    3              .010                                  .00    .00     .00      0
ELEMENT NO  15 IS A SYSTEM HEADWORKS               *                     *
                U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                             6353.00  236.12    3                                          .00
```

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 CO#2 Alternative C -
Osborn Road Storm Drain- IBW to Osborn Rd. along Scottsdale Rd.
6 HR 10 YR Storm - 5124.13 OSB = 63+53 Scottsdale Rd.

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
1000.00	219.00	5.00	224.00	550.0	8.66	1.17	225.17	.00	3.87		5.00	12.75	.00	0	.00
BRIDGE EXIT													.00		
1000.00	219.00	4.64	223.64	550.0	9.88	1.52	225.16	.00	4.03		5.00	12.75	.00	1	.75
396.34	.00326					.00331	1.31			4.69			.00		
1396.34	220.29	4.69	224.98	550.0	9.77	1.48	226.47	.00	4.03		5.00	12.75	.00	1	.75
1053.66	.00326					.00326	3.44			4.69			.00		
2450.00	223.73	4.69	228.42	550.0	9.77	1.48	229.90	.00	4.03		5.00	12.75	.00	1	.75
JUNCT STR	.00300					.00294	.03						.00		
2460.00	223.76	5.94	229.70	426.0	7.16	.80	230.49	.00	3.40		5.00	12.75	.00	1	.75
TRANS STR	.00325					.00296	.12						.00		
2500.00	223.89	5.80	229.69	426.0	7.82	.95	230.64	.00	3.60		5.00	11.75	.00	1	.75
1230.00	.00326					.00330	4.06			4.22			.00		
3730.00	227.90	5.86	233.76	426.0	7.82	.95	234.71	.00	3.60		5.00	11.75	.00	1	.75
50.00	.00320					.00330	.17			4.25			.00		
3780.00	228.06	5.86	233.92	426.0	7.82	.95	234.87	.00	3.60		5.00	11.75	.00	1	.75
JUNCT STR	.00327					.00310	3.94						.00		
5050.00	232.21	5.88	238.09	399.0	7.32	.83	238.93	.00	3.44		5.00	11.75	.00	1	.75
100.00	.00310					.00290	.29			4.09			.00		
5150.00	232.52	6.03	238.55	399.0	7.32	.83	239.38	.00	3.44		5.00	11.75	.00	1	.75
BRIDGE ENTRANCE													.00		
5150.00	232.52	6.20	238.72	399.0	6.82	.72	239.44	.00	3.30		5.00	11.75	.00	0	.00
TRANS STR	.00300												.00		
5200.00	232.67	5.33	238.00	399.0	15.03	3.51	241.51	.00	5.33		6.00	.00	.00	0	.00
53.56	.00298					.00462	.25			6.00			.00		
5253.56	232.83	5.74	238.57	399.0	14.33	3.19	241.76	.00	5.33		6.00	.00	.00	0	.00
87.21	.00298					.00488	.43			6.00			.00		
5340.77	233.09	6.00	239.09	399.0	14.11	3.09	242.18	.00	5.33		6.00	.00	.00	0	.00
359.23	.00298					.00522	1.88			6.00			.00		
5700.00	234.16	6.82	240.98	399.0	14.11	3.09	244.07	.00	5.33		6.00	.00	.00	0	.00
JUNCT STR	.00302					.00464	.12						.00		
5726.50	234.24	8.31	242.55	349.0	12.34	2.37	244.92	.00	5.06		6.00	.00	.00	0	.00
626.50	.00300					.00402	2.52			6.00			.00		
6353.00	236.12	8.95	245.07	349.0	12.34	2.37	247.44	.00	5.06		6.00	.00	.00	0	.00

.0033

Alternative D: 71st Street Diversion

Paiute Park to 71st St. (osbco2d1.out)

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STORM DRAIN ANALYSIS PLUS

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 Serial Number □□□□□□□□

 Dec 10, 1997  11:23:38

 Input file : osbco2d1.dat
 Output file: osbco2d1.out

                          INPUT FILE LISTING


 T1 STP Papago - 091131.00 CO#2 Alternative D -
 T2 Osborn Road Storm Drain-  71ST ST. to Paiute Park-
 T3 6 HR 10 YR Storm - 58+00 OSB = 70+90 71ST ST
 SO   5800.00 227.92  3      .013                244.39
 R    6400.00 229.36  3      .013                                          1
 JX   6439.00 229.45  3  8   .013    94.0        231.20        90.00
 TS   6449.00 229.48  3      .013
 R    7250.00 231.75  3      .013                                          2
 R    7700.00 239.39  3      .013                                          1
 JX   7741.00 240.09  3 20   .013   109.0        241.09        90.00
 TS   7751.00 240.26  5      .013
 R    8100.00 240.78  5      .013                                          1
 R    8139.55 240.83  5      .013
 R    8179.00 240.88  5      .013                                   5.00
 TS   8179.55 240.89 22      .013
 R    8210.55 240.94 22      .013
 TS   8250.55 241.09  5      .013
 R    8439.44 241.79  5      .013                                   5.00
 R    8700.00 242.76  5      .013                                          1
 JX   8759.00 242.98  5 10   .013   103.0        243.48        90.00
 TS   8774.00 243.04 20      .013
 R    8948.07 243.68 20      .013
 R    9000.00 243.88 20      .013                              34.02
 TS   9025.00 243.97 23      .013
 R    9055.00 244.08 23      .013                              12.73
 TS   9075.00 244.37 20      .013
 R    9160.13 245.58 20      .013                              43.25
 R    9793.42 248.01 20      .013                                          2
 R    9934.27 248.56 20      .013                              90.33
 R    9958.83 248.65 20      .013
 SH                  20                                  SP
                          WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE  PIERS   WIDTH    DIAMETER  WIDTH              DROP

 CD      1    4                      9.50
 CD      2    3     0        .00     5.50    9.50    .00   .00   .00
 CD      3    4                      7.00
 CD      4    4                      5.50
 CD      5    4                      6.00
 CD      7    4                      2.00
 CD      8    4                      4.50
 CD      9    4                      3.50
 CD     10    4                      4.00
 CD     15    4                      3.00
 CD     18    3     0        .00     5.00    9.00    .00   .00   .00
 CD     20    4                      5.00
 CD     21    4                      1.50
 CD     22    3     0        .00     3.00    8.50    .00   .00   .00
 CD     23    3     0        .00     3.50    5.00    .00   .00   .00

                          WATER SURFACE PROFILE - TITLE CARD LISTING
 HEADING LINE NO 1 IS -
                          STP Papago - 091131.00 CO#2 Alternative D -
 HEADING LINE NO 2 IS -
                          Osborn Road Storm Drain-  71ST ST. to Paiute Park-
 HEADING LINE NO 3 IS -
                          6 HR 10 YR Storm - 58+00 OSB = 70+90 71ST ST

                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   1 IS A SYSTEM OUTLET      *       *       *                                    W S ELEV
                    U/S DATA   STATION    INVERT  SECT                                       244.39
                                5800.00   227.92    3
 ELEMENT NO   2 IS A REACH              *       *       *                                                 RADIUS  ANGLE  ANG PT  MAN H
                    U/S DATA   STATION    INVERT  SECT              N                                      .00    .00     .00     1
                                6400.00   229.36    3             .013
 ELEMENT NO   3 IS A JUNCTION           *       *       *       *       *                       *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                6439.00   229.45    3     8     0  .013    94.0      .0   231.20      .00   90.00     .00
 ELEMENT NO   4 IS A TRANSITION         *       *       *
                    U/S DATA   STATION    INVERT  SECT              N
                                6449.00   229.48    3             .013
 ELEMENT NO   5 IS A REACH              *       *       *                                                 RADIUS  ANGLE  ANG PT  MAN H
                    U/S DATA   STATION    INVERT  SECT              N                                      .00    .00     .00     2
                                7250.00   231.75    3             .013
 ELEMENT NO   6 IS A REACH              *       *       *                                                 RADIUS  ANGLE  ANG PT  MAN H
                    U/S DATA   STATION    INVERT  SECT              N                                      .00    .00     .00     1
                                7700.00   239.39    3             .013
 ELEMENT NO   7 IS A JUNCTION           *       *       *       *       *                       *       *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2  N      Q3      Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                7741.00   240.09    3    20     0  .013   109.0      .0   241.09      .00   90.00     .00
```

only .55' long? not buildable

3' x 8.5' box → 6' pipe

```
ELEMENT NO   8 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT              N
                             7751.00  240.26    5              .013
ELEMENT NO   9 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             8100.00  240.78    5              .013                                  .00    .00     .00      1
ELEMENT NO  10 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             8139.55  240.83    5              .013                                  .00    .00     .00      0
ELEMENT NO  11 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             8179.00  240.88    5              .013                                  .00    .00    5.00      0
ELEMENT NO  12 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT              N
                             8179.55  240.89   22              .013

                      WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  13 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             8210.55  240.94   22              .013                                  .00    .00     .00      0
ELEMENT NO  14 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT              N
                             8250.55  241.09    5              .013
ELEMENT NO  15 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             8439.44  241.79    5              .013                                  .00    .00    5.00      0
ELEMENT NO  16 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             8700.00  242.76    5              .013                                  .00    .00     .00      1
ELEMENT NO  17 IS A JUNCTION            *          *     *          *                 *                 *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                             8759.00  242.98    5    10     0  .013   103.0       .0   243.48      .00   90.00     .00
ELEMENT NO  18 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT              N
                             8774.00  243.04   20              .013
ELEMENT NO  19 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             8948.07  243.68   20              .013                                  .00    .00     .00      0
ELEMENT NO  20 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             9000.00  243.88   20              .013                                  .00  34.02     .00      0
ELEMENT NO  21 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT              N
                             9025.00  243.97   23              .013
ELEMENT NO  22 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             9055.00  244.08   23              .013                                  .00  12.73     .00      0
ELEMENT NO  23 IS A TRANSITION          *          *     *
                U/S DATA   STATION    INVERT  SECT              N
                             9075.00  244.37   20              .013
ELEMENT NO  24 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             9160.13  245.58   20              .013                                  .00  43.25     .00      0

                      WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  25 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             9793.42  248.01   20              .013                                  .00    .00     .00      2
ELEMENT NO  26 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             9934.27  248.56   20              .013                                  .00  90.33     .00      0
ELEMENT NO  27 IS A REACH               *          *     *
                U/S DATA   STATION    INVERT  SECT              N                                RADIUS  ANGLE  ANG PT  MAN H
                             9958.83  248.65   20              .013                                  .00    .00     .00      0
ELEMENT NO  28 IS A SYSTEM HEADWORKS                    *                    *
                U/S DATA   STATION    INVERT  SECT                                        W S ELEV
                             9958.83  248.65   20                                             .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
```

WATER SURFACE PROFILE LISTING

STP Papago - 091131.00 CO#2 Alternative D -
Osborn Road Storm Drain- 71ST ST. to Paiute Park-
6 HR 10 YR Storm - 58+00 OSB = 70+90 71ST ST

STATION / L/ELEM	INVERT ELEV / SO	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD / SF AVE	ENERGY GRD.EL. / HF	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL / ZR	NO PIER	AVBPR
5800.00	227.92	16.47	244.39	377.0	9.80	1.49	245.88	.00	5.12		7.00	.00	.00	0	.00
600.00	.00240					.00348	2.09			7.00			.00		
6400.00	229.36	17.19	246.55	377.0	9.80	1.49	248.05	.00	5.12		7.00	.00	.00	0	.00
JUNCT STR	.00231					.00272	.11						.00		
6439.00	229.45	18.51	247.96	283.0	7.35	.84	248.80	.00	4.42		7.00	.00	.00	0	.00
TRANS STR	.00300					.00196	.02						.00		
6449.00	229.48	18.50	247.98	283.0	7.35	.84	248.82	.00	4.42		7.00	.00	.00	0	.00
801.00	.00283					.00196	1.57			4.88			.00		
7250.00	231.75	17.89	249.64	283.0	7.35	.84	250.48	.00	4.42		7.00	.00	.00	0	.00
450.00	.01698					.00196	.88			2.81			.00		
7700.00	239.39	11.17	250.56	283.0	7.35	.84	251.40	.00	4.42		7.00	.00	.00	0	.00
JUNCT STR	.01707					.00135	.06						.00		
7741.00	240.09	11.57	251.66	174.0	4.52	.32	251.98	.00	3.43		7.00	.00	.00	0	.00
TRANS STR	.01700					.00121	.01						.00		
7751.00	240.26	11.20	251.46	174.0	6.15	.59	252.05	.00	3.60		6.00	.00	.00	0	.00
349.00	.00149					.00169	.59			5.38			.00		
8100.00	240.78	11.30	252.08	174.0	6.15	.59	252.67	.00	3.60		6.00	.00	.00	0	.00
39.55	.00126					.00169	.07			6.00			.00		
8139.55	240.83	11.31	252.14	174.0	6.15	.59	252.73	.00	3.60		6.00	.00	.00	0	.00
39.45	.00127					.00169	.07			6.00			.00		
8179.00	240.88	11.34	252.22	174.0	6.15	.59	252.81	.00	3.60		6.00	.00	.00	0	.00
TRANS STR	.01818					.00245	.00						.00		
- 8179.55	240.89	11.21	252.10	174.0	6.89	.74	252.84	.00	2.35		3.00	8.50	.00	0	.00
31.00	.00161					.00321	.10			3.00			.00		
8210.55	240.94	11.26	252.20	174.0	6.89	.74	252.94	.00	2.35		3.00	8.50	.00	0	.00
TRANS STR	.00375					.00245	.10						.00		
8250.55	241.09	11.37	252.46	174.0	6.15	.59	253.05	.00	3.60		6.00	.00	.00	0	.00
188.89	.00371					.00169	.32			3.61			.00		
8439.44	241.79	11.00	252.79	174.0	6.15	.59	253.38	.00	3.60		6.00	.00	.00	0	.00
260.56	.00372					.00169	.44			3.61			.00		
8700.00	242.76	10.50	253.26	174.0	6.15	.59	253.85	.00	3.60		6.00	.00	.00	0	.00
JUNCT STR	.00373					.00098	.06						.00		
8759.00	242.98	11.32	254.30	71.0	2.51	.10	254.40	.00	2.25		6.00	.00	.00	0	.00

TRANS STR	.00400					.00051	.01						.00			
8774.00	243.04	11.18	254.22	71.0	3.62	.20	254.43	.00	2.38		5.00	.00	.00	0	.00	
174.07	.00368					.00074	.13			2.35			.00			
8948.07	243.68	10.67	254.35	71.0	3.62	.20	254.56	.00	2.38		5.00	.00	.00	0	.00	
51.93	.00385					.00074	.04			2.32			.00			
9000.00	243.88	10.54	254.42	71.0	3.62	.20	254.62	.00	2.38		5.00	.00	.00	0	.00	
TRANS STR	.00360					.00101	.03						.00			
9025.00	243.97	10.43	254.40	71.0	4.12	.26	254.66	.00	1.84		3.50	5.00	.00	0	.00	
30.00	.00367					.00127	.04			1.94			.00			
9055.00	244.08	10.37	254.45	71.0	4.12	.26	254.72	.00	1.84		3.50	5.00	.00	0	.00	
TRANS STR	.01450					.00101	.02						.00			
9075.00	244.37	10.17	254.54	71.0	3.62	.20	254.74	.00	2.38		5.00	.00	.00	0	.00	
85.13	.01421					.00074	.06			1.63			.00			
9160.13	245.58	9.05	254.63	71.0	3.62	.20	254.83	.00	2.38		5.00	.00	.00	0	.00	
633.29	.00384					.00074	.47			2.32			.00			
9793.42	248.01	7.11	255.12	71.0	3.62	.20	255.32	.00	2.38		5.00	.00	.00	0	.00	
140.85	.00390					.00074	.10			2.31			.00			
9934.27	248.56	6.71	255.27	71.0	3.62	.20	255.47	.00	2.38		5.00	.00	.00	0	.00	
24.56	.00366					.00074	.02			2.35			.00			
9958.83	248.65	6.64	255.29	71.0	3.62	.20	255.49	.00	2.38		5.00	.00	.00	0	.00	

IBW to Osborn Rd. at 71st St. (osbco2d2.out)

Higher than "old" HW = 254.37. "Existing" design for segment between Marriott Brighton Gardens Basin & Paivite Park should be checked, and cost estimate revised accordingly.

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STORM DRAIN ANALYSIS PLUS

 Original version by Los Angeles County Public Works
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 Version □□□□□
 Serial Number □□□□□□□□

 Nov 24, 1997  16:17:23

 Input file : OSBCO2D2.DAT
 Output file: OSBCO2D2.OUT

                          INPUT FILE LISTING


 T1 STP Papago - 091131.00 CO#2 Alternative C -
 T2 Osborn Road Storm Drain-  IBW to Osborn Rd. along 71ST. ST.
 T3 6 HR 10 YR Storm - 58+00 OSB = 70+90 71ST ST
 SO   1000.00 219.00  4                        224.00
 BX   1000.00 219.00  5
 R    2450.00 221.14  5       .013
 JX   2460.00 221.15  5  2    .013   123.0     221.15        90.00
 TS   2500.00 221.21  5       .013
 R    3780.00 223.08  7       .013
 R    5090.00 225.00  7       .013
 JX   5100.00 225.01  7       .013   229.0     225.01        90.00
 BE   5100.00 225.01  6
 TS   5150.00 225.08  3       .013
 R    5700.00 225.88  3       .013
 R    5840.00 226.09  3       .013                            90.00
 R    7090.00 227.92  3       .013
 SH                   3
                                                              SP
                     WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
  CARD  SECT  CHN  NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
  CODE   NO   TYPE PIERS   WIDTH    DIAMETER  WIDTH              DROP

  CD      1    4                     8.00
  CD      2    4                     4.00
  CD      3    4                     7.00
  CD      4    3     0       .00     5.00   14.75   .00   .00   .00
  CD      5    3     1       .75     5.00   14.75   .00   .00   .00
  CD      6    3     0       .00     5.00   14.75   .00   .00   .00
  CD      7    3     1       .75     5.00   14.75   .00   .00   .00

                     WATER SURFACE PROFILE - TITLE CARD LISTING
 HEADING LINE NO 1 IS -
                       STP Papago - 091131.00 CO#2 Alternative C -
 HEADING LINE NO 2 IS -
                       Osborn Road Storm Drain-  IBW to Osborn Rd. along 71ST. ST.
 HEADING LINE NO 3 IS -
                       6 HR 10 YR Storm - 58+00 OSB = 70+90 71ST ST

                     WATER SURFACE PROFILE - ELEMENT CARD LISTING
  ELEMENT NO   1 IS A SYSTEM OUTLET     *        *      *                                W S ELEV
                   U/S DATA   STATION    INVERT  SECT                                    224.00
                                1000.00  219.00    4
  ELEMENT NO   2 IS A BRIDGE EXIT                    *
                   U/S DATA   STATION    INVERT  SECT
                                1000.00  219.00    5
  ELEMENT NO   3 IS A REACH             *        *      *
                   U/S DATA   STATION    INVERT  SECT              N                          RADIUS  ANGLE  ANG PT  MAN H
                                2450.00  221.14    5             .013                            .00    .00     .00     0
  ELEMENT NO   4 IS A JUNCTION          *        *      *      *                *                *       *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                2460.00  221.15    5     2     0   .013    123.0       .0   221.15      .00  90.00     .00
  ELEMENT NO   5 IS A TRANSITION        *        *      *
                   U/S DATA   STATION    INVERT  SECT              N
                                2500.00  221.21    5             .013
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
  ELEMENT NO   6 IS A REACH             *        *      *
                   U/S DATA   STATION    INVERT  SECT              N                          RADIUS  ANGLE  ANG PT  MAN H
                                3780.00  223.08    7             .013                            .00    .00     .00     0
  ELEMENT NO   7 IS A REACH             *        *      *
                   U/S DATA   STATION    INVERT  SECT              N                          RADIUS  ANGLE  ANG PT  MAN H
                                5090.00  225.00    7             .013                            .00    .00     .00     0
  ELEMENT NO   8 IS A JUNCTION          *        *      *      *                *                *       *
                   U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                                5100.00  225.01    7     0     0   .013    229.0       .0   225.01      .00  90.00     .00
  ELEMENT NO   9 IS A BRIDGE ENTRANCE                    *
                   U/S DATA   STATION    INVERT  SECT              FP
                                5100.00  225.01    6            1.000
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ELEMENT NO  10 IS A TRANSITION          *          *      *
                U/S DATA   STATION    INVERT  SECT              N
                             5150.00  225.08    3              .013
ELEMENT NO  11 IS A REACH               *          *      *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS  ANGLE  ANG PT  MAN H
                             5700.00  225.88    3              .013                             .00    .00     .00      0

                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  12 IS A REACH               *          *      *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS  ANGLE  ANG PT  MAN H
                             5840.00  226.09    3              .013                             .00  90.00     .00      0
ELEMENT NO  13 IS A REACH               *          *      *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS  ANGLE  ANG PT  MAN H
                             7090.00  227.92    3              .013                             .00    .00     .00      0
ELEMENT NO  14 IS A SYSTEM HEADWORKS                   *                      *
                U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                             7090.00  227.92    3                                        .00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

                                   WATER SURFACE PROFILE LISTING
                     STP Papago - 091131.00 CO#2 Alternative C -
                     Osborn Road Storm Drain-  IBW to Osborn Rd. along 71ST. ST.
                     6 HR 10 YR Storm - 58+00 OSB = 70+90 71ST ST
 STATION    INVERT   DEPTH     W.S.        Q       VEL     VEL     ENERGY   SUPER  CRITICAL          HGT/    BASE/    ZL   NO  AVBPR
            ELEV   OF FLOW    ELEV                        HEAD    GRD.EL.  ELEV   DEPTH                DIA     ID NO.        PIER
 L/ELEM      SO                                          SF AVE    HF                     NORM DEPTH                     ZR
*****************************************************************************************************************************
  1000.00   219.00     5.00   224.00    729.0    9.92    1.53   225.53    .00    4.23                5.00    14.75   .00   0    .00
  1000.00   219.00     3.55   222.55    729.0   13.92    3.01   225.56    .00    4.23                5.00    14.75   .00   0    .00
BRIDGE EXIT                                                                                                            .00
  1000.00   219.00     4.38   223.38    729.0   11.88    2.19   225.58    .00    4.38                5.00    14.75   .00   1    .75
     5.41   .00148                                    .00419     .02                      5.00                        .00
  1005.41   219.01     4.60   223.61    729.0   11.32    1.99   225.60    .00    4.38                5.00    14.75   .00   1    .75
    19.42   .00148                                    .00370     .07                      5.00                        .00
  1024.83   219.04     4.82   223.86    729.0   10.80    1.81   225.67    .00    4.38                5.00    14.75   .00   1    .75
    27.52   .00148                                    .00332     .09                      5.00                        .00
  1052.36   219.08     5.00   224.08    729.0   10.42    1.69   225.76    .00    4.38                5.00    14.75   .00   1    .75
  1397.64   .00148                                    .00317    4.43                      5.00                        .00
  2450.00   221.14     5.00   226.14    729.0   10.42    1.69   227.83    .00    4.38                5.00    14.75   .00   1    .75
JUNCT STR   .00100                                    .00336     .03                                                   .00
  2460.00   221.15     6.05   227.20    606.0    8.72    1.18   228.38    .00    3.88                5.00    14.75   .00   1    .75
TRANS STR   .00150                                    .00355     .14                                                   .00
  2500.00   221.21     6.13   227.34    606.0    8.72    1.18   228.53    .00    3.88                5.00    14.75   .00   1    .75
  1280.00   .00146                                    .00355    4.55                      5.00                        .00
  3780.00   223.08     8.81   231.89    606.0    8.72    1.18   233.07    .00    3.88                5.00    14.75   .00   1    .75
  1310.00   .00147                                    .00355    4.65                      5.00                        .00
  5090.00   225.00    11.54   236.54    606.0    8.72    1.18   237.73    .00    3.88                5.00    14.75   .00   1    .75
JUNCT STR   .00100                                    .00246     .02                                                   .00
  5100.00   225.01    13.01   238.02    377.0    5.42     .46   238.47    .00    2.83                5.00    14.75   .00   1    .75
BRIDGE ENTRANCE                                                                                                        .00
  5100.00   225.01    13.08   238.09    377.0    5.13     .41   238.50    .00    2.73                5.00    14.75   .00   0    .00
TRANS STR   .00140                                    .00218     .11                                                   .00
  5150.00   225.08    12.25   237.33    377.0    9.80    1.49   238.82    .00    5.12                7.00      .00   .00   0    .00
   550.00   .00146                                    .00348    1.92                      7.00                        .00
  5700.00   225.88    13.37   239.25    377.0    9.80    1.49   240.74    .00    5.12                7.00      .00   .00   0    .00
   140.00   .00150                                    .00348     .49                      7.00                        .00
  5840.00   226.09    13.94   240.03    377.0    9.80    1.49   241.53    .00    5.12                7.00      .00   .00   0    .00
  1250.00   .00146                                    .00348    4.35                      7.00                        .00
  7090.00   227.92    16.47   244.39    377.0    9.80    1.49   245.88    .00    5.12                7.00      .00   .00   0    .00
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Appendix D: Insituform Brochure

Insituform
Technologies, Inc.

Worldwide Pipeline Rehabilitation

706 East Bell Road, Suite 200
Phoenix, AZ 85022

Tel: (602) 992-9338
Fax: (602) 992-9245

December 3, 1997

Mr. Rob Jeter,
Project Engineer
Kimley Horn Assoc
7600 N 15th Street
Suite 250
Phoenix,, AZ 85020

Re: 72" Storm Drain in Scottsdale

Dear Rob:

Enclosed is literature regarding Insituform Technologies, Inc. and the family of products we offer to the pipeline rehabilitation market.

I discussed your particular application with our estimating team, and got an initial cost of doing this type of project. We are limited, by our installation method, to make our tube carrier no less than a DR 100 dimension ratio. This thickness is much thicker than we actually need for the project, but must be maintained to prevent the tube from separating during the inversion process of getting the tube into place. Based on the formula needed, our pricing will range between $700 and $800 per foot installed. The variance is due to traffic control and cleaning considerations, and would be discovered in the actual project development.

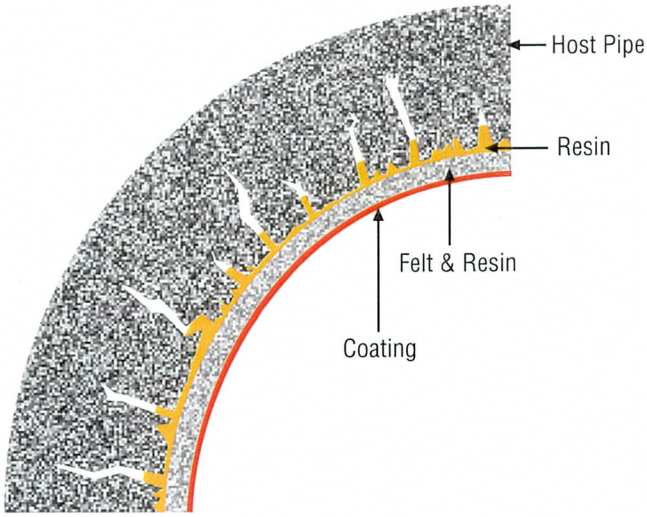
Rob, I hope that this is what you needed to proceed. If I can be of further assistance, please contact me.

Sincerely,

John M. Heisler
Technical Representative

Why Insituform is BETTER:

Our extra resin creates a thicker pipe which fits tightly against the host pipe to maximize buckling resistance and MINIMIZE INFILTRATION.



At Insituform, we consider ***two factors*** when calculating the amount of thermosetting resin we'll need to rehabilitate a sewer pipe.

First, we determine the quantity of resin needed to completely impregnate the felt in our Insituform® tube and create the desired Insituform® pipe thickness. Then, we use our proprietary formula to calculate the amount of ***extra*** resin we'll use to compensate for irregularities in the host pipe.

The second part of the equation is especially important.

We place the extra resin inside the impregnated felt layer of our tube. We can do this because our tube is coated only on the surface that will become the inside of the new pipe. As we install the tube in the host pipe using our Insituform® inversion method, the extra resin moves into the irregularities in the host pipe, creating a tight fit between the Insituform® and host pipes. When cured, this extra resin minimizes tracking and infiltration, while the tight fit maximizes buckling resistance. Independent tests confirm it.

Tests also show that the walls of Insituform® pipes are thicker, on average, than the felt because of the extra resin.

Our close attention to the details associated with resin quantities is just one reason why pipes rehabilitated with the Insituform® process have a proven 50-year minimum design life. It's also one of ***dozens*** of reasons why Insituform is the world's leader in pipeline rehabilitation.

For more information, please call us at **1-800-234-2992**.

Insituform
Technologies,® Inc.

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