Proposed Rezoning of

Lot 36 in DP28024 and Lot 105 in DP 1210084
Turner Road, Currans Hill

Stormwater Management Report

Prepared by

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For

Turner Road Developments & Broome

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1. Introduction

JMD has been retained by Turner Road Developments and Broome to prepare a stormwater management report summarising drainage concept and stormwater management in support of a proposed rezoning of Lots 36, in DP28024 and Lot 105 in DP 1210084, Turner Road, Currans Hill.

Turner Road Developments is the owner of Lot 105 in DP 1210084 while Broome is the owner of Lot 36 in DP 28024. It is proposed that all three (3) lots, known as the "Site" are developed together in a number of stages.

Figure 1-1: Locality Sketch of the Site

The site will ultimately be developed for residential housing to the maximum extent permitted by the planning for the site. The rezoning application aims to realign the zoning of the site to be consistent with the proposed trunk drainage facilities for the ultimate development. It is noted that the first stages of the development are not affected by the rezoning and are being developed separately under DA528/2008 & DA525/2017.

While the catchment area of the existing watercourse extending through the site conveys runoff from multiple land holdings, Council have not developed a s94 works concept for the drainage within the site. In the absence of the support of a s94 funded works plan, JMD have developed a trunk drainage scheme for the catchment which will cater for the control of stormwater off the entire catchment and our clients have commenced negotiations with the adjoining land owners for the equitable sharing of development costs associated with the trunk drainage works.

Ultimately it is proposed that a formalised drainage channel trunk drainage system which is compliant with the requirements of the Camden Council Design Specification be constructed through the site.

The current proposal is for the rezoning of the portion of the site surrounding the existing land zoned E2 and its realignment. JMD have established a trunk drainage system that caters for the entire catchment and therefore this rezoning application aims to adjust the boundaries in accordance with the ultimate drainage concept.

This report documents the proposed ultimate trunk drainage components and the design principles used to develop the scheme which supports this application.

It is proposed that the new drainage corridor will be dedicated to council.

2. Background

2.1. Site Description

The site is approximately 11.59ha in area and is located on the northern side of Turner Road opposite the intersection of William Mannix Avenue. The site fronts Turner Road (running East-West) and currently has three zonings as described and detailed in Figure 1-1 below:

- the north western corner of the lot is zoned "E4 – Environmental Living";
- the central portion of the site contains an existing channel and has therefore been zoned "E2 – Environmental Conservation";
- the remaining portion of the site is zoned "R1 – General Residential";

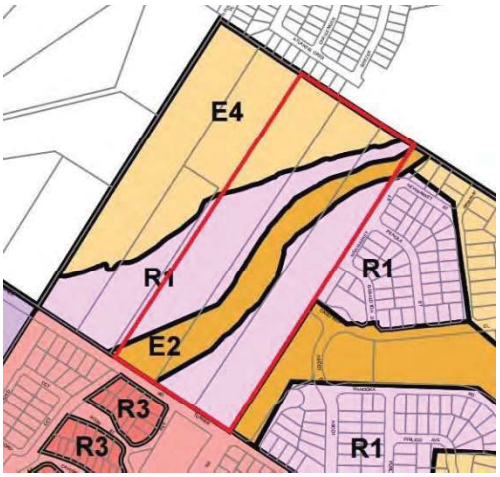


Figure 2-1: Current Zoning

This rezoning application is being prepared for the site which will define the actual limits of the area zoned "E2 – Environmental Conservation".

2.2. Previous Applications

A portion of the site has already been subdivided under DA582/2008, this subdivision created lot 105 in DP1210084.

DA525/2017, approved by Camden Council 28 November 2017 affects all lots and will result in the subdivision of those lots in two stages to create 40 residential lots and 2 residue lots. Stage 1 of this DA is currently under construction.

2.3. Existing Conditions

The subject site generally consisted of open pasture with little tree cover of which much has recently been subject to earthworks recently CC approved for DA525/2017.

A large dwelling currently exists in the northern end of Lot 36 in DP 28024. Surrounding this dwelling is a tennis court, sheds and a paved driveway / court area. It is proposed that this dwelling and the surrounding structures, elements etc. will be demolished as part of the previous application (DA525/2017).

The site is affected by an informal gully system which has been significantly altered from a natural creek system to contain a number of dams as a result of past pasture usage of the site. This gully conveys the flows from a catchment area upstream of the site (to the north) measuring some 20.4ha in area. This upstream catchment has in recent years, been developed as part of the Gregory Hills development area and it is understood that the developed flows off that catchment are being collected in a detention system on the upstream property which retards the stormwater flows off the developed catchment such that the peak stormwater flow is reduced to the pre-developed conditions. The final design details of that detention system were not known at the time of the preparation of this report and so for the purposes of this assessment, it has been assumed that the upstream catchment remains in an undeveloped condition.

In addition, to the upstream catchment from Gregory Hills there are two other external catchments that also drain on to the site. These being a portion of the Manooka Valley subdivision east of the subject site and a portion of the existing rural land west of the subject site. While the western external catchment area contains minor rural dwellings and associated outbuildings, the catchment area to the channel remains largely undeveloped. All flow from this catchment area to the subject site can be considered overland sheet flow.

The eastern external catchment area is different in the fact that it has recently been developed into a residential subdivision. Prior to its development in 2012 it had similar catchment properties as the subject site i.e. rural open pasture. Following the Manooka Valley development, the developed catchment area is captured by street drainage and piped to a raingarden/OSD basin before being discharged into the subject site via a 525mm pipe at ground level.

Downstream of the site, the central creek system discharges to an existing drainage channel which has been constructed on the other side of Turner Road. Water discharges under Turner Road via a number of 600mm high concrete culverts which total 5.4m wide under Turner Road.

The extent of the catchment considered by this study is detailed in the Catchment Plans included with the Concept Engineering Plans located in Annexure B.

2.4. Drainage Concepts

Camden Council have developed a Master Drainage Plan for most development areas in the LGA and then supported that Plan with developer contributions levied pursuant to the Camden s94 Contributions Plan which provides for a level of equity among the properties to be developed in a locality. The s94 Plan provides a vehicle for the funding of local infrastructure required to be constructed as a result of the development of the locality.

Unfortunately the Camden Contributions Plan does not consider the drainage requirements for the development of this catchment. There is therefore no official mechanism for the funding of the trunk drainage works required to be constructed within this site.

JMD have completed a review of the catchment area and assessed the extent of works required to produce a drainage scheme for the site which is compliant with the Camden Council design Specification. These works include the construction of a central channel, road culverts, rain garden and stormwater detention basin together with trunk stormwater pipes to convey flows from upstream properties to the central channel system.

For the purposes of that 'whole of catchment' investigation, it has been assumed that the south-eastern portion of the western external catchment (currently known as Lots 351 and 352 in DP809159 and Lot 34 in DP28024) will be developed for residential development and that the stormwater flows off that land will be directed to the central creek system within the subject site via the future road drainage system. These catchment areas are identified as Catch 1 and Catch 2 in the "Catchment Plan for the Ultimate Development" Drawing. The north-western corner of these parcels is severed from the local catchment by the natural topography of the site. It has been assumed that this northern catchment will drain away from the subject site towards the western Turner Road Precinct drainage system.

The current rezoning proposal seeks to adjust the existing zoning boundaries to allow the Ultimate Drainage Concept described in the catchment plans to be developed.

3. Stormwater Quantity Issues

It is understood that all development within the catchment area will need to provide adequate on-site detention such that the discharge from the developed site is less than that which occurs under current conditions.

3.1. Existing Conditions

It is noted that the XP-Rafts model for the existing catchment has been set-up as a snapshot of what the existing flows were prior to the development of the Manooka Valley subdivision and corresponding Raingarden / OSD basin. This modelling also assumes that the Stage 1 & 2 development (DA 525/2017) hasn't been developed yet. Sheet 5 of the concept engineering plans describes the existing catchment areas and flows. These are also detailed below.

Table 3-1: Existing Catchment Details

EXISTING CATCHMENT AREA	Area (ha)	% Impervious	Area Impervious (ha)	Area Pervious (ha)	All areas added?
A	7.293	0%	0.0	7.293	Y
B	4.741	9.2%	0.436	4.305	Y
MV**	3.54	0%	0.0	3.54	Y
C	3.596	0%	0.0	3.596	Y
D	0.968	0%	0.0	0.968	Y
E	0.973	0%	0.0	0.973	Y
U/S	20.4	0%	0.0	20.4	Y
TURNER RD***	41.511		0.436	41.075	Y

An XP-Rafts model for the site under current conditions was constructed to establish the base line peak flows off the site against which the developed flows would be compared, this is described in the "Catchment Plan under Existing Conditions". This XP-Rafts file was then adapted to reflect the developed conditions. Loss factors for the models were adopted from Council's design code as listed in Table 3-2 below:-

Table 3-2: XP-Rafts Loss Factors

Condition	Loss Factor
Pervious Initial Loss	10mm
Pervious Continuing Loss	3mm/hr
Impervious Loss	1.5mm
Impervious Continuing Loss	0mm/hr
'B' Multiplier	1.0

Roughness factors adopted for the models were 0.06 for existing grassed pervious surfaces, 0.03 for developed grassed pervious surfaces and 0.013 for all impervious surfaces. Each catchment was divided into the different development zones and assigned the appropriate % impervious areas as per Table 3-3 below.

Table 3-3: Catchment Area Summary

Catchment type	% Impervious
Residential	75%
Open space areas	5%
Drainage reserve	0%
External Catchment	0%

A summary of the existing peak flows extending through the Turner Road culverts is detailed in Table 3-4.

Table 3-4: Summary of XP-Rafts Modelling – Existing Conditions

	STORM EVENT					
FLOW IN TURNER ROAD CULVERT***	2yr peak flow (cum/s)*	5yr peak flow (cum/s)*	10yr peak flow (cum/s)*	20yr peak flow (cum/s)*	50yr peak flow (cum/s)*	100yr peak flow (cum/s)*
EXISTING CATCHMENT	2.224	3.666	4.520	5.740	6.968	7.907

3.2. Ultimate Conditions

JMD have prepared the ultimate model for the site using the XP-Rafts computer program. For the purposes of this study, the site has been divided into a number of catchments as detailed in the Catchment Plan for the Ultimate Development (Sheet 6 of the concept engineering plans in Annexure B). The catchment plan details an indicative ultimate development layout based on this rezoning application being lodged with Council. The Catchment Plan for the Ultimate Development has been prepared to provide for the likely maximum development potential on the site and hence the expected "worst case" stormwater outcomes. The layout in the catchment plan is not intended to "fix" any development rights for the site.

In the "Catchment Plan for the Ultimate Development", Catchments 1 and 2 denote the future development sites to the west of the site. Catchments 3 to 6 cover the proposed development site. Each catchment area has been divided into residential and drainage reserve areas with residential areas assumed to be 75% impervious and drainage reserve areas assumed to be 0% impervious. The upstream (U/S) and Manooka Valley catchments (MV) have been included as detailed in Section 2.4 above.

The same loss factors and percentage impervious attributes detailed in Tables 3-2 and 3-3 were adopted for the Ultimate Development model.

Table 3-5: Ultimate Catchment Details

DEVELOPED CATCHMENT AREA	Area (ha)	% Imperv	Area Imperv (ha)	Area Pervious (ha)	All areas added?
1	3.575	75%	2.681	0.894	Y
2	2.403	75%	1.802	0.601	Y
3	1.586	75%	1.190	0.396	Y
4	4.173	75%	3.130	1.043	Y
MV**	3.54	75%	2.655	0.885	Y
5	2.487	75%	1.865	0.622	Y
6	1.681	75%	1.261	0.420	Y
U/S	20.4	0%	0.0	20.4	Y
CULVERT	0.780	0%	0.0	0.780	Y
TURNER RD***	0.882	0%	0.0	0.882	Y
SUM	41.507		14.584	26.923	Y

It is noted that the minor differences in total area is a result of rounding areas. Details of the XP-Rafts modelling and results are detailed in Annexure C of this report and summarised in Table 3-6 below.

Table 3-6: Summary of XP-Rafts Modelling

	STORM EVENT					
FLOW IN TURNER ROAD CULVERT***	Dev 2yr peak flow (cum/s)*	Dev 5yr peak flow (cum/s)*	Dev 10yr peak flow (cum/s)*	Dev 20yr peak flow (cum/s)*	Dev 50yr peak flow (cum/s)*	Dev 100yr peak flow (cum/s)*
EXISTING CATCHMENT	2.224	3.666	4.520	5.740	6.968	7.907
ULTIMATE DEVELOPED CATCHMENT	2.121	2.856	3.484	4.804	6.092	7.360
PONDING LEVEL IN TURNER ROAD OSD BASIN	94.287	94.793	94.95	95.124	95.255	95.37

The Ultimate Developed Scenario has been modelled with an on-line detention basin located at the downstream end of the drainage channel immediately upstream of Turner Road. The basin proposed represents a formalisation and widening of the existing channel to form an open basin with flat floor and banks sloping at 1 in 4 (V:H). Where the floor of the basin is not affected by the proposed rain garden, the bed is graded to the primary outlet at 1%. A low mound will be constructed across the base of the basin area immediately downstream of the proposed rain garden to provide the required extended detention in the rain garden. The rain garden and basin walls will be vegetated to improve performance of the rain garden and to reduce maintenance of the banks.

The modelling was carried out for multiple storm durations ranging from 20 minutes to 3 hours for 1 in 2 year Average Recurrence Interval (ARI), 1 in 5 year ARI, 1 in 10 year ARI, 1 in 20 year ARI, 1 in 50 year ARI and 1 in 100 year ARI storm events. The 2 hour event was found to be the critical duration for most models. Flows out of the basin are proposed to be controlled by the construction of discharge control outlets in a retaining wall (control wall) to be constructed immediately upstream of the Turner Road Weir. The proposed control wall and outlet are detailed in the concept engineering plans in Annexure B. As mentioned above, the proposed basin for the ultimate

development includes a rain garden bed in the base to manage water quality issues for the catchment, details regarding the raingarden are included in chapter 4 below.

The proposed depth of ponding in the basin in peak 1 in 100 year ARI storm conditions will be 2.07m and not cross the shared pathway that is to be located along the outer edge of the riparian corridor. Council's design code requires all basins with a ponding depth in excess of 0.3m to be fenced for safety of the public and so such fencing will be provided to the basin. The proposed 1 in 4 embankment batters then, are not therefore considered to be a significant risk. The basin will be provided with a sealed vehicular access ramp off Turner Road which grades at about 13% and so will provide a pedestrian traversable exit point should such be required during flooding.

4. Stormwater Quality Issues

The site is located within the Currans Hill Release Area and as such developments are required to comply with the requirements of Camden Council's Engineering Design Specification. This document has been in existence for some time and as such only specifies generic water quality objectives. Previous discussions with the officers of Camden Council have revealed that Council acknowledge that the requirements of the Engineering Design Specification are outdated and new developments are now required to satisfy the water quality objectives contained in the Oran Park DCP which are detailed in Table 4-1 below.

Table 4-1: Oran Park DCP Water Quality Objectives

	Water Quality (% reduction in pollutant loads)			
	Gross Pollutants	Total Suspended Solids (TSS)	Total Phosphorus (TP)	Total Nitrogen (TN)
Stormwater Management Objective	90	85	65	45

The objectives prescribed represent the reduction in pollutant loads in the developed condition required to be met by a particular development. In accordance with the current requirements of Camden Council, the water quality assessment has been completed by JMD using the MUSIC computer program (version 6.1 build 0.767).

Similarly to the water quantity modelling described in Section 4 of this report, a MUSIC model for each catchment was created adopting the same % impervious details described in Table 3-3. The outputs from these models were then adopted as the base line data against which the effectiveness of the proposed treatment measures would be measured.

Although the project does not lie within an area controlled by Sydney Catchment Authority, that Agency has invested a significant amount of time and effort into the development and use of the MUSIC program and their manual titled "Using MUSIC in Sydney's Drinking Water Catchment" (The SCA Manual) provides a detailed explanation of the concepts involved in the use of the program. The source and treatment nodes for this assessment have been set up in accordance with the recommendations of the SCA Manual.

The residential source nodes have been established using the % impervious data described above and pollutant loads have been input as described in the SCA Manual. It has been assumed that each dwelling will be supplied with a rainwater collection tank with the collected water being reused for toilet, laundry and hot water (309kL/yr total usage).

4.1. Water Quality for Ultimate Development Conditions

It has been assumed that ultimately, all stormwater outlets to the central drainage channel will be screened via a GPT constructed at the outlet prior to discharge and that low flows in the channel will pass through a rain garden to be constructed in the base of the proposed detention basin.

A base model of the developed site with no treatment measures was created to establish the control data. The required treatment objectives were then applied to this control data and the size of the rain garden was adjusted until the resultant pollutant loads from the developed site with treatment

met the target loads. The model indicates that the rain garden for this site is required to be 945sqm in area.

Table 4-2: Music Modelling Results

Data	No Treatment	Required % reductions	Target mean annual loads	Treatment - tanks, GPT & Raingarden (945sqm)	% reduction compared to no treatment
Flow (ML/yr)	110			88.4	
Peak Flow (m3/s)	4.76			4.32	
Total Suspended Solids (kg/yr)	1.94E+04	85%	2910	2.75E+03	85.8%
Total Phosphorus (kg/yr)	36.1	65%	12.64	11.9	67.0%
Total Nitrogen (kg/yr)	238	45%	130.90	98.7	58.5%
Gross Pollutants (kg/yr)	3.15E+03	90%	315.00	2.48E+01	99.2%

For the purposes of this assessment, the treatment nodes have been established as follows:-

GPT – Assumed to be Humegard GPT with following treatment capacities as published by the manufacturer.

TSS 41% removal
TP 34% removal
TN 24% removal
GP 90% removal

If at the time of detailed design it is found that a Humegard GPT doesn't meet these requirements, an Ecosol GPT unit will be used as the treatment capacities published by this manufacturer exceed the capacities used in the music modelling.

Pollutant	Removal Rate (%)	Entered Input Value	Entered Output Value
Total Suspended Solids (20 - 2000µm)	55	1000	450
Total Phosphorus	40	1000	600
Total Nitrogen	40	1000	600
Gross Pollutants (>2000µm)	99	1000	10
Heavy Metals	25	n/a	n/a
Total Petroleum/Hydrocarbons (Dry weather spill situation)	99	n/a	n/a

Table 6 - Ecosol™ Gross Pollutant Trap – High Flow, input and output values

The rain garden adopted for the site has an extended detention depth of 0.3m with 1 in 4 banks, a media (sandy loam) bed area of 945sqm and depth of 0.4m of media (min hydraulic conductivity of 200mm/hr (modelled as 100mm/hr to allow for degradation of media over time) and a 200mm deep submerged zone with 5% by volume of hardwood chip.

The MUSIC model indicates that the combination of the rain water tanks, gross pollutant traps and rain garden will combine to result in pollutant loads from the site complying with the target objectives.

5. Main Channel Hydraulics – Ultimate Development Conditions

5.1. Ultimate Development

The concept design of the main channel within the site has been modelled using the HEC-Ras hydraulic program. The channel is linear in nature and so the use of this one-dimensional hydraulic program produced by the US Army Corp is considered appropriate.

The channel has been modelled using the flows obtained from the XP-Rafts model and an assumed channel profile based on the site survey data. The site is quite steep in hydraulic terms and it has been determined that a number of drop structures will need to be incorporated in the channel in order to meet the following requirements detailed within Camden Council's Engineering Design Specification for the channel.

Velocity	<2m/s
Freeboard	0.5m to top of channel
Froude No	<0.8
Min Cross fall	1%

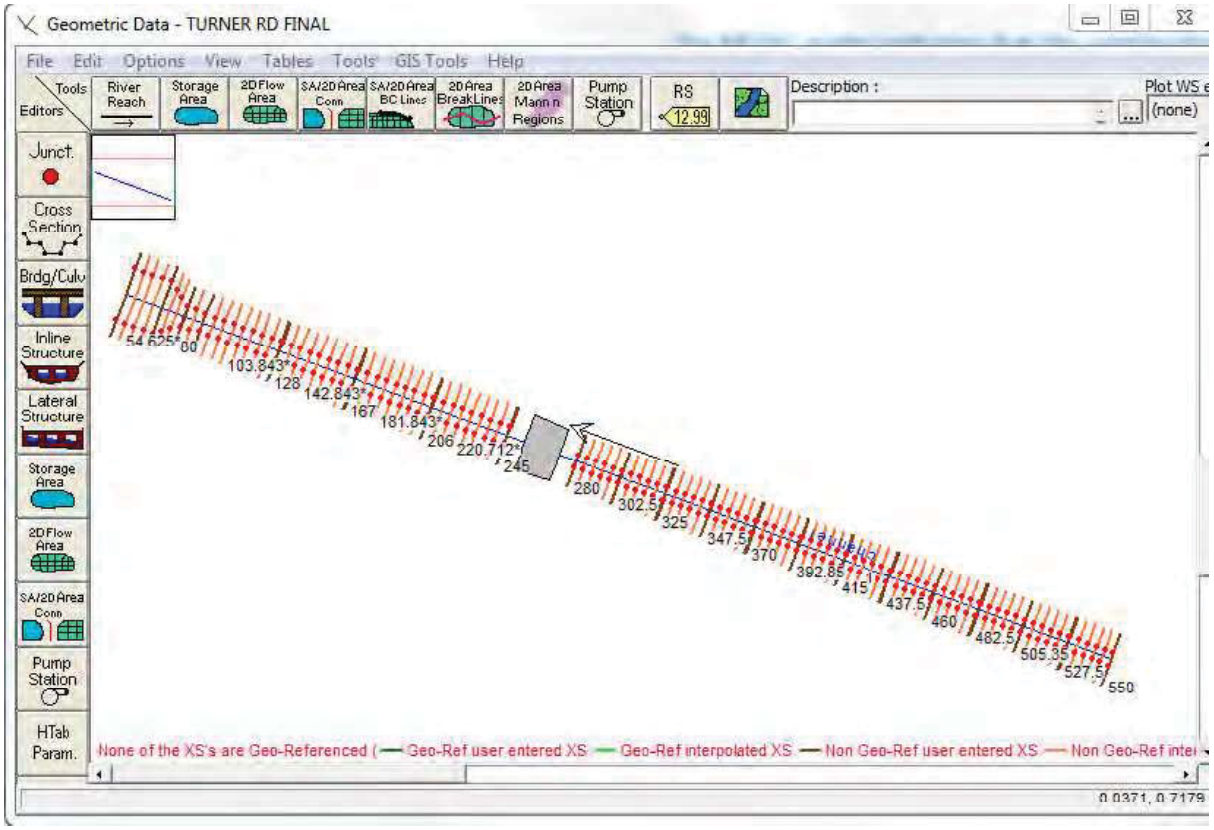


Figure 5-1: HEC-Ras model of central creek system

Figure 5-1 depicts the final model adopted for the channel. The river stations used in the model reflect the central channel chainages depicted in the JMD plans.

The Council requirement for the Froude Number to be less than 0.8 resulted in the need to reduce the channel bed slope to below 0.75%. The natural grade on the catchment is somewhat steeper than this and so the inclusions of regular stacked rock drop structures in the channel bed have been included to lower this effect. Below Road No. 1 these rock drop structures will be 0.77m high and

spaced approximately 39m centres and north of the Road No.2 culverts, the drop structures will be 0.75m high and spaced on average at 22.9m centres.

The central channel north of the Road No. 2 culverts will be 8m wide (4m each side of the centreline) with 1 in 10 batters for 1.5m to create the main channel. This centre part of the channel will be rock lined with some vegetation. The outer banks (each 7.5m wide) vary from 5 – 20% due to the need to transition between successive drop structures and will contain some sandstone block retaining walls as required. A shared pedestrian pathway is proposed to be located along one of the sides to provide access from Turner Road to Gregory Hills.

The central channel south of Road No. 2 will also consist of an 8m wide main channel with 1 in 10 batters for 1.5m. The outer banks of the channel (each 9m wide) will vary in slope from 5% to 20% due to the need to transition between successive drop structures. Like the northern section a shared pedestrian pathway is proposed to be located along one of the sides to provide access from Turner Road to Gregory Hills and retaining walls will be used as required.

It is understood that the channel will be planted out as riparian land. A roughness factor of 0.05 was adopted for the central channel as it will also be rock lined and 0.05 for the outer banks as it will be more vegetated.

The Road No. 2 culvert has been modelled as twin 3.6m wide by 1.2m high precast concrete box culverts. The design 1 in 100 year ARI flow at the culvert is 6.61cumecs resulting in an average flow per m width of culvert of 0.91m^3/s. Using these inputs in the nomogram provided in the manual titled “Hydraulics of Precast Concrete Conduits” published by the Concrete Pipe Association of Australasia, the estimated depth of flow through the culverts is approximately 0.66m. Adopting an internal height of the culvert of 1.20m, the freeboard to the soffit of the culvert is calculated as being 1.20-0.66 = 0.54m. Therefore, the 1.2m high culverts provide at least the 0.5m freeboard required by Council.

In accordance with Council’s design code requirement the culverts are also to be assessed for a 50% blockage factor in the 1% AEP (1 in 100 Year ARI) flow. As such, if we assume that one of the culverts is fully blocked (i.e. 50% blockage factor) and the entire flow is conveyed through only one of the culverts, the resulting average flow per m width of culvert is 1.84m^2/s. Using these inputs in the nomogram provided in the manual titled “Hydraulics of Precast Concrete Conduits” published by the Concrete Pipe Association of Australasia, the estimated depth of flow through the culverts is approximately 1.09m. Adopting an internal height of the culvert of 1.20m, the freeboard to the soffit of the culvert is calculated as being 1.20-1.09 = 0.11m. Therefore, the 1.2m high culverts still provide a 0.11m freeboard when a 50% blockage factor is applied to the culverts. This water level equates to RL 99.27 + 1.09m = RL 100.36. The top of water level in the 1:100yr ARI storm event under a 50% blockage factor is 1.10m below the Road No.2 centreline level which has a level of RL101.46.

The existing culverts under Turner Road will need to be amplified to provide adequate capacity in accordance with the requirements of Council’s code. The total catchment flow under current conditions has been estimated at 7.907cumecs and under the ultimate developed conditions the peak flow is estimated at 7.36cumecs. It is understood that Council has engaged Calibre Consulting to complete the design for the Turner Road upgrades. Council has provided a preliminary copy of these plans which identified that the existing Turner Road culverts will be replaced with twin 2.4m x 1.8m Reinforced Concrete Box Culverts resulting in an average flow per m width of culvert of 1.53m^3/s (ultimate developed scenario). Using these inputs in the nomogram provided in the manual titled “Hydraulics of Precast Concrete Conduits” published by the Concrete Pipe Association of Australasia, the estimated depth of flow through the culverts is approximately 0.51m. Adopting an

internal height of the culvert of 1.80m, the freeboard to the soffit of the culvert is calculated as being 1.80-0.51 = 1.29m. The depth of the culvert is therefore more than three times the depth of flow.

These culverts therefore satisfy the 0.5m freeboard requirement and based on the argument mounted for the Road No.1 culvert above they also satisfy the 50% blockage issue as well.

The design peak flow rate through the Turner Road culverts in the 1 in 5 year event is 2.856cumecs in the Ultimate Development scenario. The average flow per metre width of culvert of 0.595m^3/s and using these inputs in the nomogram provided in the manual titled "Hydraulics of Precast Concrete Conduits" published by the Concrete Pipe Association of Australasia, the estimated depth of flow through the culverts is less than 0.3m.

With an invert of RL93.00, the top water level at the culvert in the peak 1 in 5 year event is less than 93.30. The primary orifice for the detention basin has an invert level of 93.3 and a centreline RL93.50. Thus the tail water level in the proposed Turner Road culverts do not impact on the operation of the discharge control structure for the basin.

The results from the Hec-Ras modelling is included in Appendix E. Included is a profile section of the channel as well as the cross-sections and table of results. The channel has been modelled under the assumption that the flows from catchments 2 and 4 join the channel upstream of the culverts while catchment 6 is diverted into the channel south of the culverts.

6. Erosion and sediment control

During construction of the proposed road and drainage works, sufficient measures will be put in place to ensure that the site is not subject to significant erosion and that the adjoining creek systems are not impacted by the earthworks. All required measures will be installed prior to commencement of works and maintained during construction to ensure their effectiveness. Certain measures will also be implemented as required during the works.

As part of the erosion and sediment control measures it is proposed that a temporary sediment basin be constructed for duration of works. For this purpose, the proposed rain garden structure will be excavated and used as sediment basins then once the upstream catchments have been stabilised, the basins will be emptied and converted to rain gardens.

It is possible that one of the existing dams and existing raingardens constructed under previous DA's to and treat stormwater during construction. All clean water is to be pumped/piped around the construction site to the existing culverts under Turner Road. It is noted that when required, any sediment basins collecting "dirty" water will be flocculated before any basins are pumped dry to be ready to capture the flows from the next storm event.

Post downstream development, mounds / diversion drains will be constructed to divert all dirty water to the raingarden sediment basins. As required, these basins will be flocculated and pumped dry to be ready for the next storm event. A clean water basin will be constructed upstream of the culvert works. All "clean" water from this basin will pumped around the work zone into an existing stabilised section of the downstream gully.

All measures will be maintained on site until the disturbed surfaces have been stabilised to the satisfaction of Camden Council. Once stable, the basins will be removed and the areas affected by the sediment basins restored to design levels.

7. Conclusions

JMD has been retained by Turner Road Developments and Broome to prepare an engineering report summarising road design, drainage concept and stormwater management in support of the proposed rezoning of Lots 36 in DP28024 and Lot 105 in DP1210084, Turner Road, Currans Hill.

The current proposal is for the rezoning of the subject site only. Ultimately, it is proposed that the site be fully developed in accordance with the planning for the site; however, the residential layout detailed in the catchment plans is not intended to "fix" any development rights for the site. This report details the proposed drainage concepts, analysis and/or design of the ultimate system central channel, OSD basin and raingarden and supports the rezoning proposal.

The site is currently affected by a gully system which conveys stormwater flows from a number of external catchments outside the subject development land. It is proposed that the existing gully be replaced with a constructed channel trunk drainage system located within the adjusted E2 zoning boundaries and compliant with Council's Design Code requirements.

The construction of this central channel involves significant costs which do not form the part of any s94 Contributions Plan. In the absence of any formal funding arrangement, the developers are endeavouring to negotiate a private funding arrangement between the parties which will benefit from the ultimate drainage system. This arrangement is yet to be finalised.

The total catchment area drained by the creek is approx. 41.51ha in area with the majority of this catchment being external to the subject site. The external catchment to the west of the site will ultimately be developed for residential and drain to the drainage system within the subject site. This land has been allowed for in the proposed design of the central channel, OSD basin and raingarden assuming that the funding arrangement will be finalised. The site is also affected by runoff from an external catchment to the north which has been assessed as being 20.4ha in area and an existing catchment to the east which has been assessed as being 3.54ha in area. As these sites are already developed and have their own OSD systems it is assumed that the existing OSD basins reduce flows back to pre-development conditions.

The stormwater runoff from the site has been modelled by JMD using the XP-Rafts computer program. Various storm durations in the 1 in 2 year ARI, 1 in 5 year ARI, 1 in 10 year ARI, 1 in 20 year ARI, 1 in 50 year ARI and 1 in 100 year ARI storm events were analysed. The modelling results which are detailed in the annexures and summarised in Chapter 3 of this report demonstrate that in the ultimate developed conditions the proposed detention basin will operate to satisfy Council's on-site detention requirements. Peak flows from the developed site in all ARI events are reduced to less than that which occurs under current site conditions.

The ultimate development of the site will require stormwater flows discharging from the site to be treated and enhanced to ensure that stormwater meets current water quality targets. The target objectives defined in Council's design code are outdated and so the water quality measures to be incorporated into the development have been designed to meet the water quality objectives outlined in the more recent Oran Park DCP. The proposed water quality measures including the proposed raingarden for the proposed trunk drainage channel meet council's requirements.

The modelling of water quality measures has been undertaken using the MUSIC computer program. It has been determined that the incorporation of 2500L water tanks and water reuse for toilet, laundry and hot water on each lot, gross pollutant traps on all stormwater discharge points to the central drainage channel and construction of a raingarden complying with the specification in

Chapter 4 of this report with a minimum bed area of 945m² will ensure that the water quality outcomes are satisfied for the ultimate development conditions.

Chapter 5 of this report documents the channel design and channel flow as modelled in HEC-RAS. All flows meet Council's specifications and the Froude number is reduced to below 0.8 for main portions of the channel.

It is proposed that the riparian corridor contain a rock lined channel and be landscaped appropriately to make it maintenance free but still enhance the environmental aspects of the channel and achieve a good outcome for the overall area.

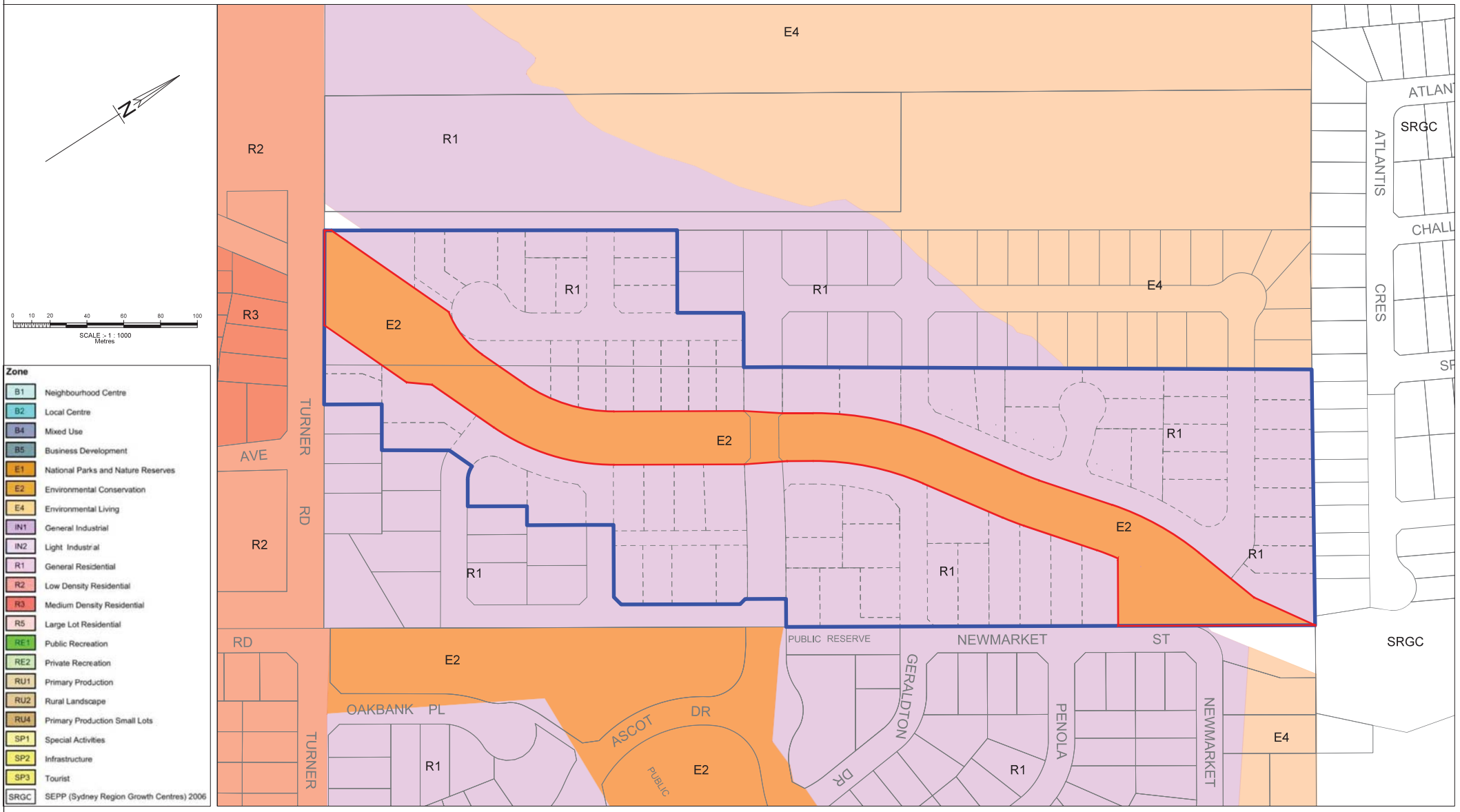
The above measures will act to ensure that the proposed development is compliant with the stormwater outcome objectives identified in the planning documents for the site.

Yours faithfully

.....

Terry Hams
BE (Civil) MIE Aust (409949)
CP Eng

Annexure A – Preliminary Zoning Plan prepared by JMD Ref: 14194E13 dated 16th October 2019 - Issue C



Issue	App	Date	Description
C	S.G.	16-10-2019	LOTS AND SHARED PATHWAYS AMENDED - LOT SIZING PLANS REMOVED
B	S.G.	20-09-2019	REZONING PLANS WITH UPDATED LOTS & DRAINAGE RESERVE BOUNDARY
A	T.H.	22-08-2018	REZONING PLANS COMBINED FOR PLANNING PROPOSAL

Client: TURNER ROAD ROAD DEVELOPMENTS P/L
Designed by : T.H.
Date of Drawing : 22-08-2018
Ratio (A1) : 1:2000

Datum : AHD
Origin of Levels :
Date of Survey :

JMD Development Consultants

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email: admin@jmd.com.au

Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

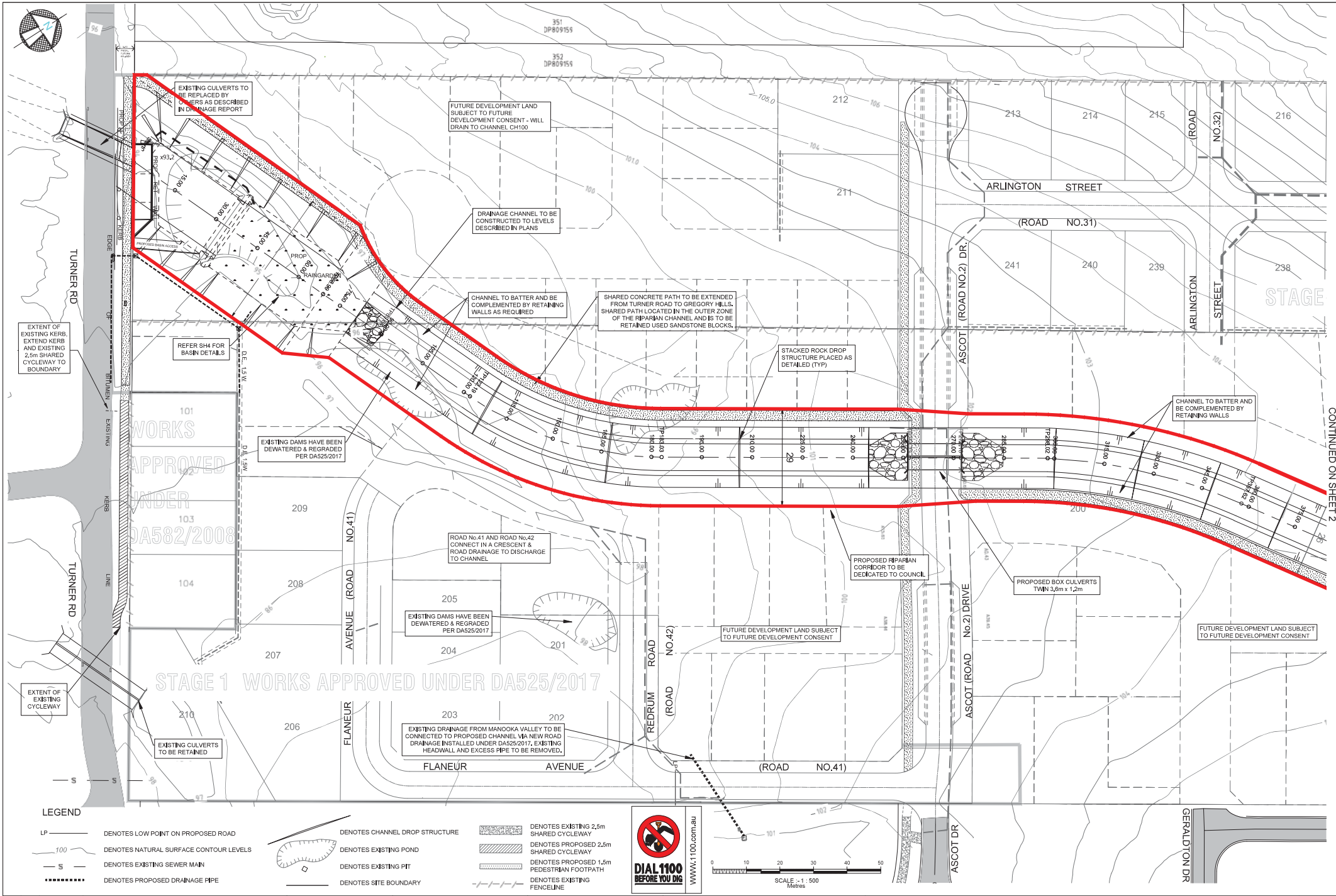
Sheet 1 of 4 sheets

TURNER ROAD PROPOSED ZONING PLAN

Ref: 14194E13

Locality : CURRANS HILL | L.G.A. : CAMDEN | CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMM\ENG\CAD\E13 - PLANNING PROPOSAL\ZONING PLAN

Annexure B – Concept Engineering Plans by JMD Ref: 14194E8 – dated 29-10-2019 – Issue B



Issue	App	Date	Description
B	S.G.	29-10-2019	UPDATED PER AMENDMENTS TO RIPARIAN CHANNEL
A	T.H.	06-12-2017	ORIGINAL ISSUE

Client: TURNER ROAD DEVELOPMENT

Designed by : T.H.

Date of Drawing : 06-12-2017

Ratio (A1) : 1:500

Datum : AHD

Origin of Levels : PM46777 - RL103.276

Date of Survey : 23-09-2016

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email: admin@jmd.com.au

Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

CONCEPT CIVIL PLAN
ULTIMATE DRAINAGE CONCEPT PART A

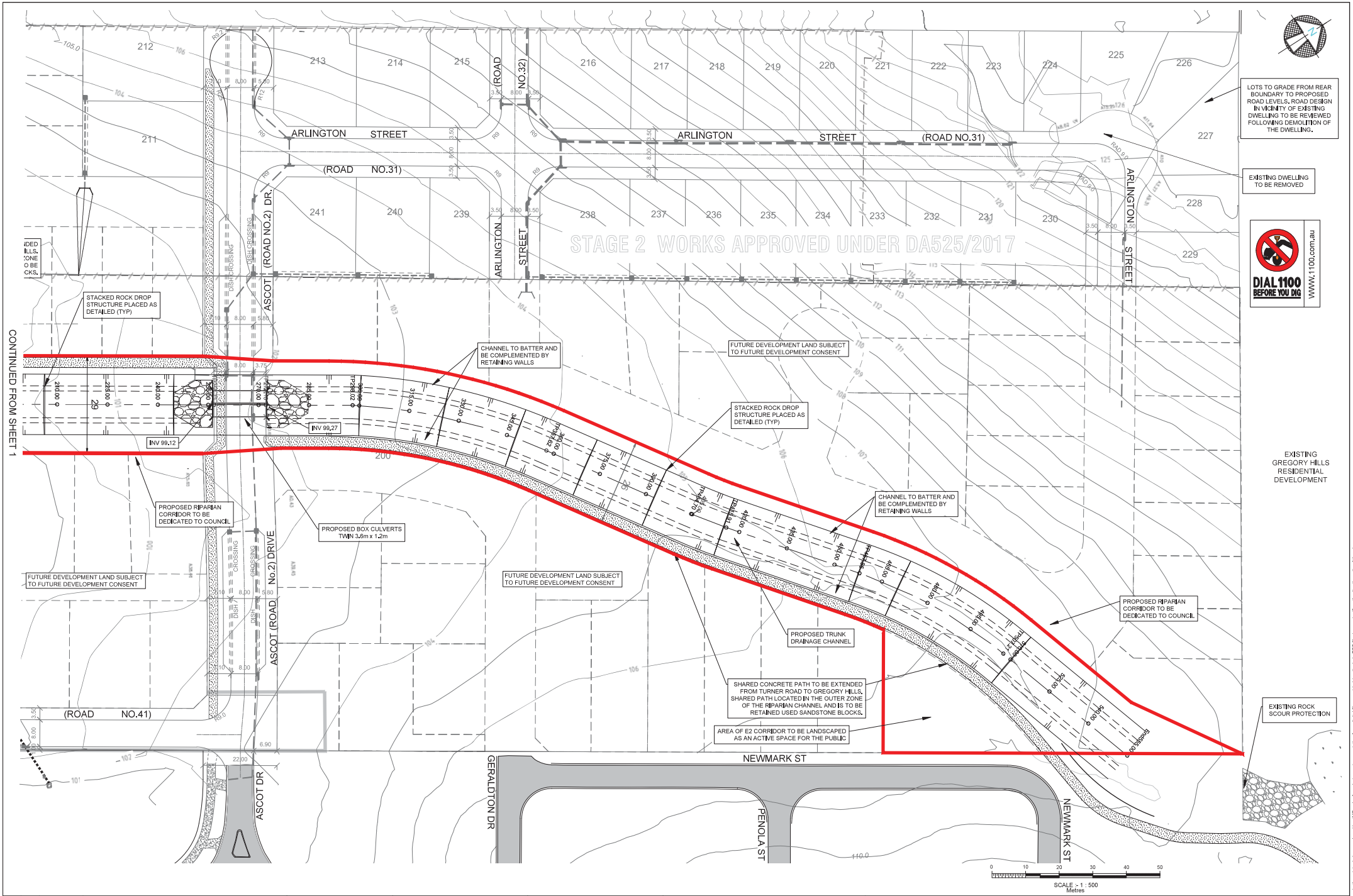
Locality : CURRANS HILL

L.G.A. : CAMDEN

CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E8-REZONING PLANS\14194E8-TRB

Sheet 1 of 6 sheets

Ref: 14194E8



Issue	App	Date	Description
B	S.G.	29-10-2019	UPDATED PER AMENDMENTS TO RIPARIAN CHANNEL
A	T.H.	06-12-2017	ORIGINAL ISSUE

Client: TURNER ROAD DEVELOPMENT
Designed by : T.H.
Date of Drawing : 06-12-2017
Ratio (A1) : 1:500

Datum : AHD
Origin of Levels : PM46777 - RL103.276
Date of Survey : 23-09-2016

Development Consultants

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FAX (02) 4628 2013
email: admin@jmd.com.au

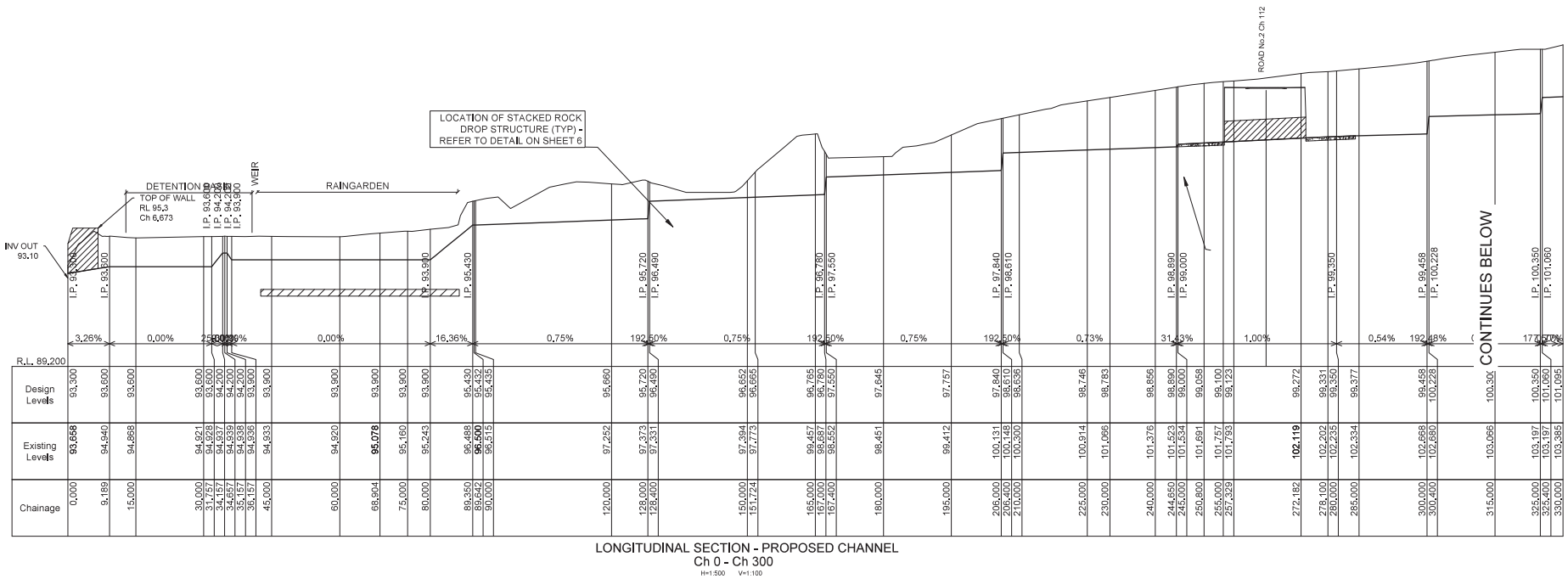
Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

CONCEPT CIVIL PLAN
ULTIMATE DRAINAGE CONCEPT PART B

Locality : CURRANS HILL
L.G.A. : CAMDEN

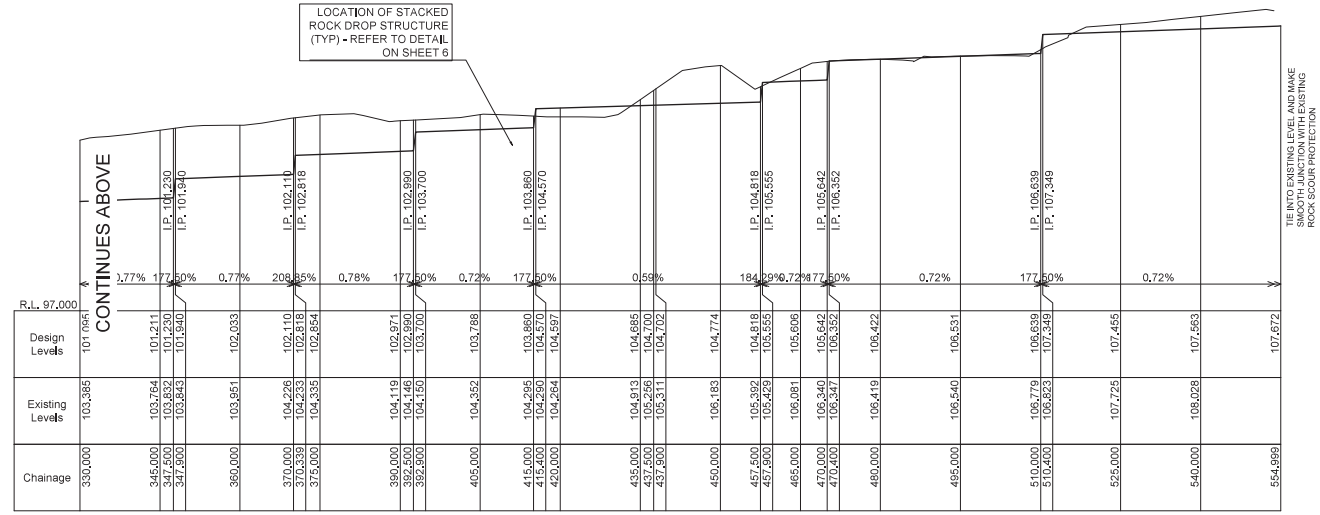
CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E8-REZONING PLANS\14194E8-TRB

Sheet 2 of 6 sheets
Ref: 14194E8



LONGITUDINAL SECTION - PROPOSED CHANNEL
Ch 0 - Ch 300
H=1:500 V=1:100

NOTE:
REFER DWG. - CATCHMENT PLAN FOR TYPICAL SECTION DETAILS OF TRUNK DRAINAGE



LONGITUDINAL SECTION - PROPOSED CHANNEL
Ch 300 - END
H=1:500 V=1:100

SCALE :- 1 : 100 Metres

SCALE :- 1 : 500 Metres

DIAL 1100 BEFORE YOU DIG
WWW.1100.com.au

Issue	App	Date	Description
B	S.G.	29-10-2019	CHANNEL GRADES IN THE UPPER PORTION AMENDED TO RETAIN TREES
A	T.H.	06-12-2017	ORIGINAL ISSUE

Client: TURNER ROAD DEVELOPMENT
Designed by : T.H.
Date of Drawing : 06-12-2017
Ratio (A1) : 1:500/1:100

Datum : AHD
Origin of Levels : PM46777 - RL103.276
Date of Survey : 23-09-2016

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email: admin@jmd.com.au

Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

Sheet 3 of 6 sheets

PROPOSED CHANNEL LONGITUDINAL SECTION- ULTIMATE CONCEPT

Ref: 14194E8

Locality : CURRANS HILL
L.G.A. : CAMDEN
CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E8-REZONING PLANS\14194E8-CHANNEL LS

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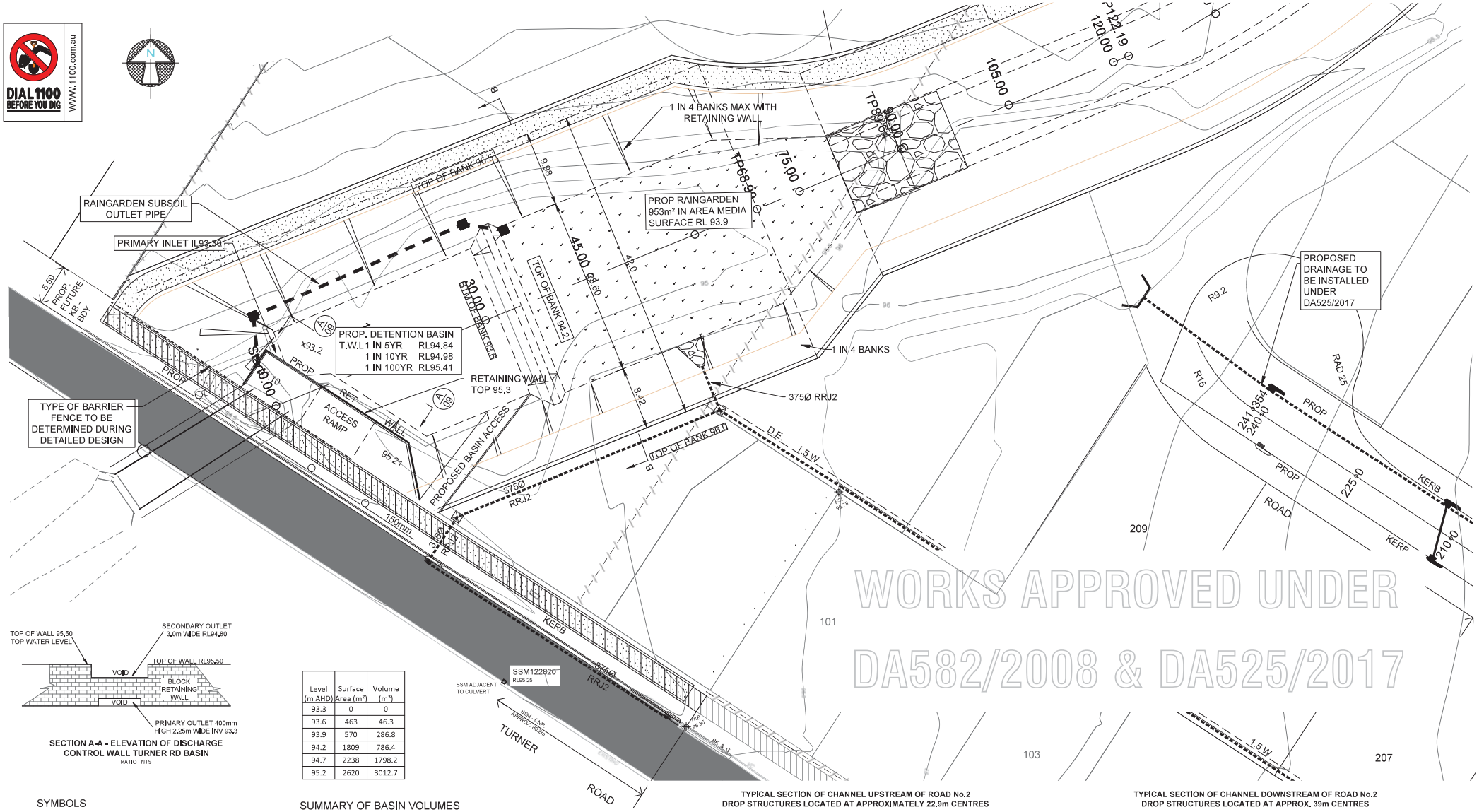


SECTION A-A - ELEVATION OF DISCHARGE CONTROL WALL TURNER RD BASIN
RATIO : NTS

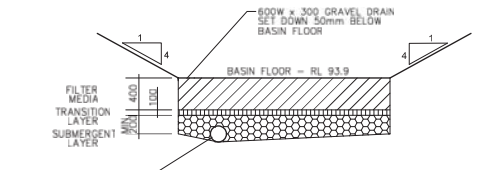
SUMMARY OF BASIN VOLUMES

Level (m AHD)	Surface Area (m²)	Volume (m³)
93.3	0	0
93.6	463	46.3
93.9	570	286.8
94.2	1809	786.4
94.7	2238	1798.2
95.2	2620	3012.7

SYMBOLS

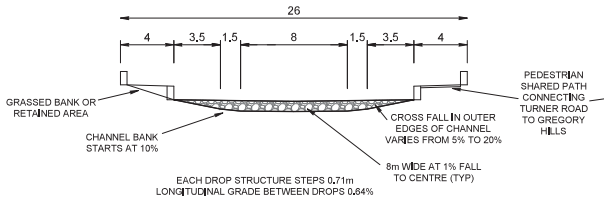
- EXISTING NATURAL SURFACE CONTOUR
- EXISTING 150mm BARRIER KERB & GUTTER
- EXISTING VEHICULAR CROSSING / EXISTING TOP OF KERB LEVEL
- EXISTING STREET NAME SIGN POST
- PROPOSED FINISHED SURFACE LEVEL

SCALE :- 1 : 250
Metres



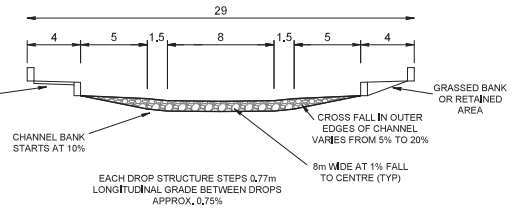
SECTION B-B THROUGH RAIN GARDEN
NOT TO SCALE

TYPICAL SECTION OF CHANNEL UPSTREAM OF ROAD No.2
DROP STRUCTURES LOCATED AT APPROXIMATELY 22.9m CENTRES



EACH DROP STRUCTURE STEPS 0.71m
LONGITUDINAL GRADE BETWEEN DROPS 0.64%

TYPICAL SECTION OF CHANNEL DOWNSTREAM OF ROAD No.2
DROP STRUCTURES LOCATED AT APPROX. 39m CENTRES



EACH DROP STRUCTURE STEPS 0.77m
LONGITUDINAL GRADE BETWEEN DROPS APPROX. 0.75%

Issue	App	Date	Description
B	S.G.	29-10-2019	UPDATED PER AMENDMENTS TO RIPARIAN CHANNEL
A	T.H.	06-12-2017	ORIGINAL ISSUE

Client: TURNER ROAD DEVELOPMENT
Designed by : T.H.
Date of Drawing : 06-12-2017
Ratio (A1) : 1:250
Datum : AHD
Origin of Levels : PM46777 - RL103.276
Date of Survey : 23-09-2016

JMD Development Consultants

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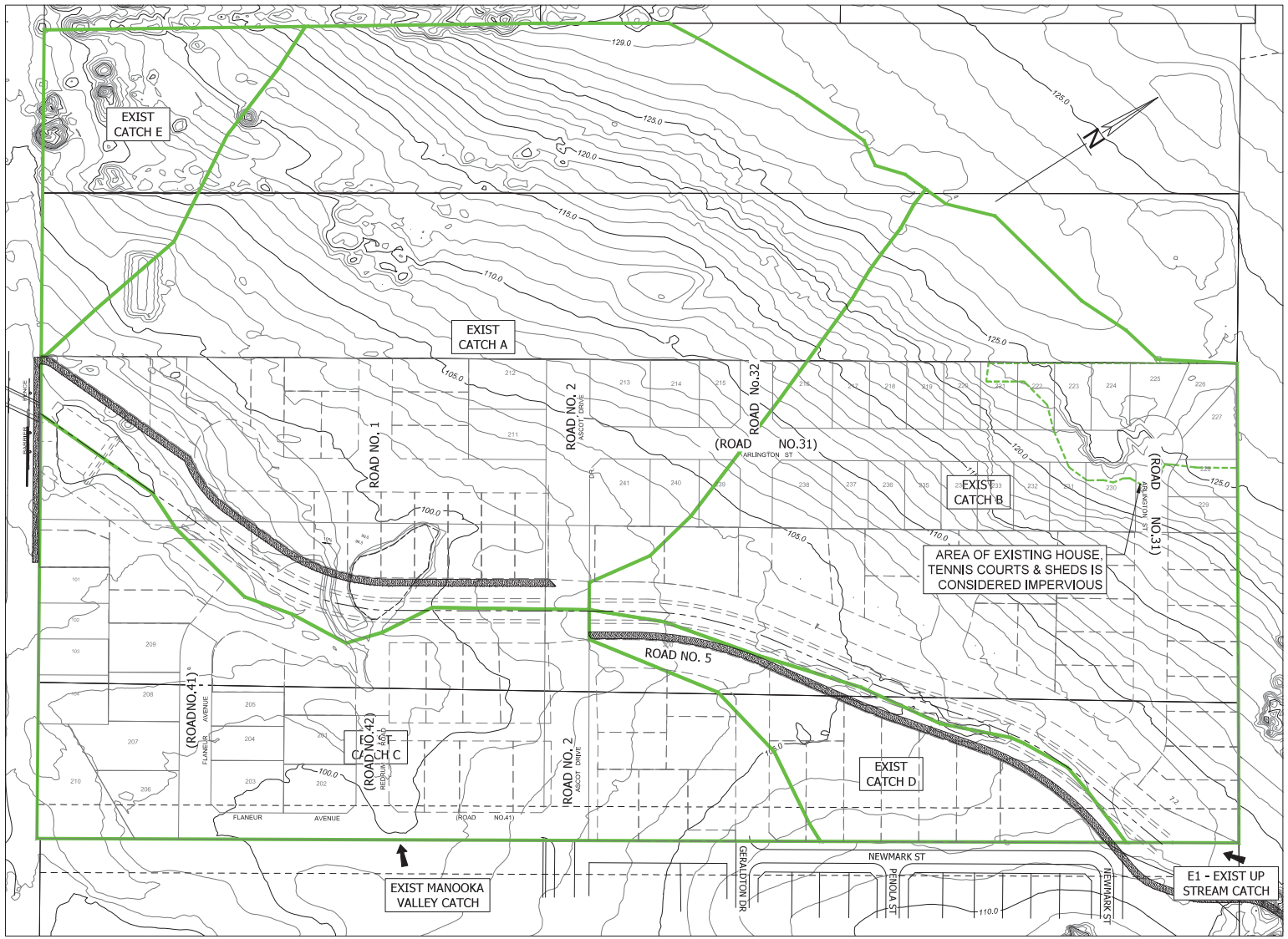
email: admin@jmd.com.au

Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

PLAN OF PROPOSED DETENTION BASIN AND RAIN GARDEN- ULTIMATE CONCEPT

Sheet 4 of 6 sheets
Ref: 14194E8

Locality : CURRANS HILL
L.G.A. : CAMDEN
CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EWW\ENG\CAD\E6-REZONING PLANS\14194E8-BASIN DETAIL



EXISTING CATCHMENT PLAN

EXISTING CATCHMENT SUMMARY

EXISTING CATCHMENT AREA	Area (ha)	% Impervious	Area Impervious (ha)	Area Pervious (ha)	All areas added?
A	7.293	0%	0.0	7.293	Y
B	4.741	9.2%	0.436	4.305	Y
MV**	3.54	0%	0.0	3.54	Y
C	3.596	0%	0.0	3.596	Y
D	0.968	0%	0.0	0.968	Y
E	0.973	0%	0.0	0.973	Y
U/S	20.4	0%	0.0	20.4	Y
TURNER RD***	41.511		0.436	41.075	Y

EXISTING CATCHMENT HYDRAULIC SUMMARY

	STORM EVENT					
FLOW IN TURNER ROAD CULVERT***	2yr peak flow (cum/s)*	5yr peak flow (cum/s)*	10yr peak flow (cum/s)*	20yr peak flow (cum/s)*	50yr peak flow (cum/s)*	100yr peak flow (cum/s)*
EXISTING CATCHMENT	2.224	3.666	4.520	5.740	6.968	7.907

* PEAK FLOWS FOR THE 2yr, 5yr, 10yr 20yr, 50yr & 100yr STORM EVENTS HAVE BEEN CALCULATED IN XP RAFTS.

** THE MANOOKA VALLEY FLOWS ARE BASED ON CATCHMENT AREAS SHOWN IN THE CARDNO REPORT DATED JANUARY 2011 (VERSION 3 - 17-01-2011).

*** TURNER ROAD AREAS ARE A SUM OF ALL OTHER CATCHMENT AREAS. TURNER ROAD PEAK FLOWS ARE BASED ON THE RESULTS OF THE XP RAFTS MODELLING AND NOT A SUM OF THE INDIVIDUAL CATCHMENT PEAK FLOWS.

LEGEND

- DENOTES EXISTING CATCHMENT BOUNDARY
- DENOTES DEVELOPED CATCHMENT BOUNDARY
- DENOTES STG 1&2 DEVELOPED CATCHMENT BOUNDARY
- CATCH 4 — DENOTES CATCHMENT LABELS
- 125.0 — DENOTES EXISTING SURFACE CONTOURS
- DENOTES PROPOSED ROCK RIP RAP SCOUR PROTECTION
- DENOTES PROPOSED DIRECTION OF STORMWATER FLOWS
- DENOTES EXTENT OF PROPOSED RAIN GARDEN

Issue	App	Date	Description
B	S.G.	29-10-2019	UPDATED PER AMENDMENTS TO RIPARIAN CHANNEL
A	T.H.	06-12-2017	ORIGINAL ISSUE

Client: TURNER ROAD DEVELOPMENT
Designed by : T.H.
Date of Drawing : 06-12-2017
Ratio (A1) : 1:1000

Datum : AHD
Origin of Levels : PM46777 - RL103.276
Date of Survey : 23-09-2016

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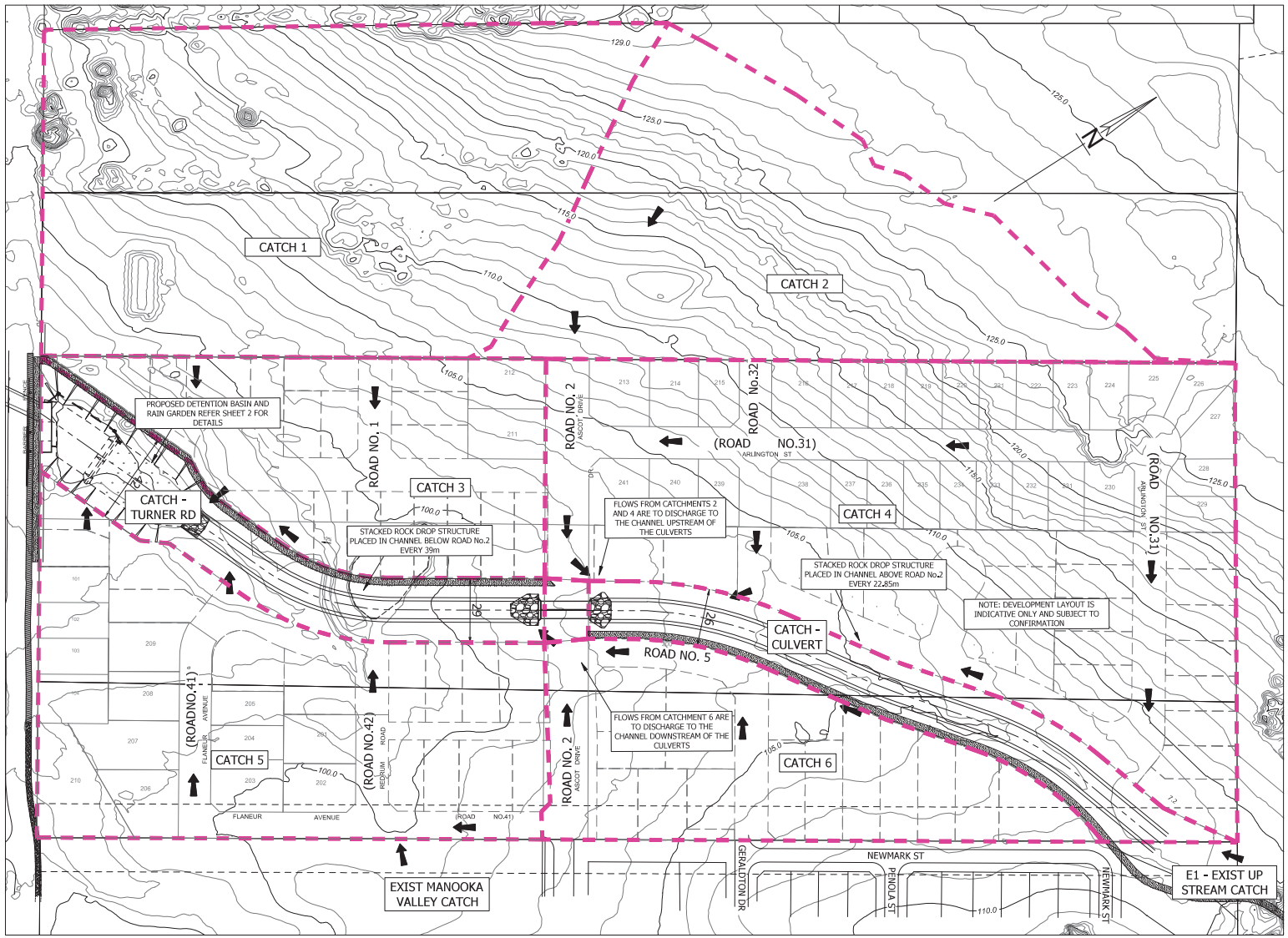
email: admin@jmd.com.au

Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

CATCHMENT PLAN UNDER EXISTING CONDITIONS

Sheet 5 of 6 sheets
Ref: 14194E8

Locality : CURRANS HILL
L.G.A. : CAMDEN
CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E8-REZONING PLANS\14194E8-CATCHM



CATCHMENT PLAN

DEVELOPED CATCHMENT SUMMARY

DEVELOPED CATCHMENT AREA	Area (ha)	% Imperv	Area Imperv (ha)	Area Pervious (ha)	All areas added?
1	3.575	75%	2.681	0.894	Y
2	2.403	75%	1.802	0.601	Y
3	1.586	75%	1.190	0.396	Y
4	4.173	75%	3.130	1.043	Y
MV	3.54	0%	0	3.54	Y
5	2.487	75%	1.865	0.622	Y
6	1.681	75%	1.261	0.420	Y
U/S	20.4	0%	0.0	20.4	Y
CULVERT	0.780	0%	0.0	0.780	Y
TURNER RD***	0.882	0%	0.0	0.882	Y
SUM	41.507		11.929	29.578	Y

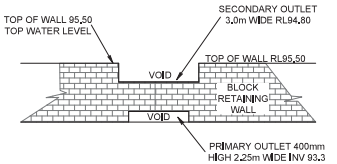
HYDRAULIC ANALYSIS SUMMARY

	STORM EVENT					
FLOW IN TURNER ROAD CULVERT	Dev 2yr peak flow (cum/s)*	Dev 5yr peak flow (cum/s)*	Dev 10yr peak flow (cum/s)*	Dev 20yr peak flow (cum/s)*	Dev 50yr peak flow (cum/s)*	Dev 100yr peak flow (cum/s)*
EXISTING CATCHMENT	2.224	3.666	4.520	5.740	6.968	7.907
ULTIMATE DEVELOPED CATCHMENT	2.137	2.966	3.699	5.11	6.445	7.81
PONDING LEVEL IN TURNER ROAD OSD BASIN	94.298	94.836	94.979	95.155	95.291	95.41

* PEAK FLOWS HAVE BEEN CALCULATED IN XP RAFTS.

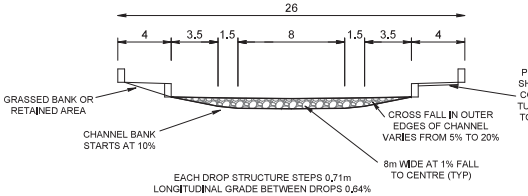
LEGEND

- DENOTES EXISTING CATCHMENT BOUNDARY
- DENOTES DEVELOPED CATCHMENT BOUNDARY
- DENOTES STG 1&2 DEVELOPED CATCHMENT BOUNDARY
- CATCH 4 — DENOTES CATCHMENT LABELS
- 125.0 — DENOTES EXISTING SURFACE CONTOURS
- DENOTES PROPOSED ROCK RIP RAP SCOUR PROTECTION
- DENOTES PROPOSED DIRECTION OF STORMWATER FLOWS
- DENOTES EXTENT OF PROPOSED RAIN GARDEN

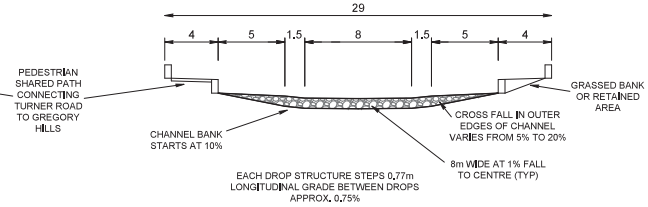


SECTION A-A - ELEVATION OF DISCHARGE CONTROL WALL TURNER RD BASIN
RATIO : NTS

TYPICAL SECTION OF CHANNEL UPSTREAM OF ROAD No.2 DROP STRUCTURES LOCATED AT APPROXIMATELY 22.9m CENTRES



TYPICAL SECTION OF CHANNEL DOWNSTREAM OF ROAD No.2 DROP STRUCTURES LOCATED AT APPROX. 39m CENTRES



Issue	App	Date	Description
B	S.G.	29-10-2019	UPDATED PER AMENDMENTS TO RIPARIAN CHANNEL
A	T.H.	06-12-2017	ORIGINAL ISSUE

Client: TURNER ROAD DEVELOPMENT
Designed by : T.H.
Date of Drawing : 06-12-2017
Ratio (A1) : 1:1000
Datum : AHD
Origin of Levels : PM46777 - RL103.276
Date of Survey : 23-09-2016

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email: admin@jmd.com.au

Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

CATCHMENT PLAN FOR THE ULTIMATE DEVELOPMENT

Locality : CURRANS HILL
L.G.A. : CAMDEN
CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E8-REZONING PLANS\14194E8-CATCHM

Sheet 6 of 6 sheets
Ref: 14194E8

Annexure C - Water Quantity Modelling – XP Rafts Modelling for Existing Conditions

C.1 – Existing Conditions

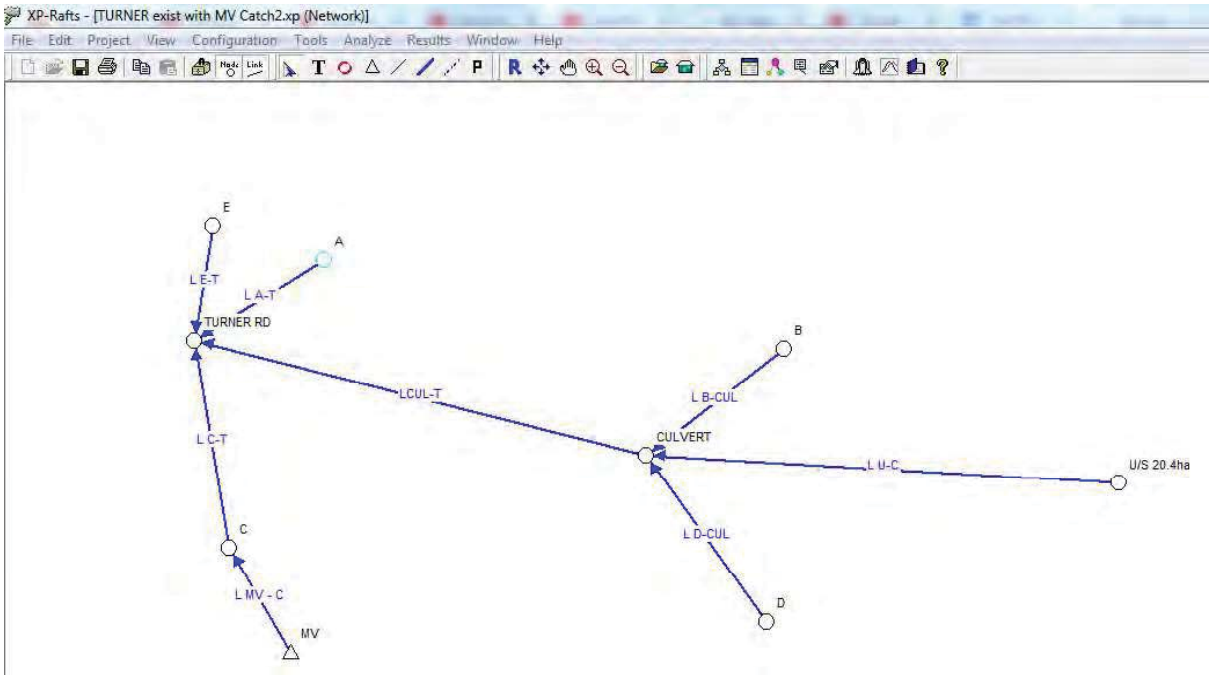

Figure C.1 – Image of XP-Rafts Existing Conditions Model.

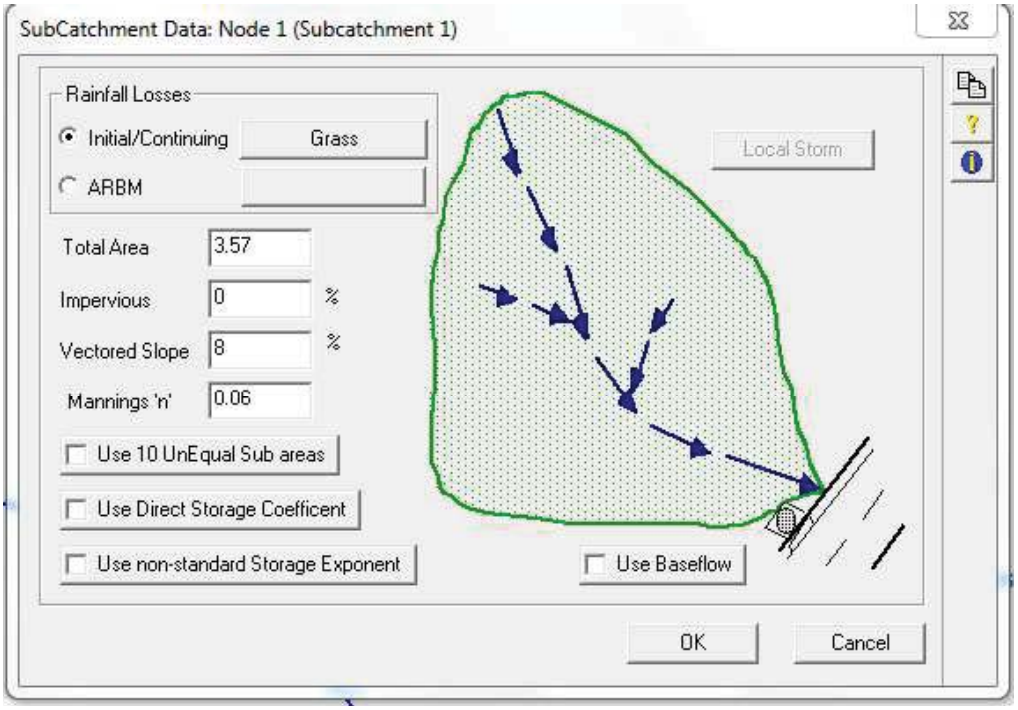

Figure C.2 – Typical node catchment details for existing conditions

TURNER exist with MV Catch2.out
Run started at: 30th August 2017 12:53:22

##
#####
RUNTIME RESULTS
##
#####

Max. no. of links allowed = 2000

Max. no. of routng increments allowed = 25000

Max. no. of rating curve points = 25000

Max. no. of storm temporal points = 25000

Max. no. of channel subreaches = 25

Max link stack level = 25

Input Version number = 650

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.3486
ESTIMATED PEAK FLOW (CUMECS) = 0.11
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 0.6995
ESTIMATED PEAK FLOW (CUMECS) = 0.27
ESTIMATED TIME TO PEAK (MINS) = 27.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.033
ESTIMATED PEAK FLOW (CUMECS) = 0.41
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK B 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.5080
ESTIMATED PEAK FLOW (CUMECS) = 0.21
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK D 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.9602E-01
ESTIMATED PEAK FLOW (CUMECS) = 0.05
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.636
ESTIMATED PEAK FLOW (CUMECS) = 0.62
ESTIMATED TIME TO PEAK (MINS) = 31.00

TURNER exist with MV Catch2.out

LINK A 5.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.7257
ESTIMATED PEAK FLOW (CUMECS) = 0.24
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK E 6.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.9650E-01
ESTIMATED PEAK FLOW (CUMECS) = 0.05
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK TURNER RD 1.002

ESTIMATED VOLUME (CU METRES*10**3) = 4.158
ESTIMATED PEAK FLOW (CUMECS) = 1.15
ESTIMATED TIME TO PEAK (MINS) = 34.00

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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

##########

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 25.
RETURN PERIOD (YRS) = 2.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 41.08
TOTAL OF SECOND SUB-AREAS (ha) = 0.44
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Perm #1	#2	B #1	#2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	49.364	10.00	0.000	3.000	0.000	9.818	0.000	0.1147	26.00	0.000

C	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.2663	27.00	0.000
U/S 20.4ha	49.364	10.00	0.000	3.000	0.000	9.818	0.000	0.4078	26.00	0.000
B	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.2069	15.00	0.000
D	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.0525	26.00	0.000
CULVERT	49.364	10.00	0.000	3.000	0.000	9.818	0.000	0.6223	31.00	0.000
A	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.2414	26.00	0.000
E	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.0527	26.00	0.000
TURNER RD	49.364	10.00	0.000	3.000	0.000	9.818	0.000	1.147	34.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.417	.0600	0.0387	0.1148	1.0	0.000	0.000	0.000
C	0.582	.0600	0.0641	0.2664	1.0	0.000	0.000	0.000
U/S 20.4ha	0.683	.0600	0.1617	0.4077	1.0	0.000	0.000	0.000
B	0.505	.0600	0.0551	0.1984	1.0	0.000	0.000	0.000
D	0.306	.0600	0.0242	0.0526	1.0	0.000	0.000	0.000
CULVERT	0.785	.0600	0.2047	0.6216	1.0	0.000	0.000	0.000
A	0.560	.0600	0.0605	0.2419	1.0	0.000	0.000	0.000
E	0.668	.0600	0.0773	0.0528	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.7771
ESTIMATED PEAK FLOW (CUMECS) = 0.21
ESTIMATED TIME TO PEAK (MINS) = 48.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.560
ESTIMATED PEAK FLOW (CUMECS) = 0.48
ESTIMATED TIME TO PEAK (MINS) = 46.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 4.410
ESTIMATED PEAK FLOW (CUMECS) = 0.98
ESTIMATED TIME TO PEAK (MINS) = 60.00

LINK B 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.089
ESTIMATED PEAK FLOW (CUMECS) = 0.33
ESTIMATED TIME TO PEAK (MINS) = 45.00

LINK D 4.000

```
 ESTIMATED VOLUME (CU METRES*10**3) =          0.2105
 ESTIMATED PEAK FLOW          (CUMECS) =      0.09
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          5.709
 ESTIMATED PEAK FLOW          (CUMECS) =      1.27
 ESTIMATED TIME TO PEAK          (MINS) =     59.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.596
 ESTIMATED PEAK FLOW          (CUMECS) =      0.48
 ESTIMATED TIME TO PEAK          (MINS) =     45.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.2116
 ESTIMATED PEAK FLOW          (CUMECS) =      0.09
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          9.077
 ESTIMATED PEAK FLOW          (CUMECS) =      2.16
 ESTIMATED TIME TO PEAK          (MINS) =     49.00
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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =       90.
                              RETURN PERIOD (YRS)      =        2.
                              BX                       =     1.0000
                              TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                              TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                              TOTAL OF ALL SUB-AREAS (ha)    =      41.51
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SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	Catch. Area (ha) #2	Slope (%) #1	Slope (%) #2	% Impervious #1	% Impervious #2	Perm #1	Perm #2	B #1	B #2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000

E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	23.555	10.00	0.000	3.000	0.000	21.682	0.000	0.2149	48.00	0.000
C	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.4765	46.00	0.000
U/S 20.4ha	23.555	10.00	0.000	3.000	0.000	21.682	0.000	0.9766	60.00	0.000
B	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.3289	45.00	0.000
D	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.0891	35.00	0.000
CULVERT	23.555	10.00	0.000	3.000	0.000	21.682	0.000	1.267	59.00	0.000
A	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.4798	45.00	0.000
E	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.0896	35.00	0.000
TURNER RD	23.555	10.00	0.000	3.000	0.000	21.682	0.000	2.163	49.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.536	.0600	0.0563	0.2149	1.0	0.000	0.000	0.000
C	0.731	.0600	0.0910	0.4765	1.0	0.000	0.000	0.000
U/S 20.4ha	0.906	.0600	0.2625	0.9757	1.0	0.000	0.000	0.000
B	0.633	.0600	0.0727	0.3290	1.0	0.000	0.000	0.000
D	0.377	.0600	0.0332	0.0890	1.0	0.000	0.000	0.000
CULVERT	0.978	.0600	0.3031	1.266	1.0	0.000	0.000	0.000
A	0.732	.0600	0.0914	0.4794	1.0	0.000	0.000	0.000
E	0.809	.0600	0.1078	0.0895	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.8622
ESTIMATED PEAK FLOW (CUMECS) = 0.22
ESTIMATED TIME TO PEAK (MINS) = 61.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.743
ESTIMATED PEAK FLOW (CUMECS) = 0.48
ESTIMATED TIME TO PEAK (MINS) = 53.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 4.940
ESTIMATED PEAK FLOW (CUMECS) = 1.03

```
 ESTIMATED TIME TO PEAK          (MINS) =     66.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.212
 ESTIMATED PEAK FLOW          (CUMECS) =      0.33
 ESTIMATED TIME TO PEAK          (MINS) =     51.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.2358
 ESTIMATED PEAK FLOW          (CUMECS) =      0.10
 ESTIMATED TIME TO PEAK          (MINS) =     42.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          6.388
 ESTIMATED PEAK FLOW          (CUMECS) =      1.34
 ESTIMATED TIME TO PEAK          (MINS) =     66.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.772
 ESTIMATED PEAK FLOW          (CUMECS) =      0.48
 ESTIMATED TIME TO PEAK          (MINS) =     52.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.2371
 ESTIMATED PEAK FLOW          (CUMECS) =      0.10
 ESTIMATED TIME TO PEAK          (MINS) =     42.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          10.14
 ESTIMATED PEAK FLOW          (CUMECS) =      2.22
 ESTIMATED TIME TO PEAK          (MINS) =     65.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =       120.
                                RETURN PERIOD (YRS)      =         2.
                                BX                       =    1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                                TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
            (ha)             (%)          (%)
MV         3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

C          3.596 .00001  8.000 5.000  0.000 100.0  .060 .013  .0346 0.000  1.001
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U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak mins	Link Lag mins
MV	19.535	10.00	0.000	3.000	0.000	24.320	0.000	0.2200	61.00	0.000
C	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.4769	53.00	0.000
U/S 20.4ha	19.535	10.00	0.000	3.000	0.000	24.320	0.000	1.033	66.00	0.000
B	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.3276	51.00	0.000
D	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.1010	42.00	0.000
CULVERT	19.535	10.00	0.000	3.000	0.000	24.320	0.000	1.338	66.00	0.000
A	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.4751	52.00	0.000
E	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.1017	42.00	0.000
TURNER RD	19.535	10.00	0.000	3.000	0.000	24.320	0.000	2.224	65.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.541	.0600	0.0570	0.2200	1.0	0.000	0.000	0.000
C	0.731	.0600	0.0910	0.4770	1.0	0.000	0.000	0.000
U/S 20.4ha	0.915	.0600	0.2719	1.030	1.0	0.000	0.000	0.000
B	0.630	.0600	0.0727	0.3273	1.0	0.000	0.000	0.000
D	0.401	.0600	0.0359	0.1026	1.0	0.000	0.000	0.000
CULVERT	0.992	.0600	0.3125	1.335	1.0	0.000	0.000	0.000
A	0.731	.0600	0.0906	0.4749	1.0	0.000	0.000	0.000
E	0.856	.0600	0.1172	0.1031	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.5560
ESTIMATED PEAK FLOW (CUMECS) = 0.20
ESTIMATED TIME TO PEAK (MINS) = 26.00

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 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.122
 ESTIMATED PEAK FLOW         (CUMECS) =      0.48
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.263
 ESTIMATED PEAK FLOW         (CUMECS) =      0.82
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.7987
 ESTIMATED PEAK FLOW         (CUMECS) =      0.36
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.1532
 ESTIMATED PEAK FLOW         (CUMECS) =      0.11
 ESTIMATED TIME TO PEAK         (MINS) =     21.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.215
 ESTIMATED PEAK FLOW         (CUMECS) =      1.20
 ESTIMATED TIME TO PEAK         (MINS) =     29.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.152
 ESTIMATED PEAK FLOW         (CUMECS) =      0.49
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.1541
 ESTIMATED PEAK FLOW         (CUMECS) =      0.11
 ESTIMATED TIME TO PEAK         (MINS) =     21.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          6.644
 ESTIMATED PEAK FLOW         (CUMECS) =      2.19
 ESTIMATED TIME TO PEAK         (MINS) =     29.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
################################################################################
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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =        25.
                              RETURN PERIOD (YRS)      =         5.
                              BX                       =     1.0000
                              TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                              TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                              TOTAL OF ALL SUB-AREAS (ha)    =      41.51
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SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	#2	Slope #1 (%)	#2	% Impervious #1	#2	Pern #1	#2	B #1	#2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	64.073	10.00	0.000	3.000	0.000	15.847	0.000	0.2029	26.00	0.000
C	64.073	10.00	1.500	3.000	0.000	15.847	25.197	0.4795	26.00	0.000
U/S 20.4ha	64.073	10.00	0.000	3.000	0.000	15.847	0.000	0.8221	26.00	0.000
B	64.073	10.00	1.500	3.000	0.000	15.847	25.197	0.3553	15.00	0.000
D	64.073	10.00	1.500	3.000	0.000	15.847	25.197	0.1061	21.00	0.000
CULVERT	64.073	10.00	0.000	3.000	0.000	15.847	0.000	1.198	29.00	0.000
A	64.073	10.00	1.500	3.000	0.000	15.847	25.197	0.4924	26.00	0.000
E	64.073	10.00	1.500	3.000	0.000	15.847	25.197	0.1066	21.00	0.000
TURNER RD	64.073	10.00	0.000	3.000	0.000	15.847	0.000	2.186	29.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.523	.0600	0.0545	0.2032	1.0	0.000	0.000	0.000
C	0.732	.0600	0.0914	0.4796	1.0	0.000	0.000	0.000
U/S 20.4ha	0.857	.0600	0.2391	0.8211	1.0	0.000	0.000	0.000
B	0.638	.0600	0.0762	0.3476	1.0	0.000	0.000	0.000
D	0.405	.0600	0.0369	0.1064	1.0	0.000	0.000	0.000
CULVERT	0.962	.0600	0.2938	1.195	1.0	0.000	0.000	0.000
A	0.737	.0600	0.0930	0.4912	1.0	0.000	0.000	0.000

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E         0.863   .0600 0.1203  0.1069    1.0  0.000    0.000     0.000


 LINK MV                 1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.139
 ESTIMATED PEAK FLOW          (CUMECS) =      0.34
 ESTIMATED TIME TO PEAK          (MINS) =     45.00

 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.297
 ESTIMATED PEAK FLOW          (CUMECS) =      0.75
 ESTIMATED TIME TO PEAK          (MINS) =     41.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          6.575
 ESTIMATED PEAK FLOW          (CUMECS) =      1.57
 ESTIMATED TIME TO PEAK          (MINS) =     55.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.575
 ESTIMATED PEAK FLOW          (CUMECS) =      0.53
 ESTIMATED TIME TO PEAK          (MINS) =     39.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.3101
 ESTIMATED PEAK FLOW          (CUMECS) =      0.15
 ESTIMATED TIME TO PEAK          (MINS) =     34.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          8.460
 ESTIMATED PEAK FLOW          (CUMECS) =      1.99
 ESTIMATED TIME TO PEAK          (MINS) =     49.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.343
 ESTIMATED PEAK FLOW          (CUMECS) =      0.77
 ESTIMATED TIME TO PEAK          (MINS) =     42.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.3118
 ESTIMATED PEAK FLOW          (CUMECS) =      0.15
 ESTIMATED TIME TO PEAK          (MINS) =     34.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          13.41
 ESTIMATED PEAK FLOW          (CUMECS) =      3.51
 ESTIMATED TIME TO PEAK          (MINS) =     44.00



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Results for period from 12: 0.0 23/ 5/2006
                      to  3: 0.0 24/ 5/2006
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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 90.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 41.08
TOTAL OF SECOND SUB-AREAS (ha) = 0.44
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1 (%)	% Impervious #2 (%)	Perm #1	Perm #2	B #1	B #2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak mins	Link Lag mins
MV	30.568	10.00	0.000	3.000	0.000	32.052	0.000	0.3429	45.00	0.000
C	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.7519	41.00	0.000
U/S 20.4ha	30.568	10.00	0.000	3.000	0.000	32.052	0.000	1.566	55.00	0.000
B	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.5335	39.00	0.000
D	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.1534	34.00	0.000
CULVERT	30.568	10.00	0.000	3.000	0.000	32.052	0.000	1.986	49.00	0.000
A	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.7736	42.00	0.000
E	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.1540	34.00	0.000
TURNER RD	30.568	10.00	0.000	3.000	0.000	32.052	0.000	3.511	44.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.642	.0600	0.0746	0.3425	1.0	0.000	0.000	0.000
C	0.874	.0600	0.1195	0.7515	1.0	0.000	0.000	0.000

U/S 20.4ha	1.03	.0600	0.3406	1.564	1.0	0.000	0.000	0.000
B	0.761	.0600	0.0977	0.5331	1.0	0.000	0.000	0.000
D	0.467	.0600	0.0461	0.1533	1.0	0.000	0.000	0.000
CULVERT	1.11	.0600	0.3859	1.984	1.0	0.000	0.000	0.000
A	0.882	.0600	0.1219	0.7737	1.0	0.000	0.000	0.000
E	0.977	.0600	0.1531	0.1547	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.279
ESTIMATED PEAK FLOW (CUMECS) = 0.35
ESTIMATED TIME TO PEAK (MINS) = 50.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.577
ESTIMATED PEAK FLOW (CUMECS) = 0.80
ESTIMATED TIME TO PEAK (MINS) = 46.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 7.330
ESTIMATED PEAK FLOW (CUMECS) = 1.64
ESTIMATED TIME TO PEAK (MINS) = 65.00

LINK B 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.766
ESTIMATED PEAK FLOW (CUMECS) = 0.58
ESTIMATED TIME TO PEAK (MINS) = 45.00

LINK D 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.3473
ESTIMATED PEAK FLOW (CUMECS) = 0.16
ESTIMATED TIME TO PEAK (MINS) = 42.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 9.443
ESTIMATED PEAK FLOW (CUMECS) = 2.07
ESTIMATED TIME TO PEAK (MINS) = 65.00

LINK A 5.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.621
ESTIMATED PEAK FLOW (CUMECS) = 0.80
ESTIMATED TIME TO PEAK (MINS) = 48.00

LINK E 6.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.3491
ESTIMATED PEAK FLOW (CUMECS) = 0.16
ESTIMATED TIME TO PEAK (MINS) = 42.00

LINK TURNER RD 1.002

ESTIMATED VOLUME (CU METRES*10**3) = 14.99
ESTIMATED PEAK FLOW (CUMECS) = 3.67
ESTIMATED TIME TO PEAK (MINS) = 49.00

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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006
##
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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 41.08
TOTAL OF SECOND SUB-AREAS (ha) = 0.44
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Perm #1	#2	B #1	#2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	25.371	10.00	0.000	3.000	0.000	35.842	0.000	0.3491	50.00	0.000
C	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.8015	46.00	0.000
U/S 20.4ha	25.371	10.00	0.000	3.000	0.000	35.842	0.000	1.641	65.00	0.000
B	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.5817	45.00	0.000
D	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.1612	42.00	0.000
CULVERT	25.371	10.00	0.000	3.000	0.000	35.842	0.000	2.069	65.00	0.000
A	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.8006	48.00	0.000
E	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.1619	42.00	0.000
TURNER RD	25.371	10.00	0.000	3.000	0.000	35.842	0.000	3.666	49.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.647	.0600	0.0754	0.3491	1.0	0.000	0.000	0.000
C	0.895	.0600	0.1242	0.8007	1.0	0.000	0.000	0.000
U/S 20.4ha	1.05	.0600	0.3484	1.639	1.0	0.000	0.000	0.000
B	0.789	.0600	0.1023	0.5800	1.0	0.000	0.000	0.000
D	0.478	.0600	0.0475	0.1615	1.0	0.000	0.000	0.000
CULVERT	1.13	.0600	0.3938	2.067	1.0	0.000	0.000	0.000
A	0.895	.0600	0.1242	0.8004	1.0	0.000	0.000	0.000
E	0.992	.0600	0.1578	0.1619	1.0	0.000	0.000	0.000

```
 LINK MV                 1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.6719
 ESTIMATED PEAK FLOW          (CUMECS) =      0.26
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.362
 ESTIMATED PEAK FLOW          (CUMECS) =      0.62
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.931
 ESTIMATED PEAK FLOW          (CUMECS) =      1.08
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.9464
 ESTIMATED PEAK FLOW          (CUMECS) =      0.45
 ESTIMATED TIME TO PEAK          (MINS) =     25.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.1859
 ESTIMATED PEAK FLOW          (CUMECS) =      0.14
 ESTIMATED TIME TO PEAK          (MINS) =     21.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          5.064
 ESTIMATED PEAK FLOW          (CUMECS) =      1.57
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.401
 ESTIMATED PEAK FLOW          (CUMECS) =      0.64
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK E                  6.000
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TURNER exist with MV Catch2.out

ESTIMATED VOLUME (CU METRES*10**3) = 0.1869
ESTIMATED PEAK FLOW (CUMECS) = 0.14
ESTIMATED TIME TO PEAK (MINS) = 21.00

LINK TURNER RD 1.002

ESTIMATED VOLUME (CU METRES*10**3) = 8.013
ESTIMATED PEAK FLOW (CUMECS) = 2.86
ESTIMATED TIME TO PEAK (MINS) = 27.00

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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

##########

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 25.
RETURN PERIOD (YRS) = 10.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 41.08
TOTAL OF SECOND SUB-AREAS (ha) = 0.44
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Perm #1	#2	B #1	#2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	72.056	10.00	0.000	3.000	0.000	19.123	0.000	0.2613	26.00	0.000
C	72.056	10.00	1.500	3.000	0.000	19.123	28.523	0.6223	26.00	0.000
U/S 20.4ha	72.056	10.00	0.000	3.000	0.000	19.123	0.000	1.082	26.00	0.000
B	72.056	10.00	1.500	3.000	0.000	19.123	28.523	0.4496	25.00	0.000
D	72.056	10.00	1.500	3.000	0.000	19.123	28.523	0.1393	21.00	0.000

CULVERT	72.056	10.00	0.000	3.000	0.000	19.123	0.000	1.567	26.00	0.000
A	72.056	10.00	1.500	3.000	0.000	19.123	28.523	0.6377	26.00	0.000
E	72.056	10.00	1.500	3.000	0.000	19.123	28.523	0.1401	21.00	0.000
TURNER RD	72.056	10.00	0.000	3.000	0.000	19.123	0.000	2.858	27.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.579	.0600	0.0633	0.2616	1.0	0.000	0.000	0.000
C	0.808	.0600	0.1070	0.6211	1.0	0.000	0.000	0.000
U/S 20.4ha	0.933	.0600	0.2781	1.081	1.0	0.000	0.000	0.000
B	0.709	.0600	0.0879	0.4465	1.0	0.000	0.000	0.000
D	0.451	.0600	0.0434	0.1394	1.0	0.000	0.000	0.000
CULVERT	1.03	.0600	0.3406	1.559	1.0	0.000	0.000	0.000
A	0.817	.0600	0.1086	0.6373	1.0	0.000	0.000	0.000
E	0.949	.0600	0.1438	0.1409	1.0	0.000	0.000	0.000

```
 LINK MV                1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.340
 ESTIMATED PEAK FLOW         (CUMECS) =      0.42
 ESTIMATED TIME TO PEAK         (MINS) =     42.00

 LINK C                 1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.698
 ESTIMATED PEAK FLOW         (CUMECS) =      0.92
 ESTIMATED TIME TO PEAK         (MINS) =     39.00

 LINK U/S 20.4ha        2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          7.713
 ESTIMATED PEAK FLOW         (CUMECS) =      1.89
 ESTIMATED TIME TO PEAK         (MINS) =     53.00

 LINK B                 3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.836
 ESTIMATED PEAK FLOW         (CUMECS) =      0.67
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK D                 4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.3666
 ESTIMATED PEAK FLOW         (CUMECS) =      0.19
 ESTIMATED TIME TO PEAK         (MINS) =     32.00

 LINK CULVERT           2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          9.916
 ESTIMATED PEAK FLOW         (CUMECS) =      2.45
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 ESTIMATED TIME TO PEAK          (MINS) =     46.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.755
 ESTIMATED PEAK FLOW         (CUMECS) =      0.94
 ESTIMATED TIME TO PEAK          (MINS) =     40.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.3685
 ESTIMATED PEAK FLOW         (CUMECS) =      0.19
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          15.74
 ESTIMATED PEAK FLOW         (CUMECS) =      4.30
 ESTIMATED TIME TO PEAK          (MINS) =     42.00



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Results for period from 12: 0.0 23/ 5/2006
                      to  3: 0.0 24/ 5/2006
################################################################################
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =        90.
                                RETURN PERIOD (YRS)      =        10.
                                BX                       =    1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                                TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
            (ha)             (%)           (%)
MV         3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

C          3.596 .00001  8.000 5.000  0.000 100.0  .060 .013  .0346 0.000  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

B          4.305 0.4360  8.000 8.000  0.000 100.0  .060 .013  .0380 .0003  3.000

D         0.9680 .00001  8.000 5.000  0.000 100.0  .060 .013  .0175 0.000  4.000

CULVERT   .00001  0.000  2.800 0.000  0.000 0.000  .060 0.00  0.000 0.000  2.001

A          7.293 .00001  8.000 5.000  0.000 100.0  .060 .013  .0500 0.000  5.000

E         0.9730 .00001  8.000 .0010  0.000 0.000  .060 .025  .0176 .0021  6.000

TURNER RD .00001  0.000  2.500 0.000  0.000 0.000  .060 0.00  0.000 0.000  1.002


 Link    Average  Init. Loss  Cont. Loss    Excess Rain   Peak    Time   Link
 Label  Intensity  #1    #2    #1    #2      #1    #2    Inflow   to     Lag
```

	(mm/h)	(mm)		(mm/h)		(mm)		(m^3/s)	Peak	mins
MV	34.373	10.00	0.000	3.000	0.000	37.710	0.000	0.4194	42.00	0.000
C	34.373	10.00	1.500	3.000	0.000	37.710	50.060	0.9180	39.00	0.000
U/S 20.4ha	34.373	10.00	0.000	3.000	0.000	37.710	0.000	1.885	53.00	0.000
B	34.373	10.00	1.500	3.000	0.000	37.710	50.060	0.6703	30.00	0.000
D	34.373	10.00	1.500	3.000	0.000	37.710	50.060	0.1868	32.00	0.000
CULVERT	34.373	10.00	0.000	3.000	0.000	37.710	0.000	2.447	46.00	0.000
A	34.373	10.00	1.500	3.000	0.000	37.710	50.060	0.9449	40.00	0.000
E	34.373	10.00	1.500	3.000	0.000	37.710	50.060	0.1874	32.00	0.000
TURNER RD	34.373	10.00	0.000	3.000	0.000	37.710	0.000	4.304	42.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.694	.0600	0.0844	0.4195	1.0	0.000	0.000	0.000
C	0.942	.0600	0.1352	0.9178	1.0	0.000	0.000	0.000
U/S 20.4ha	1.10	.0600	0.3750	1.885	1.0	0.000	0.000	0.000
B	0.828	.0600	0.1117	0.6648	1.0	0.000	0.000	0.000
D	0.506	.0600	0.0520	0.1873	1.0	0.000	0.000	0.000
CULVERT	1.18	.0600	0.4313	2.445	1.0	0.000	0.000	0.000
A	0.953	.0600	0.1375	0.9452	1.0	0.000	0.000	0.000
E	1.04	.0600	0.1734	0.1878	1.0	0.000	0.000	0.000

```
 LINK MV                 1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.504
 ESTIMATED PEAK FLOW          (CUMECS) =      0.44
 ESTIMATED TIME TO PEAK          (MINS) =     46.00

 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.022
 ESTIMATED PEAK FLOW          (CUMECS) =      1.01
 ESTIMATED TIME TO PEAK          (MINS) =     46.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          8.579
 ESTIMATED PEAK FLOW          (CUMECS) =      1.96
 ESTIMATED TIME TO PEAK          (MINS) =     62.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.062
 ESTIMATED PEAK FLOW          (CUMECS) =      0.70
 ESTIMATED TIME TO PEAK          (MINS) =     45.00
```

```
 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.4085
 ESTIMATED PEAK FLOW         (CUMECS) =      0.19
 ESTIMATED TIME TO PEAK         (MINS) =     41.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          11.05
 ESTIMATED PEAK FLOW         (CUMECS) =      2.51
 ESTIMATED TIME TO PEAK         (MINS) =     50.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.070
 ESTIMATED PEAK FLOW         (CUMECS) =      0.99
 ESTIMATED TIME TO PEAK         (MINS) =     46.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.4107
 ESTIMATED PEAK FLOW         (CUMECS) =      0.19
 ESTIMATED TIME TO PEAK         (MINS) =     41.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          17.55
 ESTIMATED PEAK FLOW         (CUMECS) =      4.52
 ESTIMATED TIME TO PEAK         (MINS) =     48.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =       120.
                              RETURN PERIOD (YRS)      =        10.
                              BX                       =     1.0000
                              TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                              TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                              TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link       Catch. Area       Slope     % Impervious      Pern          B        Link
 Label       #1     #2      #1    #2       #1   #2      #1    #2     #1   #2      No.
             (ha)             (%)           (%)
MV          3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

C           3.596 .00001  8.000 5.000  0.000 100.0  .060 .013  .0346 0.000  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

B           4.305 0.4360  8.000 8.000  0.000 100.0  .060 .013  .0380 .0003  3.000

D          0.9680 .00001  8.000 5.000  0.000 100.0  .060 .013  .0175 0.000  4.000

CULVERT    .00001  0.000  2.800 0.000  0.000 0.000  .060 0.00  0.000 0.000  2.001
```

A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	28.541	10.00	0.000	3.000	0.000	42.132	0.000	0.4429	46.00	0.000
C	28.541	10.00	1.500	3.000	0.000	42.132	55.582	1.006	46.00	0.000
U/S 20.4ha	28.541	10.00	0.000	3.000	0.000	42.132	0.000	1.959	62.00	0.000
B	28.541	10.00	1.500	3.000	0.000	42.132	55.582	0.7031	45.00	0.000
D	28.541	10.00	1.500	3.000	0.000	42.132	55.582	0.1933	41.00	0.000
CULVERT	28.541	10.00	0.000	3.000	0.000	42.132	0.000	2.511	50.00	0.000
A	28.541	10.00	1.500	3.000	0.000	42.132	55.582	0.9897	46.00	0.000
E	28.541	10.00	1.500	3.000	0.000	42.132	55.582	0.1941	41.00	0.000
TURNER RD	28.541	10.00	0.000	3.000	0.000	42.132	0.000	4.520	48.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.711	.0600	0.0871	0.4438	1.0	0.000	0.000	0.000
C	0.981	.0600	0.1422	1.006	1.0	0.000	0.000	0.000
U/S 20.4ha	1.11	.0600	0.3828	1.958	1.0	0.000	0.000	0.000
B	0.848	.0600	0.1148	0.7003	1.0	0.000	0.000	0.000
D	0.513	.0600	0.0529	0.1938	1.0	0.000	0.000	0.000
CULVERT	1.19	.0600	0.4375	2.507	1.0	0.000	0.000	0.000
A	0.969	.0600	0.1414	0.9891	1.0	0.000	0.000	0.000
E	1.04	.0600	0.1781	0.1938	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.8448
ESTIMATED PEAK FLOW (CUMECS) = 0.36
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.699
ESTIMATED PEAK FLOW (CUMECS) = 0.84
ESTIMATED TIME TO PEAK (MINS) = 25.00

LINK U/S 20.4ha 2.000

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 ESTIMATED VOLUME (CU METRES*10**3) =          4.857
 ESTIMATED PEAK FLOW         (CUMECS) =      1.44
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.162
 ESTIMATED PEAK FLOW         (CUMECS) =      0.60
 ESTIMATED TIME TO PEAK         (MINS) =     25.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.2311
 ESTIMATED PEAK FLOW         (CUMECS) =      0.18
 ESTIMATED TIME TO PEAK         (MINS) =     21.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          6.250
 ESTIMATED PEAK FLOW         (CUMECS) =      2.09
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.742
 ESTIMATED PEAK FLOW         (CUMECS) =      0.85
 ESTIMATED TIME TO PEAK         (MINS) =     25.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.2323
 ESTIMATED PEAK FLOW         (CUMECS) =      0.18
 ESTIMATED TIME TO PEAK         (MINS) =     21.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          9.922
 ESTIMATED PEAK FLOW         (CUMECS) =      3.85
 ESTIMATED TIME TO PEAK         (MINS) =     26.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =        25.
                                RETURN PERIOD (YRS)      =        20.
                                BX                       =     1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                                TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
            (ha)             (%)           (%)
MV         3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000
```

C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2	Cont. Loss #1 (mm/h)	Cont. Loss #2	Excess Rain #1 (mm)	Excess Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	83.043	10.00	0.000	3.000	0.000	23.701	0.000	0.3632	26.00	0.000
C	83.043	10.00	1.500	3.000	0.000	23.701	33.101	0.8448	25.00	0.000
U/S 20.4ha	83.043	10.00	0.000	3.000	0.000	23.701	0.000	1.442	26.00	0.000
B	83.043	10.00	1.500	3.000	0.000	23.701	33.101	0.5997	25.00	0.000
D	83.043	10.00	1.500	3.000	0.000	23.701	33.101	0.1809	21.00	0.000
CULVERT	83.043	10.00	0.000	3.000	0.000	23.701	0.000	2.090	26.00	0.000
A	83.043	10.00	1.500	3.000	0.000	23.701	33.101	0.8534	25.00	0.000
E	83.043	10.00	1.500	3.000	0.000	23.701	33.101	0.1816	21.00	0.000
TURNER RD	83.043	10.00	0.000	3.000	0.000	23.701	0.000	3.848	26.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.655	.0600	0.0773	0.3625	1.0	0.000	0.000	0.000
C	0.913	.0600	0.1281	0.8423	1.0	0.000	0.000	0.000
U/S 20.4ha	1.01	.0600	0.3250	1.439	1.0	0.000	0.000	0.000
B	0.797	.0600	0.1047	0.5994	1.0	0.000	0.000	0.000
D	0.499	.0600	0.0508	0.1808	1.0	0.000	0.000	0.000
CULVERT	1.12	.0600	0.3969	2.084	1.0	0.000	0.000	0.000
A	0.921	.0600	0.1289	0.8552	1.0	0.000	0.000	0.000
E	1.02	.0600	0.1703	0.1814	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.616
ESTIMATED PEAK FLOW (CUMECS) = 0.53

```
 ESTIMATED TIME TO PEAK          (MINS) =     40.00

 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.249
 ESTIMATED PEAK FLOW          (CUMECS) =      1.19
 ESTIMATED TIME TO PEAK          (MINS) =     37.00

 WARNING 12 - DRDH = -ve
 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          9.321
 ESTIMATED PEAK FLOW          (CUMECS) =      2.38
 ESTIMATED TIME TO PEAK          (MINS) =     47.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.211
 ESTIMATED PEAK FLOW          (CUMECS) =      0.85
 ESTIMATED TIME TO PEAK          (MINS) =     30.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.4422
 ESTIMATED PEAK FLOW          (CUMECS) =      0.23
 ESTIMATED TIME TO PEAK          (MINS) =     31.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =         11.97
 ESTIMATED PEAK FLOW          (CUMECS) =      3.12
 ESTIMATED TIME TO PEAK          (MINS) =     44.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.330
 ESTIMATED PEAK FLOW          (CUMECS) =      1.18
 ESTIMATED TIME TO PEAK          (MINS) =     39.00

 WARNING 12 - DRDH = -ve
 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.4443
 ESTIMATED PEAK FLOW          (CUMECS) =      0.23
 ESTIMATED TIME TO PEAK          (MINS) =     31.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =         19.00
 ESTIMATED PEAK FLOW          (CUMECS) =      5.54
 ESTIMATED TIME TO PEAK          (MINS) =     41.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =       90.
                              RETURN PERIOD (YRS)      =       20.
```

TURNER exist with MV Catch2.out

BX = 1.0000

TOTAL OF FIRST SUB-AREAS (ha) = 41.08

TOTAL OF SECOND SUB-AREAS (ha) = 0.44

TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1 (%)	% Impervious #2 (%)	Perm #1	Perm #2	B #1	B #2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	39.611	10.00	0.000	3.000	0.000	45.517	0.000	0.5339	40.00	0.000
C	39.611	10.00	1.500	3.000	0.000	45.517	57.917	1.186	37.00	0.000
U/S 20.4ha	39.611	10.00	0.000	3.000	0.000	45.517	0.000	2.385	47.00	0.000
B	39.611	10.00	1.500	3.000	0.000	45.517	57.917	0.8535	30.00	0.000
D	39.611	10.00	1.500	3.000	0.000	45.517	57.917	0.2279	31.00	0.000
CULVERT	39.611	10.00	0.000	3.000	0.000	45.517	0.000	3.124	44.00	0.000
A	39.611	10.00	1.500	3.000	0.000	45.517	57.917	1.183	39.00	0.000
E	39.611	10.00	1.500	3.000	0.000	45.517	57.917	0.2286	31.00	0.000
TURNER RD	39.611	10.00	0.000	3.000	0.000	45.517	0.000	5.540	41.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.762	.0600	0.0977	0.5336	1.0	0.000	0.000	0.000
C	0.990	.0600	0.1641	1.184	1.0	0.000	0.000	0.000
U/S 20.4ha	1.17	.0600	0.4250	2.383	1.0	0.000	0.000	0.000
B	0.904	.0600	0.1289	0.8400	1.0	0.000	0.000	0.000
D	0.550	.0600	0.0584	0.2291	1.0	0.000	0.000	0.000

CULVERT	1.27	.0600	0.4891	3.122	1.0	0.000	0.000	0.000
A	1.00	.0600	0.1625	1.182	1.0	0.000	0.000	0.000
E	1.11	.0600	0.1977	0.2284	1.0	0.000	0.000	0.000

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 LINK MV                 1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.798
 ESTIMATED PEAK FLOW         (CUMECS) =      0.57
 ESTIMATED TIME TO PEAK         (MINS) =     46.00

 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.626
 ESTIMATED PEAK FLOW         (CUMECS) =      1.26
 ESTIMATED TIME TO PEAK         (MINS) =     45.00

 WARNING 12 - DRDH = -ve
 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          10.36
 ESTIMATED PEAK FLOW         (CUMECS) =      2.44
 ESTIMATED TIME TO PEAK         (MINS) =     58.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.467
 ESTIMATED PEAK FLOW         (CUMECS) =      0.87
 ESTIMATED TIME TO PEAK         (MINS) =     40.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.4921
 ESTIMATED PEAK FLOW         (CUMECS) =      0.24
 ESTIMATED TIME TO PEAK         (MINS) =     41.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          13.32
 ESTIMATED PEAK FLOW         (CUMECS) =      3.22
 ESTIMATED TIME TO PEAK         (MINS) =     49.00

 WARNING 12 - DRDH = -ve
 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.715
 ESTIMATED PEAK FLOW         (CUMECS) =      1.26
 ESTIMATED TIME TO PEAK         (MINS) =     46.00

 WARNING 12 - DRDH = -ve
 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.4946
 ESTIMATED PEAK FLOW         (CUMECS) =      0.24
 ESTIMATED TIME TO PEAK         (MINS) =     41.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          21.16
 ESTIMATED PEAK FLOW         (CUMECS) =      5.74
 ESTIMATED TIME TO PEAK         (MINS) =     49.00
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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

##
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 41.08
TOTAL OF SECOND SUB-AREAS (ha) = 0.44
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Area #2	Slope #1 (%)	Slope #2	% Impervious #1	% Impervious #2	Pern #1	Pern #2	B #1	B #2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2	Cont. Loss #1 (mm/h)	Cont. Loss #2	Excess Rain #1 (mm)	Excess Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	32.901	10.00	0.000	3.000	0.000	50.753	0.000	0.5680	46.00	0.000
C	32.901	10.00	1.500	3.000	0.000	50.753	64.303	1.261	45.00	0.000
U/S 20.4ha	32.901	10.00	0.000	3.000	0.000	50.753	0.000	2.435	58.00	0.000
B	32.901	10.00	1.500	3.000	0.000	50.753	64.303	0.8740	40.00	0.000
D	32.901	10.00	1.500	3.000	0.000	50.753	64.303	0.2365	41.00	0.000
CULVERT	32.901	10.00	0.000	3.000	0.000	50.753	0.000	3.223	49.00	0.000
A	32.901	10.00	1.500	3.000	0.000	50.753	64.303	1.256	46.00	0.000
E	32.901	10.00	1.500	3.000	0.000	50.753	64.303	0.2375	41.00	0.000
TURNER RD	32.901	10.00	0.000	3.000	0.000	50.753	0.000	5.740	49.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.781	.0600	0.1012	0.5674	1.0	0.000	0.000	0.000
C	0.987	.0600	0.1734	1.261	1.0	0.000	0.000	0.000
U/S 20.4ha	1.18	.0600	0.4297	2.435	1.0	0.000	0.000	0.000
B	0.924	.0600	0.1313	0.8742	1.0	0.000	0.000	0.000
D	0.554	.0600	0.0598	0.2363	1.0	0.000	0.000	0.000
CULVERT	1.27	.0600	0.4969	3.214	1.0	0.000	0.000	0.000
A	0.994	.0600	0.1719	1.256	1.0	0.000	0.000	0.000
E	1.12	.0600	0.2031	0.2376	1.0	0.000	0.000	0.000

```
 LINK MV                1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.042
 ESTIMATED PEAK FLOW         (CUMECS) =      0.51
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK C                 1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.111
 ESTIMATED PEAK FLOW         (CUMECS) =      1.15
 ESTIMATED TIME TO PEAK         (MINS) =     25.00

 WARNING 12 - DRDH = -ve
 LINK U/S 20.4ha        2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          6.072
 ESTIMATED PEAK FLOW         (CUMECS) =      2.04
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK B                 3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.438
 ESTIMATED PEAK FLOW         (CUMECS) =      0.81
 ESTIMATED TIME TO PEAK         (MINS) =     25.00

 LINK D                 4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.2890
 ESTIMATED PEAK FLOW         (CUMECS) =      0.22
 ESTIMATED TIME TO PEAK         (MINS) =     21.00

 LINK CULVERT           2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          7.799
 ESTIMATED PEAK FLOW         (CUMECS) =      2.86
 ESTIMATED TIME TO PEAK         (MINS) =     28.00

 LINK A                 5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.172
 ESTIMATED PEAK FLOW         (CUMECS) =      1.15
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 WARNING 12 - DRDH = -ve
 LINK E                 6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.2906
```

TURNER exist with MV Catch2.out

ESTIMATED PEAK FLOW (CUMECS) = 0.22
ESTIMATED TIME TO PEAK (MINS) = 21.00

LINK TURNER RD 1.002

ESTIMATED VOLUME (CU METRES*10**3) = 12.37
ESTIMATED PEAK FLOW (CUMECS) = 5.18
ESTIMATED TIME TO PEAK (MINS) = 27.00

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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

##########

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 25.
RETURN PERIOD (YRS) = 50.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 41.08
TOTAL OF SECOND SUB-AREAS (ha) = 0.44
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Perm #1	#2	B #1	#2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	97.422	10.00	0.000	3.000	0.000	29.642	0.000	0.5094	26.00	0.000
C	97.422	10.00	1.500	3.000	0.000	29.642	39.092	1.154	25.00	0.000
U/S 20.4ha	97.422	10.00	0.000	3.000	0.000	29.642	0.000	2.036	26.00	0.000
B	97.422	10.00	1.500	3.000	0.000	29.642	39.092	0.8073	25.00	0.000
D	97.422	10.00	1.500	3.000	0.000	29.642	39.092	0.2225	21.00	0.000

CULVERT	97.422	10.00	0.000	3.000	0.000	29.642	0.000	2.862	28.00	0.000
A	97.422	10.00	1.500	3.000	0.000	29.642	39.092	1.146	26.00	0.000
E	97.422	10.00	1.500	3.000	0.000	29.642	39.092	0.2234	21.00	0.000
TURNER RD	97.422	10.00	0.000	3.000	0.000	29.642	0.000	5.182	27.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.753	.0600	0.0945	0.5104	1.0	0.000	0.000	0.000
C	0.998	.0600	0.1594	1.155	1.0	0.000	0.000	0.000
U/S 20.4ha	1.12	.0600	0.3906	2.030	1.0	0.000	0.000	0.000
B	0.891	.0600	0.1250	0.8016	1.0	0.000	0.000	0.000
D	0.542	.0600	0.0574	0.2222	1.0	0.000	0.000	0.000
CULVERT	1.23	.0600	0.4672	2.854	1.0	0.000	0.000	0.000
A	1.00	.0600	0.1578	1.147	1.0	0.000	0.000	0.000
E	1.10	.0600	0.1953	0.2240	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.978
ESTIMATED PEAK FLOW (CUMECS) = 0.66
ESTIMATED TIME TO PEAK (MINS) = 39.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 3.984
ESTIMATED PEAK FLOW (CUMECS) = 1.43
ESTIMATED TIME TO PEAK (MINS) = 36.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 11.40
ESTIMATED PEAK FLOW (CUMECS) = 2.92
ESTIMATED TIME TO PEAK (MINS) = 46.00

LINK B 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.690
ESTIMATED PEAK FLOW (CUMECS) = 1.03
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK D 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.5411
ESTIMATED PEAK FLOW (CUMECS) = 0.26
ESTIMATED TIME TO PEAK (MINS) = 31.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 14.63
ESTIMATED PEAK FLOW (CUMECS) = 3.79
ESTIMATED TIME TO PEAK (MINS) = 44.00

```
 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          4.055
 ESTIMATED PEAK FLOW         (CUMECS) =      1.42
 ESTIMATED TIME TO PEAK         (MINS) =     38.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.5439
 ESTIMATED PEAK FLOW         (CUMECS) =      0.27
 ESTIMATED TIME TO PEAK         (MINS) =     31.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          23.21
 ESTIMATED PEAK FLOW         (CUMECS) =      6.65
 ESTIMATED TIME TO PEAK         (MINS) =     40.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =        90.
                                RETURN PERIOD (YRS)      =        50.
                                BX                       =    1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                                TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern        B       Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
            (ha)             (%)          (%)
MV         3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

C          3.596 .00001  8.000 5.000  0.000 100.0  .060 .013  .0346 0.000  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

B          4.305 0.4360  8.000 8.000  0.000 100.0  .060 .013  .0380 .0003  3.000

D         0.9680 .00001  8.000 5.000  0.000 100.0  .060 .013  .0175 0.000  4.000

CULVERT   .00001  0.000  2.800 0.000  0.000 0.000  .060 0.00  0.000 0.000  2.001

A          7.293 .00001  8.000 5.000  0.000 100.0  .060 .013  .0500 0.000  5.000

E         0.9730 .00001  8.000 .0010  0.000 0.000  .060 .025  .0176 .0021  6.000

TURNER RD .00001  0.000  2.500 0.000  0.000 0.000  .060 0.00  0.000 0.000  1.002


 Link    Average  Init. Loss  Cont. Loss    Excess Rain   Peak    Time   Link
 Label  Intensity  #1    #2    #1    #2      #1    #2    Inflow   to     Lag
          (mm/h)    ( mm )      (mm/h)        ( mm )    (m^3/s)  Peak  mins
```

MV	46.466	10.00	0.000	3.000	0.000	55.749	0.000	0.6551	39.00	0.000
C	46.466	10.00	1.500	3.000	0.000	55.749	68.199	1.432	36.00	0.000
U/S 20.4ha	46.466	10.00	0.000	3.000	0.000	55.749	0.000	2.921	46.00	0.000
B	46.466	10.00	1.500	3.000	0.000	55.749	68.199	1.030	30.00	0.000
D	46.466	10.00	1.500	3.000	0.000	55.749	68.199	0.2643	31.00	0.000
CULVERT	46.466	10.00	0.000	3.000	0.000	55.749	0.000	3.785	44.00	0.000
A	46.466	10.00	1.500	3.000	0.000	55.749	68.199	1.416	38.00	0.000
E	46.466	10.00	1.500	3.000	0.000	55.749	68.199	0.2655	31.00	0.000
TURNER RD	46.466	10.00	0.000	3.000	0.000	55.749	0.000	6.647	40.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.828	.0600	0.1102	0.6551	1.0	0.000	0.000	0.000
C	0.992	.0600	0.1906	1.432	1.0	0.000	0.000	0.000
U/S 20.4ha	1.24	.0600	0.4719	2.919	1.0	0.000	0.000	0.000
B	0.980	.0600	0.1445	1.022	1.0	0.000	0.000	0.000
D	0.583	.0600	0.0637	0.2652	1.0	0.000	0.000	0.000
CULVERT	1.06	.0600	0.5969	3.784	1.0	0.000	0.000	0.000
A	0.992	.0600	0.1891	1.416	1.0	0.000	0.000	0.000
E	1.16	.0600	0.2188	0.2647	1.0	0.000	0.000	0.000

```
 LINK MV                 1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.200
 ESTIMATED PEAK FLOW          (CUMECS) =      0.68
 ESTIMATED TIME TO PEAK          (MINS) =     46.00

 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.434
 ESTIMATED PEAK FLOW          (CUMECS) =      1.50
 ESTIMATED TIME TO PEAK          (MINS) =     44.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          12.69
 ESTIMATED PEAK FLOW          (CUMECS) =      2.95
 ESTIMATED TIME TO PEAK          (MINS) =     58.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.014
 ESTIMATED PEAK FLOW          (CUMECS) =      1.08
 ESTIMATED TIME TO PEAK          (MINS) =     40.00

 LINK D                  4.000
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```
 ESTIMATED VOLUME (CU METRES*10**3) =          0.6011
 ESTIMATED PEAK FLOW         (CUMECS) =      0.27
 ESTIMATED TIME TO PEAK         (MINS) =     41.00

 LINK CULVERT           2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          16.31
 ESTIMATED PEAK FLOW         (CUMECS) =      3.89
 ESTIMATED TIME TO PEAK         (MINS) =     49.00

 LINK A                 5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          4.539
 ESTIMATED PEAK FLOW         (CUMECS) =      1.50
 ESTIMATED TIME TO PEAK         (MINS) =     45.00

 LINK E                 6.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.6044
 ESTIMATED PEAK FLOW         (CUMECS) =      0.27
 ESTIMATED TIME TO PEAK         (MINS) =     41.00

 LINK TURNER RD         1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          25.89
 ESTIMATED PEAK FLOW         (CUMECS) =      6.97
 ESTIMATED TIME TO PEAK         (MINS) =     47.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
################################################################################
#####


                            ROUTING INCREMENT (MINS) =       1.00
                            STORM DURATION (MINS)    =       120.
                            RETURN PERIOD (YRS)      =        50.
                            BX                       =     1.0000
                            TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                            TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                            TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
            (ha)             (%)          (%)
MV          3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

C           3.596 .00001  8.000 5.000  0.000 100.0  .060 .013  .0346 0.000  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

B           4.305 0.4360  8.000 8.000  0.000 100.0  .060 .013  .0380 .0003  3.000

D          0.9680 .00001  8.000 5.000  0.000 100.0  .060 .013  .0175 0.000  4.000

CULVERT    .00001  0.000  2.800 0.000  0.000 0.000  .060 0.00  0.000 0.000  2.001

A           7.293 .00001  8.000 5.000  0.000 100.0  .060 .013  .0500 0.000  5.000
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E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	38.609	10.00	0.000	3.000	0.000	62.068	0.000	0.6834	46.00	0.000
C	38.609	10.00	1.500	3.000	0.000	62.068	75.718	1.502	44.00	0.000
U/S 20.4ha	38.609	10.00	0.000	3.000	0.000	62.068	0.000	2.950	58.00	0.000
B	38.609	10.00	1.500	3.000	0.000	62.068	75.718	1.083	40.00	0.000
D	38.609	10.00	1.500	3.000	0.000	62.068	75.718	0.2730	41.00	0.000
CULVERT	38.609	10.00	0.000	3.000	0.000	62.068	0.000	3.894	49.00	0.000
A	38.609	10.00	1.500	3.000	0.000	62.068	75.718	1.503	45.00	0.000
E	38.609	10.00	1.500	3.000	0.000	62.068	75.718	0.2744	41.00	0.000
TURNER RD	38.609	10.00	0.000	3.000	0.000	62.068	0.000	6.968	47.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.839	.0600	0.1133	0.6834	1.0	0.000	0.000	0.000
C	0.996	.0600	0.1969	1.502	1.0	0.000	0.000	0.000
U/S 20.4ha	1.25	.0600	0.4750	2.950	1.0	0.000	0.000	0.000
B	1.00	.0600	0.1492	1.079	1.0	0.000	0.000	0.000
D	0.585	.0600	0.0652	0.2726	1.0	0.000	0.000	0.000
CULVERT	1.06	.0600	0.6031	3.893	1.0	0.000	0.000	0.000
A	0.995	.0600	0.1969	1.501	1.0	0.000	0.000	0.000
E	1.18	.0600	0.2234	0.2753	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.213
ESTIMATED PEAK FLOW (CUMECS) = 0.62
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.444
ESTIMATED PEAK FLOW (CUMECS) = 1.38
ESTIMATED TIME TO PEAK (MINS) = 25.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 6.924

```
 ESTIMATED PEAK FLOW          (CUMECS) =      2.39
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.658
 ESTIMATED PEAK FLOW          (CUMECS) =      0.96
 ESTIMATED TIME TO PEAK          (MINS) =     24.00

 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.3341
 ESTIMATED PEAK FLOW          (CUMECS) =      0.26
 ESTIMATED TIME TO PEAK          (MINS) =     20.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          8.916
 ESTIMATED PEAK FLOW          (CUMECS) =      3.39
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 WARNING 12 - DRDH = -ve
 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.507
 ESTIMATED PEAK FLOW          (CUMECS) =      1.37
 ESTIMATED TIME TO PEAK          (MINS) =     25.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.3358
 ESTIMATED PEAK FLOW          (CUMECS) =      0.26
 ESTIMATED TIME TO PEAK          (MINS) =     20.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          14.20
 ESTIMATED PEAK FLOW          (CUMECS) =      6.06
 ESTIMATED TIME TO PEAK          (MINS) =     27.00



################################################################################
#####


Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
################################################################################
#####


                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =       25.
                                RETURN PERIOD (YRS)      =       100.
                                BX                       =    1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      41.08
                                TOTAL OF SECOND SUB-AREAS (ha) =       0.44
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
            (ha)             (%)           (%)
MV         3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000
```

C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2	Cont. Loss #1 (mm/h)	Cont. Loss #2	Excess Rain #1 (mm)	Excess Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	108.36	10.00	0.000	3.000	0.000	34.151	0.000	0.6154	26.00	0.000
C	108.36	10.00	1.500	3.000	0.000	34.151	43.651	1.383	25.00	0.000
U/S 20.4ha	108.36	10.00	0.000	3.000	0.000	34.151	0.000	2.390	26.00	0.000
B	108.36	10.00	1.500	3.000	0.000	34.151	43.651	0.9604	24.00	0.000
D	108.36	10.00	1.500	3.000	0.000	34.151	43.651	0.2618	20.00	0.000
CULVERT	108.36	10.00	0.000	3.000	0.000	34.151	0.000	3.390	26.00	0.000
A	108.36	10.00	1.500	3.000	0.000	34.151	43.651	1.373	25.00	0.000
E	108.36	10.00	1.500	3.000	0.000	34.151	43.651	0.2630	20.00	0.000
TURNER RD	108.36	10.00	0.000	3.000	0.000	34.151	0.000	6.062	27.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.808	.0600	0.1063	0.6167	1.0	0.000	0.000	0.000
C	0.988	.0600	0.1859	1.380	1.0	0.000	0.000	0.000
U/S 20.4ha	1.17	.0600	0.4250	2.383	1.0	0.000	0.000	0.000
B	0.963	.0600	0.1383	0.9612	1.0	0.000	0.000	0.000
D	0.576	.0600	0.0637	0.2618	1.0	0.000	0.000	0.000
CULVERT	1.07	.0600	0.5625	3.357	1.0	0.000	0.000	0.000
A	0.989	.0600	0.1852	1.373	1.0	0.000	0.000	0.000
E	1.16	.0600	0.2172	0.2633	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.259
ESTIMATED PEAK FLOW (CUMECS) = 0.77

```
 ESTIMATED TIME TO PEAK          (MINS) =     38.00

 LINK C                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.549
 ESTIMATED PEAK FLOW          (CUMECS) =      1.68
 ESTIMATED TIME TO PEAK          (MINS) =     34.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          12.98
 ESTIMATED PEAK FLOW          (CUMECS) =      3.42
 ESTIMATED TIME TO PEAK          (MINS) =     46.00

 WARNING 12 - DRDH = -ve
 LINK B                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.073
 ESTIMATED PEAK FLOW          (CUMECS) =      1.24
 ESTIMATED TIME TO PEAK          (MINS) =     30.00

 WARNING 12 - DRDH = -ve
 LINK D                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.6141
 ESTIMATED PEAK FLOW          (CUMECS) =      0.31
 ESTIMATED TIME TO PEAK          (MINS) =     31.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          16.66
 ESTIMATED PEAK FLOW          (CUMECS) =      4.33
 ESTIMATED TIME TO PEAK          (MINS) =     45.00

 LINK A                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          4.644
 ESTIMATED PEAK FLOW          (CUMECS) =      1.66
 ESTIMATED TIME TO PEAK          (MINS) =     36.00

 LINK E                  6.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.6174
 ESTIMATED PEAK FLOW          (CUMECS) =      0.31
 ESTIMATED TIME TO PEAK          (MINS) =     31.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          26.47
 ESTIMATED PEAK FLOW          (CUMECS) =      7.60
 ESTIMATED TIME TO PEAK          (MINS) =     40.00



################################################################################
#####


Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
################################################################################
#####


                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =        90.
                              RETURN PERIOD (YRS)      =       100.
```

TURNER exist with MV Catch2.out

BX = 1.0000

TOTAL OF FIRST SUB-AREAS (ha) = 41.08

TOTAL OF SECOND SUB-AREAS (ha) = 0.44

TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1	% Impervious #2	Perm #1	Perm #2	B #1	B #2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	51.681	10.00	0.000	3.000	0.000	63.572	0.000	0.7675	38.00	0.000
C	51.681	10.00	1.500	3.000	0.000	63.572	76.022	1.680	34.00	0.000
U/S 20.4ha	51.681	10.00	0.000	3.000	0.000	63.572	0.000	3.416	46.00	0.000
B	51.681	10.00	1.500	3.000	0.000	63.572	76.022	1.242	30.00	0.000
D	51.681	10.00	1.500	3.000	0.000	63.572	76.022	0.3051	31.00	0.000
CULVERT	51.681	10.00	0.000	3.000	0.000	63.572	0.000	4.335	45.00	0.000
A	51.681	10.00	1.500	3.000	0.000	63.572	76.022	1.665	36.00	0.000
E	51.681	10.00	1.500	3.000	0.000	63.572	76.022	0.3066	31.00	0.000
TURNER RD	51.681	10.00	0.000	3.000	0.000	63.572	0.000	7.601	40.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV	0.881	.0600	0.1211	0.7675	1.0	0.000	0.000	0.000
C	0.998	.0600	0.2125	1.680	1.0	0.000	0.000	0.000
U/S 20.4ha	1.06	.0600	0.5688	3.407	1.0	0.000	0.000	0.000
B	0.987	.0600	0.1703	1.233	1.0	0.000	0.000	0.000
D	0.614	.0600	0.0695	0.3052	1.0	0.000	0.000	0.000

CULVERT	1.11	.0600	0.6219	4.332	1.0	0.000	0.000	0.000
A	1.00	.0600	0.2109	1.665	1.0	0.000	0.000	0.000
E	1.21	.0600	0.2406	0.3063	1.0	0.000	0.000	0.000

LINK MV 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.504
ESTIMATED PEAK FLOW (CUMECS) = 0.80
ESTIMATED TIME TO PEAK (MINS) = 45.00

LINK C 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 5.040
ESTIMATED PEAK FLOW (CUMECS) = 1.76
ESTIMATED TIME TO PEAK (MINS) = 42.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 14.45
ESTIMATED PEAK FLOW (CUMECS) = 3.43
ESTIMATED TIME TO PEAK (MINS) = 53.00

WARNING 12 - DRDH = -ve
LINK B 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 3.415
ESTIMATED PEAK FLOW (CUMECS) = 1.26
ESTIMATED TIME TO PEAK (MINS) = 40.00

WARNING 12 - DRDH = -ve
LINK D 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.6843
ESTIMATED PEAK FLOW (CUMECS) = 0.31
ESTIMATED TIME TO PEAK (MINS) = 41.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 18.55
ESTIMATED PEAK FLOW (CUMECS) = 4.47
ESTIMATED TIME TO PEAK (MINS) = 49.00

LINK A 5.000

ESTIMATED VOLUME (CU METRES*10**3) = 5.172
ESTIMATED PEAK FLOW (CUMECS) = 1.76
ESTIMATED TIME TO PEAK (MINS) = 44.00

LINK E 6.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.6877
ESTIMATED PEAK FLOW (CUMECS) = 0.31
ESTIMATED TIME TO PEAK (MINS) = 41.00

LINK TURNER RD 1.002

ESTIMATED VOLUME (CU METRES*10**3) = 29.45
ESTIMATED PEAK FLOW (CUMECS) = 7.91
ESTIMATED TIME TO PEAK (MINS) = 47.00

#####

Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

##
#####

ROUTING INCREMENT (MINS)	=	1.00
STORM DURATION (MINS)	=	120.
RETURN PERIOD (YRS)	=	100.
BX	=	1.0000
TOTAL OF FIRST SUB-AREAS (ha)	=	41.08
TOTAL OF SECOND SUB-AREAS (ha)	=	0.44
TOTAL OF ALL SUB-AREAS (ha)	=	41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	#2	Slope #1 (%)	#2	% Impervious #1 (%)	#2	Perm #1	#2	B #1	#2	Link No.
MV	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
C	3.596	.00001	8.000	5.000	0.000	100.0	.060	.013	.0346	0.000	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
B	4.305	0.4360	8.000	8.000	0.000	100.0	.060	.013	.0380	.0003	3.000
D	0.9680	.00001	8.000	5.000	0.000	100.0	.060	.013	.0175	0.000	4.000
CULVERT	.00001	0.000	2.800	0.000	0.000	0.000	.060	0.00	0.000	0.000	2.001
A	7.293	.00001	8.000	5.000	0.000	100.0	.060	.013	.0500	0.000	5.000
E	0.9730	.00001	8.000	.0010	0.000	0.000	.060	.025	.0176	.0021	6.000
TURNER RD	.00001	0.000	2.500	0.000	0.000	0.000	.060	0.00	0.000	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV	42.954	10.00	0.000	3.000	0.000	70.657	0.000	0.8019	45.00	0.000
C	42.954	10.00	1.500	3.000	0.000	70.657	84.407	1.759	42.00	0.000
U/S 20.4ha	42.954	10.00	0.000	3.000	0.000	70.657	0.000	3.431	53.00	0.000
B	42.954	10.00	1.500	3.000	0.000	70.657	84.407	1.263	40.00	0.000
D	42.954	10.00	1.500	3.000	0.000	70.657	84.407	0.3097	41.00	0.000
CULVERT	42.954	10.00	0.000	3.000	0.000	70.657	0.000	4.467	49.00	0.000
A	42.954	10.00	1.500	3.000	0.000	70.657	84.407	1.761	44.00	0.000
E	42.954	10.00	1.500	3.000	0.000	70.657	84.407	0.3109	41.00	0.000
TURNER RD	42.954	10.00	0.000	3.000	0.000	70.657	0.000	7.907	47.00	0.000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link	Ave.	Ave.	Flow	Max.	No.	Pipe	Pipe	Pipe

Label	Vel. (m/s)	Rough. (n)	Depth (m)	Flow (m^3/s)	of Pipes	Dia. (m)	Slope (%)	Flow (m3^/s)
MV	0.895	.0600	0.1242	0.8009	1.0	0.000	0.000	0.000
C	1.00	.0600	0.2180	1.760	1.0	0.000	0.000	0.000
U/S 20.4ha	1.06	.0600	0.5688	3.426	1.0	0.000	0.000	0.000
B	0.980	.0600	0.1734	1.253	1.0	0.000	0.000	0.000
D	0.618	.0600	0.0703	0.3104	1.0	0.000	0.000	0.000
CULVERT	1.12	.0600	0.6281	4.463	1.0	0.000	0.000	0.000
A	1.00	.0600	0.2188	1.761	1.0	0.000	0.000	0.000
E	1.23	.0600	0.2422	0.3119	1.0	0.000	0.000	0.000

Run completed at: 30th August 2017 12:53:28

mik open 0

Annexure D - Water Quantity Modelling – XP Rafts Modelling for the Ultimate Development

D.2 – Developed Conditions

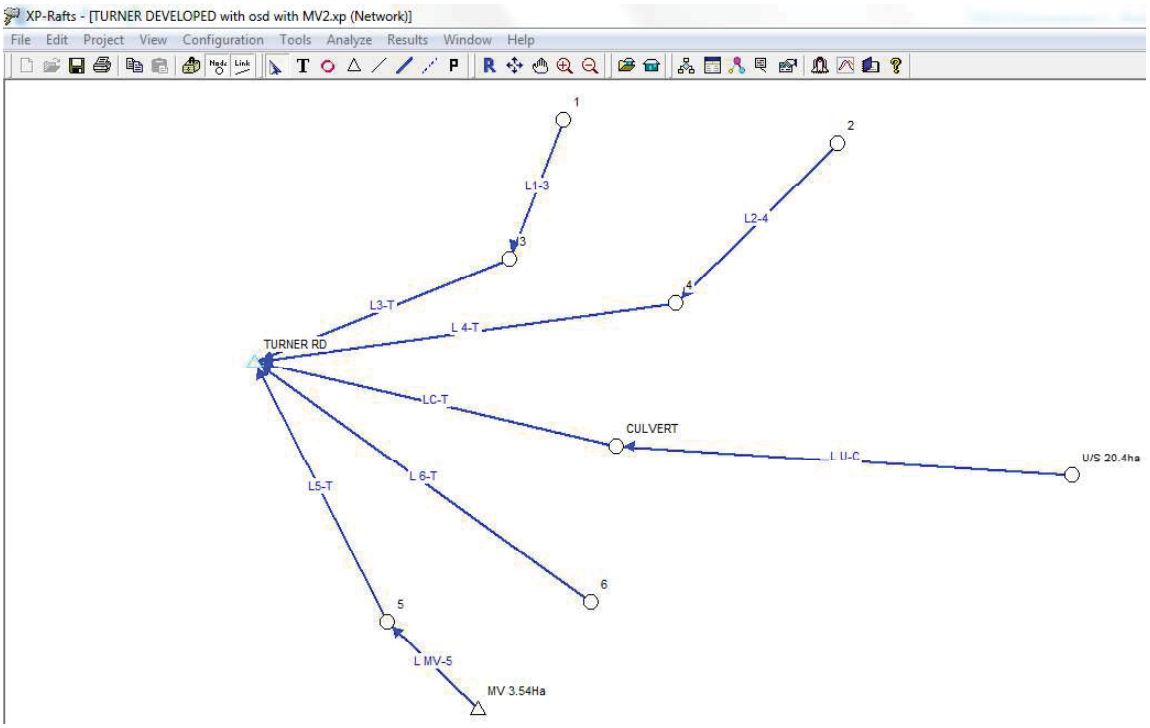

Figure D.1 – Image of XP-Rafts Ultimate Developed Conditions Model.

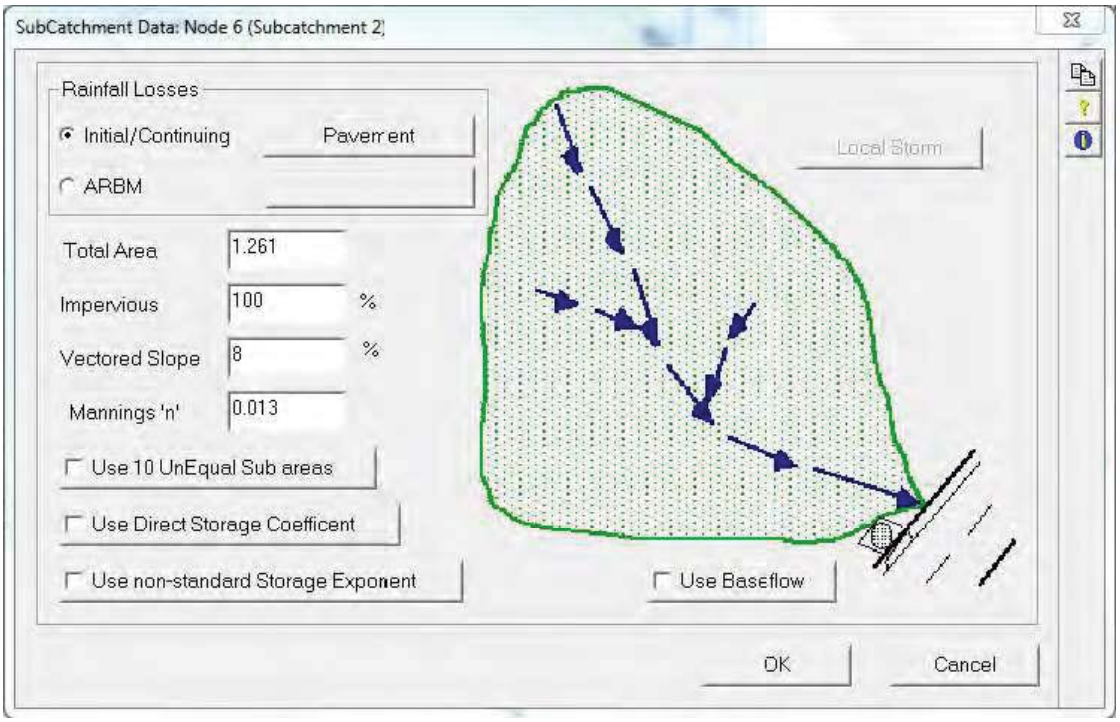

Figure D.2 – Typical node catchment details for the Ultimate Developed Conditions

TURNER DEVELOPED with osd with MV2.out
Run started at: 24th October 2017 7:10:52

##
#####
RUNTIME RESULTS
##
#####

Max. no. of links allowed = 2000

Max. no. of routng increments allowed = 25000

Max. no. of rating curve points = 25000

Max. no. of storm temporal points = 25000

Max. no. of channel subreaches = 25

Max link stack level = 25

Input Version number = 650

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.3486
ESTIMATED PEAK FLOW (CUMECS) = 0.11
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 0.7657
ESTIMATED PEAK FLOW (CUMECS) = 0.58
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.033
ESTIMATED PEAK FLOW (CUMECS) = 0.41
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.109
ESTIMATED PEAK FLOW (CUMECS) = 0.45
ESTIMATED TIME TO PEAK (MINS) = 29.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.5982
ESTIMATED PEAK FLOW (CUMECS) = 0.77
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 0.8643
ESTIMATED PEAK FLOW (CUMECS) = 1.14
ESTIMATED TIME TO PEAK (MINS) = 15.00

```
 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.2820
 ESTIMATED PEAK FLOW         (CUMECS) =      0.37
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.4027
 ESTIMATED PEAK FLOW         (CUMECS) =      0.52
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.100
 ESTIMATED PEAK FLOW         (CUMECS) =      1.43
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          5.208
 ESTIMATED PEAK FLOW         (CUMECS) =      3.34
 ESTIMATED TIME TO PEAK         (MINS) =     15.00



################################################################################
#####


Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
################################################################################
#####


                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =        25.
                                RETURN PERIOD (YRS)      =         2.
                                BX                       =     1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                                TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
             (ha)             (%)          (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5          0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

CULVERT    0.7800  0.000  2.800 0.000  0.000 0.000  .030 0.00  .0155 0.000  2.001

1          0.8940  2.681  8.000 8.000  0.000 100.0  .030 .013  .0098 .0008  3.000

3          0.3960  1.190  8.000 8.000  0.000 100.0  .030 .013  .0064 .0005  3.001

6          0.4200  1.261  8.000 8.000  0.000 100.0  .030 .013  .0066 .0005  4.000

2          0.6010  1.802  8.000 8.000  0.000 100.0  .030 .013  .0080 .0007  5.000

4           1.043  3.130  8.000 8.000  0.000 100.0  .030 .013  .0107 .0009  5.001
```

TURNER RD 0.8820 0.000 2.500 0.000 0.000 0.000 .030 0.00 .0175 0.000 1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	49.364	10.00	0.000	3.000	0.000	9.818	0.000	0.1147	26.00	0.000
5	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.5755	15.00	0.000
U/S 20.4ha	49.364	10.00	0.000	3.000	0.000	9.818	0.000	0.4078	26.00	0.000
CULVERT	49.364	10.00	0.000	3.000	0.000	9.818	0.000	0.4491	29.00	0.000
1	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.7732	15.00	0.000
3	49.364	10.00	1.500	3.000	0.000	9.818	19.068	1.140	15.00	0.000
6	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.3719	15.00	0.000
2	49.364	10.00	1.500	3.000	0.000	9.818	19.068	0.5225	15.00	0.000
4	49.364	10.00	1.500	3.000	0.000	9.818	19.068	1.434	15.00	0.000
TURNER RD	49.364	10.00	0.000	3.000	0.000	9.818	0.000	3.338	15.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	15.00	3.337	19.00	1.955	5208.2	0.0000	739.28	94.172

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.767	.0600	0.2734	0.1147	1.0	0.000	0.000	0.000
5	2.00	.0130	0.0406	0.5783	1.0	0.000	0.000	0.000
U/S 20.4ha	1.08	.0300	0.1086	0.4080	1.0	0.000	0.000	0.000
CULVERT	1.11	.0300	0.1148	0.4475	1.0	0.000	0.000	0.000
1	2.28	.0130	0.0484	0.7880	1.0	0.000	0.000	0.000
3	2.56	.0130	0.0613	1.122	1.0	0.000	0.000	0.000
6	0.553	.0600	0.0922	0.3612	1.0	0.000	0.000	0.000
2	1.96	.0130	0.0383	0.5344	1.0	0.000	0.000	0.000
4	0.924	.0600	0.2094	1.374	1.0	0.000	0.000	0.000

```
LINK MV 3.54Ha          1.000

ESTIMATED VOLUME (CU METRES*10**3) =          0.7771
ESTIMATED PEAK FLOW          (CUMECS) =      0.21
ESTIMATED TIME TO PEAK          (MINS) =     48.00

LINK 5                  1.001

ESTIMATED VOLUME (CU METRES*10**3) =           1.543
ESTIMATED PEAK FLOW          (CUMECS) =      0.67
ESTIMATED TIME TO PEAK          (MINS) =     30.00

LINK U/S 20.4ha         2.000

ESTIMATED VOLUME (CU METRES*10**3) =           4.410
ESTIMATED PEAK FLOW          (CUMECS) =      0.98
ESTIMATED TIME TO PEAK          (MINS) =     60.00

LINK CULVERT            2.001

ESTIMATED VOLUME (CU METRES*10**3) =           4.579
ESTIMATED PEAK FLOW          (CUMECS) =      1.01
ESTIMATED TIME TO PEAK          (MINS) =     62.00

LINK 1                  3.000

ESTIMATED VOLUME (CU METRES*10**3) =           1.100
ESTIMATED PEAK FLOW          (CUMECS) =      0.81
ESTIMATED TIME TO PEAK          (MINS) =     30.00

LINK 3                  3.001

ESTIMATED VOLUME (CU METRES*10**3) =           1.588
ESTIMATED PEAK FLOW          (CUMECS) =      1.18
ESTIMATED TIME TO PEAK          (MINS) =     30.00

LINK 6                  4.000

ESTIMATED VOLUME (CU METRES*10**3) =          0.5176
ESTIMATED PEAK FLOW          (CUMECS) =      0.38
ESTIMATED TIME TO PEAK          (MINS) =     30.00

LINK 2                  5.000

ESTIMATED VOLUME (CU METRES*10**3) =          0.7400
ESTIMATED PEAK FLOW          (CUMECS) =      0.55
ESTIMATED TIME TO PEAK          (MINS) =     30.00

LINK 4                  5.001

ESTIMATED VOLUME (CU METRES*10**3) =           2.025
ESTIMATED PEAK FLOW          (CUMECS) =      1.51
ESTIMATED TIME TO PEAK          (MINS) =     30.00

LINK TURNER RD          1.002

ESTIMATED VOLUME (CU METRES*10**3) =           10.44
ESTIMATED PEAK FLOW          (CUMECS) =      3.65
ESTIMATED TIME TO PEAK          (MINS) =     30.00
```

Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006
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ROUTING INCREMENT (MINS)	=	1.00
STORM DURATION (MINS)	=	90.
RETURN PERIOD (YRS)	=	2.
BX	=	1.0000
TOTAL OF FIRST SUB-AREAS (ha)	=	29.58
TOTAL OF SECOND SUB-AREAS (ha)	=	11.93
TOTAL OF ALL SUB-AREAS (ha)	=	41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Perm #1	#2	B #1	#2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	23.555	10.00	0.000	3.000	0.000	21.682	0.000	0.2149	48.00	0.000
5	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.6722	30.00	0.000
U/S 20.4ha	23.555	10.00	0.000	3.000	0.000	21.682	0.000	0.9766	60.00	0.000
CULVERT	23.555	10.00	0.000	3.000	0.000	21.682	0.000	1.010	62.00	0.000
1	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.8133	30.00	0.000
3	23.555	10.00	1.500	3.000	0.000	21.682	33.832	1.175	30.00	0.000
6	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.3820	30.00	0.000
2	23.555	10.00	1.500	3.000	0.000	21.682	33.832	0.5542	30.00	0.000
4	23.555	10.00	1.500	3.000	0.000	21.682	33.832	1.506	30.00	0.000
TURNER RD	23.555	10.00	0.000	3.000	0.000	21.682	0.000	3.652	30.00	0.000

TURNER DEVELOPED with osd with MV2.out

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	30.00	3.652	41.00	2.077	10443.4	0.0000	900.91	94.257

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.894	.0600	0.4219	0.2149	1.0	0.000	0.000	0.000
5	2.14	.0130	0.0445	0.6798	1.0	0.000	0.000	0.000
U/S 20.4ha	1.45	.0300	0.1789	0.9764	1.0	0.000	0.000	0.000
CULVERT	1.47	.0300	0.1820	1.010	1.0	0.000	0.000	0.000
1	2.29	.0130	0.0500	0.8156	1.0	0.000	0.000	0.000
3	2.61	.0130	0.0625	1.166	1.0	0.000	0.000	0.000
6	0.559	.0600	0.0938	0.3718	1.0	0.000	0.000	0.000
2	1.98	.0130	0.0398	0.5620	1.0	0.000	0.000	0.000
4	0.925	.0600	0.2156	1.417	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.8622
ESTIMATED PEAK FLOW (CUMECS) = 0.22
ESTIMATED TIME TO PEAK (MINS) = 61.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.714
ESTIMATED PEAK FLOW (CUMECS) = 0.55
ESTIMATED TIME TO PEAK (MINS) = 35.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 4.940
ESTIMATED PEAK FLOW (CUMECS) = 1.03
ESTIMATED TIME TO PEAK (MINS) = 66.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 5.130
ESTIMATED PEAK FLOW (CUMECS) = 1.07
ESTIMATED TIME TO PEAK (MINS) = 68.00

LINK 1 3.000

TURNER DEVELOPED with osd with MV2.out

```
 ESTIMATED VOLUME (CU METRES*10**3) =          1.225
 ESTIMATED PEAK FLOW         (CUMECS) =      0.73
 ESTIMATED TIME TO PEAK         (MINS) =     32.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.768
 ESTIMATED PEAK FLOW         (CUMECS) =      1.05
 ESTIMATED TIME TO PEAK         (MINS) =     35.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.5757
 ESTIMATED PEAK FLOW         (CUMECS) =      0.35
 ESTIMATED TIME TO PEAK         (MINS) =     32.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.8230
 ESTIMATED PEAK FLOW         (CUMECS) =      0.50
 ESTIMATED TIME TO PEAK         (MINS) =     32.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.253
 ESTIMATED PEAK FLOW         (CUMECS) =      1.35
 ESTIMATED TIME TO PEAK         (MINS) =     35.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          11.66
 ESTIMATED PEAK FLOW         (CUMECS) =      3.22
 ESTIMATED TIME TO PEAK         (MINS) =     39.00
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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =       120.
                              RETURN PERIOD (YRS)      =         2.
                              BX                       =    1.0000
                              TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                              TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                              TOTAL OF ALL SUB-AREAS (ha)    =      41.51
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SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Perm #1	#2	B #1	#2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001

1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	19.535	10.00	0.000	3.000	0.000	24.320	0.000	0.2200	61.00	0.000
5	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.5455	35.00	0.000
U/S 20.4ha	19.535	10.00	0.000	3.000	0.000	24.320	0.000	1.033	66.00	0.000
CULVERT	19.535	10.00	0.000	3.000	0.000	24.320	0.000	1.070	68.00	0.000
1	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.7336	32.00	0.000
3	19.535	10.00	1.500	3.000	0.000	24.320	37.570	1.053	35.00	0.000
6	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.3478	32.00	0.000
2	19.535	10.00	1.500	3.000	0.000	24.320	37.570	0.4973	32.00	0.000
4	19.535	10.00	1.500	3.000	0.000	24.320	37.570	1.351	35.00	0.000
TURNER RD	19.535	10.00	0.000	3.000	0.000	24.320	0.000	3.215	39.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Stage Used
TURNER RD	39.00	3.215	47.00	2.137	11656.0	0.0000	985.62	94.298

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.893	.0600	0.4313	0.2200	1.0	0.000	0.000	0.000
5	1.98	.0130	0.0395	0.5562	1.0	0.000	0.000	0.000
U/S 20.4ha	1.48	.0300	0.1844	1.032	1.0	0.000	0.000	0.000
CULVERT	1.49	.0300	0.1883	1.069	1.0	0.000	0.000	0.000

1	2.18	.0130	0.0471	0.7321	1.0	0.000	0.000	0.000
3	2.54	.0130	0.0586	1.064	1.0	0.000	0.000	0.000
6	0.531	.0600	0.0883	0.3324	1.0	0.000	0.000	0.000
2	1.86	.0130	0.0373	0.4938	1.0	0.000	0.000	0.000
4	0.919	.0600	0.2016	1.316	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.5560
ESTIMATED PEAK FLOW (CUMECS) = 0.20
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.125
ESTIMATED PEAK FLOW (CUMECS) = 0.86
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 3.263
ESTIMATED PEAK FLOW (CUMECS) = 0.82
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 3.385
ESTIMATED PEAK FLOW (CUMECS) = 0.88
ESTIMATED TIME TO PEAK (MINS) = 28.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.8181
ESTIMATED PEAK FLOW (CUMECS) = 1.09
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.181
ESTIMATED PEAK FLOW (CUMECS) = 1.59
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 6 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.3845
ESTIMATED PEAK FLOW (CUMECS) = 0.52
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 2 5.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.5499
ESTIMATED PEAK FLOW (CUMECS) = 0.75
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 4 5.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.504
ESTIMATED PEAK FLOW (CUMECS) = 2.01
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK TURNER RD 1.002

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 ESTIMATED VOLUME (CU METRES*10**3) =          7.720
 ESTIMATED PEAK FLOW         (CUMECS) =      4.75
 ESTIMATED TIME TO PEAK         (MINS) =     15.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =        25.
                                RETURN PERIOD (YRS)      =         5.
                                BX                       =     1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                                TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
             (ha)             (%)          (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5          0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

CULVERT    0.7800  0.000  2.800 0.000  0.000 0.000  .030 0.00  .0155 0.000  2.001

1          0.8940  2.681  8.000 8.000  0.000 100.0  .030 .013  .0098 .0008  3.000

3          0.3960  1.190  8.000 8.000  0.000 100.0  .030 .013  .0064 .0005  3.001

6          0.4200  1.261  8.000 8.000  0.000 100.0  .030 .013  .0066 .0005  4.000

2          0.6010  1.802  8.000 8.000  0.000 100.0  .030 .013  .0080 .0007  5.000

4           1.043  3.130  8.000 8.000  0.000 100.0  .030 .013  .0107 .0009  5.001

TURNER RD 0.8820  0.000  2.500 0.000  0.000 0.000  .030 0.00  .0175 0.000  1.002


 Link    Average  Init. Loss  Cont. Loss    Excess Rain   Peak    Time   Link
 Label  Intensity  #1    #2    #1    #2      #1    #2    Inflow   to     Lag
          (mm/h)    ( mm )      (mm/h)        ( mm )     (m^3/s)  Peak  mins
MV 3.54Ha 64.073 10.00 0.000  3.000 0.000  15.847  0.000  0.2029  26.00 0.000

5          64.073 10.00 1.500  3.000 0.000  15.847 25.197  0.8564  15.00 0.000

U/S 20.4ha64.073 10.00 0.000  3.000 0.000  15.847  0.000  0.8221  26.00 0.000

CULVERT    64.073 10.00 0.000  3.000 0.000  15.847  0.000  0.8827  28.00 0.000

1          64.073 10.00 1.500  3.000 0.000  15.847 25.197   1.087  15.00 0.000

3          64.073 10.00 1.500  3.000 0.000  15.847 25.197   1.594  15.00 0.000
```

6	64.073	10.00	1.500	3.000	0.000	15.847	25.197	0.5223	15.00	0.000
2	64.073	10.00	1.500	3.000	0.000	15.847	25.197	0.7507	15.00	0.000
4	64.073	10.00	1.500	3.000	0.000	15.847	25.197	2.015	15.00	0.000
TURNER RD	64.073	10.00	0.000	3.000	0.000	15.847	0.000	4.752	15.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	15.00	4.751	23.00	2.394	7719.7	0.0000	1397.4	94.502

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.880	.0600	0.4062	0.2028	1.0	0.000	0.000	0.000
5	2.31	.0130	0.0516	0.8516	1.0	0.000	0.000	0.000
U/S 20.4ha	1.36	.0300	0.1625	0.8215	1.0	0.000	0.000	0.000
CULVERT	1.40	.0300	0.1688	0.8811	1.0	0.000	0.000	0.000
1	2.58	.0130	0.0598	1.103	1.0	0.000	0.000	0.000
3	2.96	.0130	0.0750	1.588	1.0	0.000	0.000	0.000
6	0.647	.0600	0.1133	0.5200	1.0	0.000	0.000	0.000
2	2.22	.0130	0.0477	0.7542	1.0	0.000	0.000	0.000
4	1.12	.0600	0.2578	2.064	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.139
ESTIMATED PEAK FLOW (CUMECS) = 0.34
ESTIMATED TIME TO PEAK (MINS) = 45.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.166
ESTIMATED PEAK FLOW (CUMECS) = 0.97
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 6.575
ESTIMATED PEAK FLOW (CUMECS) = 1.57

```
 ESTIMATED TIME TO PEAK          (MINS) =     55.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          6.826
 ESTIMATED PEAK FLOW          (CUMECS) =      1.62
 ESTIMATED TIME TO PEAK          (MINS) =     57.00

 LINK 1                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.476
 ESTIMATED PEAK FLOW          (CUMECS) =      1.08
 ESTIMATED TIME TO PEAK          (MINS) =     30.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.130
 ESTIMATED PEAK FLOW          (CUMECS) =      1.57
 ESTIMATED TIME TO PEAK          (MINS) =     30.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.6938
 ESTIMATED PEAK FLOW          (CUMECS) =      0.52
 ESTIMATED TIME TO PEAK          (MINS) =     29.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.9913
 ESTIMATED PEAK FLOW          (CUMECS) =      0.74
 ESTIMATED TIME TO PEAK          (MINS) =     27.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.714
 ESTIMATED PEAK FLOW          (CUMECS) =      1.99
 ESTIMATED TIME TO PEAK          (MINS) =     30.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          14.81
 ESTIMATED PEAK FLOW          (CUMECS) =      5.41
 ESTIMATED TIME TO PEAK          (MINS) =     30.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =        90.
                              RETURN PERIOD (YRS)      =         5.
                              BX                       =     1.0000
                              TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                              TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                              TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern        B       Link
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Label	#1 (ha)	#2	#1 (%)	#2	#1 (%)	#2	#1	#2	#1	#2	No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	30.568	10.00	0.000	3.000	0.000	32.052	0.000	0.3429	45.00	0.000
5	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.9711	30.00	0.000
U/S 20.4ha	30.568	10.00	0.000	3.000	0.000	32.052	0.000	1.566	55.00	0.000
CULVERT	30.568	10.00	0.000	3.000	0.000	32.052	0.000	1.615	57.00	0.000
1	30.568	10.00	1.500	3.000	0.000	32.052	44.352	1.076	30.00	0.000
3	30.568	10.00	1.500	3.000	0.000	32.052	44.352	1.573	30.00	0.000
6	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.5173	29.00	0.000
2	30.568	10.00	1.500	3.000	0.000	32.052	44.352	0.7390	27.00	0.000
4	30.568	10.00	1.500	3.000	0.000	32.052	44.352	1.992	30.00	0.000
TURNER RD	30.568	10.00	0.000	3.000	0.000	32.052	0.000	5.408	30.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	30.00	5.408	58.00	2.861	14814.7	0.0000	2029.8	94.795

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.986	.0600	0.5844	0.3427	1.0	0.000	0.000	0.000
5	2.45	.0130	0.0557	0.9732	1.0	0.000	0.000	0.000
U/S 20.4ha	1.68	.0300	0.2328	1.565	1.0	0.000	0.000	0.000
CULVERT	1.70	.0300	0.2375	1.615	1.0	0.000	0.000	0.000
1	2.57	.0130	0.0594	1.089	1.0	0.000	0.000	0.000
3	2.96	.0130	0.0742	1.574	1.0	0.000	0.000	0.000
6	0.648	.0600	0.1125	0.5166	1.0	0.000	0.000	0.000
2	2.21	.0130	0.0473	0.7464	1.0	0.000	0.000	0.000
4	1.12	.0600	0.2563	2.049	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.279
ESTIMATED PEAK FLOW (CUMECS) = 0.35
ESTIMATED TIME TO PEAK (MINS) = 50.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.420
ESTIMATED PEAK FLOW (CUMECS) = 0.84
ESTIMATED TIME TO PEAK (MINS) = 35.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 7.330
ESTIMATED PEAK FLOW (CUMECS) = 1.64
ESTIMATED TIME TO PEAK (MINS) = 65.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 7.609
ESTIMATED PEAK FLOW (CUMECS) = 1.69
ESTIMATED TIME TO PEAK (MINS) = 66.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.641
ESTIMATED PEAK FLOW (CUMECS) = 1.00
ESTIMATED TIME TO PEAK (MINS) = 35.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.369
ESTIMATED PEAK FLOW (CUMECS) = 1.46
ESTIMATED TIME TO PEAK (MINS) = 35.00

LINK 6 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.7712
ESTIMATED PEAK FLOW (CUMECS) = 0.48
ESTIMATED TIME TO PEAK (MINS) = 32.00

LINK 2 5.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.103

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                    TURNER DEVELOPED with osd with MV2.out
 ESTIMATED PEAK FLOW          (CUMECS) =      0.68
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.017
 ESTIMATED PEAK FLOW          (CUMECS) =      1.85
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          16.50
 ESTIMATED PEAK FLOW          (CUMECS) =      4.73
 ESTIMATED TIME TO PEAK          (MINS) =     38.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =       120.
                                RETURN PERIOD (YRS)      =         5.
                                BX                       =    1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                                TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern        B       Link
 Label      #1     #2      #1   #2      #1   #2     #1    #2    #1   #2     No.
             (ha)             (%)          (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5          0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

CULVERT    0.7800  0.000  2.800 0.000  0.000 0.000  .030 0.00  .0155 0.000  2.001

1          0.8940  2.681  8.000 8.000  0.000 100.0  .030 .013  .0098 .0008  3.000

3          0.3960  1.190  8.000 8.000  0.000 100.0  .030 .013  .0064 .0005  3.001

6          0.4200  1.261  8.000 8.000  0.000 100.0  .030 .013  .0066 .0005  4.000

2          0.6010  1.802  8.000 8.000  0.000 100.0  .030 .013  .0080 .0007  5.000

4           1.043  3.130  8.000 8.000  0.000 100.0  .030 .013  .0107 .0009  5.001

TURNER RD 0.8820  0.000  2.500 0.000  0.000 0.000  .030 0.00  .0175 0.000  1.002


 Link    Average  Init. Loss  Cont. Loss    Excess Rain   Peak    Time   Link
 Label  Intensity  #1    #2    #1    #2      #1    #2    Inflow   to     Lag
          (mm/h)    ( mm )      (mm/h)        ( mm )     (m^3/s)  Peak  mins
MV 3.54Ha 25.371 10.00 0.000  3.000 0.000  35.842  0.000  0.3491  50.00 0.000
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5	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.8422	35.00	0.000
U/S 20.4ha	25.371	10.00	0.000	3.000	0.000	35.842	0.000	1.641	65.00	0.000
CULVERT	25.371	10.00	0.000	3.000	0.000	35.842	0.000	1.690	66.00	0.000
1	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.9988	35.00	0.000
3	25.371	10.00	1.500	3.000	0.000	35.842	49.242	1.458	35.00	0.000
6	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.4763	32.00	0.000
2	25.371	10.00	1.500	3.000	0.000	35.842	49.242	0.6776	32.00	0.000
4	25.371	10.00	1.500	3.000	0.000	35.842	49.242	1.853	35.00	0.000
TURNER RD	25.371	10.00	0.000	3.000	0.000	35.842	0.000	4.729	38.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	38.00	4.728	67.00	2.966	16502.9	0.0000	2129.6	94.836

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.986	.0600	0.5938	0.3490	1.0	0.000	0.000	0.000
5	2.35	.0130	0.0512	0.8577	1.0	0.000	0.000	0.000
U/S 20.4ha	1.71	.0300	0.2391	1.640	1.0	0.000	0.000	0.000
CULVERT	1.73	.0300	0.2430	1.690	1.0	0.000	0.000	0.000
1	2.51	.0130	0.0566	1.017	1.0	0.000	0.000	0.000
3	2.85	.0130	0.0711	1.451	1.0	0.000	0.000	0.000
6	0.620	.0600	0.1070	0.4703	1.0	0.000	0.000	0.000
2	2.19	.0130	0.0449	0.7019	1.0	0.000	0.000	0.000
4	1.06	.0600	0.2445	1.843	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.6719
ESTIMATED PEAK FLOW (CUMECS) = 0.26
ESTIMATED TIME TO PEAK (MINS) = 26.00

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 LINK 5                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.323
 ESTIMATED PEAK FLOW         (CUMECS) =      1.01
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          3.931
 ESTIMATED PEAK FLOW         (CUMECS) =      1.08
 ESTIMATED TIME TO PEAK         (MINS) =     26.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.081
 ESTIMATED PEAK FLOW         (CUMECS) =      1.15
 ESTIMATED TIME TO PEAK         (MINS) =     28.00

 LINK 1                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.9368
 ESTIMATED PEAK FLOW         (CUMECS) =      1.25
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.352
 ESTIMATED PEAK FLOW         (CUMECS) =      1.83
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.4401
 ESTIMATED PEAK FLOW         (CUMECS) =      0.61
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.6293
 ESTIMATED PEAK FLOW         (CUMECS) =      0.86
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.722
 ESTIMATED PEAK FLOW         (CUMECS) =      2.32
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          9.089
 ESTIMATED PEAK FLOW         (CUMECS) =      5.67
 ESTIMATED TIME TO PEAK         (MINS) =     15.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                              ROUTING INCREMENT (MINS) =       1.00
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TURNER DEVELOPED with osd with MV2.out

STORM DURATION (MINS)	=	25.
RETURN PERIOD (YRS)	=	10.
BX	=	1.0000
TOTAL OF FIRST SUB-AREAS (ha)	=	29.58
TOTAL OF SECOND SUB-AREAS (ha)	=	11.93
TOTAL OF ALL SUB-AREAS (ha)	=	41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Pern #1	#2	B #1	#2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	72.056	10.00	0.000	3.000	0.000	19.123	0.000	0.2613	26.00	0.000
5	72.056	10.00	1.500	3.000	0.000	19.123	28.523	1.010	15.00	0.000
U/S 20.4ha	72.056	10.00	0.000	3.000	0.000	19.123	0.000	1.082	26.00	0.000
CULVERT	72.056	10.00	0.000	3.000	0.000	19.123	0.000	1.148	28.00	0.000
1	72.056	10.00	1.500	3.000	0.000	19.123	28.523	1.252	15.00	0.000
3	72.056	10.00	1.500	3.000	0.000	19.123	28.523	1.835	15.00	0.000
6	72.056	10.00	1.500	3.000	0.000	19.123	28.523	0.6086	15.00	0.000
2	72.056	10.00	1.500	3.000	0.000	19.123	28.523	0.8584	15.00	0.000
4	72.056	10.00	1.500	3.000	0.000	19.123	28.523	2.324	15.00	0.000
TURNER RD	72.056	10.00	0.000	3.000	0.000	19.123	0.000	5.666	15.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	15.00	5.666	25.00	2.690	9089.0	0.0000	1865.4	94.728

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.930	.0600	0.4844	0.2609	1.0	0.000	0.000	0.000
5	2.48	.0130	0.0570	1.010	1.0	0.000	0.000	0.000
U/S 20.4ha	1.50	.0300	0.1891	1.081	1.0	0.000	0.000	0.000
CULVERT	1.52	.0300	0.1961	1.147	1.0	0.000	0.000	0.000
1	2.71	.0130	0.0648	1.256	1.0	0.000	0.000	0.000
3	3.14	.0130	0.0816	1.836	1.0	0.000	0.000	0.000
6	0.665	.0600	0.1242	0.5862	1.0	0.000	0.000	0.000
2	2.37	.0130	0.0516	0.8719	1.0	0.000	0.000	0.000
4	1.17	.0600	0.2813	2.359	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.340
ESTIMATED PEAK FLOW (CUMECS) = 0.42
ESTIMATED TIME TO PEAK (MINS) = 42.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.507
ESTIMATED PEAK FLOW (CUMECS) = 1.13
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 7.713
ESTIMATED PEAK FLOW (CUMECS) = 1.89
ESTIMATED TIME TO PEAK (MINS) = 53.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 8.007
ESTIMATED PEAK FLOW (CUMECS) = 1.95
ESTIMATED TIME TO PEAK (MINS) = 49.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.679
ESTIMATED PEAK FLOW (CUMECS) = 1.21
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.424
ESTIMATED PEAK FLOW (CUMECS) = 1.78
ESTIMATED TIME TO PEAK (MINS) = 30.00

```
 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          0.7894
 ESTIMATED PEAK FLOW         (CUMECS) =      0.59
 ESTIMATED TIME TO PEAK         (MINS) =     27.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =           1.128
 ESTIMATED PEAK FLOW         (CUMECS) =      0.83
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =           3.088
 ESTIMATED PEAK FLOW         (CUMECS) =      2.25
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =           17.15
 ESTIMATED PEAK FLOW         (CUMECS) =      6.36
 ESTIMATED TIME TO PEAK         (MINS) =     30.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =        90.
                                RETURN PERIOD (YRS)      =        10.
                                BX                       =    1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                                TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
             (ha)            (%)          (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5          0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

CULVERT    0.7800  0.000  2.800 0.000  0.000 0.000  .030 0.00  .0155 0.000  2.001

1          0.8940  2.681  8.000 8.000  0.000 100.0  .030 .013  .0098 .0008  3.000

3          0.3960  1.190  8.000 8.000  0.000 100.0  .030 .013  .0064 .0005  3.001

6          0.4200  1.261  8.000 8.000  0.000 100.0  .030 .013  .0066 .0005  4.000

2          0.6010  1.802  8.000 8.000  0.000 100.0  .030 .013  .0080 .0007  5.000

4           1.043  3.130  8.000 8.000  0.000 100.0  .030 .013  .0107 .0009  5.001
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TURNER RD 0.8820 0.000 2.500 0.000 0.000 0.000 .030 0.00 .0175 0.000 1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2	Cont. Loss #1 (mm/h)	Cont. Loss #2	Excess Rain #1 (mm)	Excess Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	34.373	10.00	0.000	3.000	0.000	37.710	0.000	0.4194	42.00	0.000
5	34.373	10.00	1.500	3.000	0.000	37.710	50.060	1.133	30.00	0.000
U/S 20.4ha	34.373	10.00	0.000	3.000	0.000	37.710	0.000	1.885	53.00	0.000
CULVERT	34.373	10.00	0.000	3.000	0.000	37.710	0.000	1.947	49.00	0.000
1	34.373	10.00	1.500	3.000	0.000	37.710	50.060	1.211	30.00	0.000
3	34.373	10.00	1.500	3.000	0.000	37.710	50.060	1.780	30.00	0.000
6	34.373	10.00	1.500	3.000	0.000	37.710	50.060	0.5889	27.00	0.000
2	34.373	10.00	1.500	3.000	0.000	37.710	50.060	0.8272	30.00	0.000
4	34.373	10.00	1.500	3.000	0.000	37.710	50.060	2.248	30.00	0.000
TURNER RD	34.373	10.00	0.000	3.000	0.000	37.710	0.000	6.364	30.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	30.00	6.364	44.00	3.607	17149.6	0.0000	2445.6	94.967

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.02	.0600	0.6719	0.4195	1.0	0.000	0.000	0.000
5	2.60	.0130	0.0609	1.134	1.0	0.000	0.000	0.000
U/S 20.4ha	1.79	.0300	0.2578	1.885	1.0	0.000	0.000	0.000
CULVERT	1.80	.0300	0.2625	1.947	1.0	0.000	0.000	0.000
1	2.71	.0130	0.0637	1.235	1.0	0.000	0.000	0.000
3	3.11	.0130	0.0801	1.784	1.0	0.000	0.000	0.000
6	0.666	.0600	0.1219	0.5755	1.0	0.000	0.000	0.000
2	2.34	.0130	0.0506	0.8429	1.0	0.000	0.000	0.000

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4          1.17   .0600 0.2750   2.295    1.0  0.000   0.000    0.000


 LINK MV 3.54Ha          1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.504
 ESTIMATED PEAK FLOW          (CUMECS) =      0.44
 ESTIMATED TIME TO PEAK          (MINS) =     46.00

 LINK 5                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.801
 ESTIMATED PEAK FLOW          (CUMECS) =      0.99
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          8.579
 ESTIMATED PEAK FLOW          (CUMECS) =      1.96
 ESTIMATED TIME TO PEAK          (MINS) =     62.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          8.908
 ESTIMATED PEAK FLOW          (CUMECS) =      2.02
 ESTIMATED TIME TO PEAK          (MINS) =     63.00

 LINK 1                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.867
 ESTIMATED PEAK FLOW          (CUMECS) =      1.15
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.695
 ESTIMATED PEAK FLOW          (CUMECS) =      1.67
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.8777
 ESTIMATED PEAK FLOW          (CUMECS) =      0.55
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.255
 ESTIMATED PEAK FLOW          (CUMECS) =      0.78
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.433
 ESTIMATED PEAK FLOW          (CUMECS) =      2.10
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          19.09
 ESTIMATED PEAK FLOW          (CUMECS) =      5.55
 ESTIMATED TIME TO PEAK          (MINS) =     40.00
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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 10.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 29.58
TOTAL OF SECOND SUB-AREAS (ha) = 11.93
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Area #2	Slope #1 (%)	Slope #2	% Impervious #1 (%)	% Impervious #2	Perm #1	Perm #2	B #1	B #2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2	Cont. Loss #1 (mm/h)	Cont. Loss #2	Excess Rain #1 (mm)	Excess Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	28.541	10.00	0.000	3.000	0.000	42.132	0.000	0.4429	46.00	0.000
5	28.541	10.00	1.500	3.000	0.000	42.132	55.582	0.9857	35.00	0.000
U/S 20.4ha	28.541	10.00	0.000	3.000	0.000	42.132	0.000	1.959	62.00	0.000
CULVERT	28.541	10.00	0.000	3.000	0.000	42.132	0.000	2.018	63.00	0.000
1	28.541	10.00	1.500	3.000	0.000	42.132	55.582	1.150	32.00	0.000
3	28.541	10.00	1.500	3.000	0.000	42.132	55.582	1.669	35.00	0.000
6	28.541	10.00	1.500	3.000	0.000	42.132	55.582	0.5467	32.00	0.000
2	28.541	10.00	1.500	3.000	0.000	42.132	55.582	0.7819	32.00	0.000
4	28.541	10.00	1.500	3.000	0.000	42.132	55.582	2.101	35.00	0.000
TURNER RD	28.541	10.00	0.000	3.000	0.000	42.132	0.000	5.547	40.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	40.00	5.546	49.00	3.699	19088.5	0.0000	2476.9	94.979

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.03	.0600	0.7000	0.4432	1.0	0.000	0.000	0.000
5	2.49	.0130	0.0563	1.001	1.0	0.000	0.000	0.000
U/S 20.4ha	1.80	.0300	0.2641	1.958	1.0	0.000	0.000	0.000
CULVERT	1.82	.0300	0.2680	2.018	1.0	0.000	0.000	0.000
1	2.63	.0130	0.0617	1.160	1.0	0.000	0.000	0.000
3	3.03	.0130	0.0770	1.667	1.0	0.000	0.000	0.000
6	0.647	.0600	0.1164	0.5340	1.0	0.000	0.000	0.000
2	2.27	.0130	0.0488	0.7908	1.0	0.000	0.000	0.000
4	1.11	.0600	0.2641	2.095	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.8448
ESTIMATED PEAK FLOW (CUMECS) = 0.36
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.608
ESTIMATED PEAK FLOW (CUMECS) = 1.22
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 4.857
ESTIMATED PEAK FLOW (CUMECS) = 1.44
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 5.042
ESTIMATED PEAK FLOW (CUMECS) = 1.51
ESTIMATED TIME TO PEAK (MINS) = 28.00

LINK 1 3.000

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 ESTIMATED VOLUME (CU METRES*10**3) =          1.101
 ESTIMATED PEAK FLOW         (CUMECS) =      1.48
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          1.589
 ESTIMATED PEAK FLOW         (CUMECS) =      2.18
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.5172
 ESTIMATED PEAK FLOW         (CUMECS) =      0.72
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =         0.7389
 ESTIMATED PEAK FLOW         (CUMECS) =      1.01
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.023
 ESTIMATED PEAK FLOW         (CUMECS) =      2.73
 ESTIMATED TIME TO PEAK         (MINS) =     15.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          10.99
 ESTIMATED PEAK FLOW         (CUMECS) =      6.91
 ESTIMATED TIME TO PEAK         (MINS) =     15.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =        25.
                              RETURN PERIOD (YRS)      =        20.
                              BX                       =     1.0000
                              TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                              TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                              TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
             (ha)             (%)          (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5          0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

CULVERT    0.7800  0.000  2.800 0.000  0.000 0.000  .030 0.00  .0155 0.000  2.001
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1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	83.043	10.00	0.000	3.000	0.000	23.701	0.000	0.3632	26.00	0.000
5	83.043	10.00	1.500	3.000	0.000	23.701	33.101	1.220	15.00	0.000
U/S 20.4ha	83.043	10.00	0.000	3.000	0.000	23.701	0.000	1.442	26.00	0.000
CULVERT	83.043	10.00	0.000	3.000	0.000	23.701	0.000	1.513	28.00	0.000
1	83.043	10.00	1.500	3.000	0.000	23.701	33.101	1.480	15.00	0.000
3	83.043	10.00	1.500	3.000	0.000	23.701	33.101	2.176	15.00	0.000
6	83.043	10.00	1.500	3.000	0.000	23.701	33.101	0.7186	15.00	0.000
2	83.043	10.00	1.500	3.000	0.000	23.701	33.101	1.007	15.00	0.000
4	83.043	10.00	1.500	3.000	0.000	23.701	33.101	2.729	15.00	0.000
TURNER RD	83.043	10.00	0.000	3.000	0.000	23.701	0.000	6.914	15.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	15.00	6.913	24.00	3.489	10988.9	0.0000	2406.1	94.950

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	0.996	.0600	0.6094	0.3633	1.0	0.000	0.000	0.000
5	2.67	.0130	0.0639	1.219	1.0	0.000	0.000	0.000
U/S 20.4ha	1.65	.0300	0.2219	1.441	1.0	0.000	0.000	0.000

CULVERT	1.67	.0300	0.2281	1.512	1.0	0.000	0.000	0.000
1	2.91	.0130	0.0719	1.497	1.0	0.000	0.000	0.000
3	3.33	.0130	0.0906	2.162	1.0	0.000	0.000	0.000
6	0.717	.0600	0.1375	0.6994	1.0	0.000	0.000	0.000
2	2.51	.0130	0.0570	1.021	1.0	0.000	0.000	0.000
4	1.24	.0600	0.3094	2.737	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.616
ESTIMATED PEAK FLOW (CUMECS) = 0.53
ESTIMATED TIME TO PEAK (MINS) = 40.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.980
ESTIMATED PEAK FLOW (CUMECS) = 1.38
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 9.321
ESTIMATED PEAK FLOW (CUMECS) = 2.38
ESTIMATED TIME TO PEAK (MINS) = 47.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 9.677
ESTIMATED PEAK FLOW (CUMECS) = 2.46
ESTIMATED TIME TO PEAK (MINS) = 48.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.959
ESTIMATED PEAK FLOW (CUMECS) = 1.41
ESTIMATED TIME TO PEAK (MINS) = 27.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 2.828
ESTIMATED PEAK FLOW (CUMECS) = 2.06
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK 6 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.9216
ESTIMATED PEAK FLOW (CUMECS) = 0.68
ESTIMATED TIME TO PEAK (MINS) = 27.00

LINK 2 5.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.317
ESTIMATED PEAK FLOW (CUMECS) = 0.95
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK 4 5.001

ESTIMATED VOLUME (CU METRES*10**3) = 3.603
ESTIMATED PEAK FLOW (CUMECS) = 2.60
ESTIMATED TIME TO PEAK (MINS) = 30.00

TURNER DEVELOPED with osd with MV2.out

LINK TURNER RD 1.002

ESTIMATED VOLUME (CU METRES*10**3) = 20.41
ESTIMATED PEAK FLOW (CUMECS) = 7.72
ESTIMATED TIME TO PEAK (MINS) = 30.00

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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

##########

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 90.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 29.58
TOTAL OF SECOND SUB-AREAS (ha) = 11.93
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1 (%)	% Impervious #2 (%)	Pern #1	Pern #2	B #1	B #2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak mins	Link Lag mins
MV 3.54Ha	39.611	10.00	0.000	3.000	0.000	45.517	0.000	0.5339	40.00	0.000
5	39.611	10.00	1.500	3.000	0.000	45.517	57.917	1.376	30.00	0.000
U/S 20.4ha	39.611	10.00	0.000	3.000	0.000	45.517	0.000	2.385	47.00	0.000
CULVERT	39.611	10.00	0.000	3.000	0.000	45.517	0.000	2.459	48.00	0.000
1	39.611	10.00	1.500	3.000	0.000	45.517	57.917	1.405	27.00	0.000
3	39.611	10.00	1.500	3.000	0.000	45.517	57.917	2.063	30.00	0.000

6	39.611	10.00	1.500	3.000	0.000	45.517	57.917	0.6842	27.00	0.000
2	39.611	10.00	1.500	3.000	0.000	45.517	57.917	0.9541	30.00	0.000
4	39.611	10.00	1.500	3.000	0.000	45.517	57.917	2.601	30.00	0.000
TURNER RD	39.611	10.00	0.000	3.000	0.000	45.517	0.000	7.719	30.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	30.00	7.719	38.00	4.823	20411.1	0.0000	2832.7	95.126

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.07	.0600	0.7938	0.5338	1.0	0.000	0.000	0.000
5	2.80	.0130	0.0688	1.375	1.0	0.000	0.000	0.000
U/S 20.4ha	1.92	.0300	0.2938	2.385	1.0	0.000	0.000	0.000
CULVERT	1.93	.0300	0.2984	2.458	1.0	0.000	0.000	0.000
1	2.89	.0130	0.0695	1.435	1.0	0.000	0.000	0.000
3	3.30	.0130	0.0875	2.068	1.0	0.000	0.000	0.000
6	0.704	.0600	0.1328	0.6638	1.0	0.000	0.000	0.000
2	2.47	.0130	0.0551	0.9727	1.0	0.000	0.000	0.000
4	1.22	.0600	0.3016	2.626	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.798
ESTIMATED PEAK FLOW (CUMECS) = 0.57
ESTIMATED TIME TO PEAK (MINS) = 46.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 3.313
ESTIMATED PEAK FLOW (CUMECS) = 1.18
ESTIMATED TIME TO PEAK (MINS) = 35.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 10.36

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 ESTIMATED PEAK FLOW          (CUMECS) =      2.44
 ESTIMATED TIME TO PEAK          (MINS) =     58.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          10.76
 ESTIMATED PEAK FLOW          (CUMECS) =      2.51
 ESTIMATED TIME TO PEAK          (MINS) =     60.00

 LINK 1                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.178
 ESTIMATED PEAK FLOW          (CUMECS) =      1.33
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.144
 ESTIMATED PEAK FLOW          (CUMECS) =      1.93
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.024
 ESTIMATED PEAK FLOW          (CUMECS) =      0.64
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.463
 ESTIMATED PEAK FLOW          (CUMECS) =      0.92
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.005
 ESTIMATED PEAK FLOW          (CUMECS) =      2.43
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          22.70
 ESTIMATED PEAK FLOW          (CUMECS) =      6.71
 ESTIMATED TIME TO PEAK          (MINS) =     40.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                              ROUTING INCREMENT (MINS) =       1.00
                              STORM DURATION (MINS)    =       120.
                              RETURN PERIOD (YRS)      =        20.
                              BX                       =     1.0000
                              TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                              TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                              TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
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TURNER DEVELOPED with osd with MV2.out

Link Label	Catch. Area #1 (ha)	#2	Slope #1 (%)	#2	% Impervious #1 (%)	#2	Pern #1	#2	B #1	#2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	32.901	10.00	0.000	3.000	0.000	50.753	0.000	0.5680	46.00	0.000
5	32.901	10.00	1.500	3.000	0.000	50.753	64.303	1.179	35.00	0.000
U/S 20.4ha	32.901	10.00	0.000	3.000	0.000	50.753	0.000	2.435	58.00	0.000
CULVERT	32.901	10.00	0.000	3.000	0.000	50.753	0.000	2.505	60.00	0.000
1	32.901	10.00	1.500	3.000	0.000	50.753	64.303	1.331	32.00	0.000
3	32.901	10.00	1.500	3.000	0.000	50.753	64.303	1.931	35.00	0.000
6	32.901	10.00	1.500	3.000	0.000	50.753	64.303	0.6432	32.00	0.000
2	32.901	10.00	1.500	3.000	0.000	50.753	64.303	0.9153	32.00	0.000
4	32.901	10.00	1.500	3.000	0.000	50.753	64.303	2.431	35.00	0.000
TURNER RD	32.901	10.00	0.000	3.000	0.000	50.753	0.000	6.711	40.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	40.00	6.711	46.00	5.110	22696.3	0.0000	2903.9	95.155

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.09	.0600	0.8250	0.5679	1.0	0.000	0.000	0.000
5	2.67	.0130	0.0625	1.191	1.0	0.000	0.000	0.000
U/S 20.4ha	1.93	.0300	0.2969	2.435	1.0	0.000	0.000	0.000
CULVERT	1.95	.0300	0.3016	2.505	1.0	0.000	0.000	0.000
1	2.80	.0130	0.0672	1.347	1.0	0.000	0.000	0.000
3	3.20	.0130	0.0844	1.934	1.0	0.000	0.000	0.000
6	0.684	.0600	0.1281	0.6213	1.0	0.000	0.000	0.000
2	2.39	.0130	0.0537	0.9162	1.0	0.000	0.000	0.000
4	1.17	.0600	0.2891	2.421	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.042
ESTIMATED PEAK FLOW (CUMECS) = 0.51
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.954
ESTIMATED PEAK FLOW (CUMECS) = 1.34
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 6.072
ESTIMATED PEAK FLOW (CUMECS) = 2.04
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 6.303
ESTIMATED PEAK FLOW (CUMECS) = 2.15
ESTIMATED TIME TO PEAK (MINS) = 28.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.315
ESTIMATED PEAK FLOW (CUMECS) = 1.59
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 1.897
ESTIMATED PEAK FLOW (CUMECS) = 2.34
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 6 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.6175
ESTIMATED PEAK FLOW (CUMECS) = 0.77
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK 2 5.000

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                    TURNER DEVELOPED with osd with MV2.out
 ESTIMATED VOLUME (CU METRES*10**3) =          0.8835
 ESTIMATED PEAK FLOW          (CUMECS) =      1.08
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =           2.418
 ESTIMATED PEAK FLOW          (CUMECS) =      2.95
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =           13.45
 ESTIMATED PEAK FLOW          (CUMECS) =      7.77
 ESTIMATED TIME TO PEAK          (MINS) =     15.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =        1.00
                                STORM DURATION (MINS)    =         25.
                                RETURN PERIOD (YRS)      =         50.
                                BX                       =     1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                                TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern        B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
             (ha)             (%)           (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5          0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

CULVERT    0.7800  0.000  2.800 0.000  0.000 0.000  .030 0.00  .0155 0.000  2.001

1          0.8940  2.681  8.000 8.000  0.000 100.0  .030 .013  .0098 .0008  3.000

3          0.3960  1.190  8.000 8.000  0.000 100.0  .030 .013  .0064 .0005  3.001

6          0.4200  1.261  8.000 8.000  0.000 100.0  .030 .013  .0066 .0005  4.000

2          0.6010  1.802  8.000 8.000  0.000 100.0  .030 .013  .0080 .0007  5.000

4           1.043  3.130  8.000 8.000  0.000 100.0  .030 .013  .0107 .0009  5.001

TURNER RD 0.8820  0.000  2.500 0.000  0.000 0.000  .030 0.00  .0175 0.000  1.002


 Link    Average  Init. Loss  Cont. Loss    Excess Rain   Peak    Time   Link
 Label  Intensity  #1    #2    #1    #2      #1    #2    Inflow   to     Lag
          (mm/h)    ( mm )      (mm/h)        ( mm )     (m^3/s)  Peak  mins
MV 3.54Ha 97.422 10.00 0.000  3.000 0.000  29.642  0.000  0.5094  26.00 0.000
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5	97.422	10.00	1.500	3.000	0.000	29.642	39.092	1.341	15.00	0.000
U/S 20.4ha	97.422	10.00	0.000	3.000	0.000	29.642	0.000	2.036	26.00	0.000
CULVERT	97.422	10.00	0.000	3.000	0.000	29.642	0.000	2.147	28.00	0.000
1	97.422	10.00	1.500	3.000	0.000	29.642	39.092	1.587	15.00	0.000
3	97.422	10.00	1.500	3.000	0.000	29.642	39.092	2.344	15.00	0.000
6	97.422	10.00	1.500	3.000	0.000	29.642	39.092	0.7701	15.00	0.000
2	97.422	10.00	1.500	3.000	0.000	29.642	39.092	1.083	15.00	0.000
4	97.422	10.00	1.500	3.000	0.000	29.642	39.092	2.949	15.00	0.000
TURNER RD	97.422	10.00	0.000	3.000	0.000	29.642	0.000	7.771	15.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	15.00	7.771	25.00	4.765	13453.4	0.0000	2818.3	95.120

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.06	.0600	0.7688	0.5104	1.0	0.000	0.000	0.000
5	2.79	.0130	0.0676	1.346	1.0	0.000	0.000	0.000
U/S 20.4ha	1.83	.0300	0.2688	2.036	1.0	0.000	0.000	0.000
CULVERT	1.86	.0300	0.2766	2.149	1.0	0.000	0.000	0.000
1	3.01	.0130	0.0750	1.615	1.0	0.000	0.000	0.000
3	3.42	.0130	0.0945	2.318	1.0	0.000	0.000	0.000
6	0.794	.0600	0.1430	0.8053	1.0	0.000	0.000	0.000
2	2.61	.0130	0.0594	1.107	1.0	0.000	0.000	0.000
4	1.26	.0600	0.3250	2.934	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.978
ESTIMATED PEAK FLOW (CUMECS) = 0.66
ESTIMATED TIME TO PEAK (MINS) = 39.00

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 LINK 5                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.596
 ESTIMATED PEAK FLOW         (CUMECS) =      1.59
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          11.40
 ESTIMATED PEAK FLOW         (CUMECS) =      2.92
 ESTIMATED TIME TO PEAK         (MINS) =     46.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          11.83
 ESTIMATED PEAK FLOW         (CUMECS) =      3.01
 ESTIMATED TIME TO PEAK         (MINS) =     48.00

 LINK 1                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.326
 ESTIMATED PEAK FLOW         (CUMECS) =      1.54
 ESTIMATED TIME TO PEAK         (MINS) =     27.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.359
 ESTIMATED PEAK FLOW         (CUMECS) =      2.26
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.094
 ESTIMATED PEAK FLOW         (CUMECS) =      0.74
 ESTIMATED TIME TO PEAK         (MINS) =     27.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.564
 ESTIMATED PEAK FLOW         (CUMECS) =      1.04
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.279
 ESTIMATED PEAK FLOW         (CUMECS) =      2.84
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          24.65
 ESTIMATED PEAK FLOW         (CUMECS) =      8.86
 ESTIMATED TIME TO PEAK         (MINS) =     30.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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TURNER DEVELOPED with osd with MV2.out

ROUTING INCREMENT (MINS)	=	1.00
STORM DURATION (MINS)	=	90.
RETURN PERIOD (YRS)	=	50.
BX	=	1.0000
TOTAL OF FIRST SUB-AREAS (ha)	=	29.58
TOTAL OF SECOND SUB-AREAS (ha)	=	11.93
TOTAL OF ALL SUB-AREAS (ha)	=	41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha) #1	#2	Slope (%) #1	#2	% Impervious (%) #1	#2	Pern #1	#2	B #1	#2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	#2	Cont. Loss #1 (mm/h)	#2	Excess Rain #1 (mm)	#2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	46.466	10.00	0.000	3.000	0.000	55.749	0.000	0.6551	39.00	0.000
5	46.466	10.00	1.500	3.000	0.000	55.749	68.199	1.593	30.00	0.000
U/S 20.4ha	46.466	10.00	0.000	3.000	0.000	55.749	0.000	2.921	46.00	0.000
CULVERT	46.466	10.00	0.000	3.000	0.000	55.749	0.000	3.006	48.00	0.000
1	46.466	10.00	1.500	3.000	0.000	55.749	68.199	1.536	27.00	0.000
3	46.466	10.00	1.500	3.000	0.000	55.749	68.199	2.257	30.00	0.000
6	46.466	10.00	1.500	3.000	0.000	55.749	68.199	0.7381	27.00	0.000
2	46.466	10.00	1.500	3.000	0.000	55.749	68.199	1.039	30.00	0.000
4	46.466	10.00	1.500	3.000	0.000	55.749	68.199	2.844	30.00	0.000
TURNER RD	46.466	10.00	0.000	3.000	0.000	55.749	0.000	8.860	30.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	30.00	8.860	35.00	6.215	24654.5	0.0000	3177.4	95.268

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.11	.0600	0.9094	0.6551	1.0	0.000	0.000	0.000
5	2.96	.0130	0.0750	1.590	1.0	0.000	0.000	0.000
U/S 20.4ha	2.03	.0300	0.3281	2.922	1.0	0.000	0.000	0.000
CULVERT	2.05	.0300	0.3328	3.005	1.0	0.000	0.000	0.000
1	2.99	.0130	0.0734	1.569	1.0	0.000	0.000	0.000
3	3.41	.0130	0.0922	2.255	1.0	0.000	0.000	0.000
6	0.788	.0600	0.1391	0.7777	1.0	0.000	0.000	0.000
2	2.57	.0130	0.0578	1.060	1.0	0.000	0.000	0.000
4	1.25	.0600	0.3187	2.849	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.200
ESTIMATED PEAK FLOW (CUMECS) = 0.68
ESTIMATED TIME TO PEAK (MINS) = 46.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 3.999
ESTIMATED PEAK FLOW (CUMECS) = 1.38
ESTIMATED TIME TO PEAK (MINS) = 40.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 12.69
ESTIMATED PEAK FLOW (CUMECS) = 2.95
ESTIMATED TIME TO PEAK (MINS) = 58.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 13.18
ESTIMATED PEAK FLOW (CUMECS) = 3.03
ESTIMATED TIME TO PEAK (MINS) = 59.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.583
ESTIMATED PEAK FLOW (CUMECS) = 1.46
ESTIMATED TIME TO PEAK (MINS) = 32.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 3.730
ESTIMATED PEAK FLOW (CUMECS) = 2.11

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                    TURNER DEVELOPED with osd with MV2.out
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.215
 ESTIMATED PEAK FLOW          (CUMECS) =      0.71
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.737
 ESTIMATED PEAK FLOW          (CUMECS) =      0.99
 ESTIMATED TIME TO PEAK          (MINS) =     32.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.755
 ESTIMATED PEAK FLOW          (CUMECS) =      2.66
 ESTIMATED TIME TO PEAK          (MINS) =     35.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          27.43
 ESTIMATED PEAK FLOW          (CUMECS) =      7.91
 ESTIMATED TIME TO PEAK          (MINS) =     40.00



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Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
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                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =       120.
                                RETURN PERIOD (YRS)      =        50.
                                BX                       =     1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                                TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
             (ha)             (%)          (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5          0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000

CULVERT    0.7800  0.000  2.800 0.000  0.000 0.000  .030 0.00  .0155 0.000  2.001

1          0.8940  2.681  8.000 8.000  0.000 100.0  .030 .013  .0098 .0008  3.000

3          0.3960  1.190  8.000 8.000  0.000 100.0  .030 .013  .0064 .0005  3.001

6          0.4200  1.261  8.000 8.000  0.000 100.0  .030 .013  .0066 .0005  4.000

2          0.6010  1.802  8.000 8.000  0.000 100.0  .030 .013  .0080 .0007  5.000
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4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	38.609	10.00	0.000	3.000	0.000	62.068	0.000	0.6834	46.00	0.000
5	38.609	10.00	1.500	3.000	0.000	62.068	75.718	1.378	40.00	0.000
U/S 20.4ha	38.609	10.00	0.000	3.000	0.000	62.068	0.000	2.950	58.00	0.000
CULVERT	38.609	10.00	0.000	3.000	0.000	62.068	0.000	3.032	59.00	0.000
1	38.609	10.00	1.500	3.000	0.000	62.068	75.718	1.455	32.00	0.000
3	38.609	10.00	1.500	3.000	0.000	62.068	75.718	2.114	35.00	0.000
6	38.609	10.00	1.500	3.000	0.000	62.068	75.718	0.7112	32.00	0.000
2	38.609	10.00	1.500	3.000	0.000	62.068	75.718	0.9913	32.00	0.000
4	38.609	10.00	1.500	3.000	0.000	62.068	75.718	2.660	35.00	0.000
TURNER RD	38.609	10.00	0.000	3.000	0.000	62.068	0.000	7.908	40.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	40.00	7.907	44.00	6.445	27428.7	0.0000	3234.4	95.291

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.12	.0600	0.9375	0.6837	1.0	0.000	0.000	0.000
5	2.78	.0130	0.0688	1.369	1.0	0.000	0.000	0.000
U/S 20.4ha	2.04	.0300	0.3297	2.951	1.0	0.000	0.000	0.000
CULVERT	2.06	.0300	0.3344	3.031	1.0	0.000	0.000	0.000
1	2.90	.0130	0.0711	1.475	1.0	0.000	0.000	0.000
3	3.31	.0130	0.0891	2.111	1.0	0.000	0.000	0.000
6	0.707	.0600	0.1359	0.6817	1.0	0.000	0.000	0.000
2	2.50	.0130	0.0563	1.003	1.0	0.000	0.000	0.000

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4          1.21   .0600 0.3063   2.643    1.0  0.000   0.000    0.000


 LINK MV 3.54Ha          1.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.213
 ESTIMATED PEAK FLOW          (CUMECS) =      0.62
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK 5                  1.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.240
 ESTIMATED PEAK FLOW          (CUMECS) =      1.56
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK U/S 20.4ha         2.000

 ESTIMATED VOLUME (CU METRES*10**3) =          6.924
 ESTIMATED PEAK FLOW          (CUMECS) =      2.39
 ESTIMATED TIME TO PEAK          (MINS) =     26.00

 LINK CULVERT            2.001

 ESTIMATED VOLUME (CU METRES*10**3) =          7.190
 ESTIMATED PEAK FLOW          (CUMECS) =      2.52
 ESTIMATED TIME TO PEAK          (MINS) =     28.00

 LINK 1                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.475
 ESTIMATED PEAK FLOW          (CUMECS) =      1.78
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.130
 ESTIMATED PEAK FLOW          (CUMECS) =      2.63
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =        0.6941
 ESTIMATED PEAK FLOW          (CUMECS) =      0.86
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =        0.9925
 ESTIMATED PEAK FLOW          (CUMECS) =      1.21
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          2.715
 ESTIMATED PEAK FLOW          (CUMECS) =      3.33
 ESTIMATED TIME TO PEAK          (MINS) =     15.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          15.27
 ESTIMATED PEAK FLOW          (CUMECS) =      8.97
 ESTIMATED TIME TO PEAK          (MINS) =     15.00
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Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 25.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 29.58
TOTAL OF SECOND SUB-AREAS (ha) = 11.93
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1	% Impervious #2	Pern #1	Pern #2	B #1	B #2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2	Cont. Loss #1 (mm/h)	Cont. Loss #2	Excess Rain #1 (mm)	Excess Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	108.36	10.00	0.000	3.000	0.000	34.151	0.000	0.6154	26.00	0.000
5	108.36	10.00	1.500	3.000	0.000	34.151	43.651	1.562	15.00	0.000
U/S 20.4ha	108.36	10.00	0.000	3.000	0.000	34.151	0.000	2.390	26.00	0.000
CULVERT	108.36	10.00	0.000	3.000	0.000	34.151	0.000	2.520	28.00	0.000
1	108.36	10.00	1.500	3.000	0.000	34.151	43.651	1.783	15.00	0.000
3	108.36	10.00	1.500	3.000	0.000	34.151	43.651	2.627	15.00	0.000
6	108.36	10.00	1.500	3.000	0.000	34.151	43.651	0.8619	15.00	0.000
2	108.36	10.00	1.500	3.000	0.000	34.151	43.651	1.212	15.00	0.000
4	108.36	10.00	1.500	3.000	0.000	34.151	43.651	3.327	15.00	0.000
TURNER RD	108.36	10.00	0.000	3.000	0.000	34.151	0.000	8.966	15.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	15.00	8.965	23.00	5.761	15271.5	0.0000	3065.0	95.222

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.10	.0600	0.8719	0.6166	1.0	0.000	0.000	0.000
5	2.95	.0130	0.0742	1.569	1.0	0.000	0.000	0.000
U/S 20.4ha	1.92	.0300	0.2938	2.390	1.0	0.000	0.000	0.000
CULVERT	1.94	.0300	0.3031	2.519	1.0	0.000	0.000	0.000
1	3.16	.0130	0.0801	1.812	1.0	0.000	0.000	0.000
3	3.59	.0130	0.1012	2.606	1.0	0.000	0.000	0.000
6	0.822	.0600	0.1531	0.8933	1.0	0.000	0.000	0.000
2	2.74	.0130	0.0637	1.247	1.0	0.000	0.000	0.000
4	1.31	.0600	0.3500	3.274	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.259
ESTIMATED PEAK FLOW (CUMECS) = 0.77
ESTIMATED TIME TO PEAK (MINS) = 38.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 4.072
ESTIMATED PEAK FLOW (CUMECS) = 1.82
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 12.98
ESTIMATED PEAK FLOW (CUMECS) = 3.42
ESTIMATED TIME TO PEAK (MINS) = 46.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 13.47
ESTIMATED PEAK FLOW (CUMECS) = 3.52
ESTIMATED TIME TO PEAK (MINS) = 47.00

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 LINK 1                  3.000

 ESTIMATED VOLUME (CU METRES*10**3) =          2.607
 ESTIMATED PEAK FLOW         (CUMECS) =      1.71
 ESTIMATED TIME TO PEAK         (MINS) =     27.00

 LINK 3                  3.001

 ESTIMATED VOLUME (CU METRES*10**3) =          3.764
 ESTIMATED PEAK FLOW         (CUMECS) =      2.52
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK 6                  4.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.225
 ESTIMATED PEAK FLOW         (CUMECS) =      0.82
 ESTIMATED TIME TO PEAK         (MINS) =     27.00

 LINK 2                  5.000

 ESTIMATED VOLUME (CU METRES*10**3) =          1.752
 ESTIMATED PEAK FLOW         (CUMECS) =      1.16
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK 4                  5.001

 ESTIMATED VOLUME (CU METRES*10**3) =          4.794
 ESTIMATED PEAK FLOW         (CUMECS) =      3.18
 ESTIMATED TIME TO PEAK         (MINS) =     30.00

 LINK TURNER RD          1.002

 ESTIMATED VOLUME (CU METRES*10**3) =          27.89
 ESTIMATED PEAK FLOW         (CUMECS) =     10.17
 ESTIMATED TIME TO PEAK         (MINS) =     30.00



################################################################################
#####


Results for period from 12: 0.0 23/ 5/2006
                     to  3: 0.0 24/ 5/2006
################################################################################
#####


                                ROUTING INCREMENT (MINS) =       1.00
                                STORM DURATION (MINS)    =        90.
                                RETURN PERIOD (YRS)      =       100.
                                BX                       =    1.0000
                                TOTAL OF FIRST SUB-AREAS  (ha) =      29.58
                                TOTAL OF SECOND SUB-AREAS (ha) =      11.93
                                TOTAL OF ALL SUB-AREAS (ha)    =      41.51


     SUMMARY OF CATCHMENT AND RAINFALL DATA
 Link      Catch. Area      Slope    % Impervious     Pern         B        Link
 Label      #1     #2     #1    #2      #1   #2     #1    #2    #1   #2     No.
            (ha)             (%)          (%)
MV 3.54Ha  3.540  0.000  5.000 0.000  0.000 0.000  .060 0.00  .0434 0.000  1.000

5         0.6220  1.865  5.000 5.000  0.000 100.0  .030 .013  .0103 .0008  1.001

U/S 20.4ha20.400  0.000  6.000 0.000  0.000 0.000  .060 0.00  .0986 0.000  2.000
```

TURNER DEVELOPED with osd with MV2.out

CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2 (mm)	Cont. Loss #1 (mm/h)	Cont. Loss #2 (mm/h)	Excess Rain #1 (mm)	Excess Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	51.681	10.00	0.000	3.000	0.000	63.572	0.000	0.7675	38.00	0.000
5	51.681	10.00	1.500	3.000	0.000	63.572	76.022	1.824	30.00	0.000
U/S 20.4ha	51.681	10.00	0.000	3.000	0.000	63.572	0.000	3.416	46.00	0.000
CULVERT	51.681	10.00	0.000	3.000	0.000	63.572	0.000	3.516	47.00	0.000
1	51.681	10.00	1.500	3.000	0.000	63.572	76.022	1.714	27.00	0.000
3	51.681	10.00	1.500	3.000	0.000	63.572	76.022	2.521	30.00	0.000
6	51.681	10.00	1.500	3.000	0.000	63.572	76.022	0.8175	27.00	0.000
2	51.681	10.00	1.500	3.000	0.000	63.572	76.022	1.155	30.00	0.000
4	51.681	10.00	1.500	3.000	0.000	63.572	76.022	3.175	30.00	0.000
TURNER RD	51.681	10.00	0.000	3.000	0.000	63.572	0.000	10.169	30.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	30.00	10.17	34.00	7.697	27888.4	0.0000	3496.3	95.399

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.14	.0600	1.013	0.7676	1.0	0.000	0.000	0.000
5	3.14	.0130	0.0813	1.828	1.0	0.000	0.000	0.000
U/S 20.4ha	2.13	.0300	0.3563	3.415	1.0	0.000	0.000	0.000

CULVERT	2.15	.0300	0.3625	3.514	1.0	0.000	0.000	0.000
1	3.13	.0130	0.0781	1.751	1.0	0.000	0.000	0.000
3	3.55	.0130	0.0988	2.521	1.0	0.000	0.000	0.000
6	0.814	.0600	0.1484	0.8570	1.0	0.000	0.000	0.000
2	2.69	.0130	0.0617	1.184	1.0	0.000	0.000	0.000
4	1.29	.0600	0.3406	3.145	1.0	0.000	0.000	0.000

LINK MV 3.54Ha 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.504
ESTIMATED PEAK FLOW (CUMECS) = 0.80
ESTIMATED TIME TO PEAK (MINS) = 45.00

LINK 5 1.001

ESTIMATED VOLUME (CU METRES*10**3) = 4.517
ESTIMATED PEAK FLOW (CUMECS) = 1.59
ESTIMATED TIME TO PEAK (MINS) = 40.00

LINK U/S 20.4ha 2.000

ESTIMATED VOLUME (CU METRES*10**3) = 14.45
ESTIMATED PEAK FLOW (CUMECS) = 3.43
ESTIMATED TIME TO PEAK (MINS) = 53.00

LINK CULVERT 2.001

ESTIMATED VOLUME (CU METRES*10**3) = 15.00
ESTIMATED PEAK FLOW (CUMECS) = 3.53
ESTIMATED TIME TO PEAK (MINS) = 52.00

LINK 1 3.000

ESTIMATED VOLUME (CU METRES*10**3) = 2.895
ESTIMATED PEAK FLOW (CUMECS) = 1.62
ESTIMATED TIME TO PEAK (MINS) = 32.00

LINK 3 3.001

ESTIMATED VOLUME (CU METRES*10**3) = 4.179
ESTIMATED PEAK FLOW (CUMECS) = 2.36
ESTIMATED TIME TO PEAK (MINS) = 35.00

LINK 6 4.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.361
ESTIMATED PEAK FLOW (CUMECS) = 0.79
ESTIMATED TIME TO PEAK (MINS) = 32.00

LINK 2 5.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.946
ESTIMATED PEAK FLOW (CUMECS) = 1.10
ESTIMATED TIME TO PEAK (MINS) = 32.00

LINK 4 5.001

ESTIMATED VOLUME (CU METRES*10**3) = 5.324
ESTIMATED PEAK FLOW (CUMECS) = 2.97
ESTIMATED TIME TO PEAK (MINS) = 35.00

TURNER DEVELOPED with osd with MV2.out

LINK TURNER RD 1.002

ESTIMATED VOLUME (CU METRES*10**3) = 31.00
ESTIMATED PEAK FLOW (CUMECS) = 9.08
ESTIMATED TIME TO PEAK (MINS) = 40.00

##
#####

Results for period from 12: 0.0 23/ 5/2006
to 3: 0.0 24/ 5/2006
##
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 29.58
TOTAL OF SECOND SUB-AREAS (ha) = 11.93
TOTAL OF ALL SUB-AREAS (ha) = 41.51

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1 (%)	% Impervious #2 (%)	Perm #1	Perm #2	B #1	B #2	Link No.
MV 3.54Ha	3.540	0.000	5.000	0.000	0.000	0.000	.060	0.00	.0434	0.000	1.000
5	0.6220	1.865	5.000	5.000	0.000	100.0	.030	.013	.0103	.0008	1.001
U/S 20.4ha	20.400	0.000	6.000	0.000	0.000	0.000	.060	0.00	.0986	0.000	2.000
CULVERT	0.7800	0.000	2.800	0.000	0.000	0.000	.030	0.00	.0155	0.000	2.001
1	0.8940	2.681	8.000	8.000	0.000	100.0	.030	.013	.0098	.0008	3.000
3	0.3960	1.190	8.000	8.000	0.000	100.0	.030	.013	.0064	.0005	3.001
6	0.4200	1.261	8.000	8.000	0.000	100.0	.030	.013	.0066	.0005	4.000
2	0.6010	1.802	8.000	8.000	0.000	100.0	.030	.013	.0080	.0007	5.000
4	1.043	3.130	8.000	8.000	0.000	100.0	.030	.013	.0107	.0009	5.001
TURNER RD	0.8820	0.000	2.500	0.000	0.000	0.000	.030	0.00	.0175	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Init. Loss #2	Cont. Loss #1 (mm/h)	Cont. Loss #2	Excess Rain #1 (mm)	Excess Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
MV 3.54Ha	42.954	10.00	0.000	3.000	0.000	70.657	0.000	0.8019	45.00	0.000
5	42.954	10.00	1.500	3.000	0.000	70.657	84.407	1.587	40.00	0.000
U/S 20.4ha	42.954	10.00	0.000	3.000	0.000	70.657	0.000	3.431	53.00	0.000
CULVERT	42.954	10.00	0.000	3.000	0.000	70.657	0.000	3.532	52.00	0.000
1	42.954	10.00	1.500	3.000	0.000	70.657	84.407	1.624	32.00	0.000

3	42.954	10.00	1.500	3.000	0.000	70.657	84.407	2.358	35.00	0.000
6	42.954	10.00	1.500	3.000	0.000	70.657	84.407	0.7899	32.00	0.000
2	42.954	10.00	1.500	3.000	0.000	70.657	84.407	1.102	32.00	0.000
4	42.954	10.00	1.500	3.000	0.000	70.657	84.407	2.966	35.00	0.000
TURNER RD	42.954	10.00	0.000	3.000	0.000	70.657	0.000	9.079	40.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	Basin Vol. Avail	Basin Vol. Used	Basin Stage Used
TURNER RD	40.00	9.079	43.00	7.810	31004.7	0.0000	3519.5	95.409

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
TURNER RD	1.0	1.000		0.000	20.000	0.2000

SUMMARY OF CHANNEL/FLOODWAY DATA AND RESULT

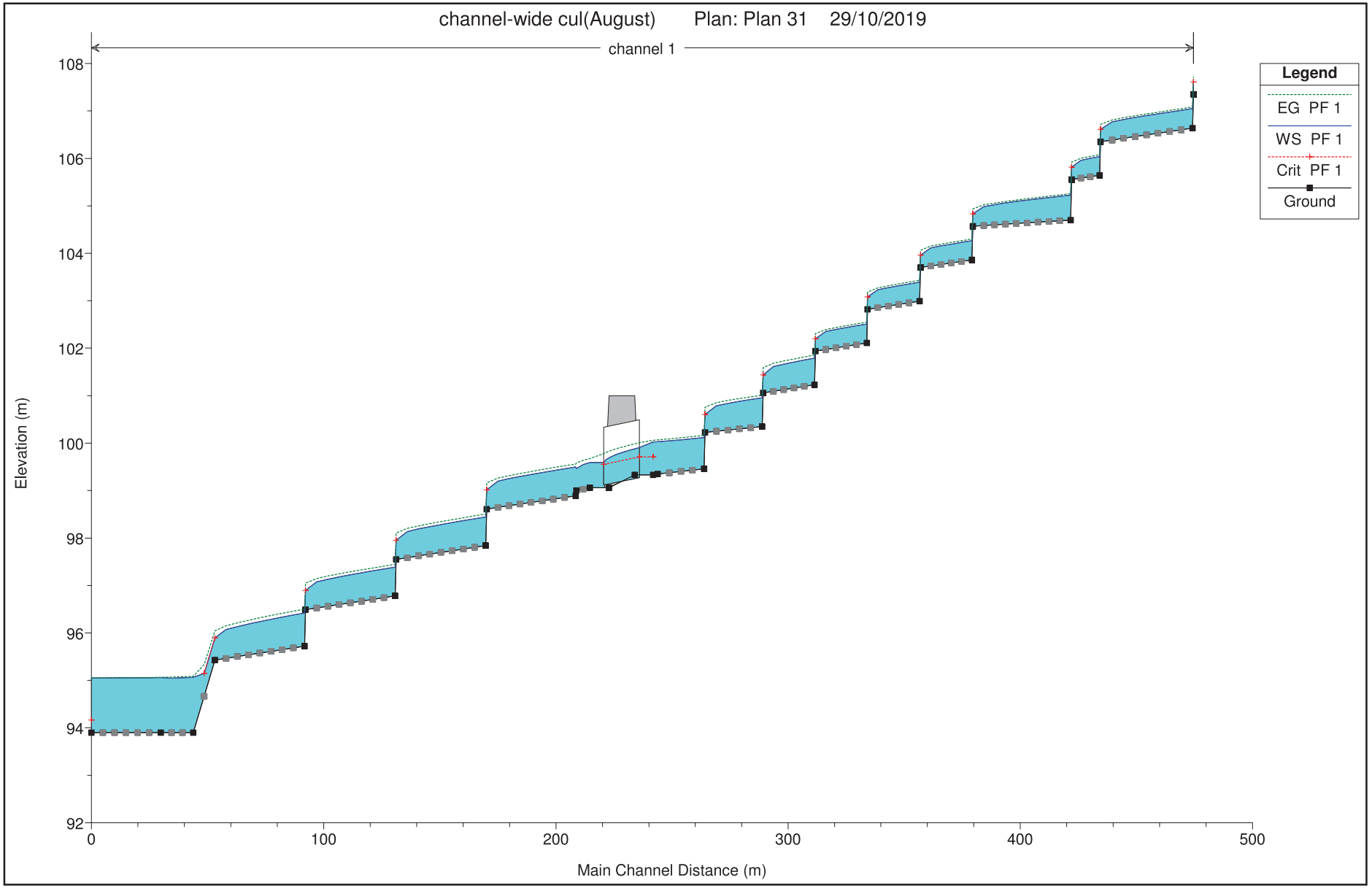
Link Label	Ave. Vel. (m/s)	Ave. Rough. (n)	Flow Depth (m)	Max. Flow (m^3/s)	No. of Pipes	Pipe Dia. (m)	Pipe Slope (%)	Pipe Flow (m3^/s)
MV 3.54Ha	1.16	.0600	1.038	0.8010	1.0	0.000	0.000	0.000
5	2.96	.0130	0.0746	1.583	1.0	0.000	0.000	0.000
U/S 20.4ha	2.14	.0300	0.3563	3.430	1.0	0.000	0.000	0.000
CULVERT	2.16	.0300	0.3625	3.532	1.0	0.000	0.000	0.000
1	3.03	.0130	0.0758	1.644	1.0	0.000	0.000	0.000
3	3.47	.0130	0.0949	2.361	1.0	0.000	0.000	0.000
6	0.749	.0600	0.1453	0.7721	1.0	0.000	0.000	0.000
2	2.61	.0130	0.0602	1.120	1.0	0.000	0.000	0.000
4	1.26	.0600	0.3266	2.939	1.0	0.000	0.000	0.000

Run completed at: 24th October 2017 7:10:58

mik open 0

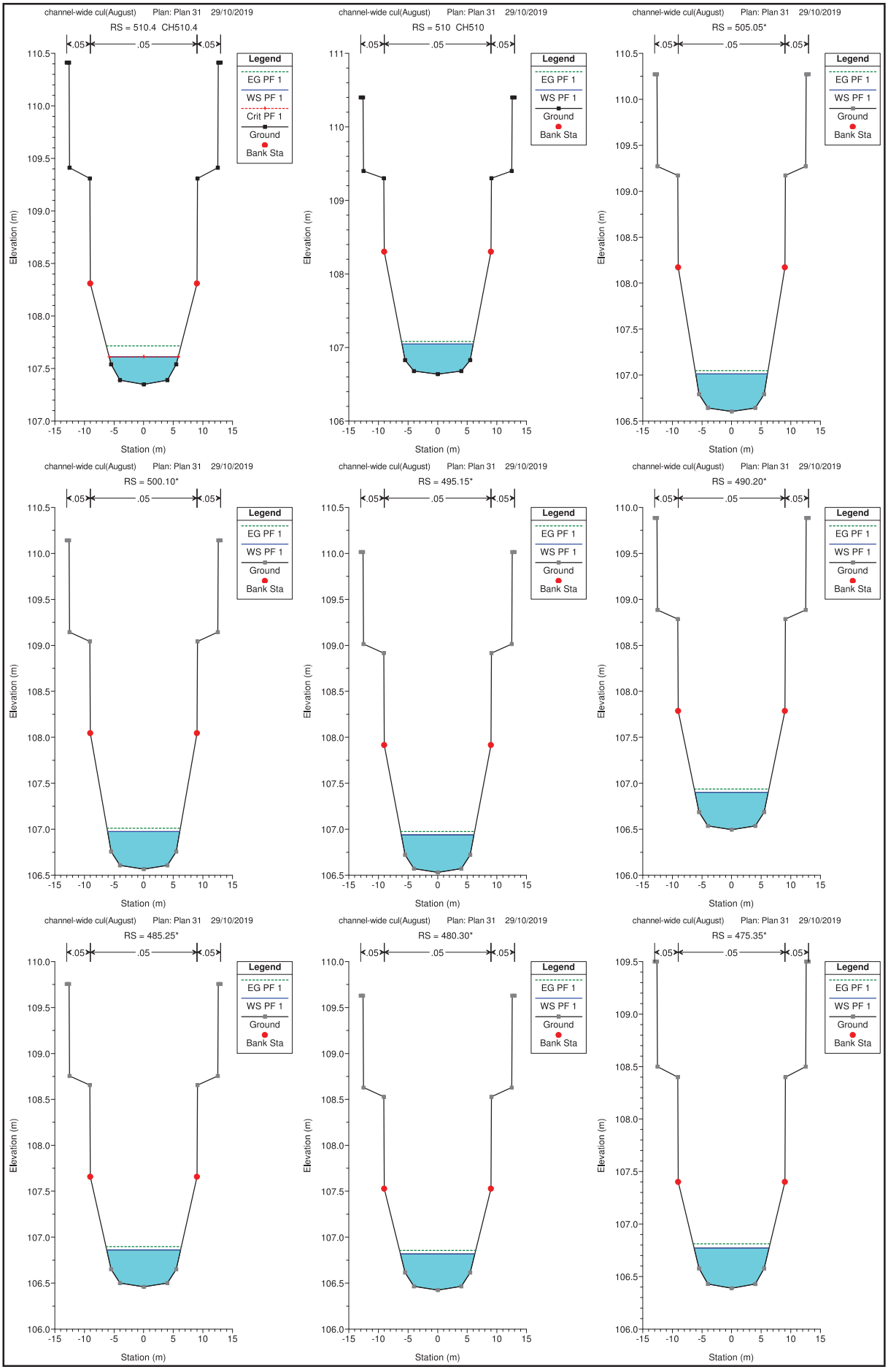
Annexure E – Central Channel Hydraulics – Ultimate Development Conditions

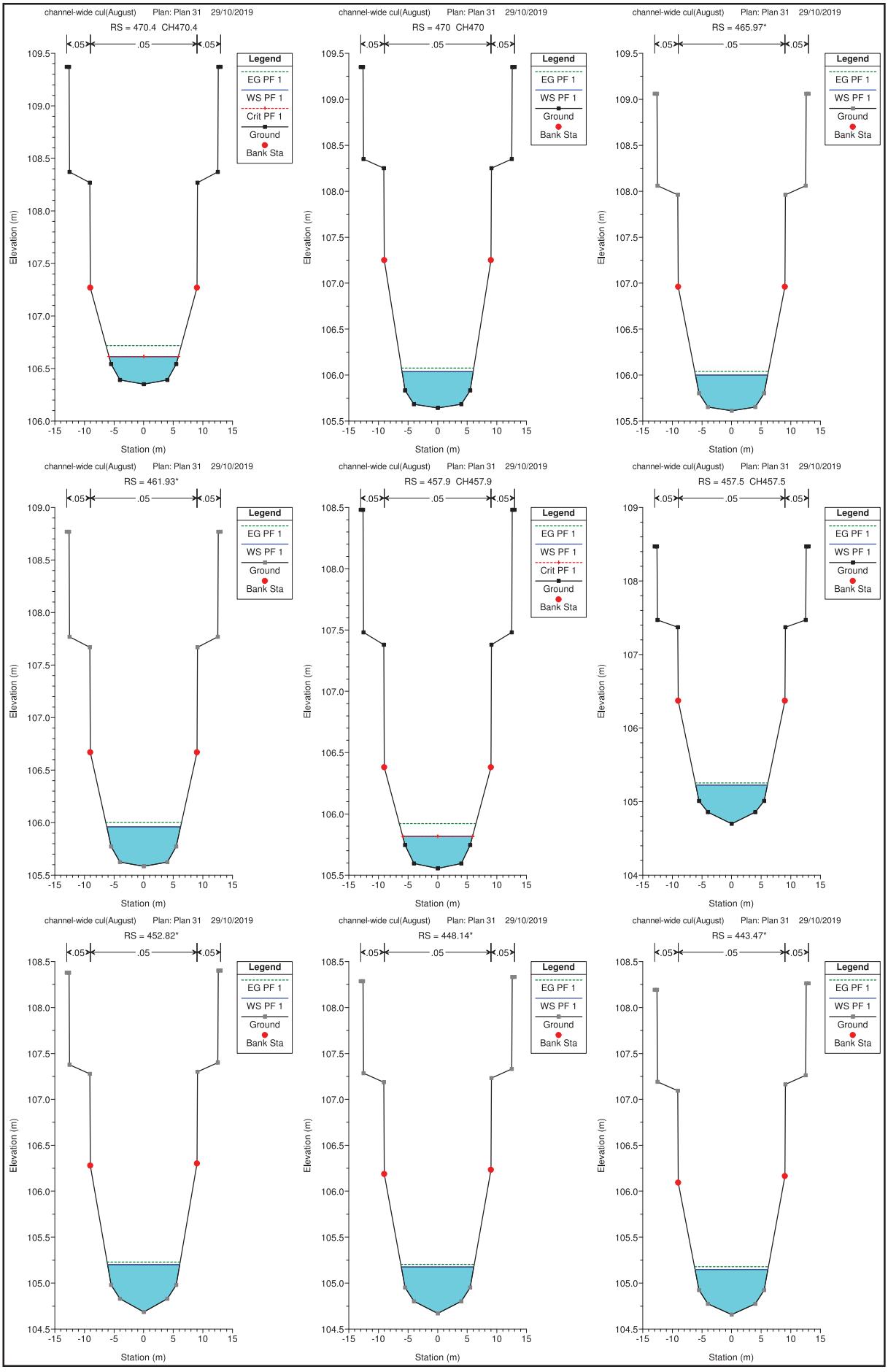
E.1 – Hec-Ras Profile Section – Ultimate Development

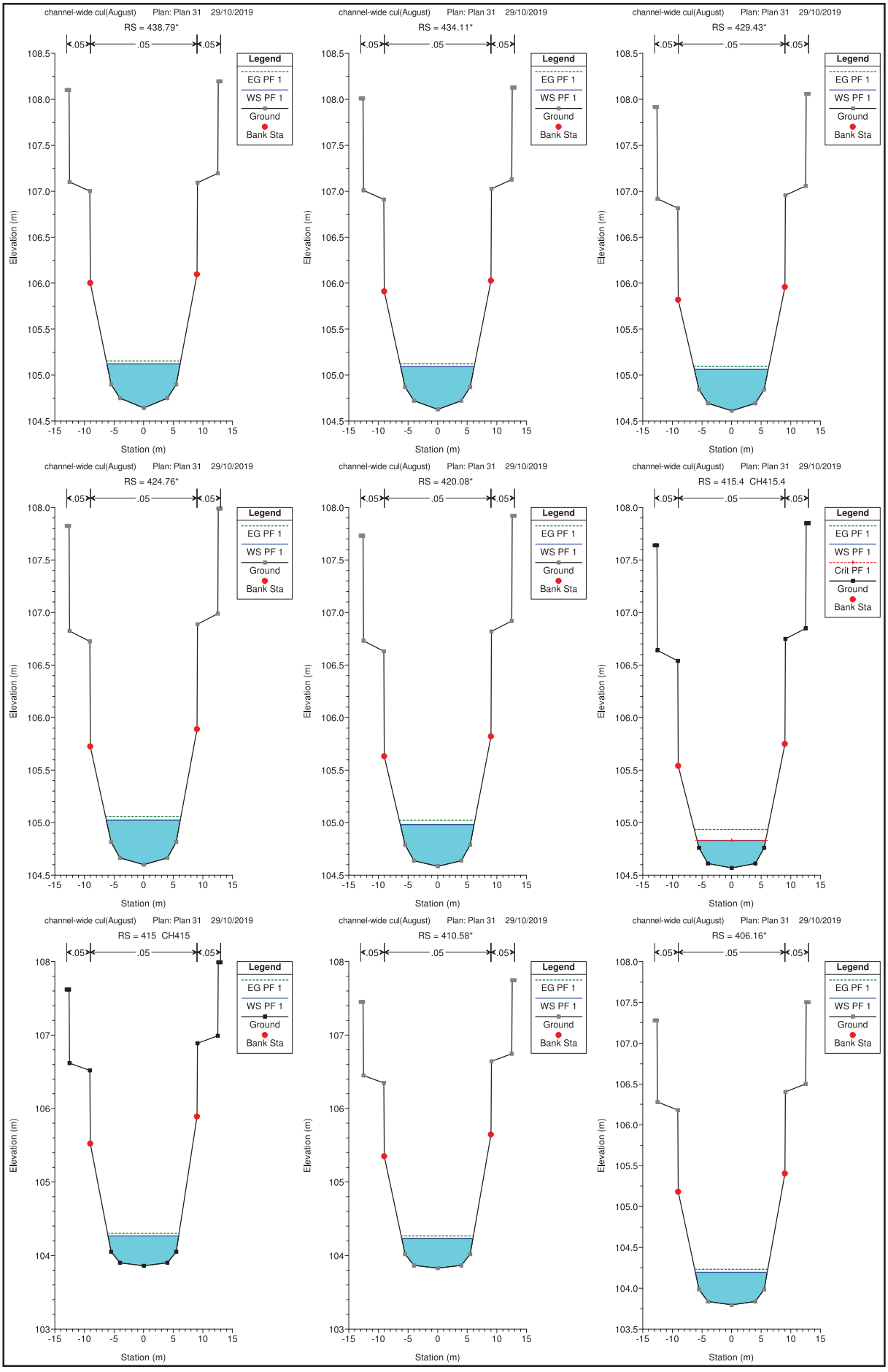

channel-wide cul(August) Plan: Plan 31 29/10/2019
channel 1
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (m)
Main Channel Distance (m)
92
94
96
98
100
102
104
106
108
0
100
200
300
400
500

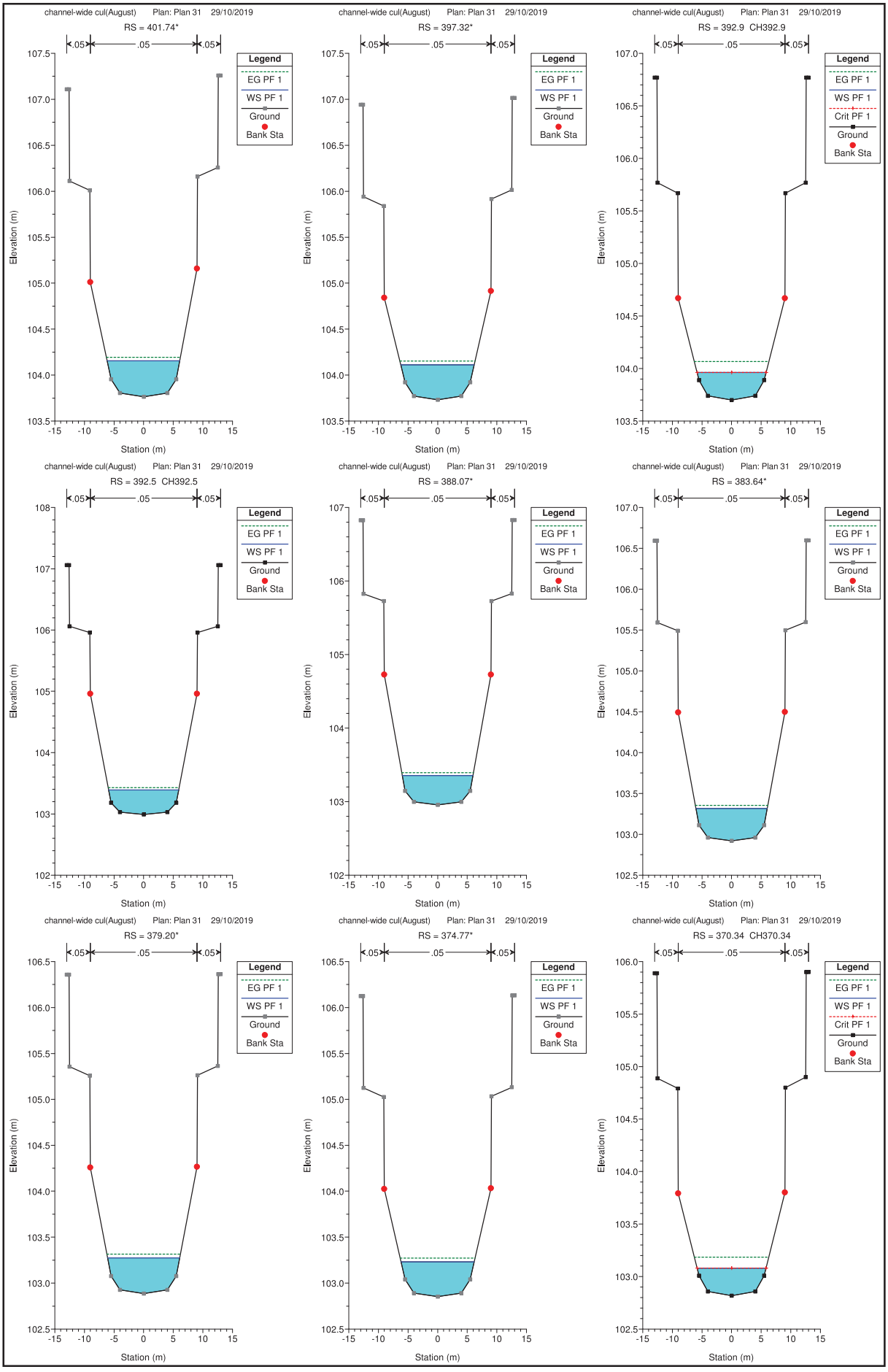
Annexure E – Central Channel Hydraulics – Ultimate Development Conditions

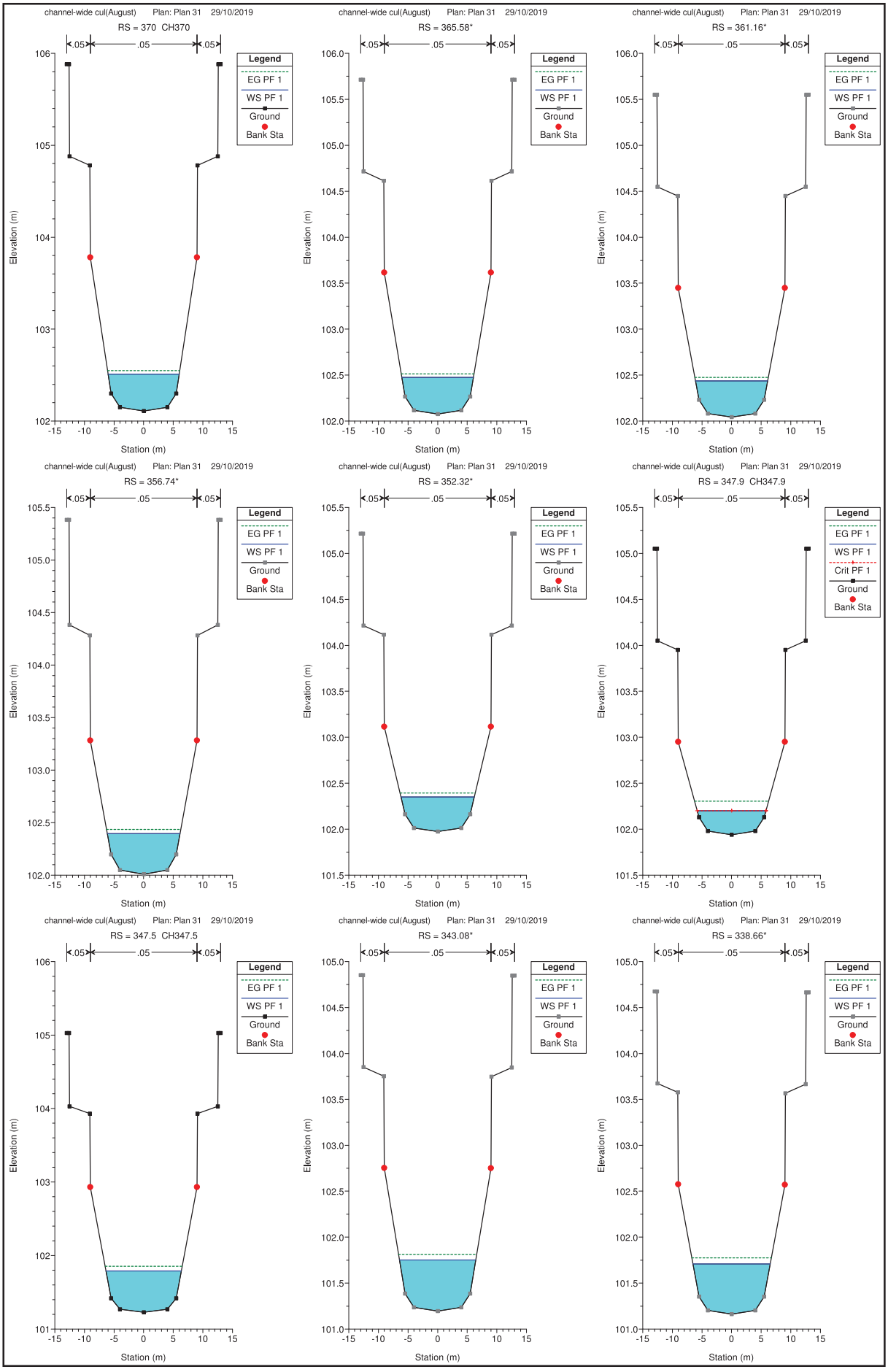
E.2 – Hec-Ras cross sections

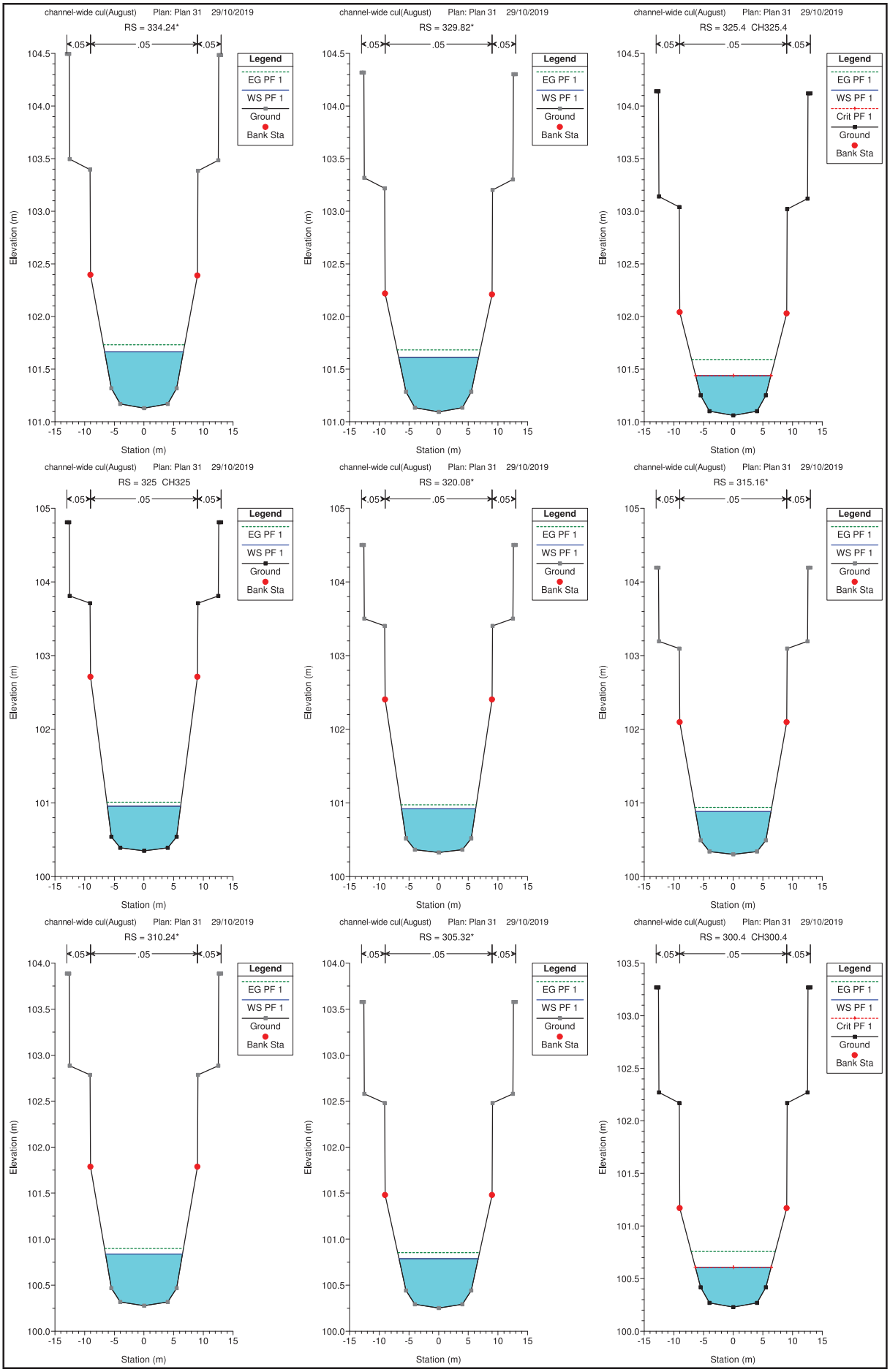

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 510.4 CH510.4
.05 .05 .05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 510 CH510
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 505.05*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 500.10*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 495.15*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 490.20*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 485.25*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 480.30*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 475.35*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

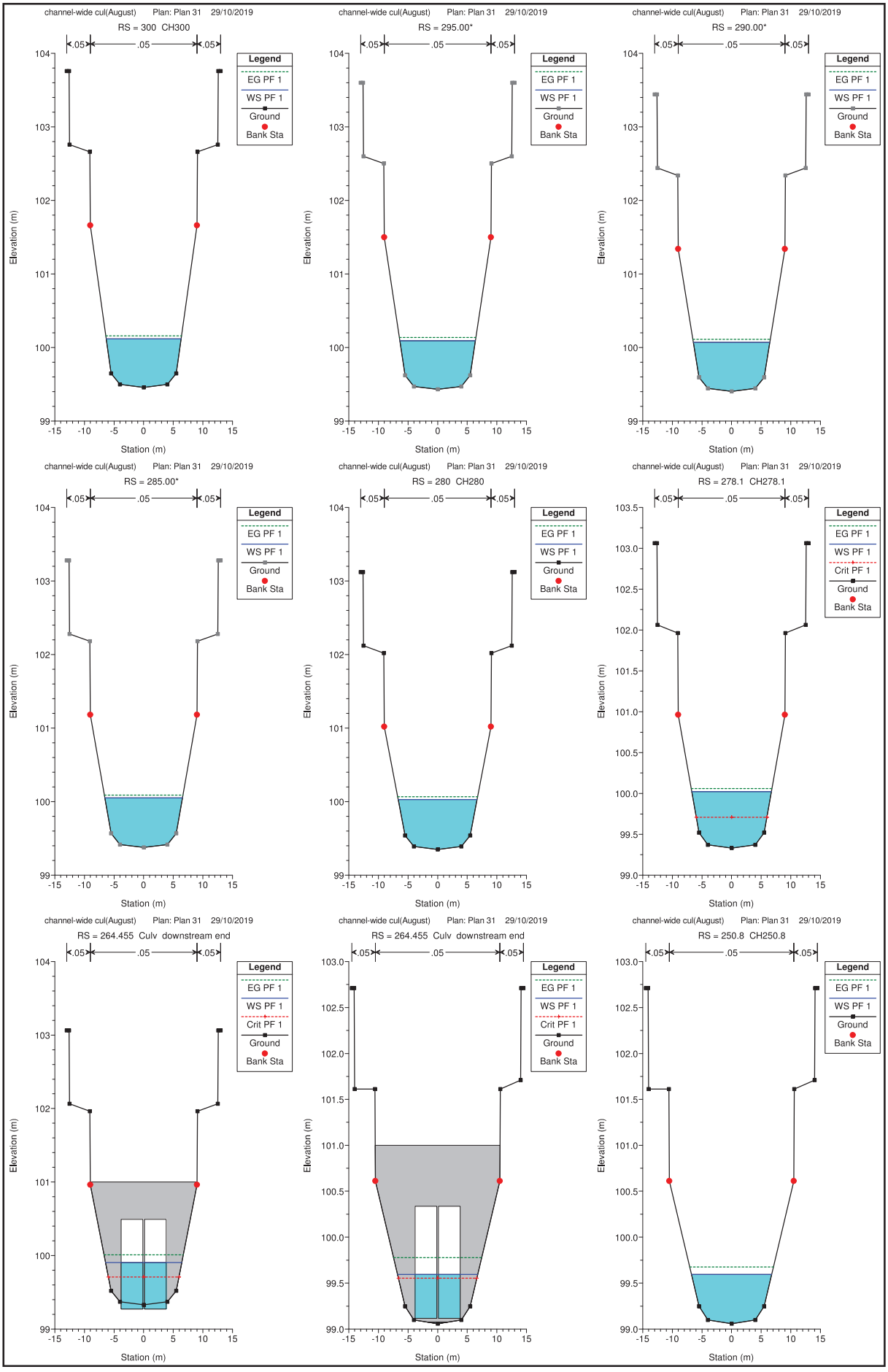

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 470.4 CH470.4
.05 .05 .05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 470 CH470
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 465.97*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 461.93*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 457.9 CH457.9
.05 .05 .05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 457.5 CH457.5
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 452.82*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 448.14*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 443.47*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

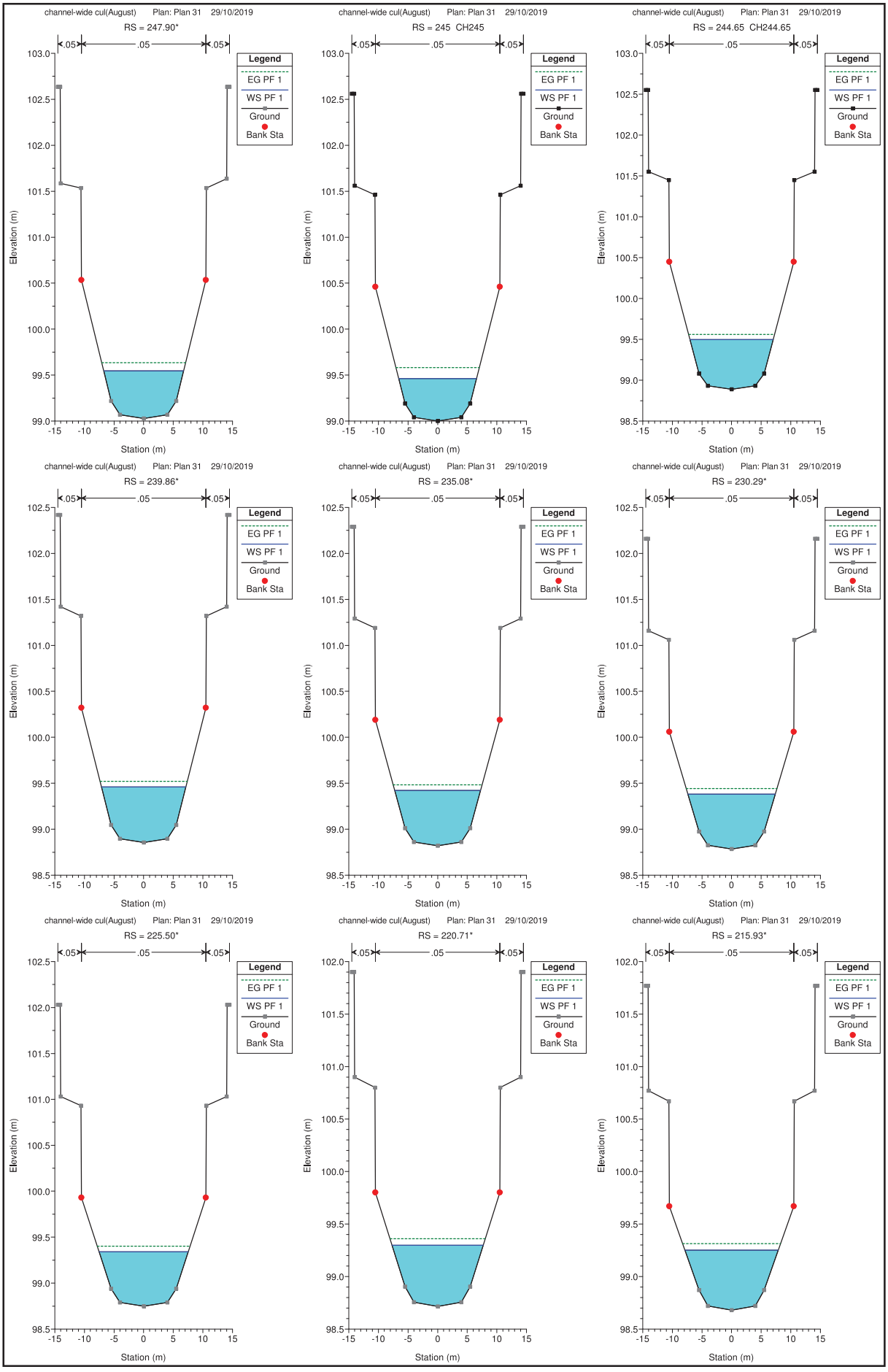

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 438.79*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 434.11*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 429.43*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 424.76*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 420.08*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 415.4 CH415.4
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 415 CH415
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 410.58*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 406.16*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

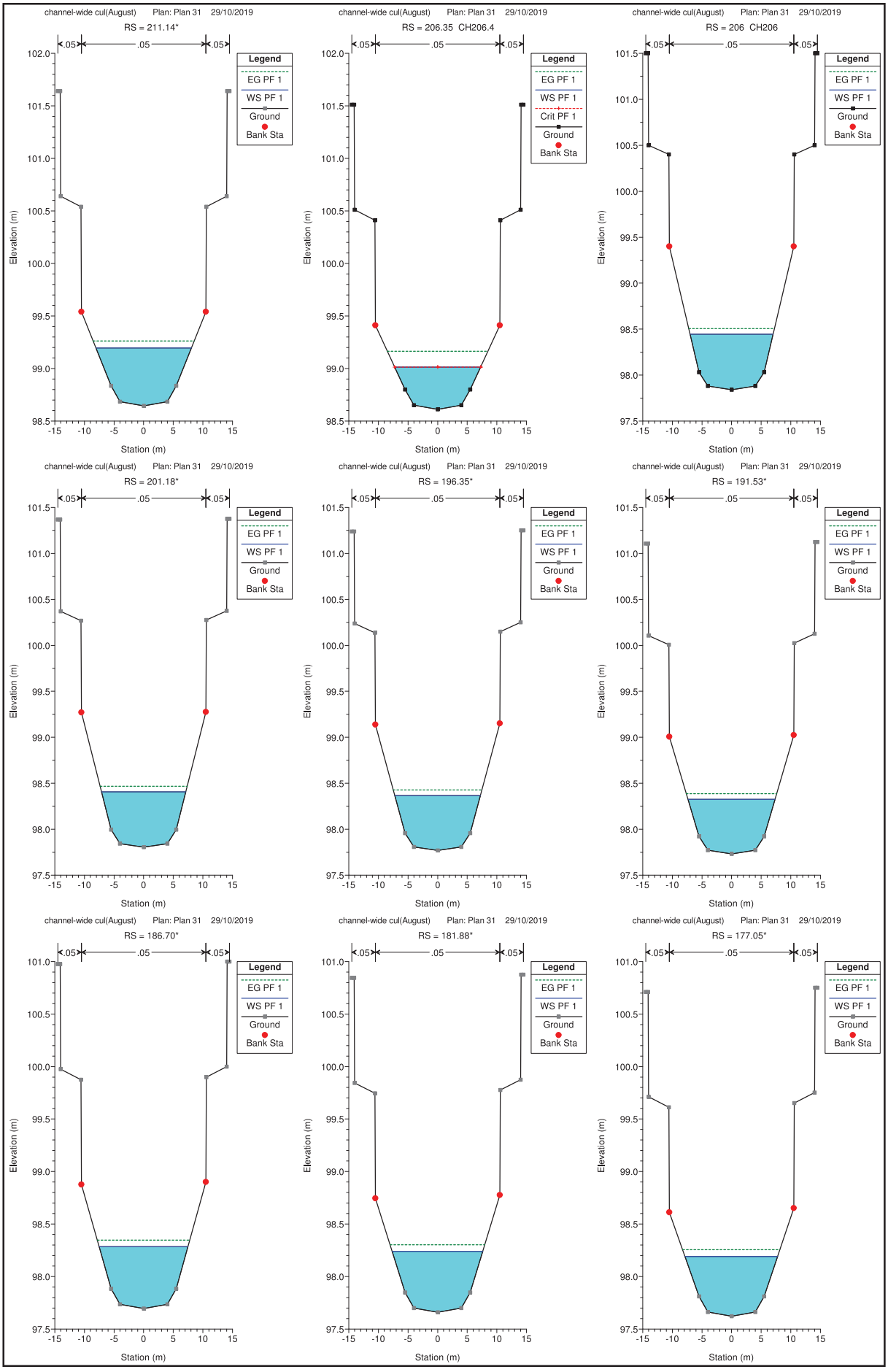

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 401.74*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 397.32*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 392.9 CH392.9
.05 .05 .05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 392.5 CH392.5
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 388.07*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 383.64*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 379.20*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 374.77*
.05 .05 .05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 370.34 CH370.34
.05 .05 .05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

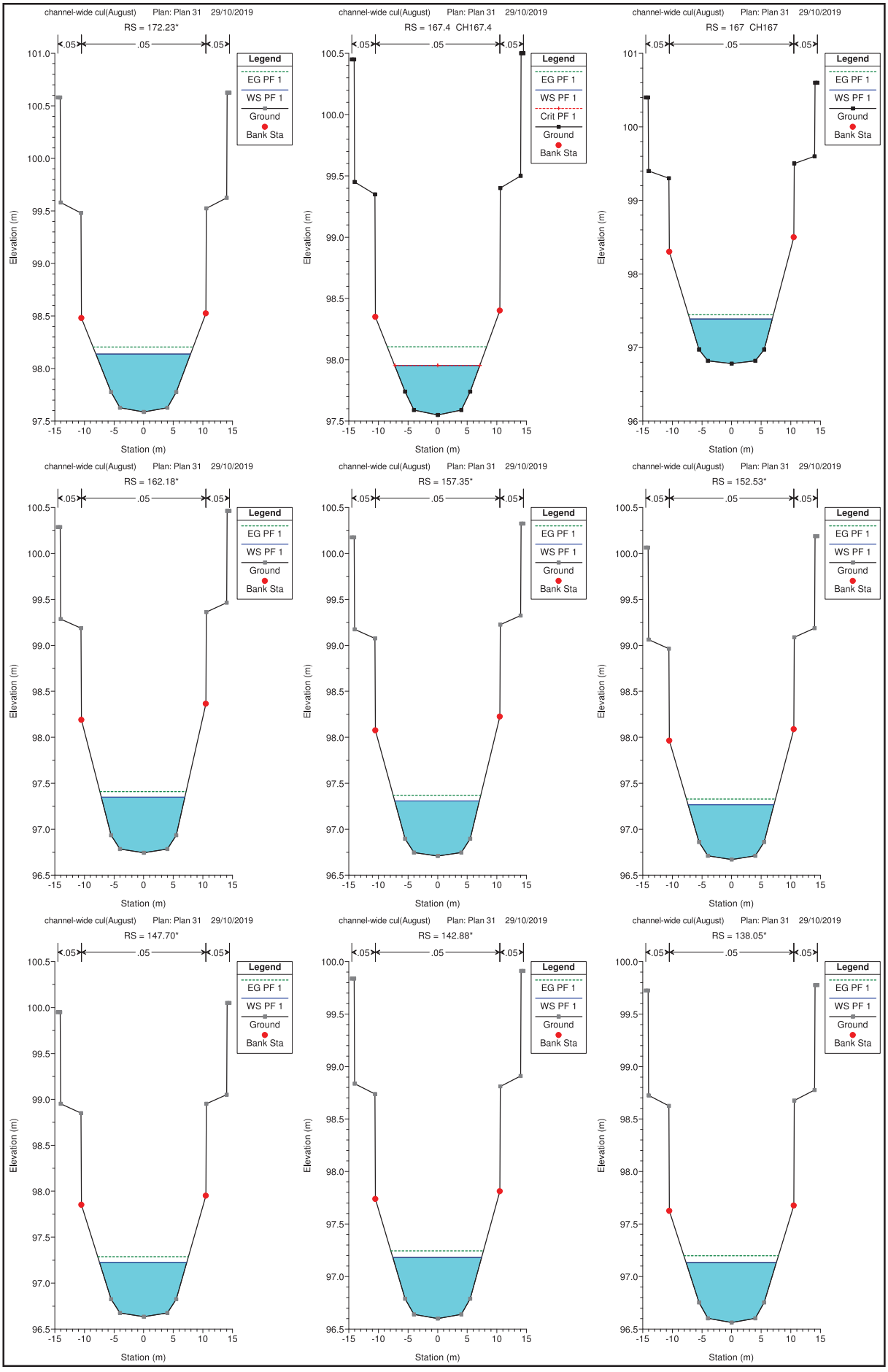

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 370 CH370
RS = 365.58*
RS = 361.16*
RS = 356.74*
RS = 352.32*
RS = 347.9 CH347.9
RS = 347.5 CH347.5
RS = 343.08*
RS = 338.66*
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

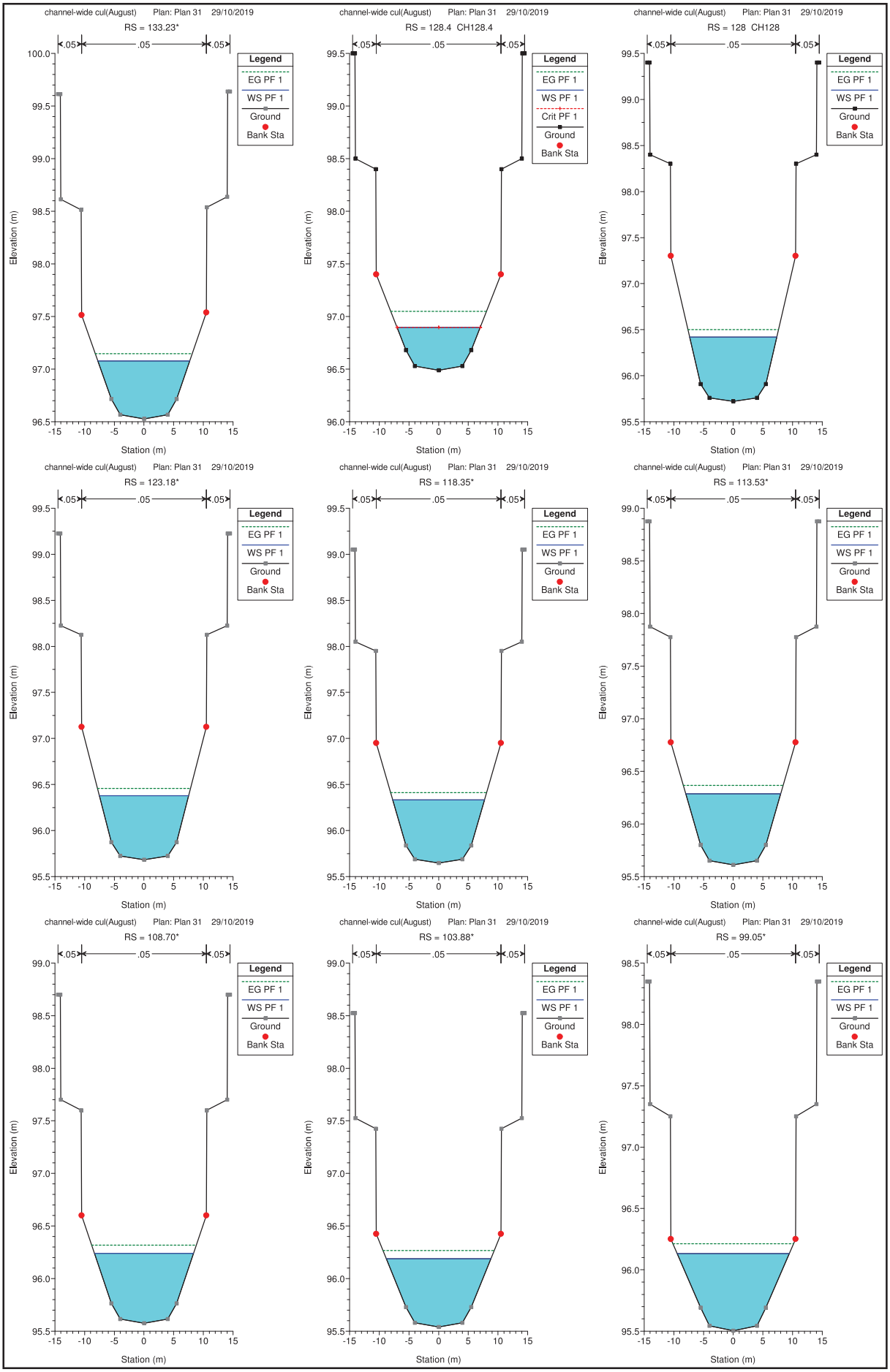

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 334.24*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 329.82*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 325.4 CH325.4
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 325 CH325
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 320.08*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 315.16*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 310.24*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 305.32*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 300.4 CH300.4
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

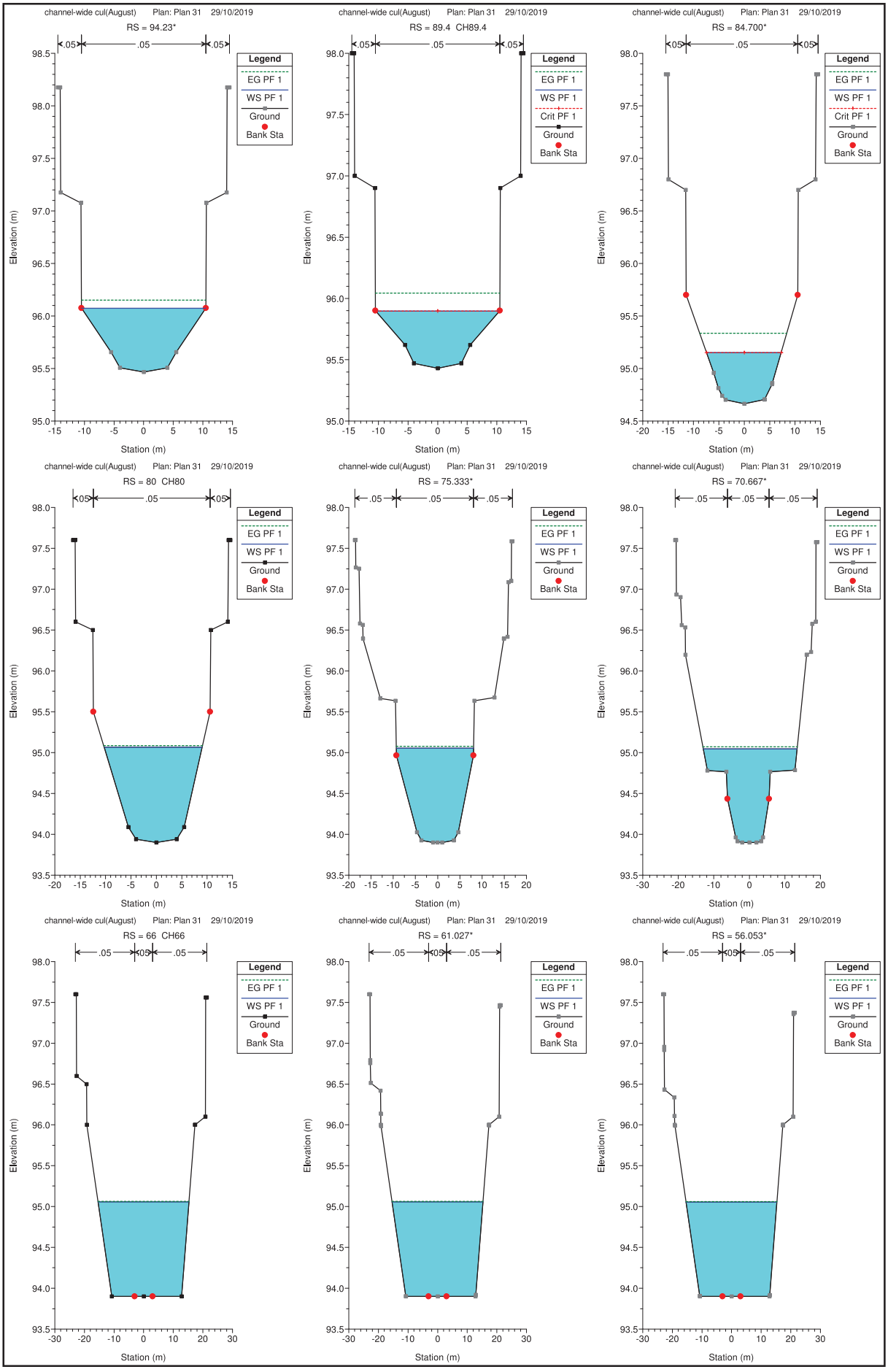

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 300 CH300
RS = 295.00*
RS = 290.00*
RS = 285.00*
RS = 280 CH280
RS = 278.1 CH278.1
RS = 264.455 Culv downstream end
RS = 264.455 Culv downstream end
RS = 250.8 CH250.8
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

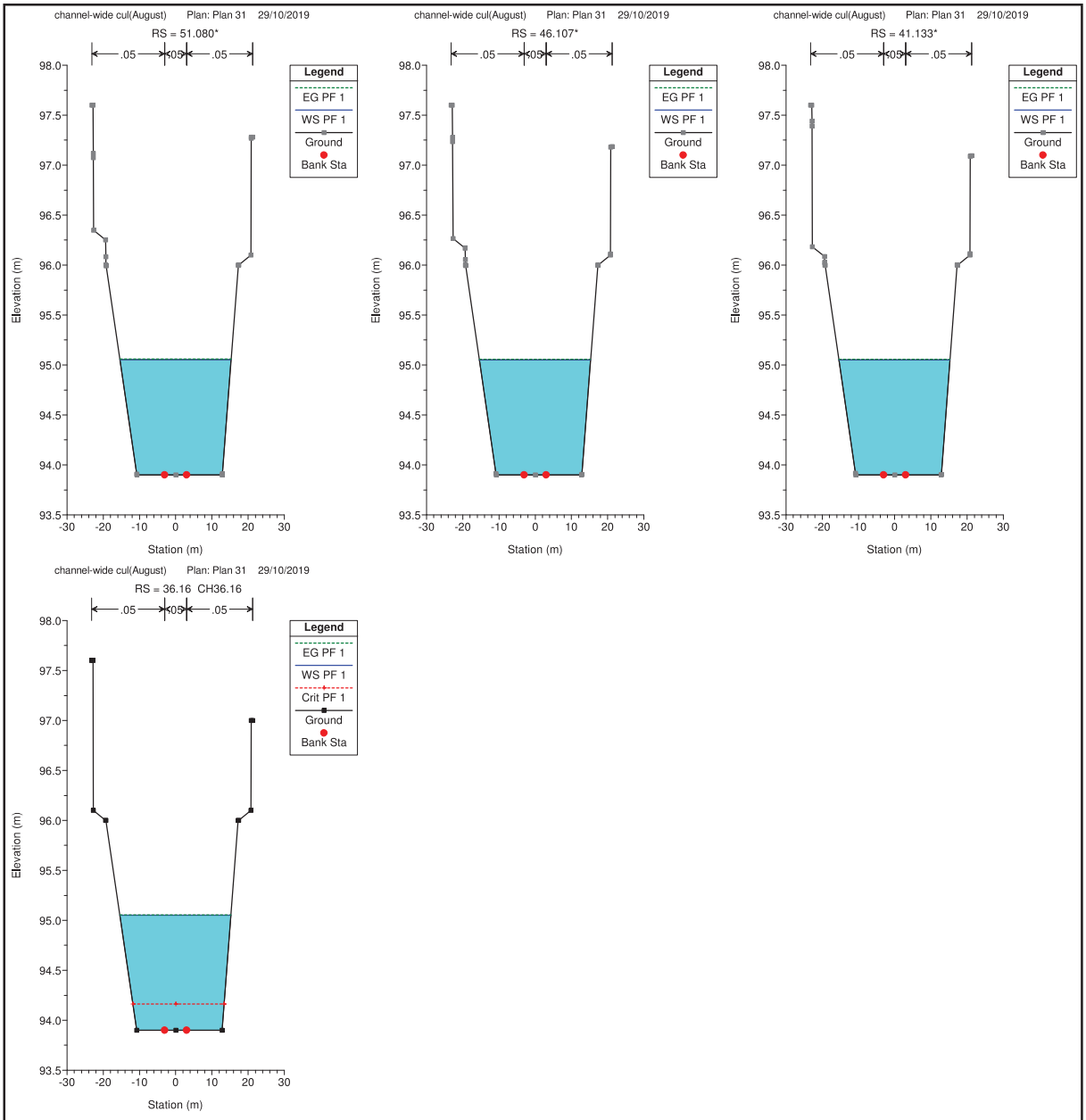

channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 247.90*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 245 CH245
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 244.65 CH244.65
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 239.86*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 235.08*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 230.29*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 225.50*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 220.71*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 215.93*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 211.14*
RS = 206.35 CH206.4
RS = 206 CH206
RS = 201.18*
RS = 196.35*
RS = 191.53*
RS = 186.70*
RS = 181.88*
RS = 177.05*
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 172.23*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 167.4 CH167.4
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 167 CH167
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 162.18*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 157.35*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 152.53*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 147.70*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 142.88*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 138.05*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 133.23*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 128.4 CH128.4
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 128 CH128
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 123.18*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 118.35*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 113.53*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 108.70*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 103.88*
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 99.05*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 94.23*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 89.4 CH89.4
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 84.700*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 80 CH80
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 75.333*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 70.667*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 66 CH66
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 61.027*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 56.053*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 51.080*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 46.107*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 41.133*
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
channel-wide cul(August) Plan: Plan 31 29/10/2019
RS = 36.16 CH36.16
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

Annexure E – Central Channel Hydraulics – Ultimate Development Conditions

E.3 – Hec-Ras Table of Results

HEC-RAS Plan: Plan 31 River: channel Reach: 1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	510.4	PF 1	3.43	107.35	107.61	107.61	107.72	0.042075	1.43	2.40	11.65	1.00
1	510	PF 1	3.43	106.64	107.05		107.08	0.007345	0.83	4.12	12.05	0.46
1	505.05*	PF 1	3.43	106.60	107.01		107.05	0.007382	0.83	4.12	12.11	0.46
1	500.10*	PF 1	3.43	106.57	106.98		107.01	0.007424	0.83	4.12	12.19	0.46
1	495.15*	PF 1	3.43	106.53	106.94		106.97	0.007509	0.83	4.12	12.28	0.46
1	490.20*	PF 1	3.43	106.50	106.90		106.94	0.007667	0.84	4.10	12.37	0.46
1	485.25*	PF 1	3.43	106.46	106.86		106.90	0.008010	0.84	4.06	12.47	0.47
1	480.30*	PF 1	3.43	106.42	106.82		106.86	0.008521	0.86	4.00	12.57	0.49
1	475.35*	PF 1	3.43	106.39	106.77		106.81	0.009561	0.89	3.87	12.65	0.51
1	470.4	PF 1	3.43	106.35	106.61	106.61	106.72	0.042394	1.43	2.40	11.69	1.01
1	470	PF 1	3.43	105.64	106.04		106.08	0.008350	0.87	3.96	12.02	0.48
1	465.97*	PF 1	3.43	105.61	106.00		106.04	0.009040	0.88	3.88	12.20	0.50
1	461.93*	PF 1	3.43	105.58	105.96		106.00	0.010345	0.91	3.76	12.45	0.53
1	457.9	PF 1	3.43	105.56	105.82	105.82	105.92	0.042477	1.43	2.41	11.79	1.01
1	457.5	PF 1	3.43	104.70	105.23		105.25	0.005228	0.75	4.57	12.12	0.39
1	452.82*	PF 1	3.43	104.69	105.20		105.23	0.005312	0.75	4.56	12.18	0.39
1	448.14*	PF 1	3.43	104.67	105.17		105.20	0.005445	0.76	4.53	12.24	0.40
1	443.47*	PF 1	3.43	104.66	105.15		105.18	0.005595	0.76	4.50	12.30	0.40
1	438.79*	PF 1	3.43	104.64	105.12		105.15	0.005826	0.77	4.46	12.36	0.41
1	434.11*	PF 1	3.43	104.63	105.09		105.12	0.006141	0.78	4.39	12.42	0.42
1	429.43*	PF 1	3.43	104.61	105.06		105.09	0.006629	0.80	4.30	12.47	0.43
1	424.76*	PF 1	3.43	104.60	105.03		105.06	0.007412	0.82	4.16	12.50	0.46
1	420.08*	PF 1	3.43	104.58	104.98		105.02	0.008978	0.87	3.93	12.47	0.50
1	415.4	PF 1	3.43	104.57	104.83	104.83	104.94	0.042208	1.43	2.39	11.57	1.01
1	415	PF 1	3.43	103.86	104.27		104.30	0.007642	0.85	4.05	11.92	0.46
1	410.58*	PF 1	3.43	103.83	104.23		104.27	0.007847	0.85	4.03	12.02	0.47
1	406.16*	PF 1	3.43	103.80	104.19		104.23	0.008184	0.86	3.99	12.13	0.48
1	401.74*	PF 1	3.43	103.76	104.16		104.19	0.008785	0.87	3.93	12.25	0.49
1	397.32*	PF 1	3.43	103.73	104.11		104.15	0.009961	0.90	3.79	12.39	0.52
1	392.9	PF 1	3.43	103.70	103.96	103.96	104.07	0.042112	1.43	2.40	11.65	1.01
1	392.5	PF 1	3.43	102.99	103.39		103.43	0.007938	0.86	4.00	11.83	0.47
1	388.07*	PF 1	3.43	102.96	103.35		103.39	0.008152	0.86	3.97	11.92	0.48
1	383.64*	PF 1	3.43	102.92	103.32		103.35	0.008406	0.87	3.95	12.04	0.48
1	379.20*	PF 1	3.43	102.89	103.28		103.32	0.008996	0.88	3.89	12.18	0.50
1	374.77*	PF 1	3.43	102.85	103.23		103.27	0.009979	0.91	3.79	12.34	0.52
1	370.34	PF 1	3.43	102.82	103.08	103.08	103.18	0.042088	1.43	2.40	11.64	1.01
1	370	PF 1	3.43	102.11	102.51		102.55	0.008020	0.86	4.00	12.00	0.47
1	365.58*	PF 1	3.43	102.08	102.47		102.51	0.008186	0.86	3.99	12.08	0.48
1	361.16*	PF 1	3.43	102.04	102.44		102.47	0.008495	0.87	3.96	12.18	0.49
1	356.74*	PF 1	3.43	102.01	102.40		102.44	0.009042	0.88	3.89	12.28	0.50
1	352.32*	PF 1	3.43	101.97	102.35		102.39	0.010143	0.91	3.77	12.38	0.53
1	347.9	PF 1	3.43	101.94	102.20	102.20	102.31	0.042348	1.43	2.39	11.61	1.01
1	347.5	PF 1	6.61	101.23	101.79		101.85	0.008535	1.11	5.97	12.72	0.52
1	343.08*	PF 1	6.61	101.20	101.75		101.81	0.008823	1.11	5.94	12.87	0.52
1	338.66*	PF 1	6.61	101.16	101.71		101.77	0.009272	1.12	5.88	13.05	0.53
1	334.24*	PF 1	6.61	101.13	101.66		101.73	0.010006	1.14	5.78	13.25	0.55
1	329.82*	PF 1	6.61	101.09	101.61		101.68	0.011345	1.18	5.60	13.47	0.58
1	325.4	PF 1	6.61	101.06	101.44	101.44	101.59	0.037444	1.73	3.82	12.68	1.01
1	325	PF 1	6.61	100.35	100.95		101.01	0.006514	1.03	6.42	12.34	0.46
1	320.08*	PF 1	6.61	100.33	100.92		100.97	0.006943	1.05	6.32	12.50	0.47
1	315.16*	PF 1	6.61	100.30	100.88		100.94	0.007498	1.06	6.21	12.70	0.49
1	310.24*	PF 1	6.61	100.28	100.84		100.90	0.008457	1.10	6.03	12.97	0.51
1	305.32*	PF 1	6.61	100.25	100.79		100.85	0.010093	1.14	5.78	13.33	0.55
1	300.4	PF 1	6.61	100.23	100.61	100.61	100.76	0.037415	1.73	3.82	12.76	1.01
1	300	PF 1	6.61	99.46	100.12		100.16	0.004772	0.93	7.11	12.63	0.40
1	295.00*	PF 1	6.61	99.43	100.09		100.14	0.004655	0.92	7.19	12.76	0.39
1	290.00*	PF 1	6.61	99.40	100.07		100.11	0.004527	0.91	7.28	12.91	0.39
1	285.00*	PF 1	6.61	99.38	100.05		100.09	0.004377	0.89	7.40	13.09	0.38
1	280	PF 1	6.61	99.35	100.03		100.07	0.004216	0.88	7.52	13.31	0.37
1	278.1	PF 1	6.61	99.33	100.02	99.71	100.06	0.003935	0.86	7.71	13.43	0.36
1	264.455		Culvert									
1	250.8	PF 1	7.43	99.06	99.59		99.68	0.012668	1.28	5.82	13.54	0.62
1	247.90*	PF 1	7.43	99.03	99.54		99.64	0.014562	1.33	5.57	13.48	0.66
1	245	PF 1	7.43	99.00	99.46		99.58	0.022017	1.52	4.87	13.14	0.80
1	244.65	PF 1	7.43	98.89	99.50		99.56	0.007854	1.09	6.83	14.05	0.50
1	239.86*	PF 1	7.43	98.85	99.46		99.52	0.007976	1.09	6.83	14.26	0.50
1	235.08*	PF 1	7.43	98.82	99.42		99.48	0.008135	1.09	6.83	14.49	0.51
1	230.29*	PF 1	7.43	98.79	99.38		99.44	0.008344	1.09	6.83	14.75	0.51
1	225.50*	PF 1	7.43	98.75	99.34		99.40	0.008639	1.09	6.81	15.05	0.52
1	220.71*	PF 1	7.43	98.71	99.30		99.36	0.009082	1.10	6.77	15.39	0.53
1	215.93*	PF 1	7.43	98.68	99.25		99.31	0.009830	1.11	6.67	15.75	0.55
1	211.14*	PF 1	7.43	98.64	99.20		99.26	0.011149	1.15	6.48	16.12	0.58
1	206.35	PF 1	7.43	98.61	99.01	99.01	99.17	0.037475	1.72	4.32	14.51	1.01
1	206	PF 1	7.43	97.84	98.45		98.51	0.008008	1.10	6.78	14.03	0.50
1	201.18*	PF 1	7.43	97.80	98.41		98.47	0.008130	1.09	6.79	14.23	0.51
1	196.35*	PF 1	7.43	97.77	98.37		98.43	0.008247	1.09	6.80	14.46	0.51
1	191.53*	PF 1	7.43	97.73	98.33		98.39	0.008443	1.09	6.80	14.70	0.51
1	186.70*	PF 1	7.43	97.70	98.28		98.35	0.008748	1.10	6.77	14.98	0.52
1	181.88*	PF 1	7.43	97.66	98.24		98.30	0.009211	1.11	6.72	15.29	0.53
1	177.05*	PF 1	7.43	97.62	98.19		98.26	0.009840	1.12	6.65	15.64	0.55
1	172.23*	PF 1	7.43	97.59	98.14		98.20	0.011128	1.15	6.46	15.98	0.58
1	167.4	PF 1	7.43	97.55	97.95	97.95	98.11	0.037564	1.73	4.30	14.37	1.01
1	167	PF 1	7.43	96.78	97.39		97.45	0.007975	1.10	6.77	13.92	0.50

HEC-RAS Plan: Plan 31 River: channel Reach: 1 Profile: PF 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	162.18*	PF 1	7.43	96.74	97.35		97.41	0.008102	1.10	6.77	14.09	0.51
1	157.35*	PF 1	7.43	96.71	97.31		97.37	0.008186	1.10	6.78	14.29	0.51
1	152.53*	PF 1	7.43	96.67	97.27		97.33	0.008386	1.10	6.77	14.50	0.51
1	147.70*	PF 1	7.43	96.64	97.23		97.29	0.008682	1.10	6.74	14.74	0.52
1	142.88*	PF 1	7.43	96.60	97.18		97.24	0.009138	1.11	6.68	14.99	0.53
1	138.05*	PF 1	7.43	96.56	97.13		97.20	0.009861	1.13	6.58	15.24	0.55
1	133.23*	PF 1	7.43	96.53	97.08		97.15	0.011154	1.17	6.37	15.47	0.58
1	128.4	PF 1	7.43	96.49	96.90	96.90	97.05	0.036686	1.74	4.28	13.99	1.00
1	128	PF 1	10.17	95.72	96.42		96.50	0.008693	1.25	8.14	14.67	0.54
1	123.18*	PF 1	10.17	95.68	96.38		96.46	0.008951	1.25	8.14	15.03	0.54
1	118.35*	PF 1	10.17	95.65	96.33		96.41	0.009257	1.25	8.14	15.46	0.55
1	113.53*	PF 1	10.17	95.61	96.29		96.37	0.009634	1.25	8.16	16.00	0.56
1	108.70*	PF 1	10.17	95.57	96.24		96.32	0.010198	1.25	8.15	16.68	0.57
1	103.88*	PF 1	10.17	95.54	96.19		96.27	0.010934	1.25	8.15	17.59	0.59
1	99.05*	PF 1	10.17	95.50	96.13		96.21	0.011954	1.25	8.16	18.89	0.61
1	94.23*	PF 1	10.17	95.47	96.07		96.15	0.013175	1.23	8.26	20.96	0.63
1	89.4	PF 1	10.17	95.43	95.90	95.90	96.04	0.037820	1.69	6.01	20.90	1.01
1	84.700*	PF 1	10.17	94.67	95.15	95.15	95.34	0.035033	1.90	5.34	14.68	1.01
1	80	PF 1	10.17	93.90	95.06		95.08	0.001226	0.62	16.35	19.30	0.22
1	75.333*	PF 1	10.17	93.90	95.05		95.08	0.001414	0.68	15.02	17.39	0.23
1	70.667*	PF 1	10.17	93.90	95.05		95.07	0.001337	0.75	15.98	26.40	0.23
1	66	PF 1	10.17	93.90	95.06		95.06	0.000256	0.35	31.44	30.71	0.10
1	61.027*	PF 1	10.17	93.90	95.06		95.06	0.000257	0.35	31.40	30.70	0.10
1	56.053*	PF 1	10.17	93.90	95.06		95.06	0.000258	0.35	31.36	30.70	0.11
1	51.080*	PF 1	10.17	93.90	95.05		95.06	0.000259	0.35	31.32	30.69	0.11
1	46.107*	PF 1	10.17	93.90	95.05		95.06	0.000260	0.35	31.29	30.68	0.11
1	41.133*	PF 1	10.17	93.90	95.05		95.06	0.000261	0.35	31.24	30.67	0.11
1	36.16	PF 1	10.17	93.90	95.05	94.16	95.06	0.000262	0.36	31.20	30.66	0.11