APPENDIX L

Hydrology Report

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TABLE OF CONTENTS

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L.1 EXECUTIVE SUMMARY

The intent of this study is to analyze and provide recommendations related to the hydrology, water quality, and floodplain impacts and mitigation measures for the proposed replacement terminal at Bob Hope "Hollywood Burbank" Airport in Burbank, California. The Proposed Project consists of a replacement passenger terminal constructed in the Northeast Quadrant of the Airport. After completion of the replacement terminal, the existing terminal located in the Southeast Quadrant of the Airport would be demolished and taxiway improvements would be implemented on the former terminal site. A more complete description can be found in the Environmental Impact Statement (EIS). Exhibits illustrating the pre- and post-development conditions for both the Northeast and the Southeast Quadrants can be found in Attachment A.

The Northeast and Southeast Quadrants were considered as two different project sites regarding stormwater requirements for Los Angeles County. Through the Los Angeles County Low Impact Development (LID) Manual, new projects within the county that meet the requirements as a Designated Site will have to retain 100% of the stormwater quality design volume (SWQDv) on-site, unless the project is exempt or seeks alternative compliance as outlined in the LID manual. Both quadrants meet the requirements as a Designated Site. Additionally, Designated Projects with greater than 50% of impervious area being redeveloped will have to meet the LID requirements for both the new and existing portions of the project site. Designated Projects with less than 50% of the impervious area being developed only have to meet this LID requirement for the new portion of the site. The Northeast Quadrant has more than 50% of the impervious area being redeveloped while the Southeast Quadrant has less than 50% of the impervious area being redeveloped.

Engineering and environmental analysis of the hydrology, water quality, and floodplain impacts was performed using the Modified Rational Method. For the Northeast Quadrant, the analysis determined that the development of the Northeast Quadrant would have a net reduction of 11.84 cfs in the post-development 50-yr peak flow rate compared to pre-development conditions. No water quality systems are currently located in this portion of the site. However, water quality systems and retention of stormwater will be required and can be addressed through effective design. Measures such as detention basins with internal treatment measures can be used to achieve both water quality and stormwater retention mitigation. The Northeast Quadrant is located outside any sensitive floodplain areas, so no additional floodplain mitigation measures are required.

A similar analysis was also performed for the Southeast Quadrant. Work in this location includes the demolition of the existing terminal and subsequent extension of the taxiways. The net reduction in the post-development 50-yr peak flow rate was 28.22 cfs compared to pre-development conditions for the Southeast Quadrant. As the site is 100% impervious in pre-development conditions, any reduction in impervious cover would reduce the peak flow rate. Although some water quality control measures exist at this location, they should be evaluated to determine compliance with current design requirements or if any additional measures are necessary. The proposed construction changes are located outside the 100-year floodplain delineated on the Flood Insurance Rate Map (FIRM) panel developed by FEMA.

L.2 BACKGROUND AND METHODOLOGY

L.2.1 INTRODUCTION

The report outlines the preliminary hydrologic and stormwater quality analysis for the proposed passenger terminal replacement at Bob Hope "Hollywood Burbank" Airport. The scope of the Proposed Project includes:

- construction of a new 355,000 square-foot terminal and support facilities to be located on the Northeast Quadrant of the Airport
- demolition of the existing terminal located in the Southeast Quadrant of the Airport
- extension of Taxiways A and C on the site of the existing terminal

A more complete description of the Proposed Project can be found in the Environmental Impact Statement (EIS). This report analyzes the existing and proposed site conditions of the Proposed Project and evaluates the pre- and post-development hydrologic impacts, the pre- and post- development water quality impacts, and floodplain impacts. This hydrology report does not include hydraulic analysis or stormwater conveyance design. For the purposes of the report, the Proposed Project is considered as two separate project sites: the Northeast Quadrant and the Southeast Quadrant. The Northeast Quadrant is the site of the replacement terminal construction. The Southeast Quadrant is the site of the existing terminal which is to be demolished and Taxiway A and Taxiway C to be extended in its place. Exhibits showing the proposed site configuration and conditions for pre- and post-development can be found in Attachment A.

L.2.2 REGULATORY REQUIREMENTS

L.2.2.1 HYDROLOGY

The Bob Hope "Hollywood Burbank" Airport is located in the Los Angeles River Watershed. The Northeast and Southeast Quadrants have two different flow regimes for stormwater runoff. In the Northeast Quadrant, the runoff sheet flows from paved and grassed surfaces into a system of inlet and pipes. The stormwater discharges to offsite storm pipes beneath Hollywood Way, then east to the Burbank Western Channel. Stormwater from the Southeast Quadrant is collected in a subsurface conveyance system and drains offsite to the Lockheed Drainage Channel, located on the southern edge of the Airport. This channel discharges to Burbank Western Channel.

Hydrology calculations for the 2-year, 5-year, 10-year, 25-year and 50-year storm events for the sites were performed in accordance with the County of Los Angeles Department of Public Works Low Impact Development (LID) Standards Manual, dated February 2014, and the City of Burbank Municipal Storm Water and Urban Runoff Discharges & Low Impact Development Standards Manual 2015. The LA County LID manual was developed to comply with revisions in the National Pollutant Discharge Elimination System (NPDES) 2012 Municipal Separate Storm Sewer System (MS4) permit for Los Angeles County as well as the Los Angeles Regional Water Quality Control Board (RWQCB) basin plan. The City of Burbank Code adopted the Los Angeles County Standard Urban Storm Water Mitigation Plan (SUSMP) in 2000, which has since

been subsequently replaced by the LID manual in 2014. The City of Burbank LID Manual still includes previously adopted SUSMP requirements.

As stated in the LA County LID manual, the required components for a hydrology analysis are to determine the time of concentration (t_c), the runoff coefficients (C), and the final stormwater quality design volume (SWQDv). This analysis is intended to reduce and/or eliminate any increase in runoff due to site development.

To assist in determining these hydrologic components, Los Angeles County Department of Public Works (LACDPW) has developed the HydroCalc program which utilizes the Modified Rational Method (MODRAT) to determine the peak flow rates (Q) and volumes for stormwater runoff. HydroCalc Version 1.0.3 was used for all analyses in this report. All sub-basin areas analyzed are under the 40-acre maximum as denoted in the LA County LID manual.

L.2.2.2 WATER QUALITY

Per the LA County LID Manual, the intent of stormwater quality measures is to "Minimize pollutant loadings from impervious surfaces by requiring development projects to incorporate properly designed, technically-appropriate Best Management Practices (BMPs) and other Low Impact Development (LID) strategies."[1]

The Northeast and Southeast Quadrants are both considered to be Designated Projects as they meet the criteria for "redevelopment" as stipulated by LA County LID Manual. This requirement was met because greater than 5,000 sq. ft. of impervious surface will be replaced on a site with more than 5,000 sq. ft. of parking surfaces. For Designated Projects, the entire SWQDv must be retained on-site through LID practices as outlined in the LA County LID manual, unless the project seeks exemption or alternative compliance. Furthermore, if 50% or more of the impervious area on a Designated Project area will be redeveloped, both the new and the existing portions of the site must meet the SWQDv requirement. If less than 50% of the Designated Project area is to be redeveloped, the only the new portion must be brought up to current LID standards. The Proposed Project in the Northeast Quadrant will develop more than 50% of the impervious and will have to meet the more stringent LID requirements. The Proposed Project in the Southeast Quadrant will develop less than 50% of the site, so only the new portions will have to meet the LID requirements.

Per the LA County LID Manual, the SWQDv is defined as either 0.75-inch, 24-hour rain event or 85th percentile, 24-hour rain event per the LA County isoheytal map, whichever is greater. The SWQDv was calculated using the HydroCalc program as LA County encourages the use of this program to determine the SWQDv. In the HydroCalc Solutions found in Attachment B, the SWQDv for each condition is designated as the "24-Hr Clear Runoff Volume". Once the SWQDv is established, there are several mitigation options outlined in the LA County LID manual for stormwater quality treatment. A discussion of these mitigation methods and their practicality for the Proposed Project can be found in the Mitigation subsections of Sections L.3.1.2 Water Quality and L.3.2.2 Water Quality of this report. Preliminary discussions with

[1] County of Los Angeles Department of Public Works, 2014 Low Impact Design Manual, February 2014, Section 1.1.

the Los Angeles Regional Water Quality Control Board indicate that this site is not suitable for implementation of infiltration LID practices due to the risk of groundwater pollution.

Additionally, site-specific source control measures and stormwater quality control measures will be required. The source control measures, taken from the LID Manual, can be found in **Table L.2-1** shown below.

TABLE L.2-1 – SOURCE CONTROL MEASURES

Source Control Measures	
S-1 – Storm Drain Message and Signage	S-6 – Outdoor Vehicle/Equipment/Accessory Wash Area
S-2 – Outdoor Material Storage Area	S-7 – Fuel & Maintenance Area
S-3 – Outdoor Trash Storage/Waste Handling Area	S-8 – Landscape Irrigation Areas
S-4 – Outdoor Loading/Unloading Dock Area	S-9 – Building Materials
S-5 – Outdoor Vehicle/Equipment Repair/ Maintenance Area	S-10 – Animal Care and Handling Facilities
	S-11 – Outdoor Horticulture Areas

Source: LA County Low Impact Design Manual – Section 5

A description of the recommended source control measures can be found in the Mitigation subsections of Sections L.3.1.2 Water Quality and L.3.2.2 Water Quality of this report.

L.2.2.3 FLOODPLAINS

Floodplains are delineated by the Federal Emergency Management Agency (FEMA) and are reported on Flood Insurance Rate Map (FIRM) panels. The FIRM panel that encompasses the Proposed Project is Panel 06037C1328F, dated September 26, 2008. This FIRM panel can be found in Attachment C.

Floodplains on airport property are managed in part by both Los Angeles County and City of Burbank, as some portions of the airport are in the City of Burbank and others are in the City of Los Angeles. The LA County LID manual requires that site development minimize land disturbance or preserve the hydrologic conditions of the site as much as practically possible. This requirement includes locating buildings and impervious surfaces away from floodplains. The City of Burbank Building Regulations limits the impact in Zones A1-30 and AE areas to an increase of no greater than one foot to the base flood elevation anywhere in the City.[2]

[2] Burbank City Code §9-1-1-G103.10.2

L.2.3 METHODOLOGY/CALCULATIONS

The hydrology calculations presented in this report were performed using the HydroCalc software. The design storm frequencies outlined in the LID manual were performed using the software, including the 2-year, 5-year, 10-year, 25-year, and 50-year storms. The results in this report refer to the values associated with the 50-year storm, as this design storm frequency was the most stringent on hydrologic calculations and design. The calculations for each of the design storm frequencies can be found in Attachment B.

Contributing areas were delineated based on existing discharge points (DPs) so that the peak flow rates for pre-development and post-development conditions could be directly compared. Implementation of the Proposed Project and associated improvements, such as the aircraft apron, proposed terminal, and taxiway extensions, would modify flow patterns and therefore the boundaries of the contributing areas for each discharge point. The discharge point remained the same for pre-development and post-development analyses. Some of the contributing areas analyzed in this report have existing subsurface drainage systems that are expected to remain in post-development conditions. Thus, in determining the flow paths utilized in HydroCalc, the analyzed flow path incorporated both overland flow from the hydraulically most distant point and a tie-in into the existing subsurface drainage. The boundaries for the pre-development and post-development contributing areas, their respective discharge points, and flow paths can be seen in Attachment A.

A topographic LiDAR survey performed on December 24, 2015 was utilized for determining slopes and flow paths for existing conditions. The proposed design conditions for slopes and flow paths were based upon FAA design criteria for pavements and engineering judgement based on the existing topography. The water quality BMPs considered in the proposed conditions were outlined in the LA County LID manual.

The Stormwater Pollution Prevention Plan (SWPPP) and the geotechnical report from Ninyo & More Consultants, dated January 18th, 2016, were provided by the Airport Authority. The SWPPP contained a map of the existing drainage systems of the Airport which was used to determine the existing basins at the Airport. Rainfall isohyetal data used in the HydroCalc calculations was obtained from LA County Department of Public Works (LACDPW) online database. Lastly, the FIRM panel information was obtained from FEMA's online web portal. The provided SWPPP map and the effective FIRM panel can be found in Attachment C.

Some information was not available at the time of this report, such as the sizes of existing stormwater pipe network or the existing contributing area sub-basins. As such, some assumptions were made related to the existing drainage patterns on the various sites. A more detailed discussion of the assumptions made for this report can be found in Section L.4 Assumptions of this report. Subsequent hydrologic and hydraulic analyses for design should verify these assumptions to ensure that the findings of these reports are still accurate.

L.2.4 EXISTING CONDITIONS

L.2.4.1 NORTHEAST QUADRANT

Hydrology

The Northeast Quadrant is approximately 60.8 acres and is located adjacent to Taxiway A and Taxiway D in the northeast corner of the Airport. The site is currently utilized for parking lots, construction staging activity for various projects at the Airport, and the Air Traffic Control Tower (ATCT), which is the only building located on this site.

According to Bob Hope "Hollywood Burbank" Airport SWPPP revised in November 2015, two (2) drainage systems currently serve the Northeast Quadrant. The first system, designated as the contributing area for discharge point (DP) 1, is 37.5 acres in size and has an open sheet flow regime the serves the Desmond parking lots in the northern portion of the Northeast Quadrant. The second area, designated as the contributing area for DP2, is 23.4 acres and comprises of a storm drain system that serves the southern portion of the Northeast Quadrant. A portion of this drainage system is proposed to remain during construction and tie into the post-development drainage system. The location of these DPs can be seen on Exhibit 1-1 in Attachment A.

The contributing area for DP1 is 53% parking lot and 47% open staging area. Historical data shows most of this staging area was previously paved. The staging area is expected to infiltrate very little, if any, stormwater due to compaction of the subgrade from being previously paved as well as the heavy equipment that regularly work in the staging area. Therefore, the open staging area is assumed to be only 5% pervious resulting in the contributing area for DP1 overall having 95% impervious cover. The contributing area for DP2 is also considered to have 95% impervious cover with the only pervious areas being the landscaping elements around the current ATCT. Exhibit 1-1 illustrating these conditions can be found in Attachment A.

Using the LACDPW program HydroCalc, the discharge at each of the DPs was determined. The results of the 50-year storm calculations can be found in **Table L.2-2** below.

TABLE L.2-2 – NORTHEAST QUADRANT – PRE-DEVELOPMENT RUNOFF CALCULATIONS

Discharge Point	Q_{2yr}	Q_{5yr}	Q_{10yr}	Q_{25yr}	Q_{50yr}
DP1	22.47 cfs	38.71 cfs	50.96 cfs	68.21 cfs	80.29 cfs
DP2	13.80 cfs	20.83 cfs	25.55 cfs	33.16 cfs	39.26 cfs

These values served as the baseline peak flows, or existing conditions, for the analysis. The complete results of the HydroCalc analysis for all design storm frequencies can be found in Attachment B.

Water Quality

Based on the information provided in the SWPPP, there does not appear to be any treatment of stormwater runoff. There are no detention or retention facilities for any of the runoff associated with the Northeast Quadrant. Under existing conditions, stormwater flows over pavements and infield areas prior to directly entering the storm drain systems. Therefore, any stormwater quality control best management practices (BMPs) implemented in the proposed development would improve the runoff quality from the site.

Floodplains

The FIRM panel showing the location of the Airport indicates that the Northeast Quadrant is located entirely within Zone X, which is defined as an area that is outside the 500-year floodplain area. As a result, the site is not considered a sensitive area and no special considerations are required.

L.2.4.2 SOUTHEAST QUADRANT

Hydrology

The Southeast Quadrant is approximately 67.7 acres in size. The existing terminal is located in the Southeast Quadrant of the Airport property and is served on the airside by a large apron area. Three surface parking lots, two parking structures, and Terminal Loop Road provide automobile access to the terminal. The existing site layout can be found in Exhibit 1-2 in Attachment A.

While the terminal site does include minor vegetative coverings along the perimeter of the parking structure, the effective site is 100% impervious. The Southeast Quadrant has been divided into four (4) contributing areas based on existing DPs, all of which are also considered to be 100% impervious. The contributing area for DP3 includes the northern terminal apron, is approximately 13.2 acres and is covered entirely by concrete pavement. The contributing area for DP4 includes the western terminal apron and is approximately 10.0 acres. The contributing area for DP5 is 9.1 acres and includes the southwest portion of the existing terminal and the valet surface lot. The contributing area for DP6 is 35.4 acres and includes the northeastern portion of the terminal, the short-term parking structure, the Regional Intermodal Transportation Center (RITC), and parking lots D, E, and G. The delineations for the contributing areas DP5 and DP6 accounted for the current subsurface drainage infrastructure that is proposed to remain in post-development conditions.

The stormwater system from the SWPPP does not show any existing subsurface drainage systems for the existing terminal and terminal loop road. The parking lots and parking structures to the southwest of the terminal are served by a combination of overland sheet flow regimes and subsurface drainage systems that exit airport property at various exit points. This map can be found in Attachment C.

The pre-development peak flow at each of these DPs was determined using the HydroCalc program as shown in **Table L.2-3** below.

TABLE L.2-3 – SOUTHEAST QUADRANT – PRE-DEVELOPMENT RUNOFF CALCULATIONS

Discharge Point	Q2yr	Q5yr	Q10yr	Q_{25yr}	Q50yr
DP3	8.12 cfs	13.11 cfs	17.34 cfs	22.84 cfs	26.68 cfs
DP4	6.39 cfs	11.04 cfs	14.51 cfs	18.87 cfs	22.15 cfs
DP5	6.38 cfs	11.09 cfs	14.38 cfs	18.91 cfs	22.37 cfs
DP6	21.84 cfs	35.90 cfs	46.61 cfs	61.40 cfs	71.73 cfs

Water Quality

According to the SWPPP, the contributing areas for DPs 3 and 4 have hydrodynamic separators located at their respective outfalls. These systems are intended to capture pollutants that may enter the stormwater system due to the operations performed on the aircraft apron. There does not appear to be any stormwater retention for either of these contributing areas. The contributing areas for DP5 and DP6 do not appear to have any existing water quality or stormwater retention measures.

Floodplains

A portion of the Southeast Quadrant is located in the 100-year floodplain; however, there are no anticipated proposed changes to occur within this area. Since no development is planned within the floodplain on this site, no impacts to the floodplain are expected to occur.

L.3 IMPACTS AND MITIGATION

L.3.1 NORTHEAST QUADRANT

L.3.1.1 HYDROLOGY

Impacts

The proposed site development includes a replacement terminal building, a new apron to serve the terminal, several parking structures, and a new terminal access road. The existing parking lots on site would be demolished. Refer to Exhibit 1-3 in Attachment A for the proposed development layout.

Stormwater runoff from the proposed development would be routed to existing outfalls via overland sheet flow and subsurface drainage systems. For this study, two (2) contributing areas are assumed to be established for the final design condition. The first area, Contributing area 1, is 26.3 acres and includes the site of the proposed terminal relocation and proposed parking structures. The second area, Contributing area 2, is 34.4 acres and includes the existing ATCT, proposed new terminal access road, and the apron serving the replacement terminal. As this area is only being slightly modified with changes to the entrance roads, much of the hydrologic conditions are anticipated to remain similar to pre-development conditions. In post-development conditions, Contributing area 1 is assumed to be 97% impervious and Contributing area 2 is 89% impervious. Although the boundaries of the contributing areas are slightly modified due to

the change in the site layout in post-development condition, the contributing areas still drain to the same DPs as pre-development conditions.

Contributing area 1 is assumed to exit the site via DP1, as this is the nearest outfall from the site. The buildings located in this area would each have their own independent roof drain capture systems which would convey runoff to this outfall. Contributing area 2 is assumed to exit the site at DP2 via two different flow regimes. Runoff from the new terminal access road is assumed to sheet flow across roadway pavements and route into curb inlets. Runoff from the apron area is assumed to be captured via a trench drain system along the center of the apron pavement which would then tie into the existing drainage system in Lot A and exit the site at DP2.

The post-development 50-year storm peak flow was determined using the HydroCalc program. The results of this analysis are shown in **Table L.3-1**.

TABLE L.3-1 – NORTHEAST QUADRANT - POST-DEVELOPMENT ANTICIPATED RUNOFF FLOWS

Discharge Point	Pre-Development Peak Flow	Post-Development Peak Flow	Difference in Peak Flow
DP1	80.29 cfs	57.11 cfs	(-23.18 cfs)
DP2	39.26 cfs	50.60 cfs	11.34 cfs

The overall post-development peak flows for the 50-year design storm frequency for the Northeast Quadrant was determined to decrease by 11.84 cfs compared to pre-development peak flows. Flow paths can be modified during final design to redistribute flow between Contributing areas 1 and 2 to more closely mimic pre-development conditions.

Mitigation

Mitigation is required to offset the increase of peak flow out of the site in order to meet the LID requirement of minimizing the impacts of the post-development peak runoff. Various alternatives for detention or retention of stormwater are presented in the LA County LID manual; however, several of these LID options are not suitable for airports due to the presence of standing water. This standing water presents a risk for creating a wildlife attractant as outlined in Federal Aviation Administration (FAA) Advisory Circular (AC) titled *Hazardous Wildlife Attractants on or Near Airports*.[3] The standards outlined in this document comply with the requirements in Title 14, Code of Federal Regulations (CFR), Part 139, *Certification of Airports*, Subpart D related to Airport Operating Certificates. Burbank is a Part 139 certified airport and is required to comply with these advisory notices on avoiding the attraction of wildlife. Additionally, many of the retention-based, biofiltration, and vegetation measures are not feasible according to the LA County LID manual as the most

[3] Federal Aviation Administration, Advisory Circular (AC), *Hazardous Wildlife Attractants on or Near Airports*, AC No. 150/5200-33B (August 28, 2007).

of the contributing areas in the Proposed Project are larger than the 10-acre maximum. Per discussions with the Regional Stormwater Quality Management officials, infiltration is not permitted at this site due to concerns with groundwater pollution.

The four remaining applicable quality control measures are treatment-based and include sand filters, an extended detention basin, permeable pavement with an underdrain system, and proprietary devices. Sand filters would likely not be feasible due to sizing restrictions from most of the proposed site being occupied by pavement and structures. Although permeable pavement would not be able to be utilized on the apron due to FAA pavement design requirements, surface parking lots could be constructed with permeable materials. However, most of the proposed parking facilities are parking structures so the extent of this LID practice would be restricted. The most feasible solution is an extended detention basin with treatment measures embedded within. These basins would need to be located underground to avoid any open standing water that may become a wildlife attractant. These basins could have baffles to increase the time of concentration enough to mitigate any increase in runoff as a result of the development. Proprietary devices would need to be investigated further as the contributing areas are finalized and the final flow paths are determined.

L.3.1.2 WATER QUALITY

Impacts

As discussed in Section L.2.4 Existing Conditions of this report, there are no pre-existing stormwater quality control measures implemented for the Northeast Quadrant. More than 50% of the site will be redeveloped; therefore, all the stormwater runoff generated from the Northeast Quadrant must be treated and retained on-site per the LID Manual Section 2.

The post-development stormwater quality design volume (SWQDv) that will require mitigation was determined to be 13.16 acre-feet for the contributing area for DP1. The post-development SWQDv for the contributing area for DP2 was determined to be to 15.96 acre-feet. All existing source control measures, if any, should be evaluated to ensure they meet the current LID requirements and can handle the increase in the peak flow rate. In addition, due to the nature of the proposed site development and operations that take place on the apron, additional source control measures would be required to offset any additional pollutants added to the system. A discussion of these proposed measures can be found below.

Mitigation

Section 5 of the LID manual outlines 11 source control measures that could be required based on the activities that will occur on the redevelopment site. Of these 11 measures, storm drainage message and signage, outdoor trash storage, outdoor loading/unloading dock area, fuel-maintenance area and landscape irrigation are anticipated to be required due to the proposed operations located at this site.

Storm drain message and signage requires that signs and messages be posted that discourage illegal dumping. Outdoor trash requirements include isolating the stormwater impacted by the storage area and ensuring that waste is contained onsite via grading and screens until the materials can be disposed of properly. Outdoor loading/unloading include similar requirements such as isolating the loading bays from

the surrounding drainage systems and covering the areas to prevent any leakage of pollutants. Any area where fueling or maintenance takes place is required to be isolated from exterior systems and include a shut off mechanism in the event of a fuel spill. Lastly, landscape requirements include design criteria to limit excessive runoff generated by the landscaping and to minimize fertilizer, pesticide, and herbicide uses. Each of these measures has a detailed list of components and features that must be incorporated into the final design to comply with the LID requirements. These requirements can be found in Appendix D of the LA County LID manual.

In addition to the source control measures above, treatment would be required for the Northeast Quadrant post-development SWQDv totaling 29.12 acre-feet. While an underground detention basin is the most feasible large-scale solution to comply with LID requirements from LA County, a combination of mitigation techniques is likely the most cost-effective solution. A dedicated detention basin with internal treatment measures such as proprietary soil mixture would be the recommended mitigation for the apron pavements. This treatment combination would provide improvement in the quality of stormwater runoff and accommodate the SWQDv within the system. A combination of smaller stormwater quality control measures, such as vegetative swales or sand filters, could be used around the development to decrease the required detention site area.

Dedicated dry wells could be utilized to treat runoff generated by the buildings. However, due to the scale of the structures, numerous cisterns would be required on each building to provide adequate volume for treatment. Many of the vegetated options outlined in the LID manual would result in standing water that could last longer than 48 hours if the systems are not designed properly. The presence of standing water for this length of time is prohibited by the FAA on the basis of attracting wildlife.

Regarding other LID strategies, an extended detention could be feasible; however, it would need to be installed underground to avoid any standing water, thus increasing the cost of the basins and increasing the difficulty of maintenance. Permeable pavements could also be utilized; however, since the majority of the proposed site is occupied by buildings or parking structures, the number of eligible pavements is limited. Additionally, apron pavements would not be able to be of permeable construction due to FAA pavement design requirements. LA County may require a maintenance plan to be submitted of all proposed LID and stormwater measures. The LA County LID manual has specific maintenance requirements and coordination with manufacturers will be necessary during final design to determine the proper maintenance procedures and frequency.

Alternative compliance may be pursued if further analysis shows that the stormwater infrastructure on a project site cannot feasibly retain 100% of the SWQDv. Per the LID manual, this alternative compliance can be achieved for the remainder of the SWQDv that cannot be reliably retained on-site, and includes measures such as on-site biofiltration, off-site infiltration/bioretention of runoff generated from the project site, replenishment of groundwater supplies, or off-site infiltration/bioretention or stormwater runoff harvest through a retrofit of an existing development with similar land uses to the project. Section 7 of the LID manual has a more detailed analysis of alternative compliance. Feasibility for these options of alternative compliance would have to be completed during final design.

Additionally, due to the potential for hydrocarbon pollutants from apron operations, a hydrodynamic separator would be required at all apron stormwater exit points to capture any pollutants, such as jet fuel, before it enters and contaminates any downstream drainage systems. These systems would be similar to the current systems in place at the apron for the Southeast Quadrant. The hydrodynamic separators would be connected to either the proposed trench drain or drainage channel that is used for the entire apron area, as they should be located upstream of any detention systems.

L.3.1.3 FLOODPLAINS

Impacts

As discussed in Section L.2.4.1 Northeast Quadrant, the Northeast Quadrant is not located in an effective FEMA floodplain area. The proposed development would not alter the site in a way to drastically change this condition; therefore, there is no projected impact to any floodplain areas.

Mitigation

No mitigation is required.

L.3.2 SOUTHEAST QUADRANT

L.3.2.1 HYDROLOGY

Impacts

The proposed modifications to the Southeast Quadrant include the removal of the existing terminal, apron pavements, and some terminal roadway pavements. The ultimate future condition includes the construction of extensions to Taxiways A and C and a realignment of the access road. Most of the parking facilities located in the southeast corner of the site would remain in the post-development condition. Exhibit 1-4 in Attachment A shows the final condition of this development.

The existing contributing areas would be maintained to the extent possible, resulting in four (4) drainage systems for the post-development condition. The boundaries of these contributing areas are altered slightly from the pre-development conditions due to the demolition of the existing terminal and extensions of the taxiways but would still discharge to the same DPs as pre-development conditions. The contributing area for DP3 would increase slightly in area to accommodate the proposed Taxiway C extension. A large portion of this area is expected to convert to pervious cover resulting in the final site condition being 41% impervious. Similarly, the contributing area DP4 would also increase in total area and add pervious cover as a result of the Taxiway A extension, resulting in a final condition of 51% impervious cover. The contributing areas for DP5 and DP6 would reduce in size but are unaffected by the development, resulting in the areas maintaining 100% impervious cover.

Runoff from the contributing area for DP3 will discharge to subsurface drainage structures that would convey the runoff towards the outfall. The infield areas along Taxiway C would capture runoff via area inlets located between the paved areas. The contributing area for DP4 would convey runoff in a similar manner. The Taxiway A extension infield areas would capture runoff using area inlets then carried through subsurface

drainage pipes to DP4. The drainage patterns for the contributing areas for DP5 and DP6 would remain unchanged and the runoff generated in each of these areas would exit at their respective existing outfalls.

The results from the post-development 50-year storm peak flow as determined by HydroCalc can be found in Table L.3-2 below.

TABLE L.3-2 – SOUTHEAST QUADRANT - POST-DEVELOPMENT ANTICIPATED RUNOFF FLOWS

Discharge Point	Pre-Development Peak Flow	Post Development Peak Flow	Difference in Peak Flow
DP3	26.68 cfs	21.06 cfs	(-5.62 cfs)
DP4	22.15 cfs	14.13 cfs	(-8.02 cfs)
DP5	22.37 cfs	16.63 cfs	(-5.74 cfs)
DP6	71.73 cfs	62.89 cfs	(-8.84 cfs)

Mitigation

Since the contributing areas for DP3 and DP4 decreased in imperviousness and the contributing areas for DP5 and DP6 decreased in size, the peak flows decrease in post-development conditions in the Southeast Quadrant. Therefore, no mitigation is necessary for the peak flows for these areas. Each of the hydraulically most distant points for the contributing areas for DP3 and DP4 were chosen to be conservative in the peak flow when accounting for the final site design.

L.3.2.2 WATER QUALITY

Impacts

Less than 50% of the Southeast Quadrant will be redeveloped; therefore, the LA County LID manual requirements only apply to the modified portions of the site. The SWQDv for each contributing area was calculated in HydroCalc. The SWQDv in for the contributing areas for DP3 and DP4 would require mitigation due to the redevelopment; however, as the contributing areas for DP5 and DP6 are untouched they do not require any additional mitigation or treatment. The SWQDv for each area was determined to be 5.10 ac-ft SWQDv for the contributing area for DP3 and 3.10 ac-ft for the contributing area for DP4. Moreover, the removal of the refueling operations from the contributing areas for DP3 and DP4 by demolition of the aprons would decrease the amount of pollutants in the stormwater runoff, resulting in improvement in runoff water quality for both areas.

Mitigation

Only one source control measure will be required based on the site layout and land use of the Proposed Project. The changes to the Southeast Quadrant include demolition of the terminal and the addition of airfield taxiways which would not feature many of the site conditions outlined in the LID manual. Storm

drain message and signage will be required on all new drainage structures that are constructed as part of the site development.

The contributing areas for DP3 and DP4 would require treatment for their SWQDv that is generated as a result of the development under the LID manual requirements. As with the hydrologic mitigation measures, this treatment can be achieved in underground detention basins coupled with proprietary soil mixture to provide treatment prior to water exiting the site. A sand filter basin could also be installed to capture and provide treatment to the larger stormwater volume in for the contributing area for DP3. The contributing areas for DP5 and DP6 do not require mitigation as there is no change to the future condition of these areas.

L.3.2.3 FLOODPLAINS

Impacts

There are no impacts anticipated based on the current site development location. The areas of the Southeast Quadrant currently located inside the floodplain are not anticipated to be disturbed by the proposed development.

Mitigation

No mitigation is required with the current proposed development. However, the impacts to the floodplain should be reevaluated if additional changes are made to the proposed development on this site.

L.4 ASSUMPTIONS

Due to a lack of additional information regarding the existing contributing areas throughout the Airport site, it was assumed that all exterior water to the sites will be routed around the site via external conveyance methods.

Topographic data was not readily available during the preparation of this report. For the pre-development flow paths, the most plausible route from the hydraulically most distant point to the either the DP or a tie-in into subsurface drainage was considered. Engineering judgement was used to determine flow paths based on physical features such as roadway alignments and typical sections.

A stormwater system map, included in Attachment C, showing the location of the various storm drain networks located on the airfield was provided in the Nov. 2015 Bob Hope "Hollywood Burbank" Airport Stormwater Pollution Prevention Plan (SWPPP); however, there was no information regarding the various inverts, sizes, or slopes of the pipes in the network. As a result, a capacity analysis could not be performed to determine if any changes in the runoff pattern of the sites would have adverse effects on the systems. These systems would need to be assessed prior to any site modifications or tie-ins with proposed drainage systems.

Time of concentration for existing systems was determined conservatively by assuming the maximum allowable pipe velocity. It was assumed that the pipes carry all water at a velocity of 10 feet per second to their designated outfalls. Velocities greater than this may cause scouring in the pipe. Additionally, this

velocity is half maximum velocity allowable by American Public Works Association (APWA) design criteria, which is the design standard for the City of Burbank. This assumed condition is likely higher than the actual velocities but represents the worst-case scenario for calculating peak runoff. Additionally, post-development grading and slopes are not finalized and thus can only be estimated for purposes of the hydrologic analysis. Post-development slopes were estimated to be between 1% to 2%. Some of the contributing areas have buildings proposed in post-development conditions where immediate capture of precipitation can be assumed in further analysis.

Stormwater outfalls were assumed to have enough capacity to receive existing flows. Much of the existing site is previously developed; therefore, there is little change to the overall runoff of the sites. Minor modifications may be required at specific exit points to accommodate the final design flows.

The proposed stormwater source control measures and stormwater quality control measures were established based on the planning level sketches of the site. As the site condition is finalized, a more detailed analysis will be required to accurately determine the extent of treatment required and the feasibility of the recommendations presented in this report. These recommendations may no longer be the most economical or applicable as the site is completely established. Smaller combination systems may be used to effectively treat any stormwater, but at the time of this report, the details of the sites were not finalized enough to analyze the potential combinations.

Lastly, the calculations and BMPs outlined in this report are intended for planning purposes. As the design of the site development is finalized, the assumptions and findings of this report should be verified to ensure the analysis is applicable.

ATTACHMENT A: EXHIBITS

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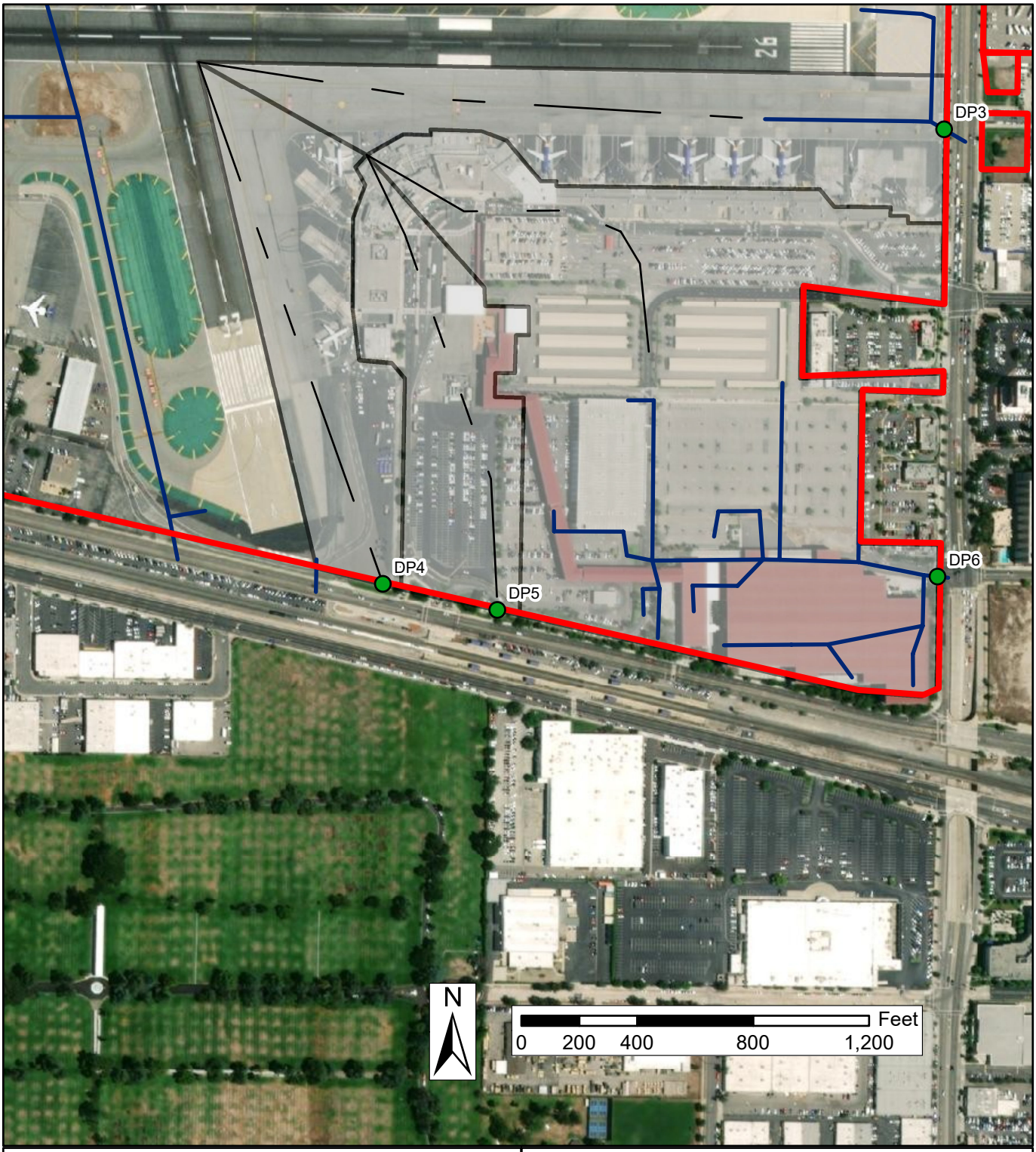
Legend

- Discharge Point
- Drainage Pipe
- Airport Boundary
- Contributing Areas
- Tc Flowpath

Pre-Development Proposed Terminal

Exhibit 1-1

Project: 2260044.000
Date: 10/30/2019
Drawn By: NAG



Legend

- Discharge Point
- Drainage Pipe
- Airport Boundary
- Contributing Areas
- Tc Flowpath

Pre-Development Existing Terminal

Exhibit 1-2

Project: 2260044.000
Date: 10/30/2019
Drawn By: NAG

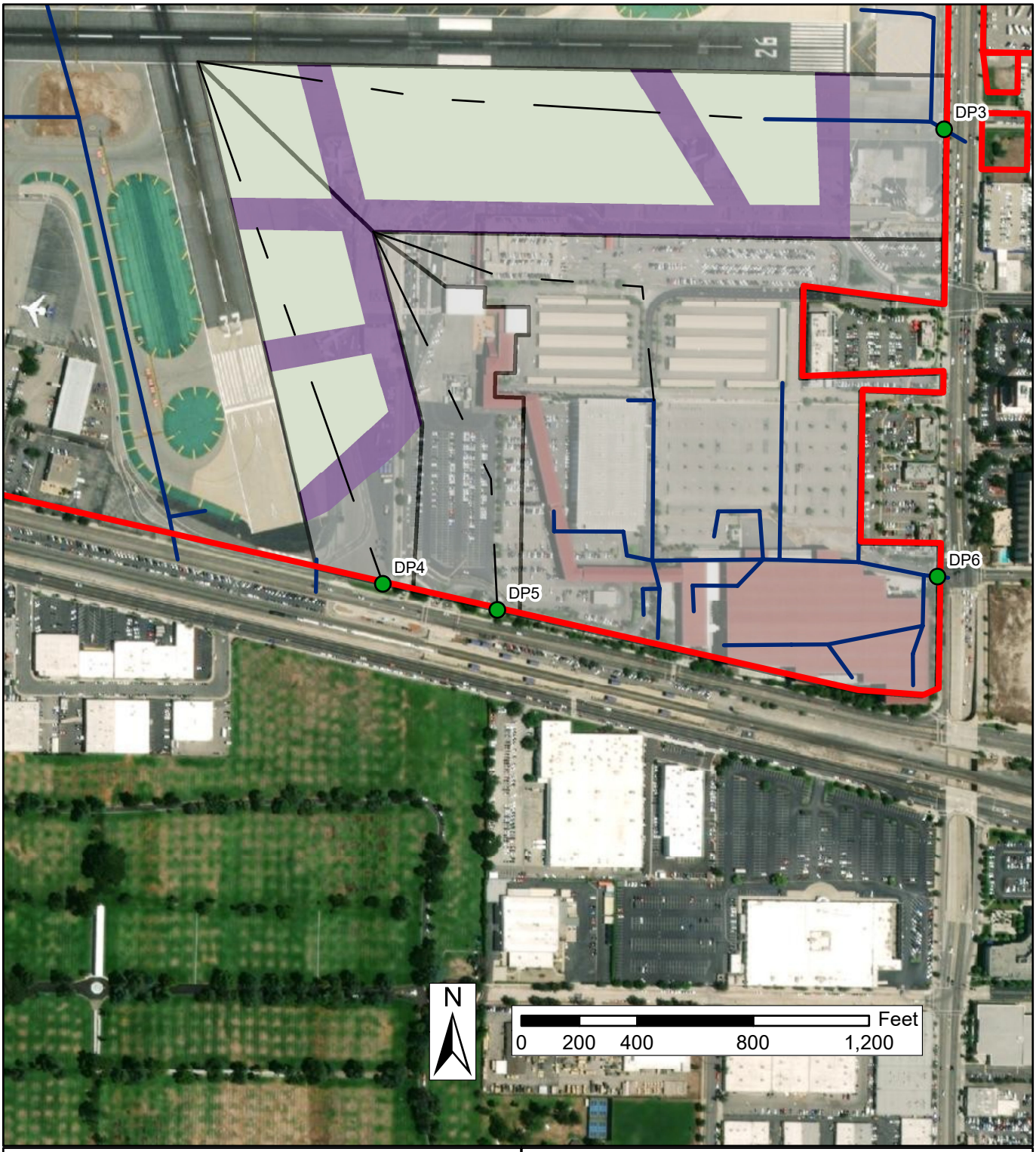
Legend

- Discharge Point
- Drainage Pipe
- Airport Boundary
- Contributing Areas
- Tc Flowpath

Post-Development Proposed Terminal

Exhibit 1-3

Project: 2260044.000
Date: 10/30/2019
Drawn By: NAG



Legend

- Discharge Point
- Airport Boundary
- Drainage Pipe
- Tc Flowpath
- Contributing Area
- Taxiway Extensions
- Infield Areas

Post-Development Existing Terminal

Exhibit 1-4

Project: 2260044.000
Date: 10/30/2019
Drawn By: NAG

ATTACHMENT B: HYDROCALC SOLUTIONS

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Peak Flow Hydrologic Analysis

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Version: HydroCalc 1.0.3

Input Parameters

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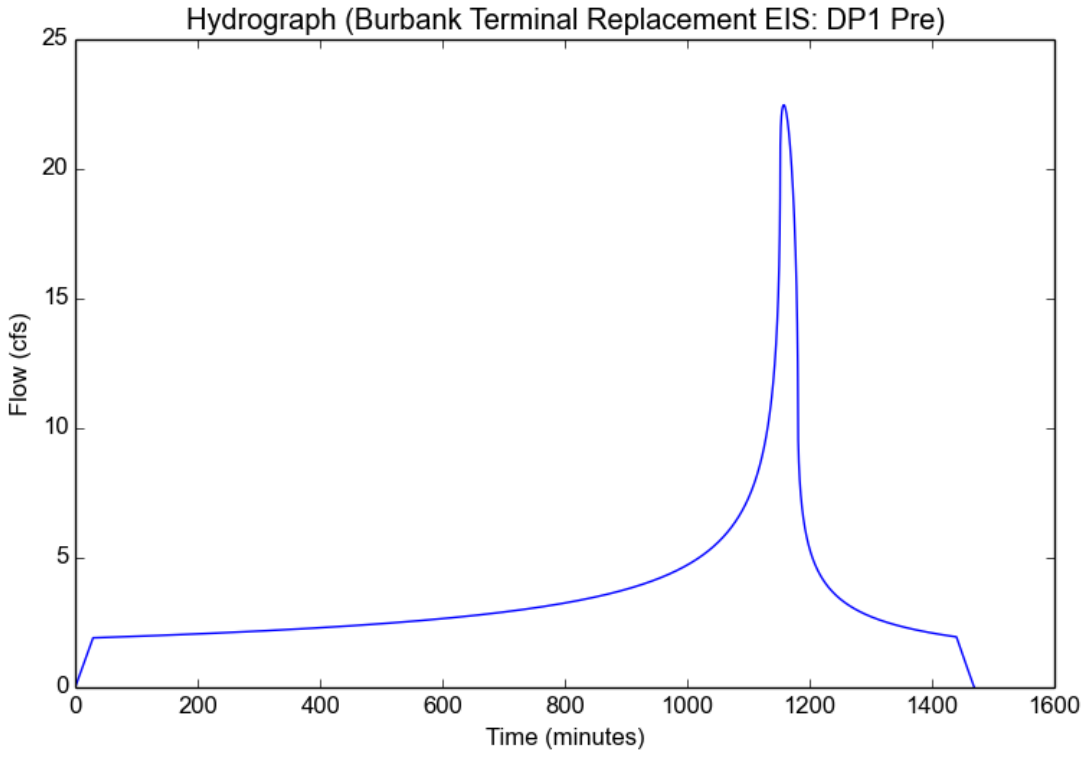
Output Results



Peak Flow Hydrologic Analysis

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Version: HydroCalc 1.0.3

Input Parameters

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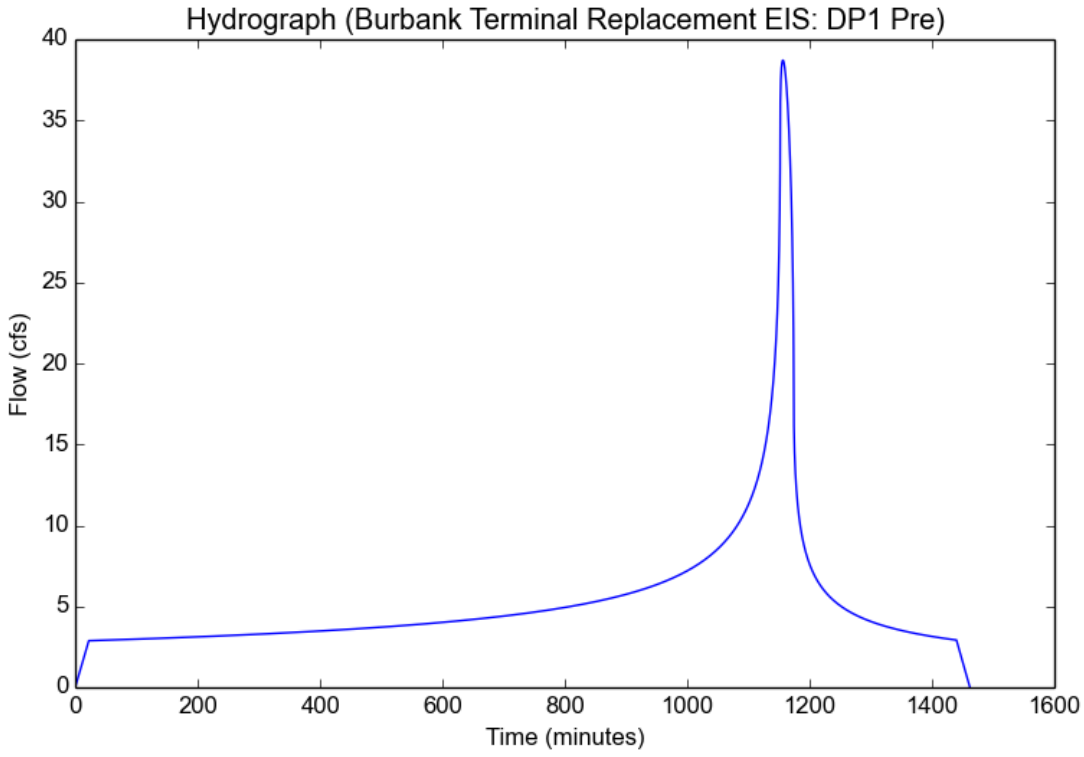

Peak Flow Hydrologic Analysis

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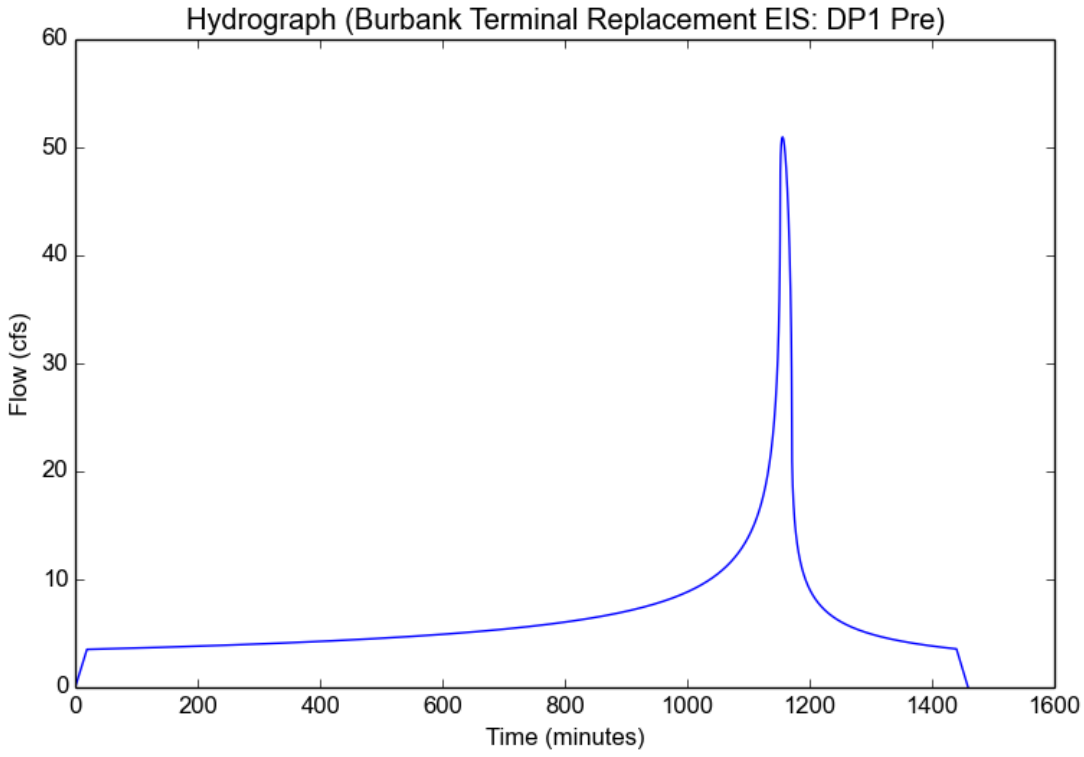

Peak Flow Hydrologic Analysis

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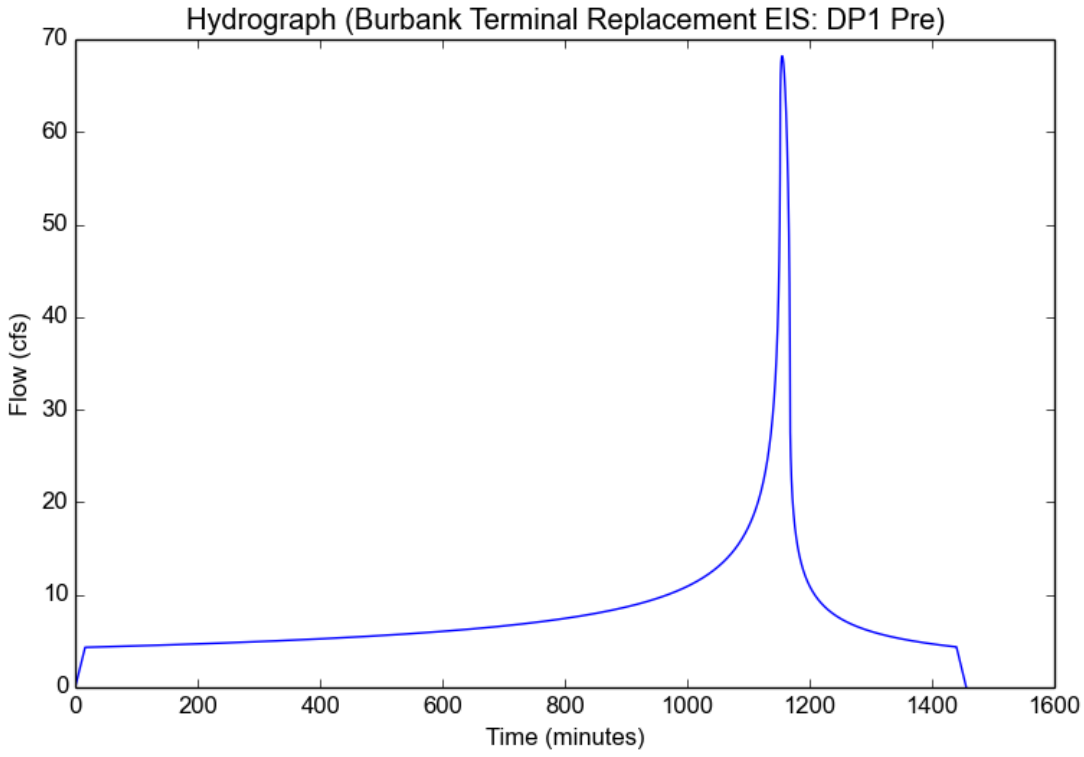

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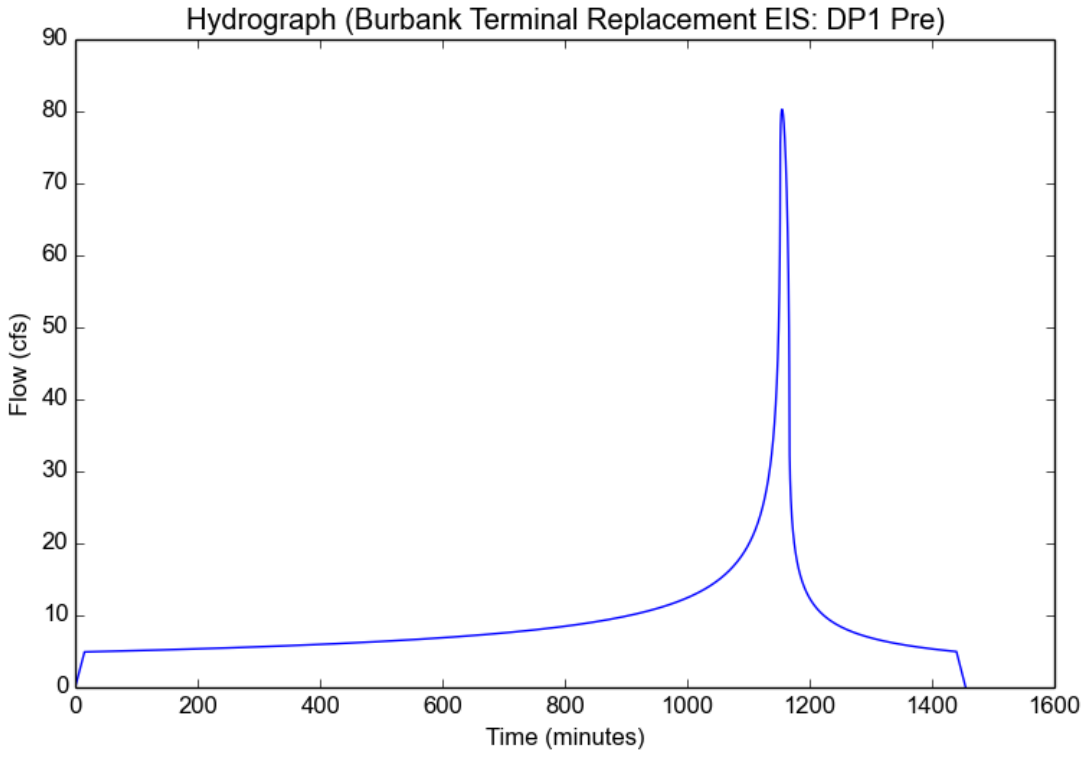

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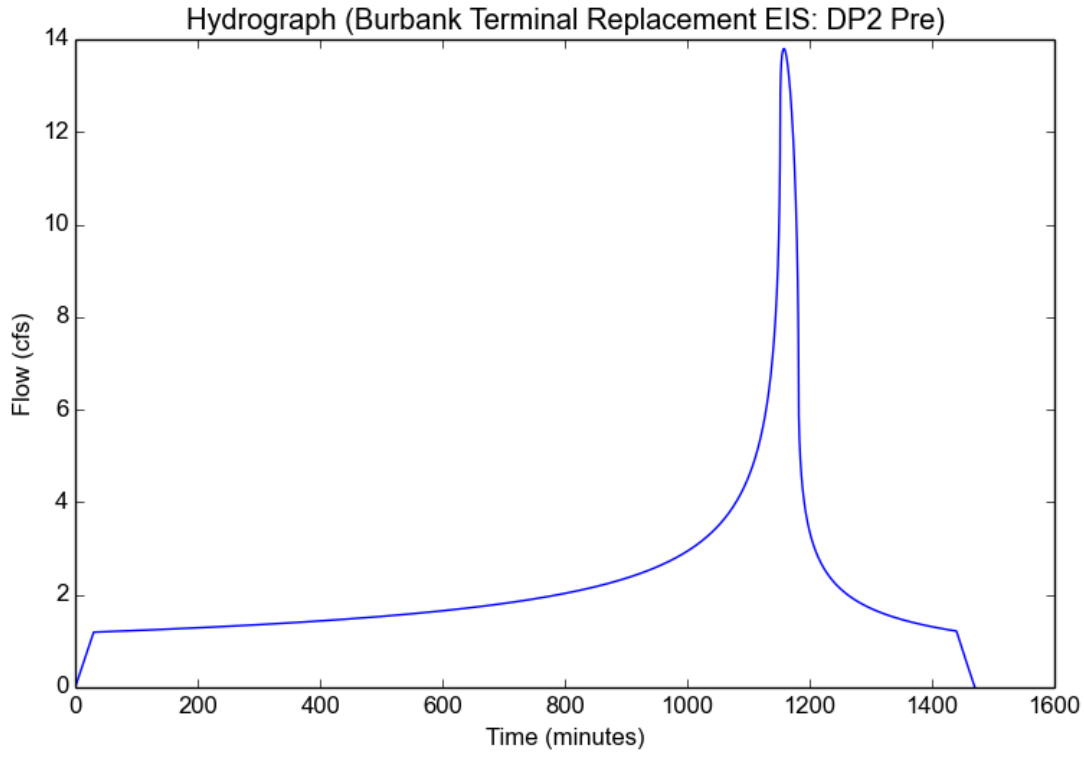

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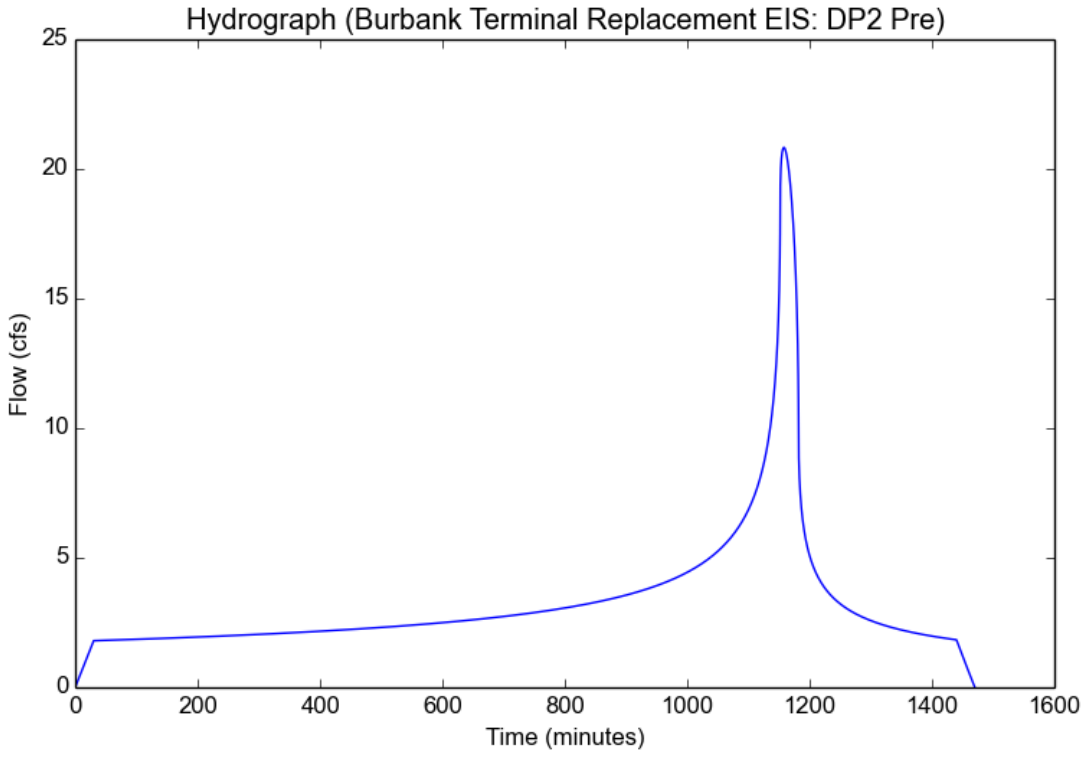

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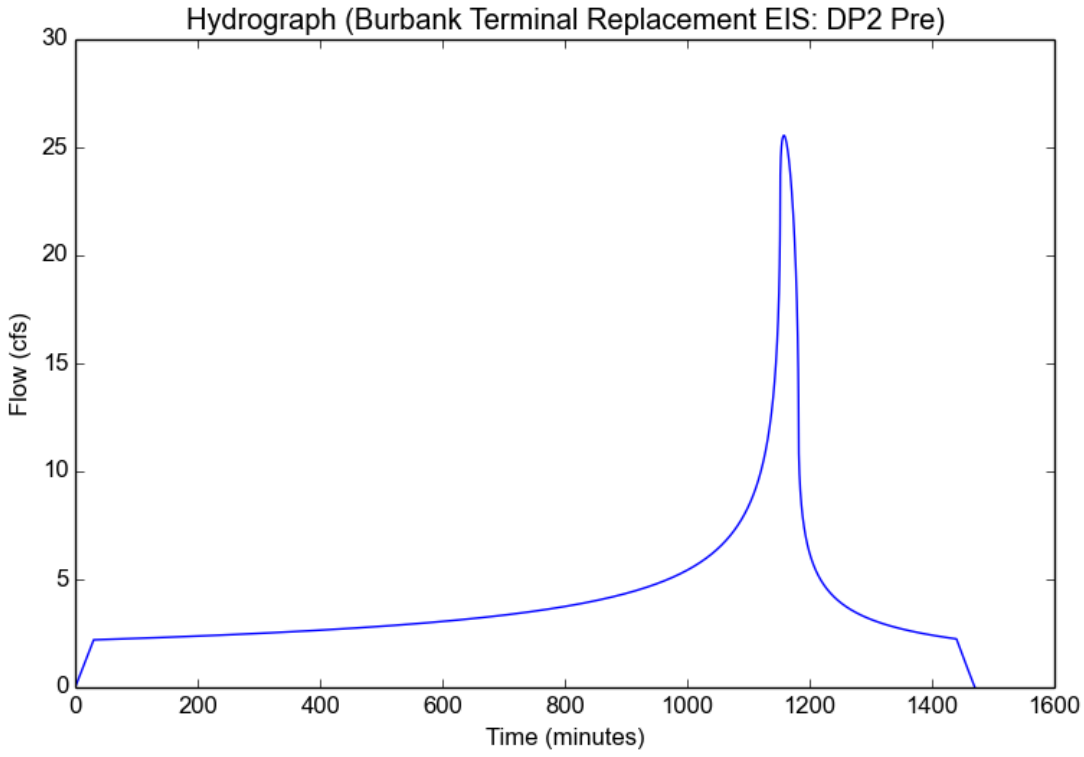

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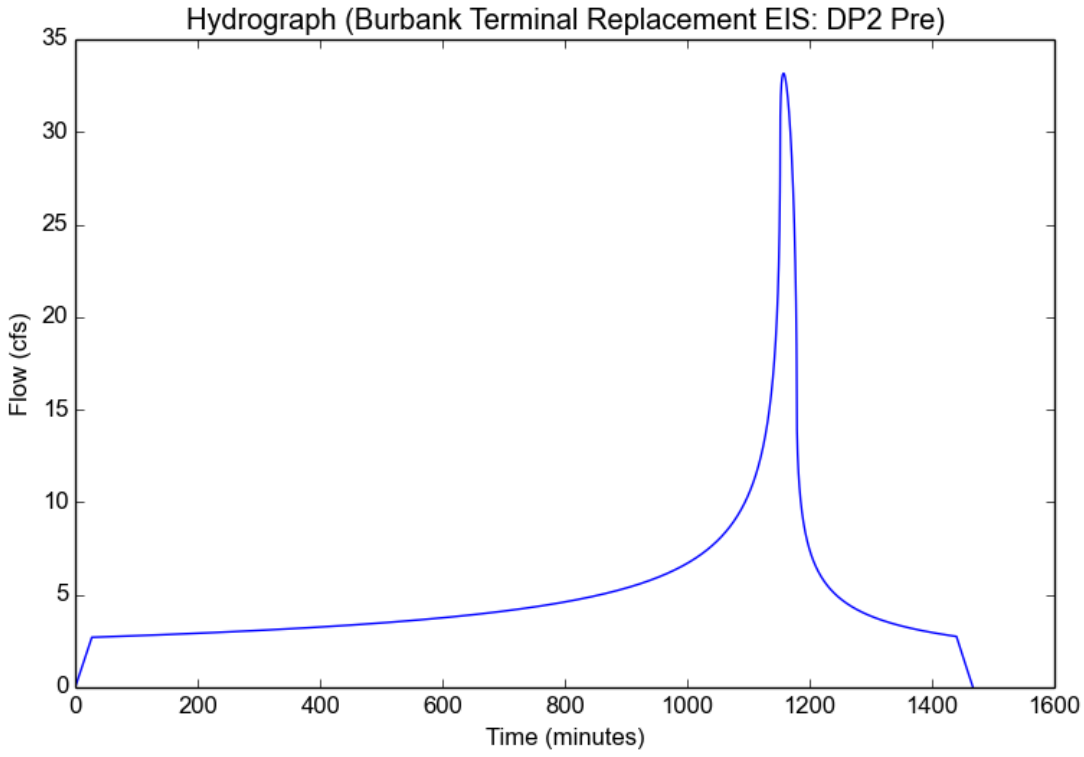

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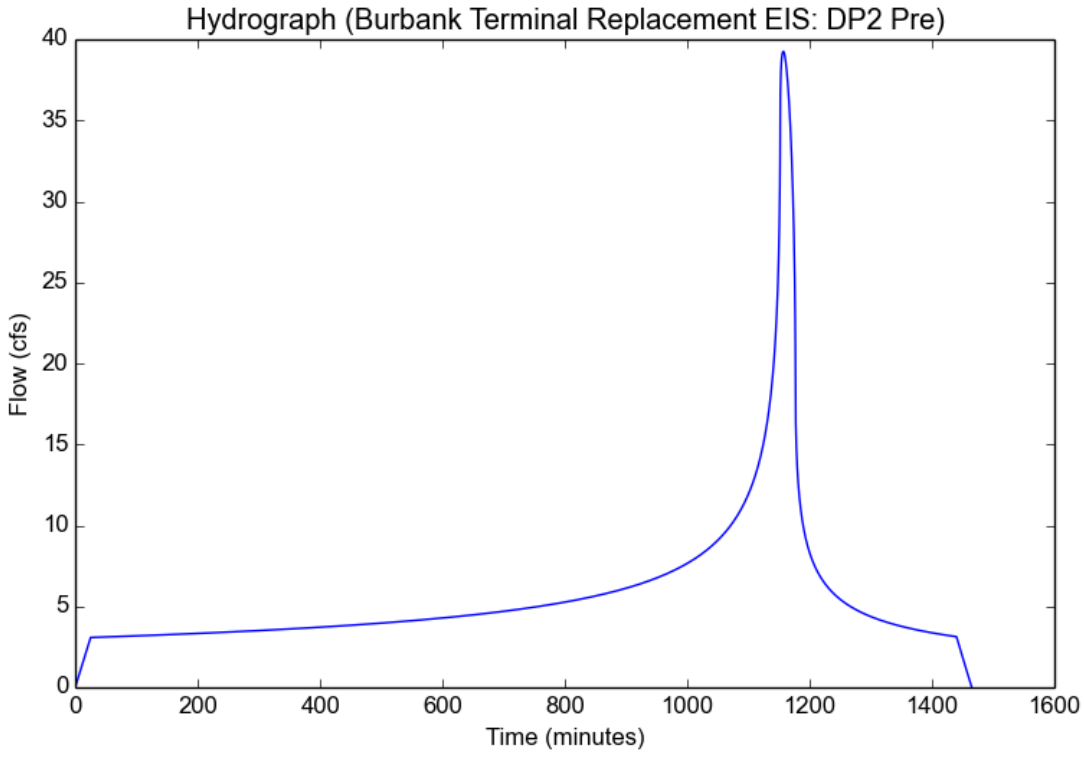

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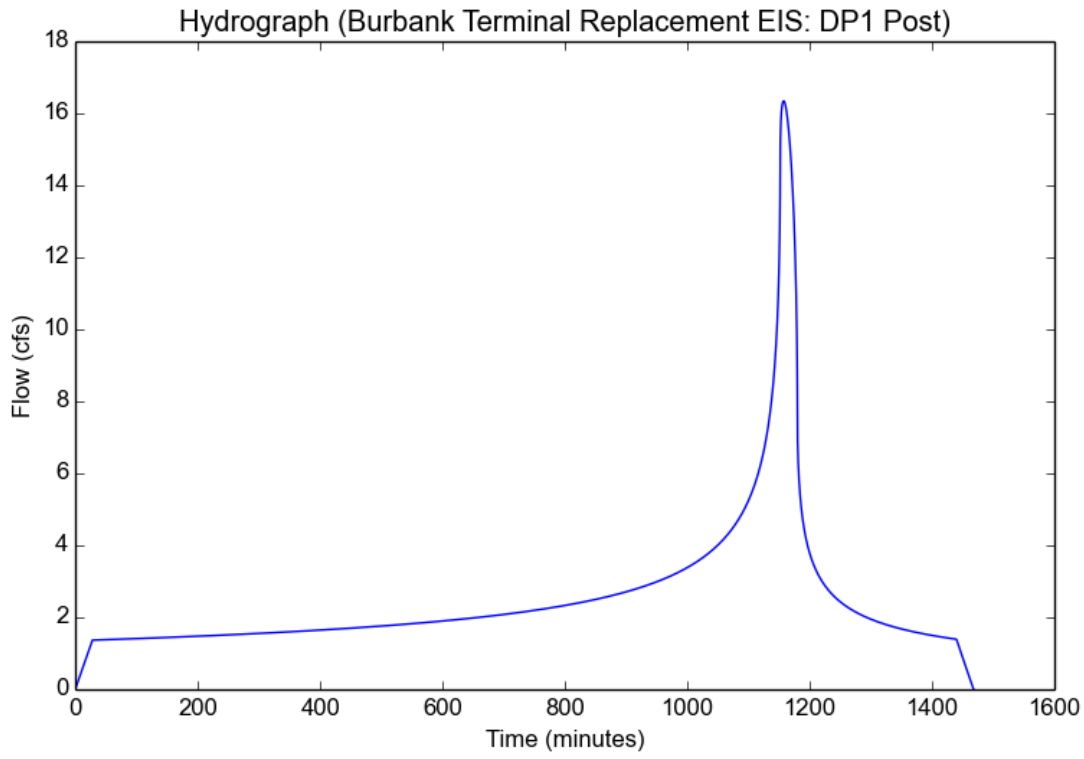

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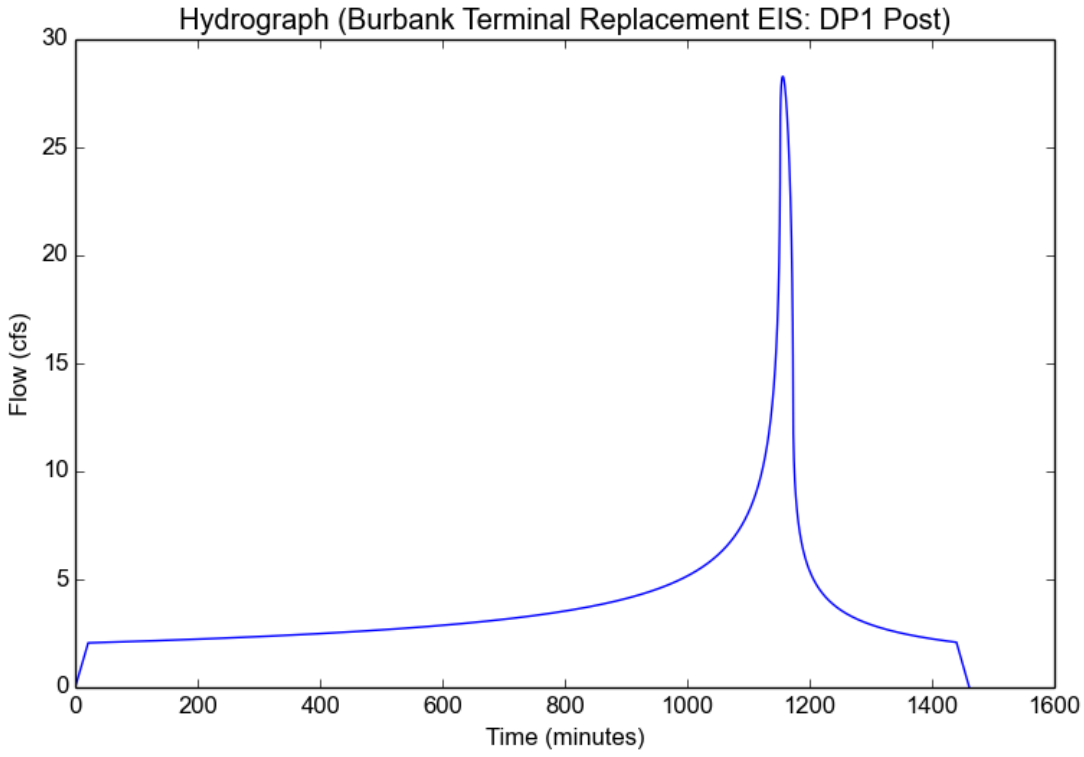

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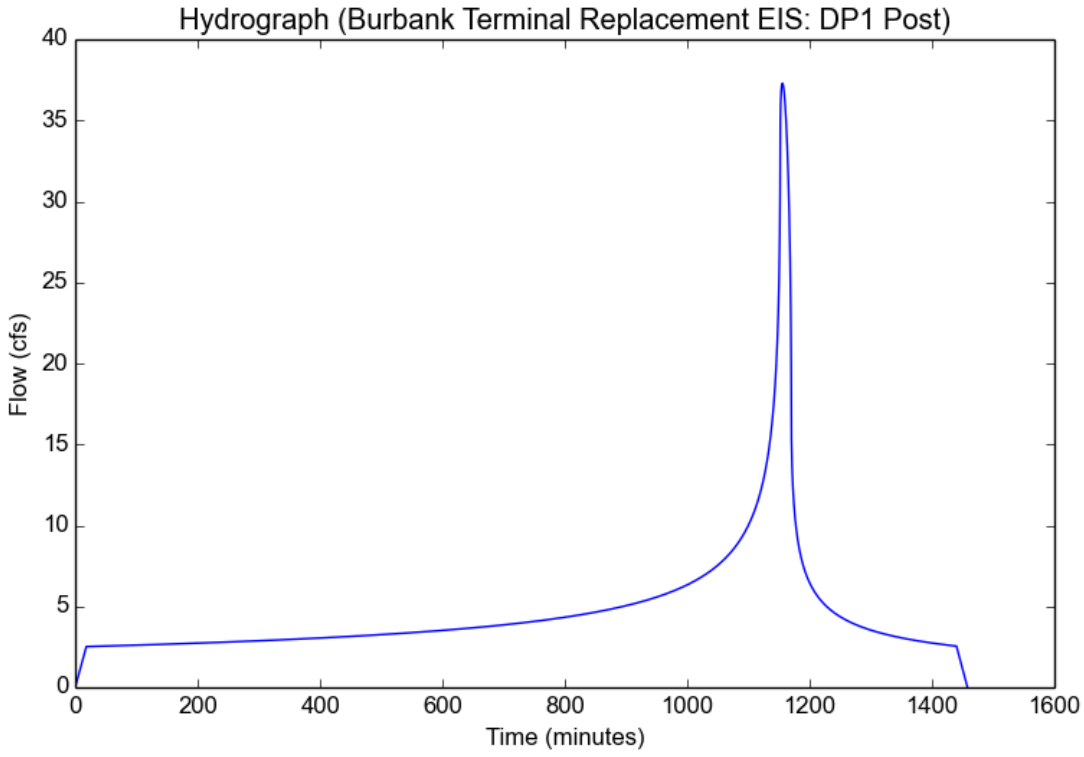

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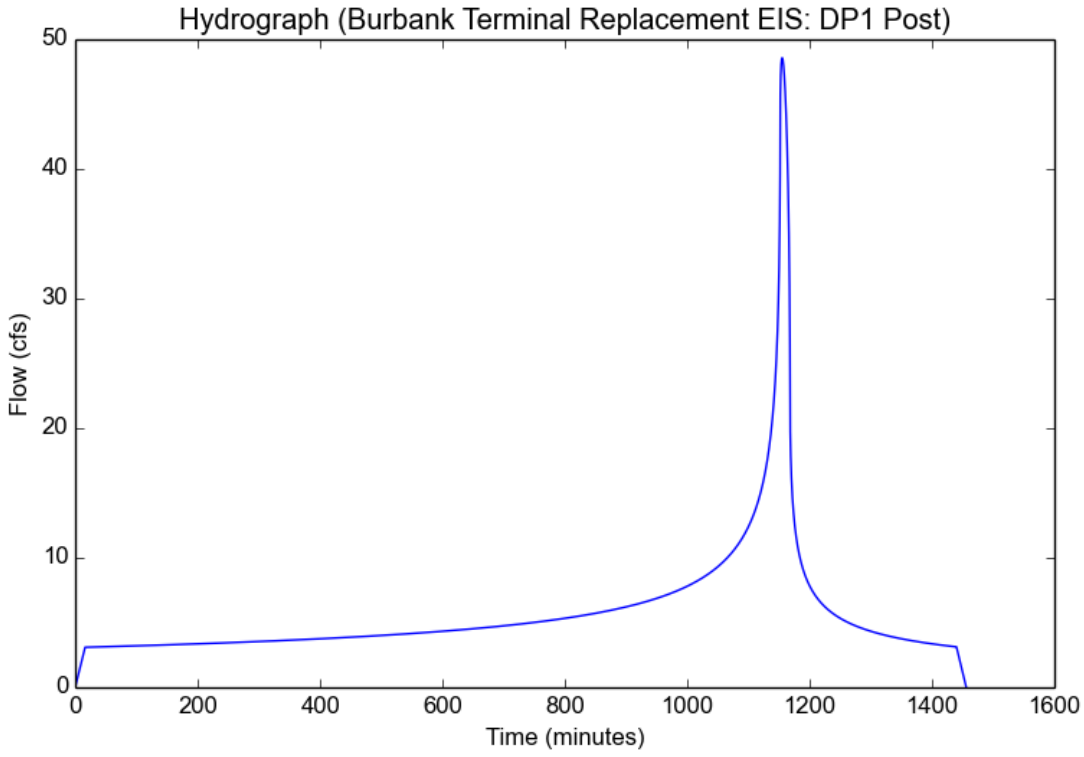

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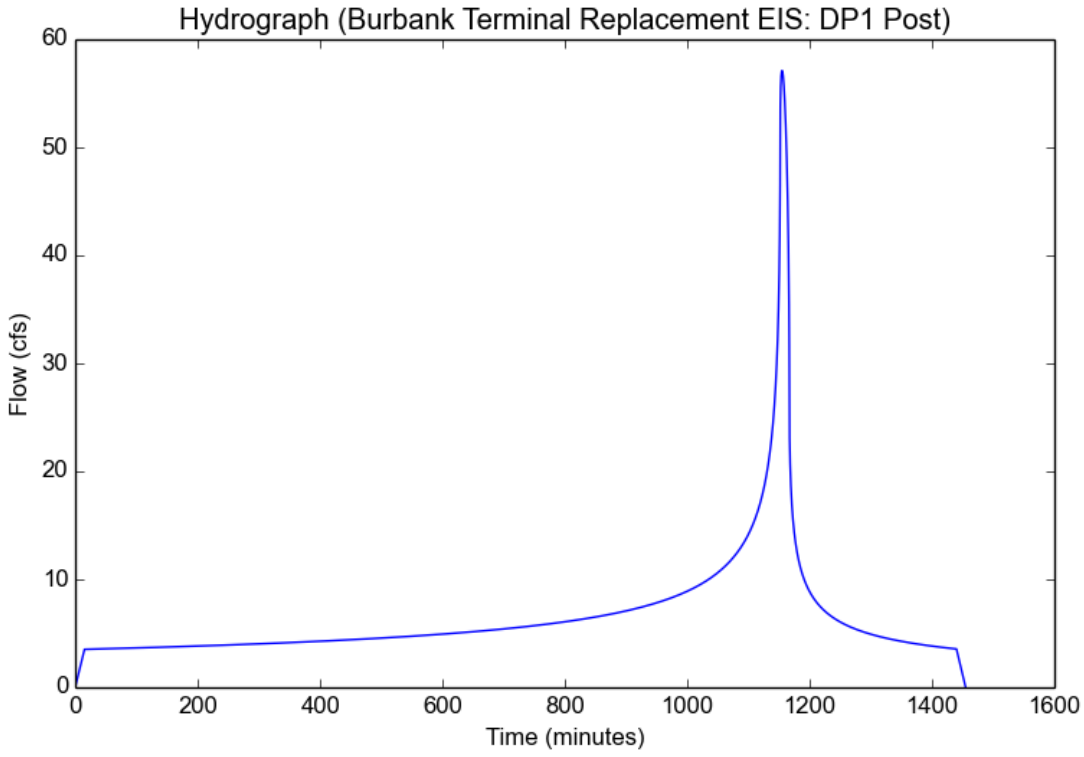

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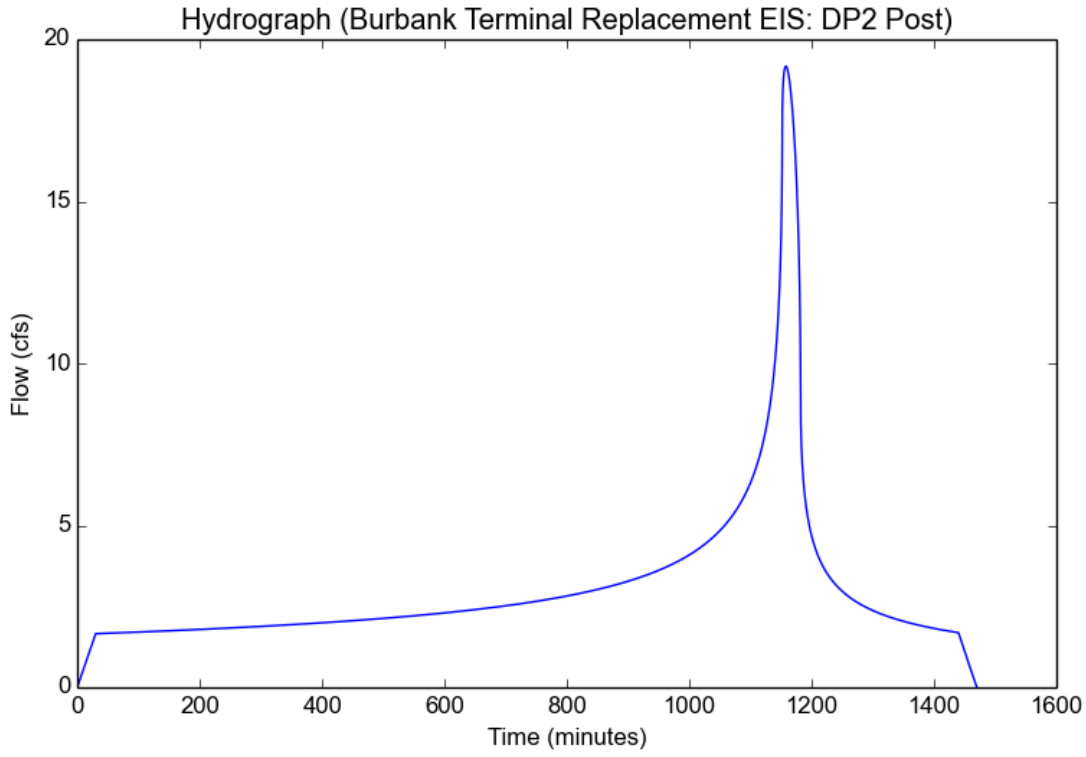

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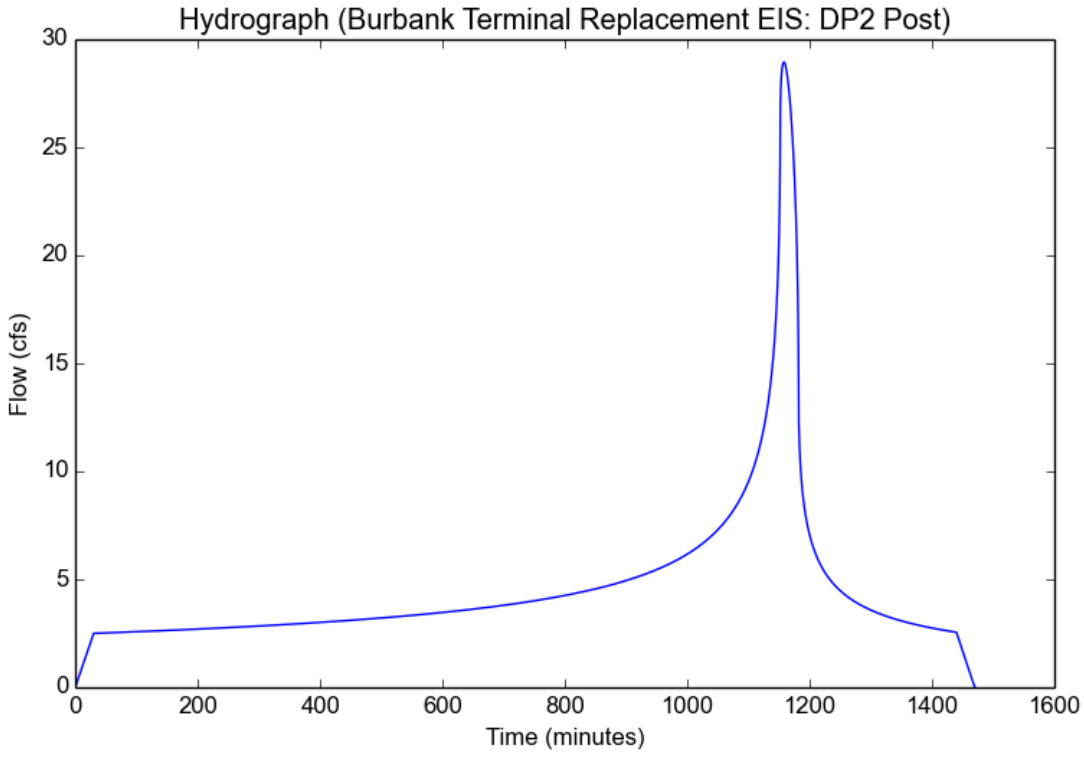

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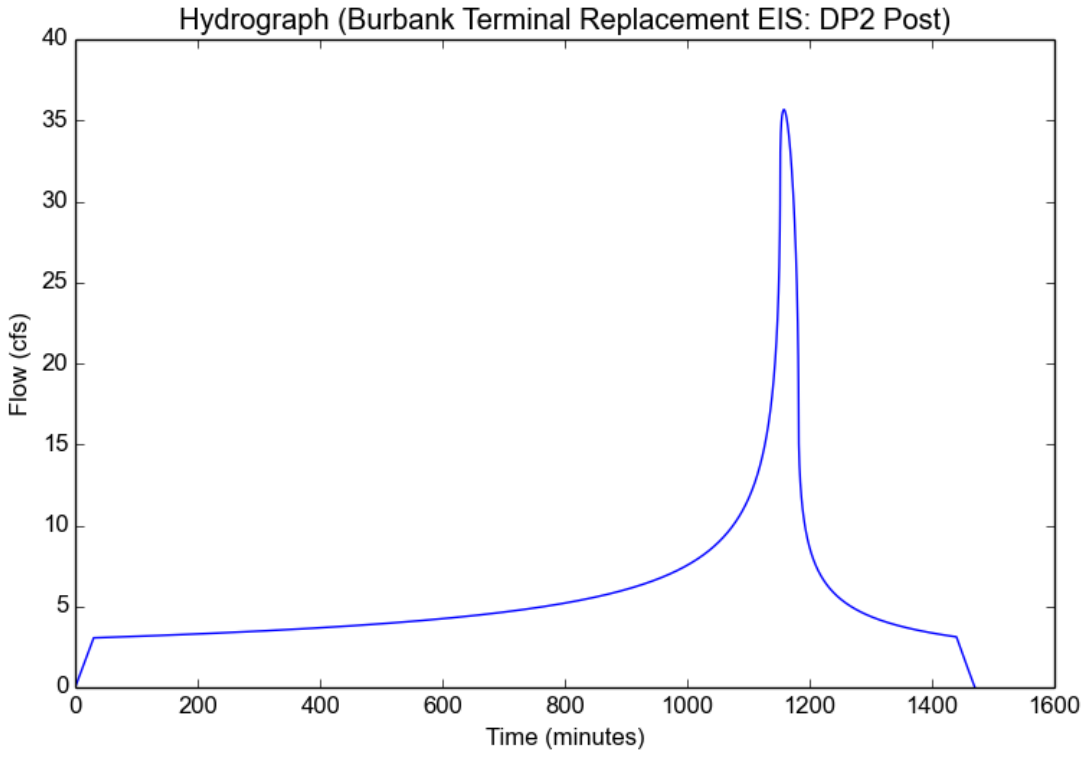

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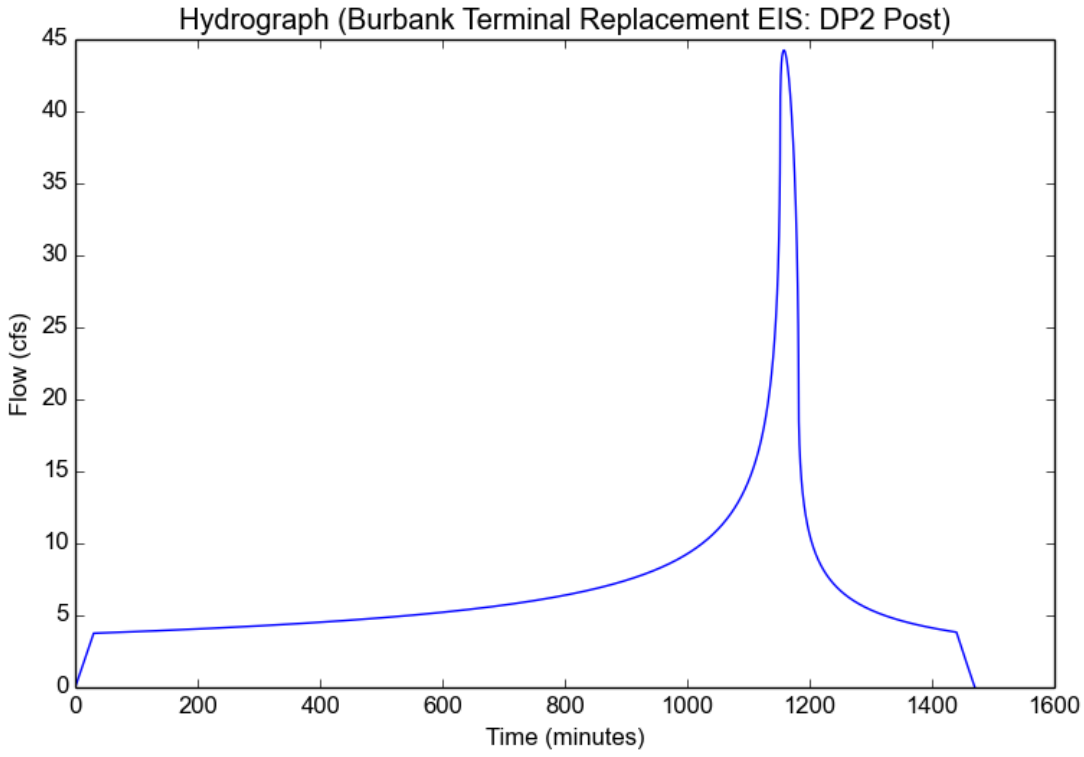

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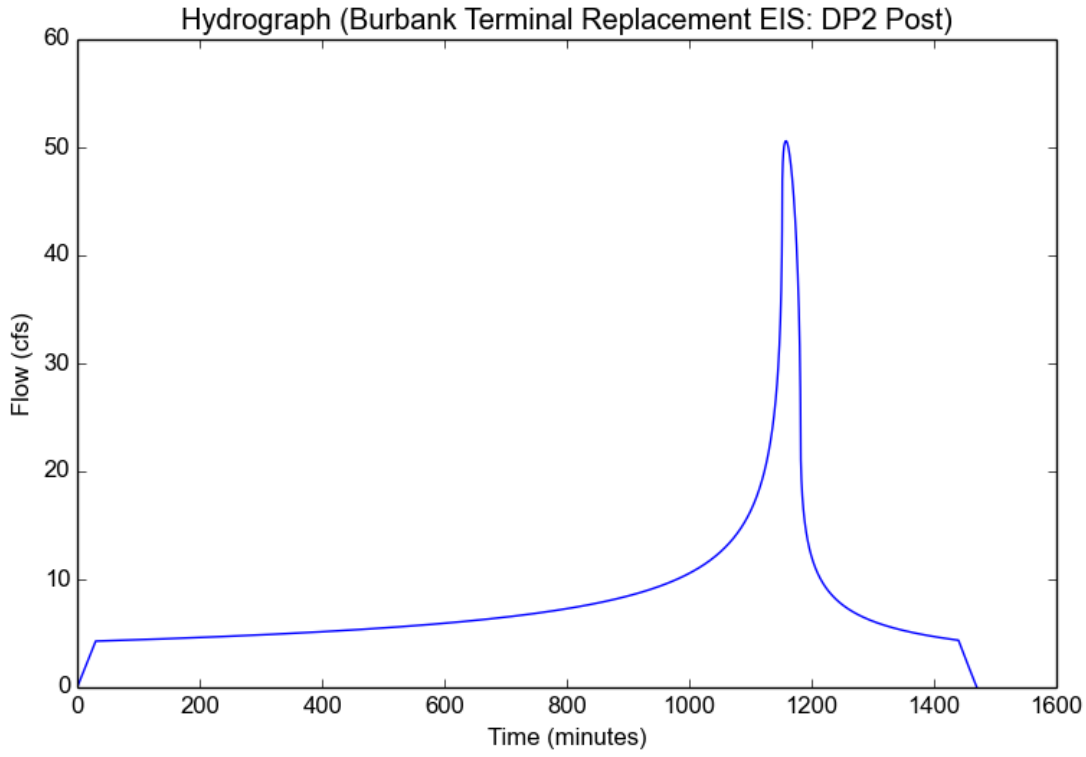

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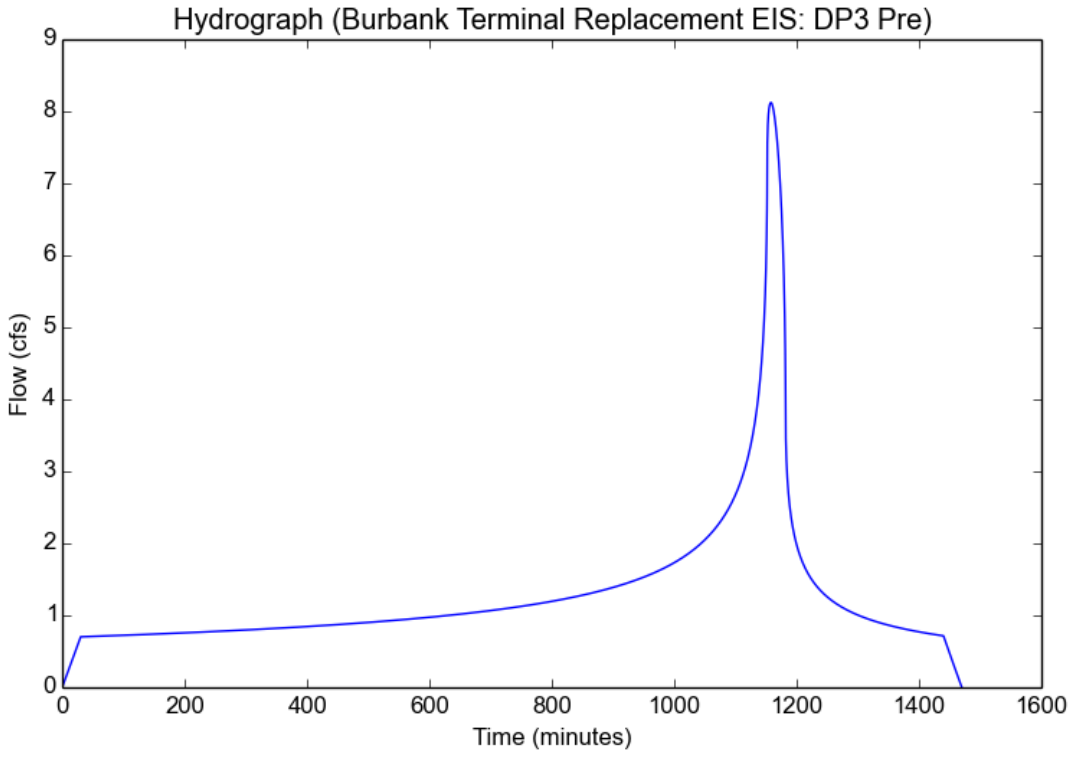

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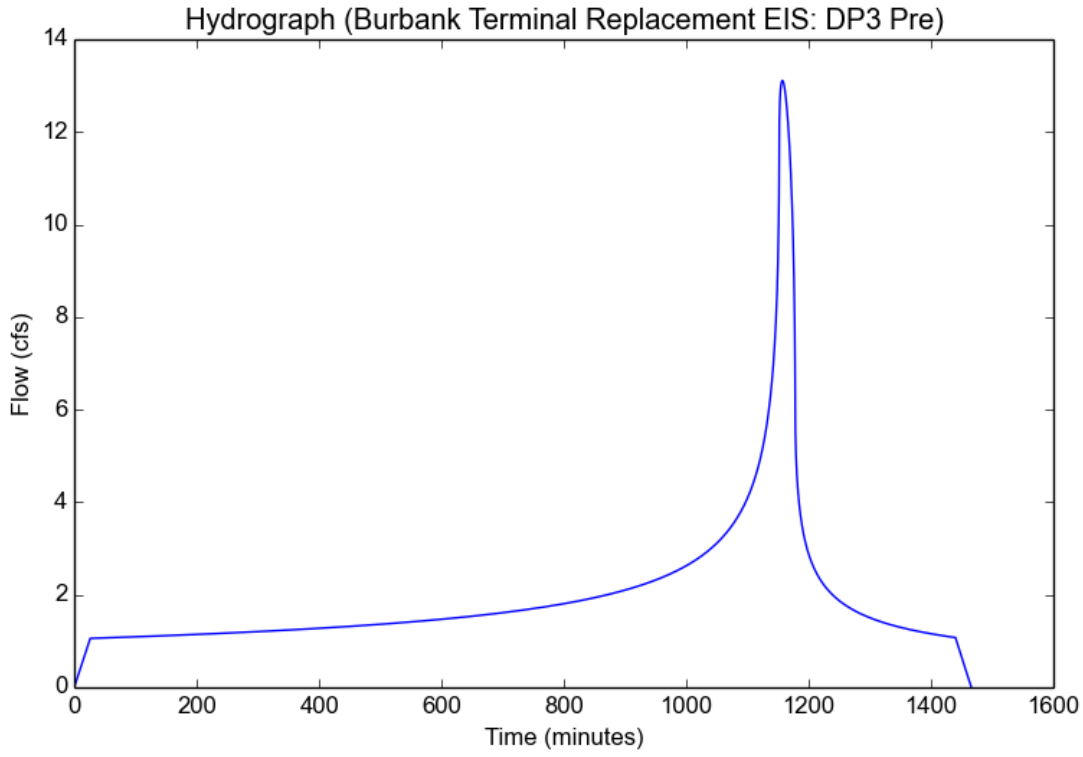

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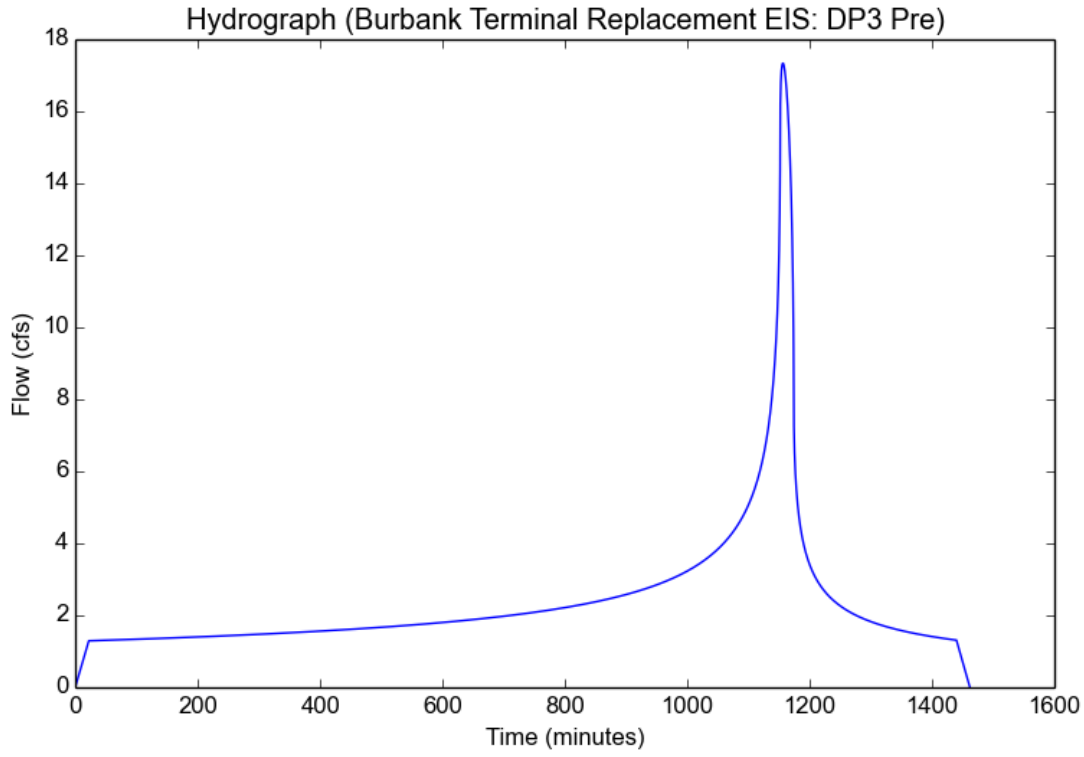

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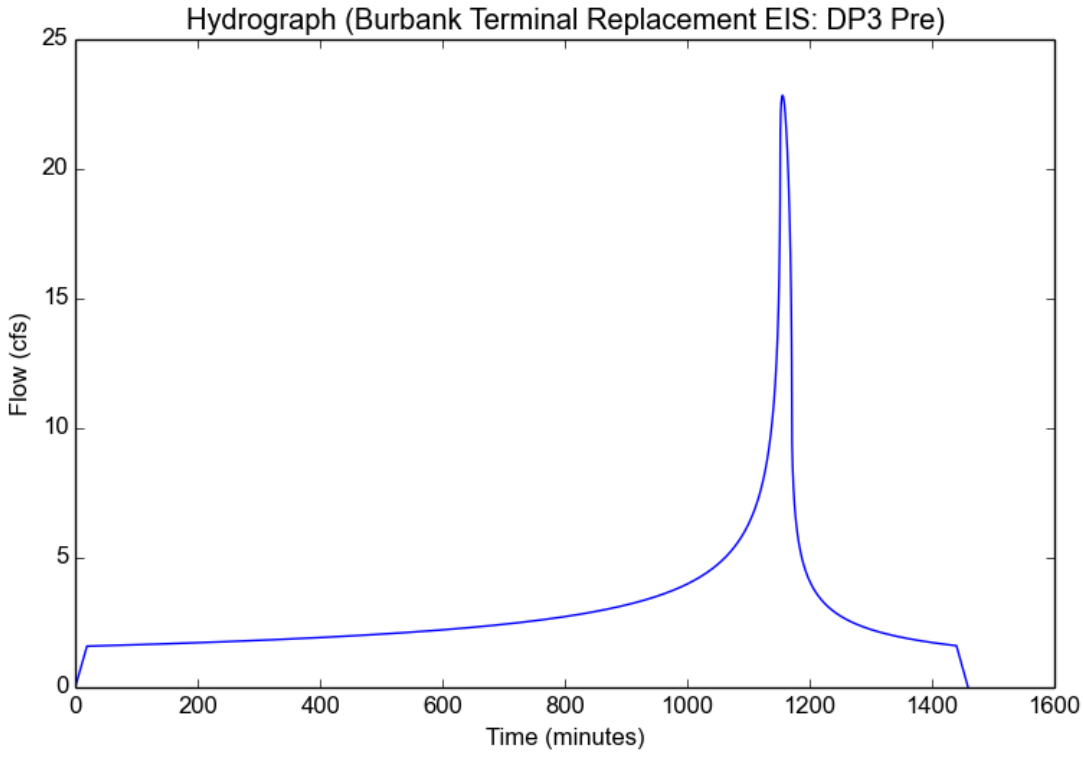

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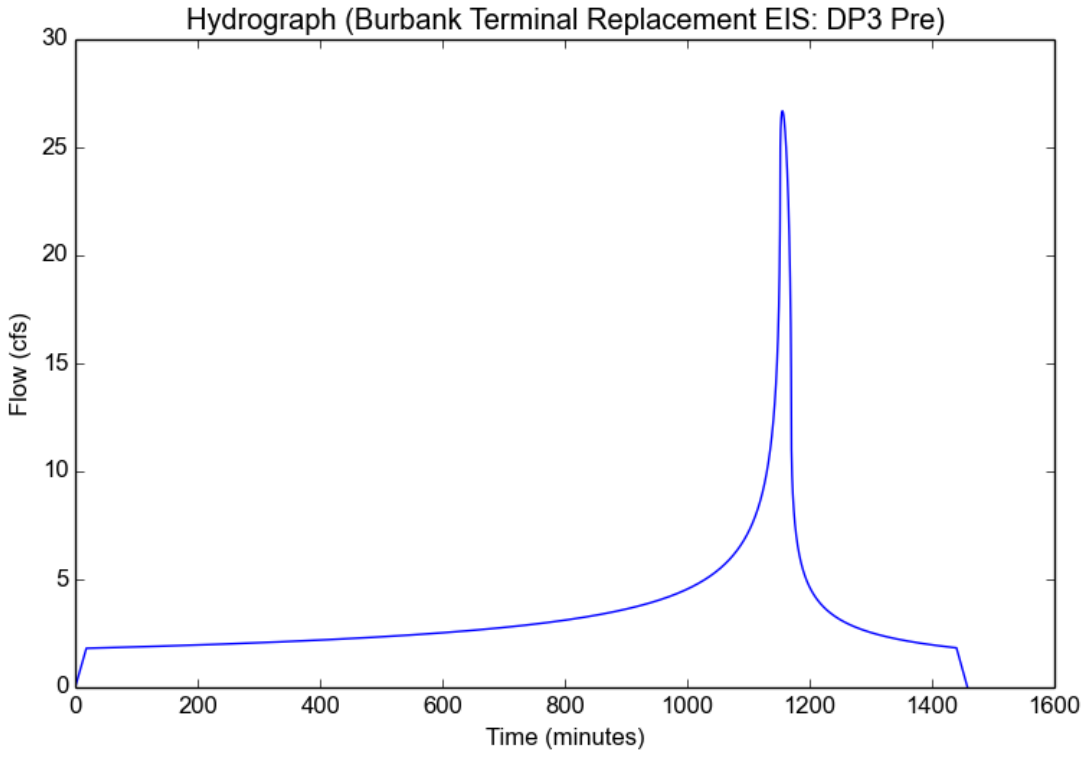

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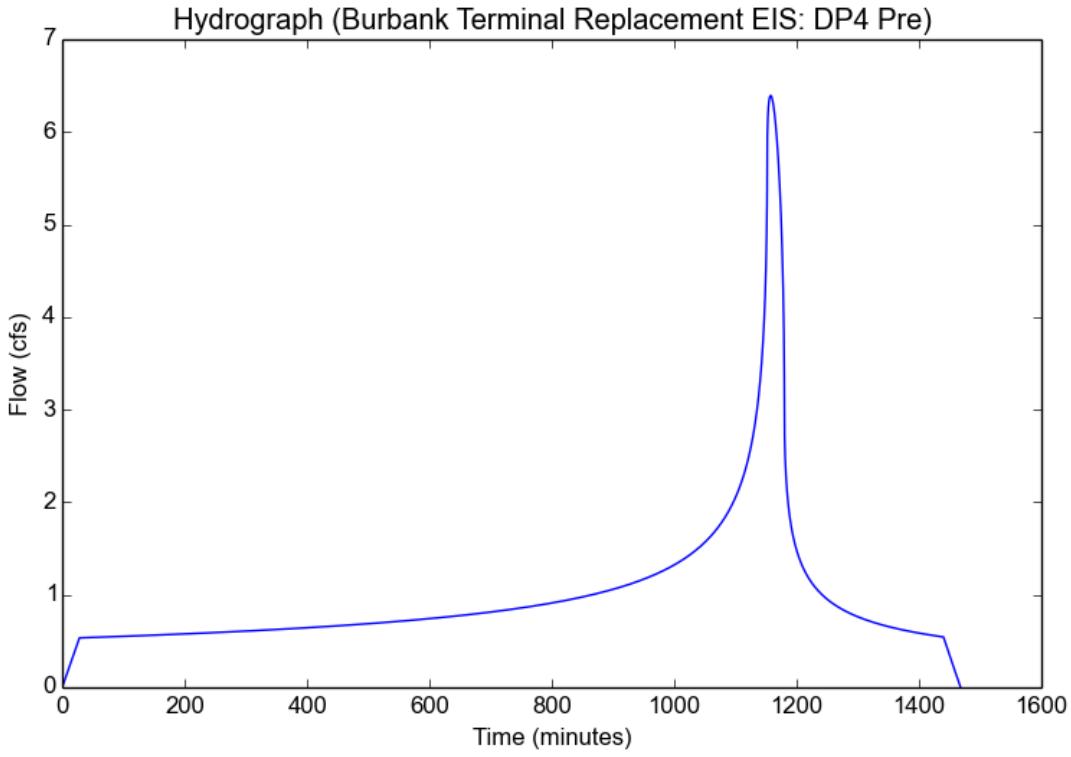

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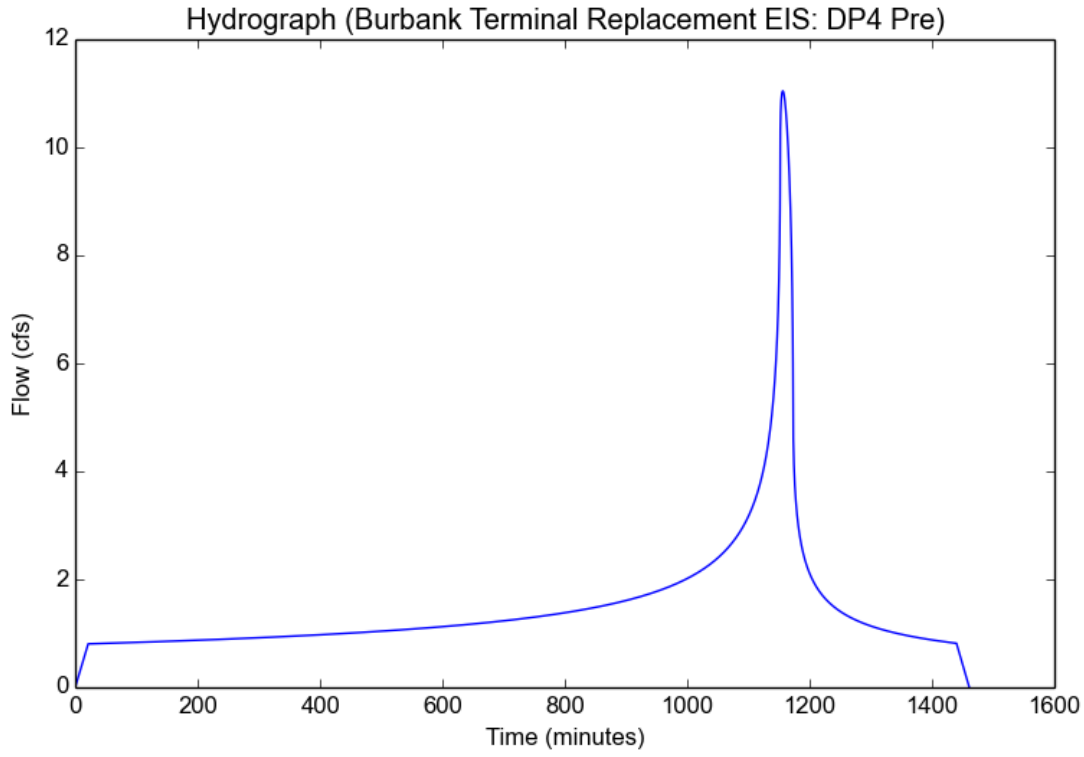

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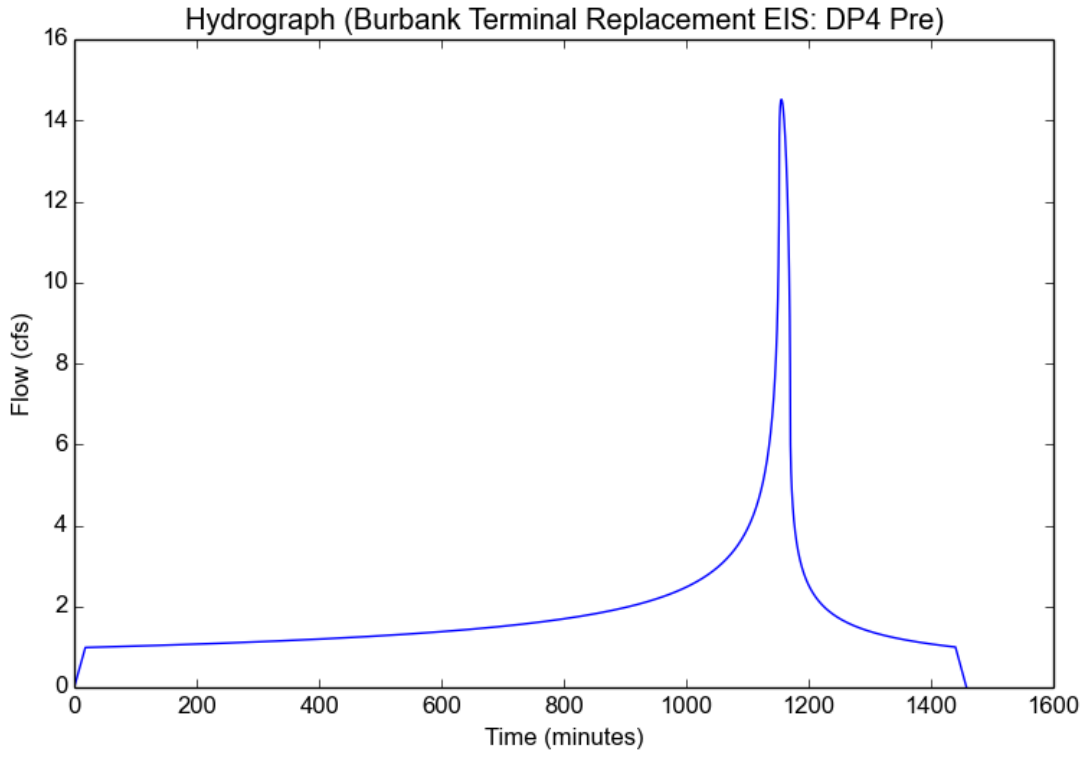

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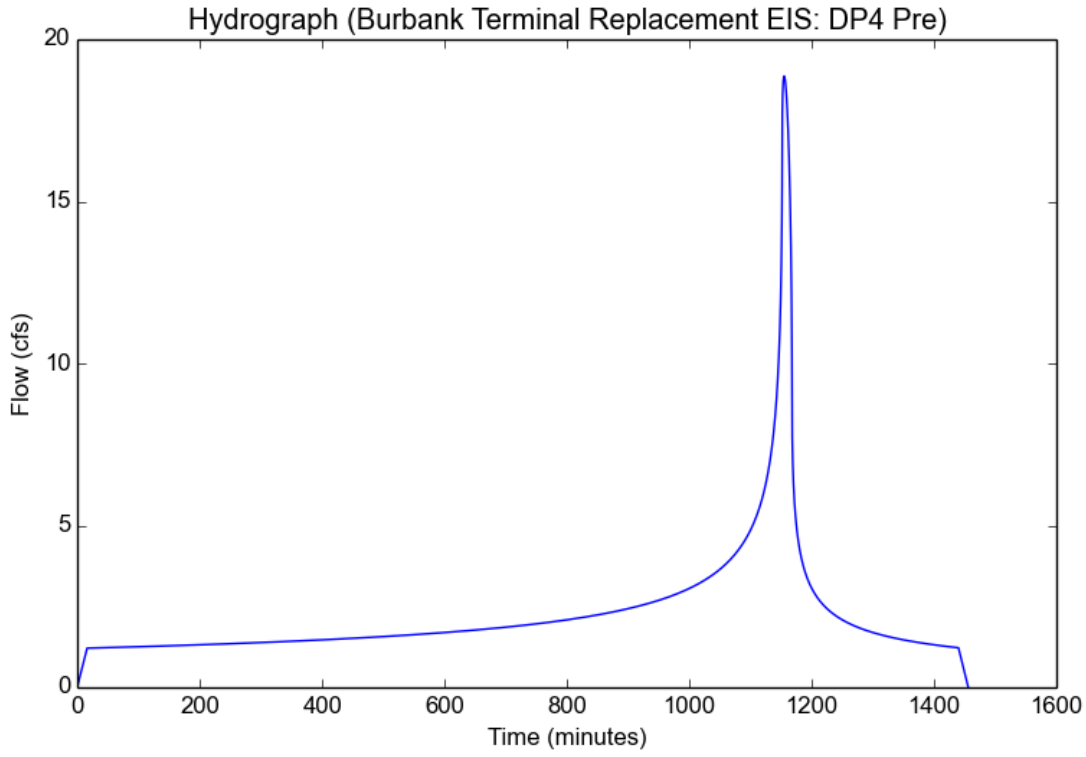

Peak Flow Hydrologic Analysis

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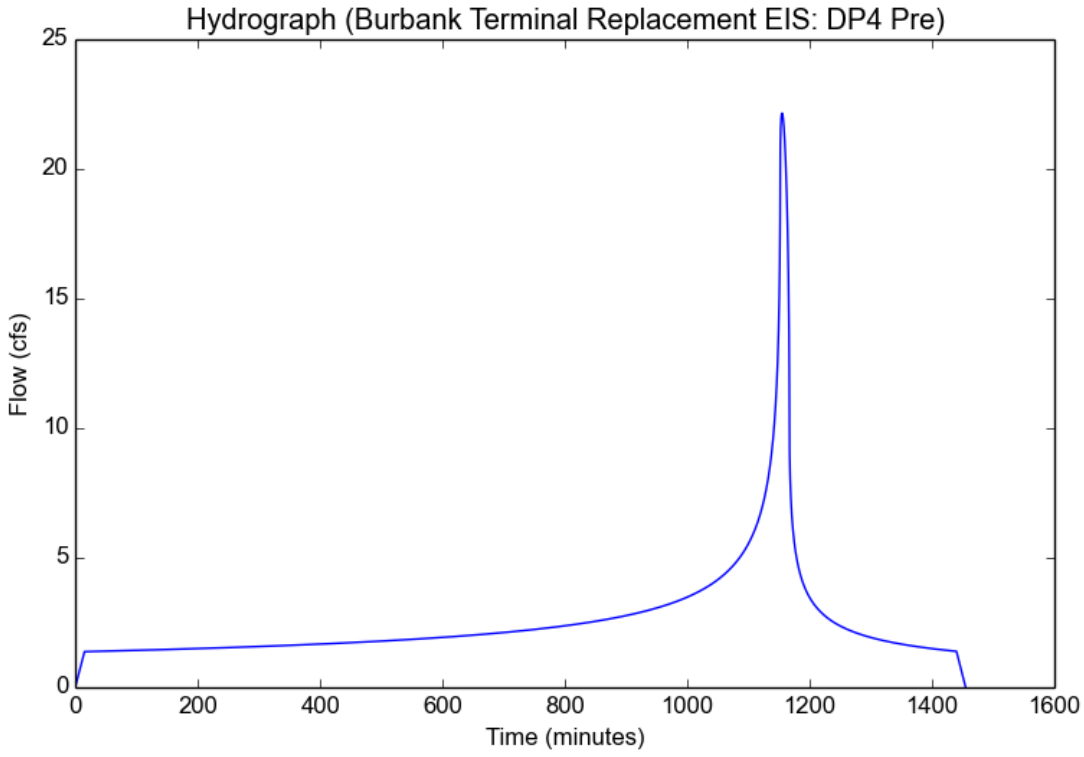

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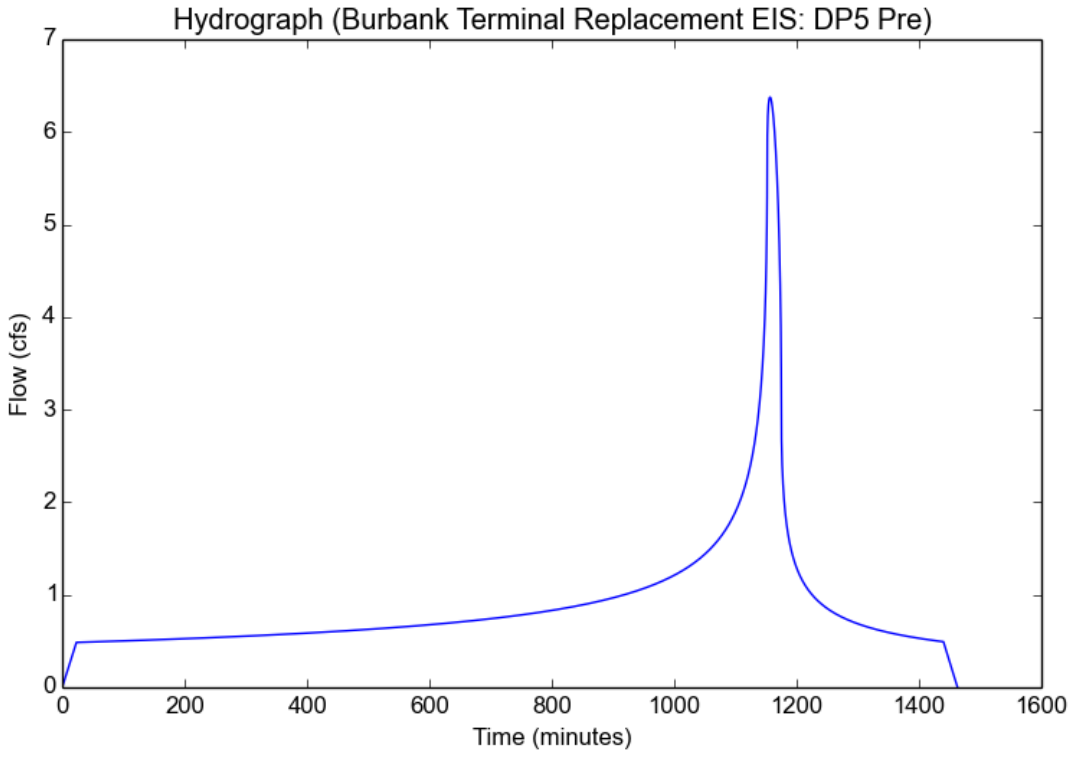

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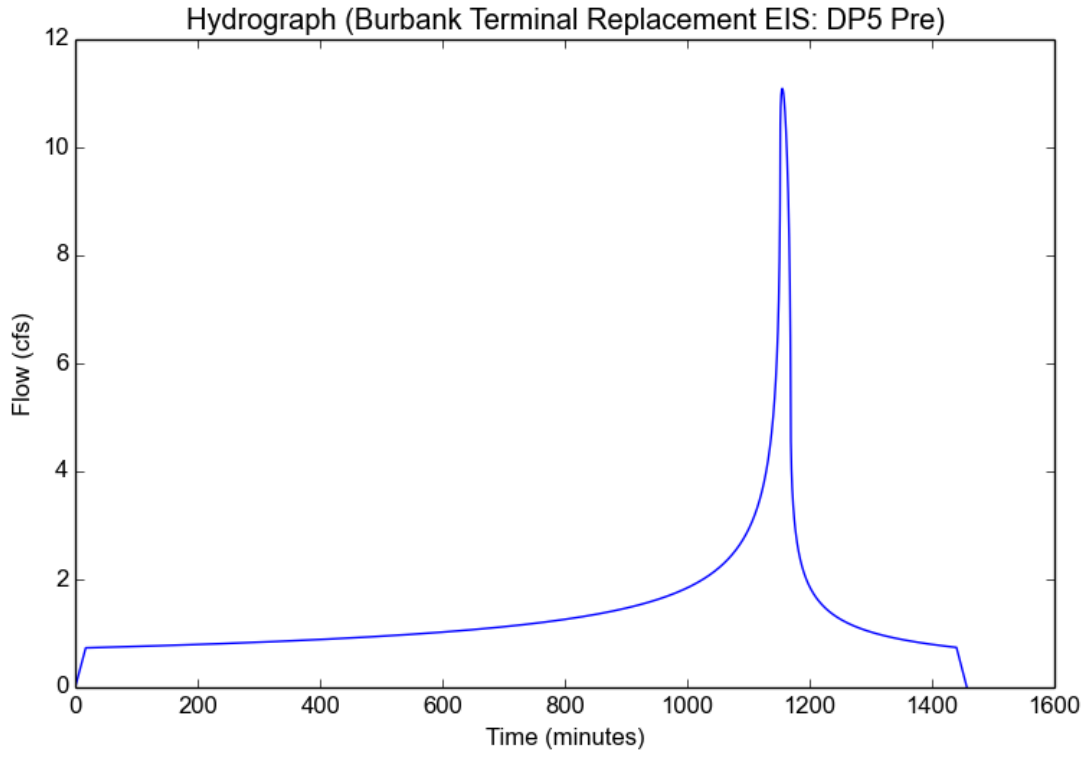

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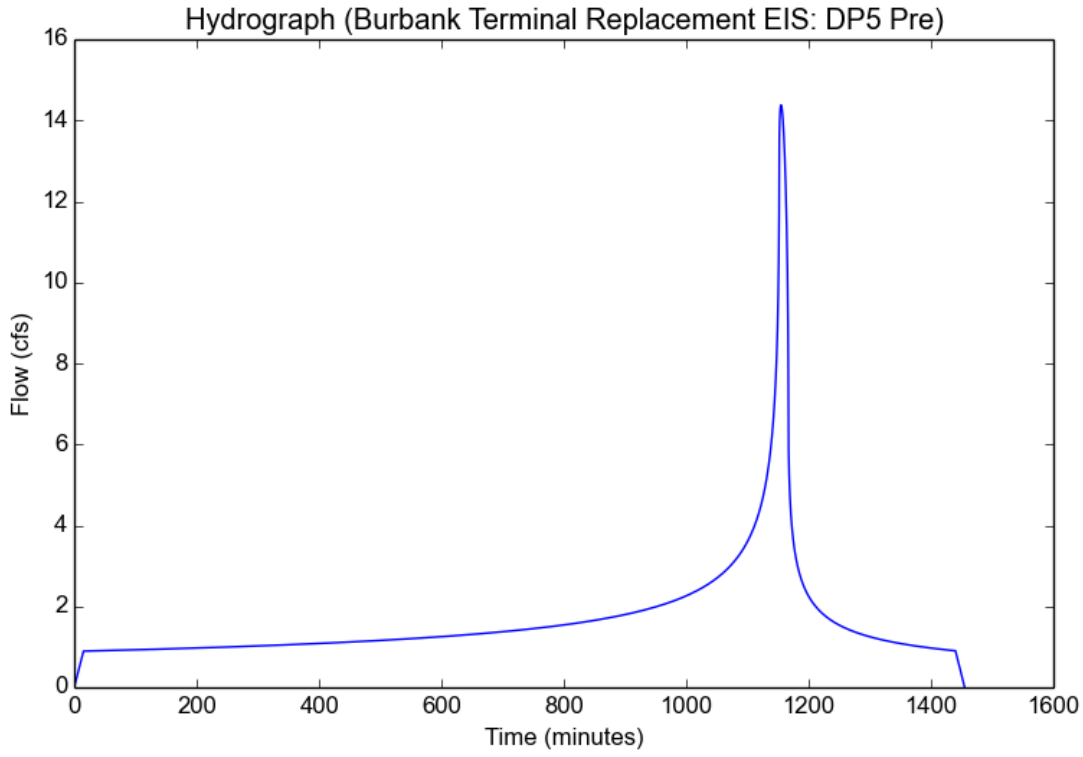

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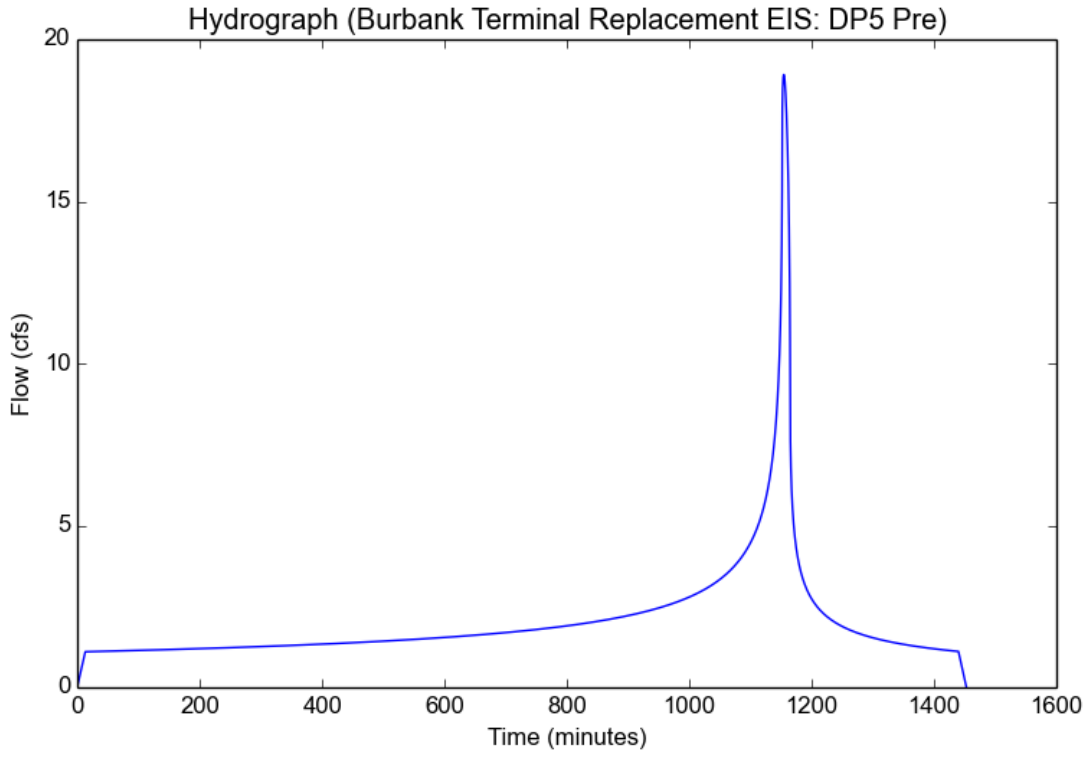
Output Results



Peak Flow Hydrologic Analysis

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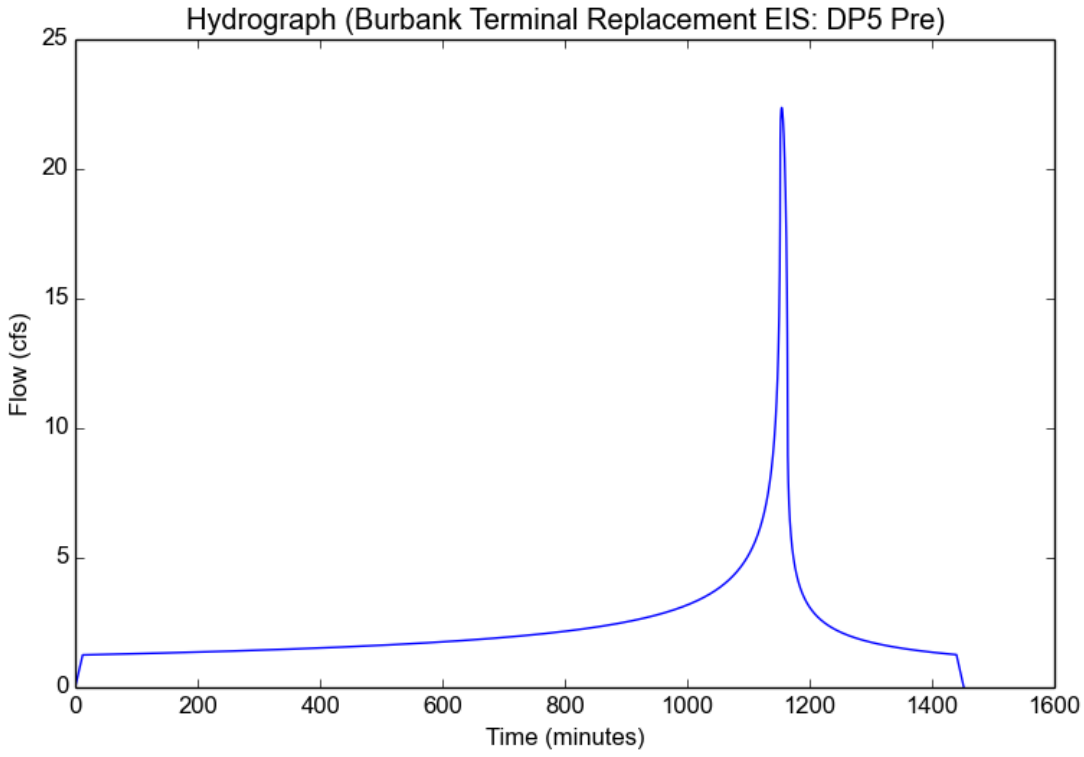
Version: HydroCalc 1.0.3

Input Parameters

IS

Output Results



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Version: HydroCalc 1.0.3

Input Parameters

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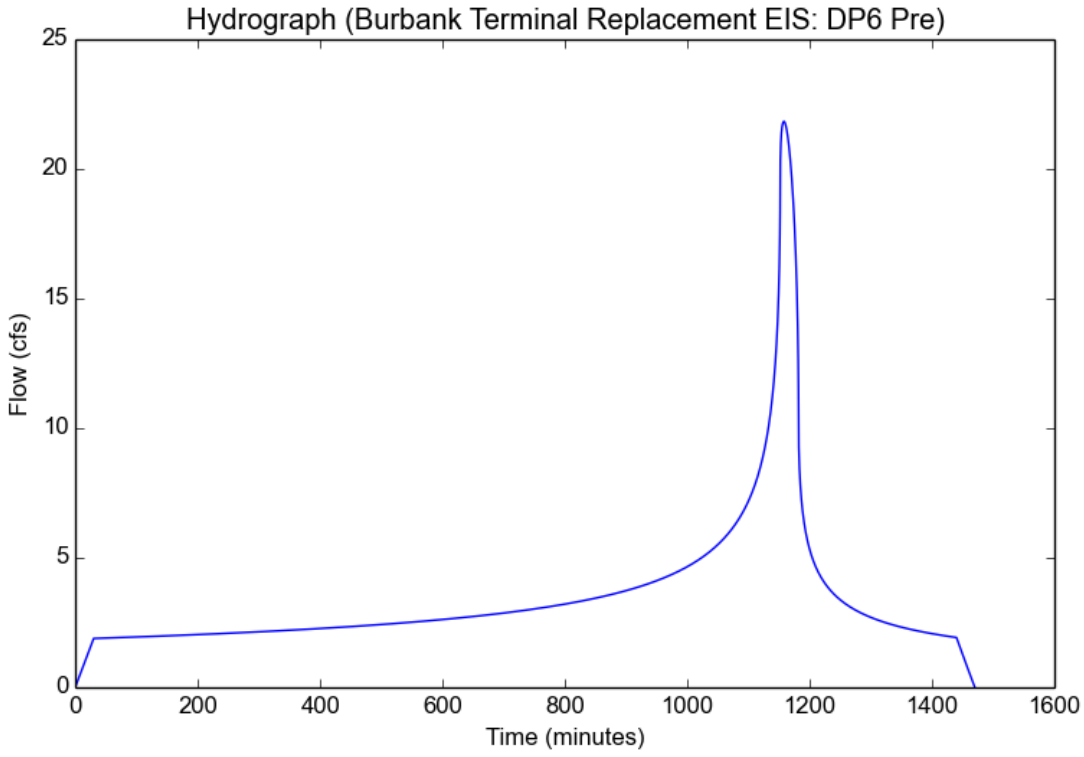
Output Results



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Input Parameters

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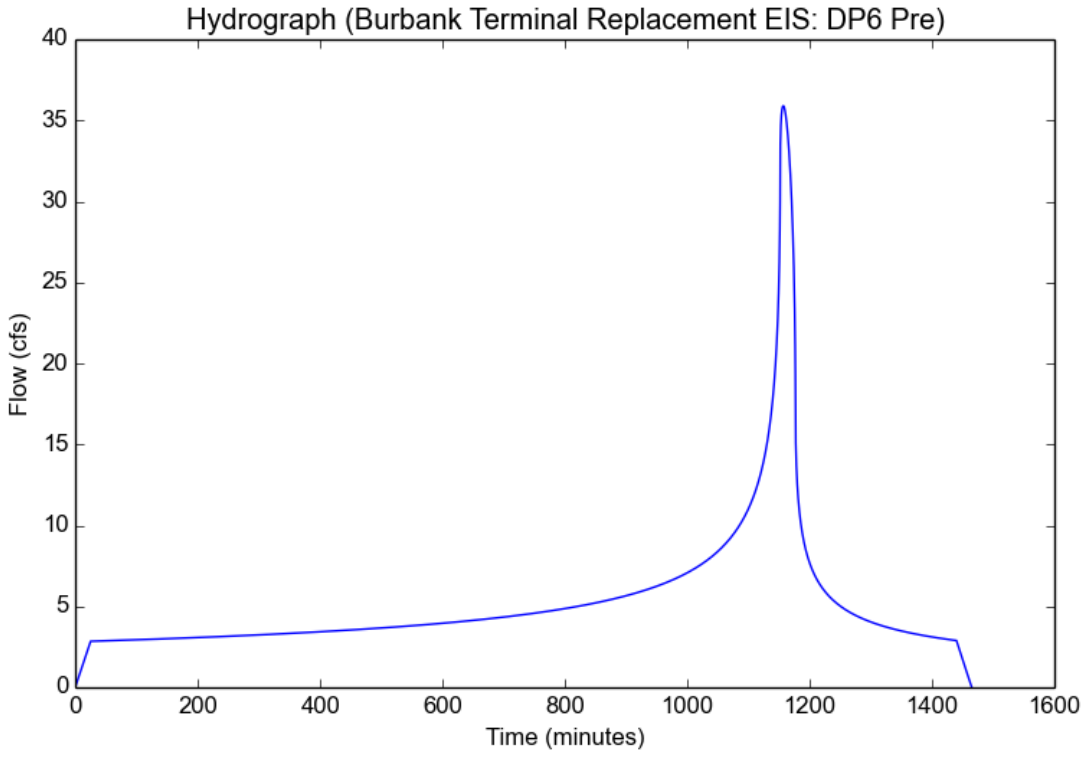
Output Results



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Input Parameters

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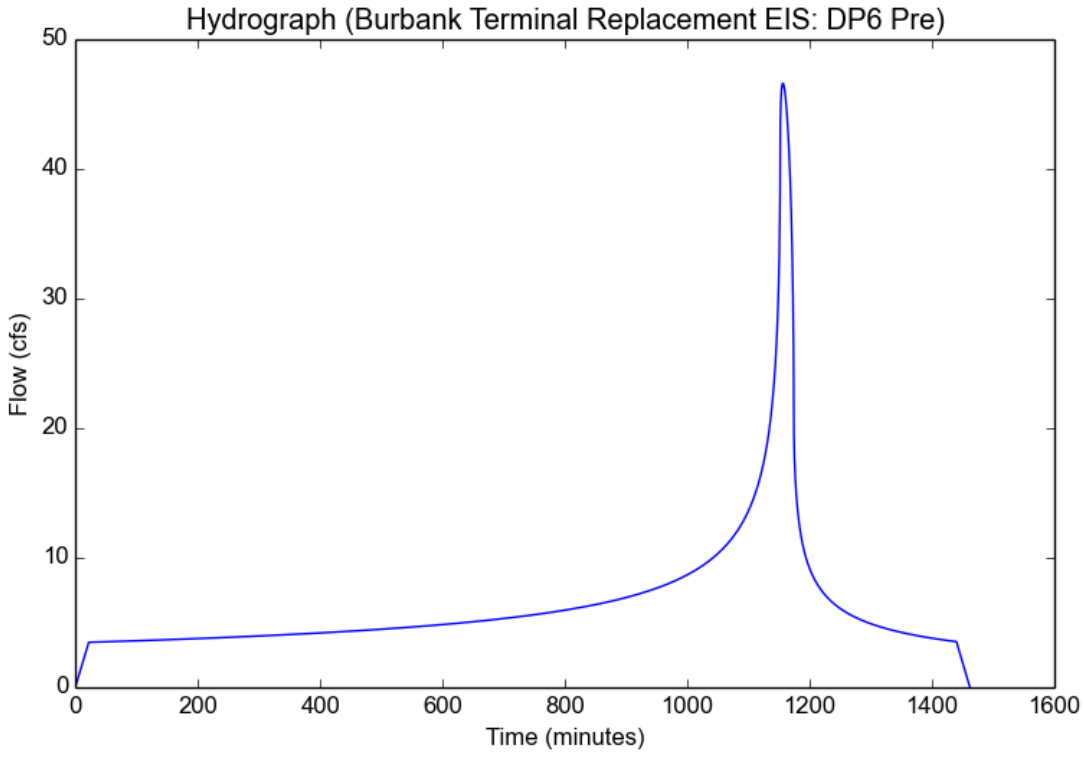
Output Results



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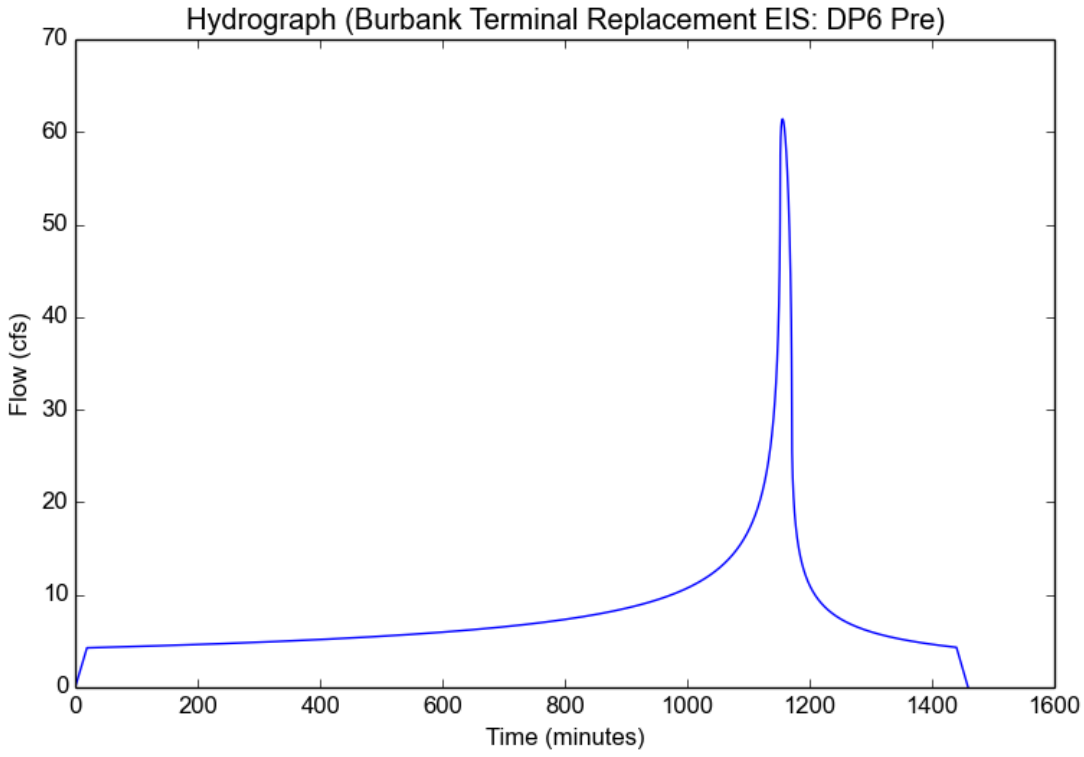

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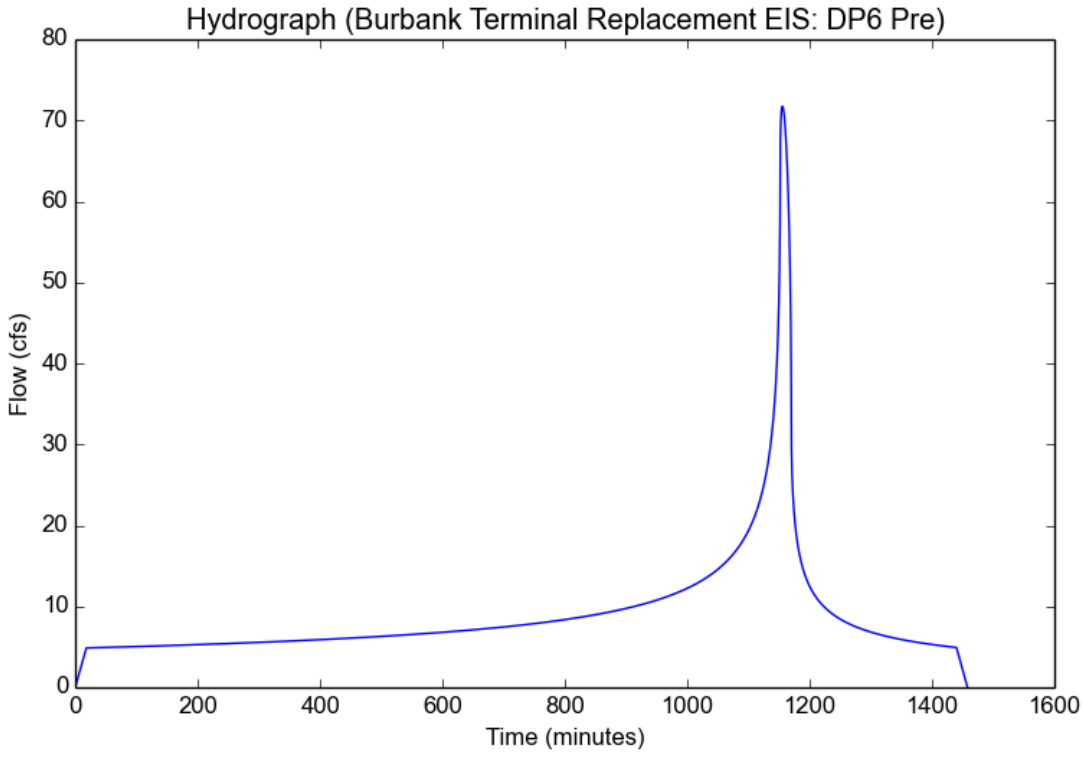

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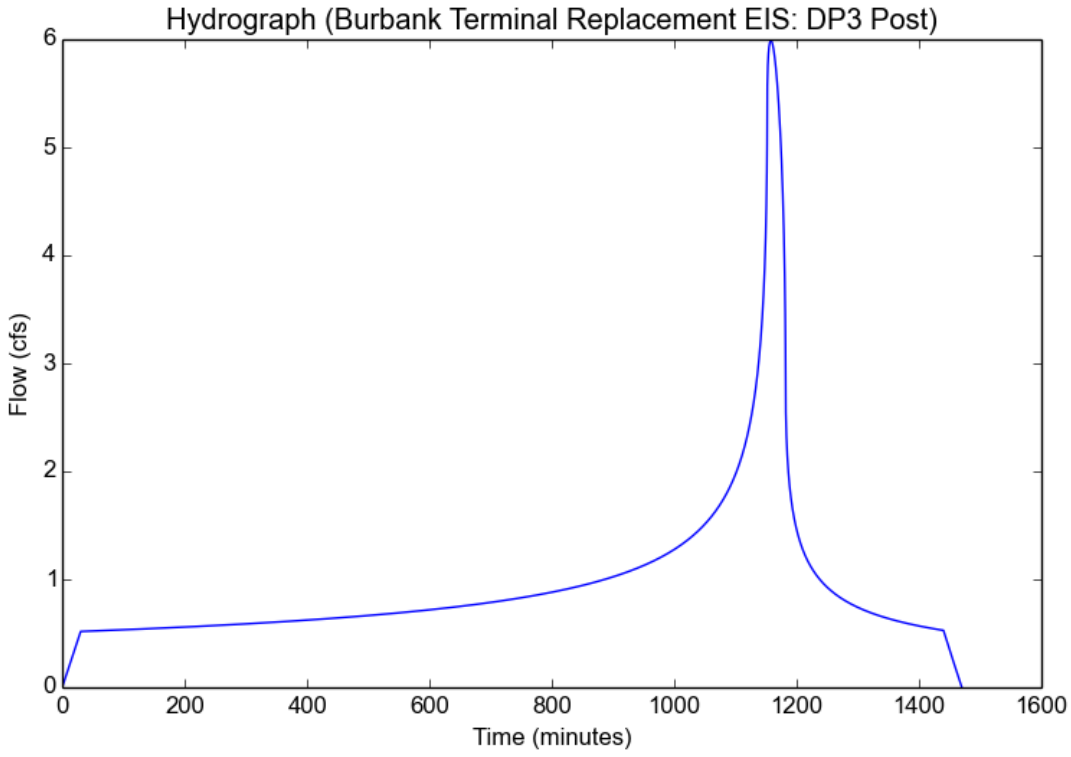

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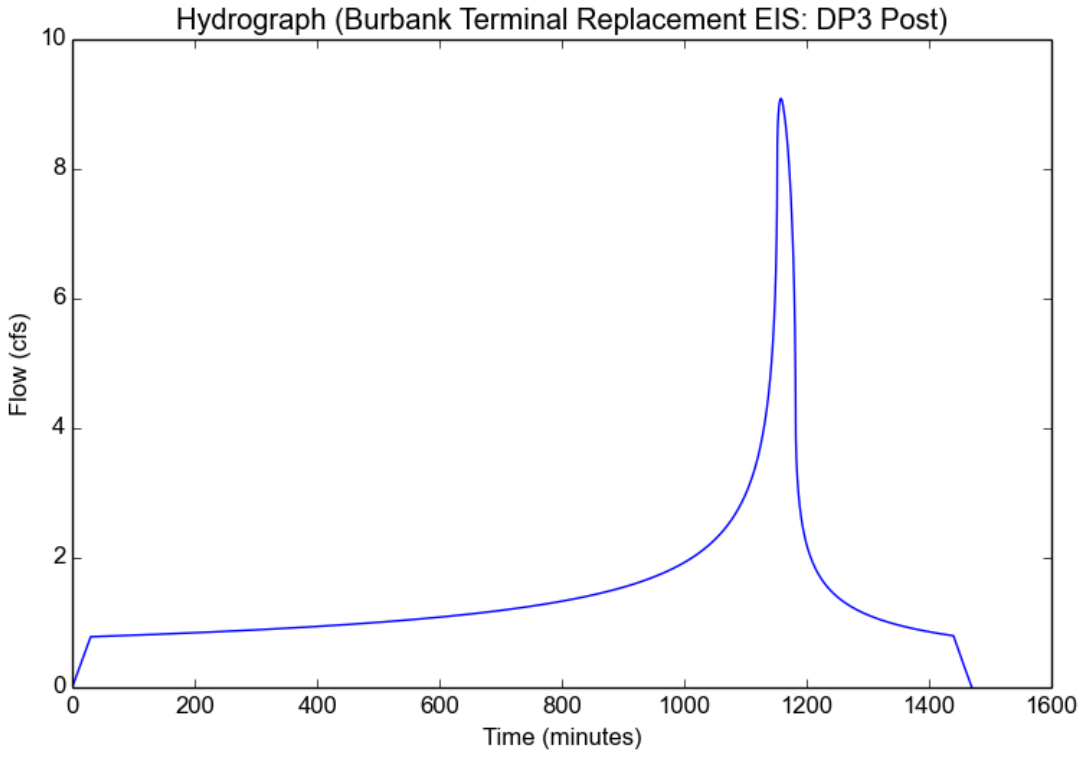

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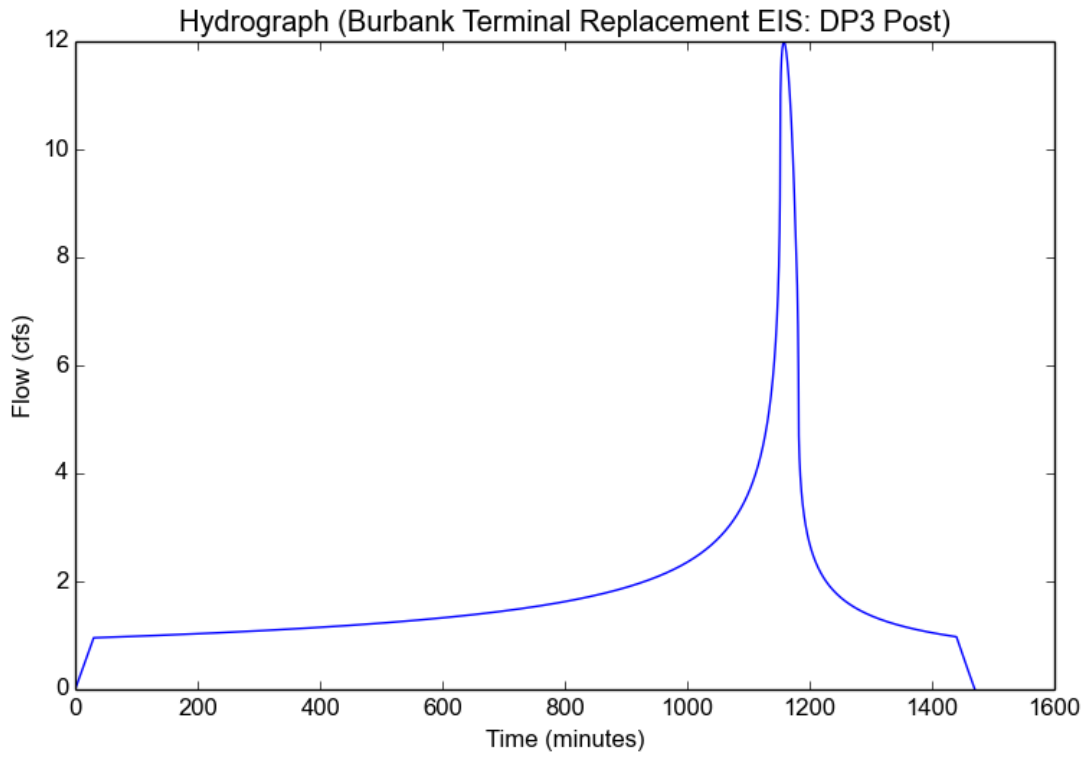

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Input Parameters

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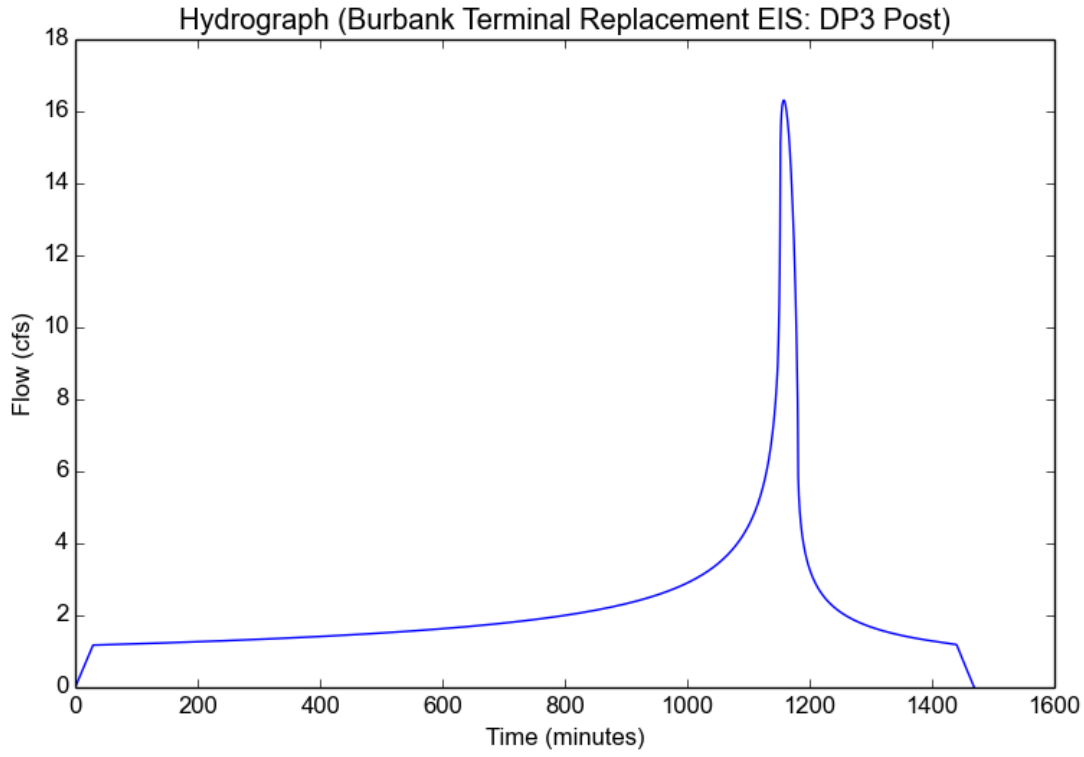
Output Results



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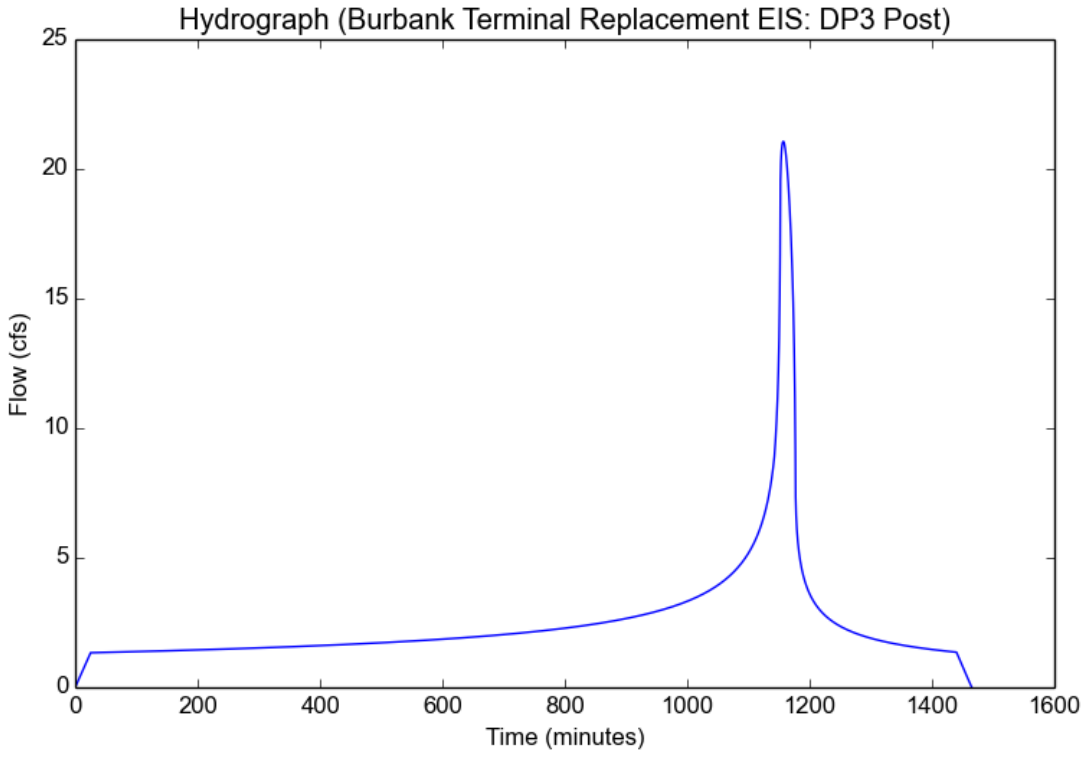

Peak Flow Hydrologic Analysis

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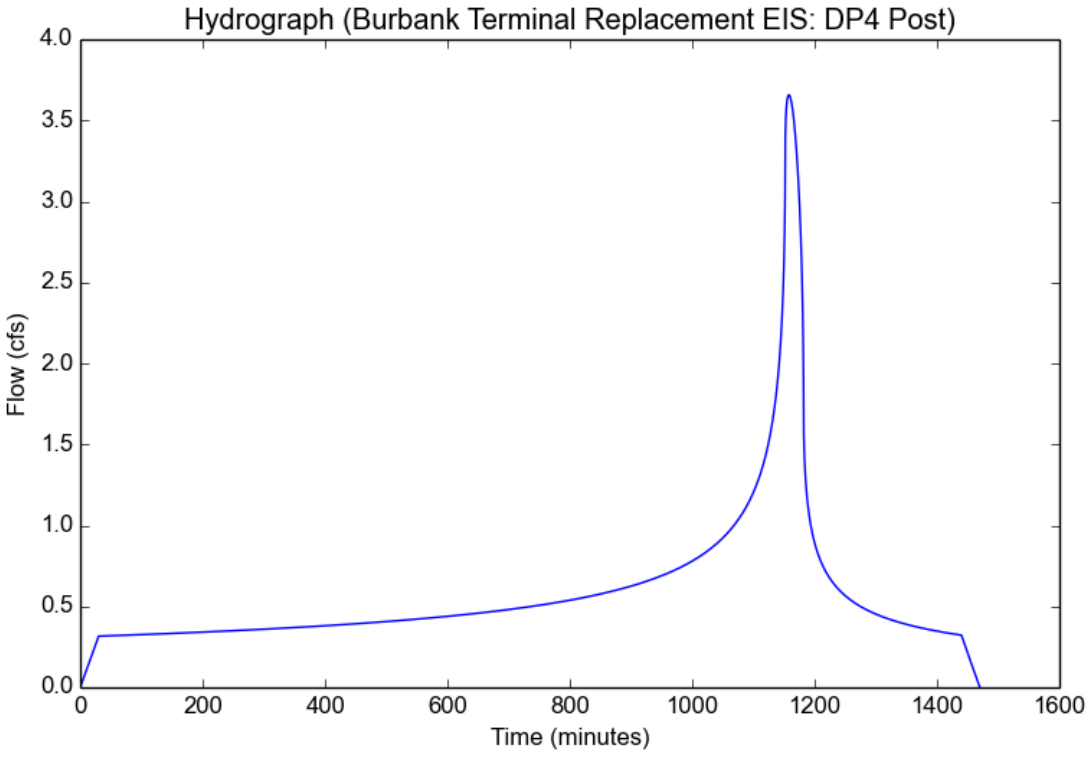
Version: HydroCalc 1.0.3

Input Parameters

IS

Output Results



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Version: HydroCalc 1.0.3

Input Parameters

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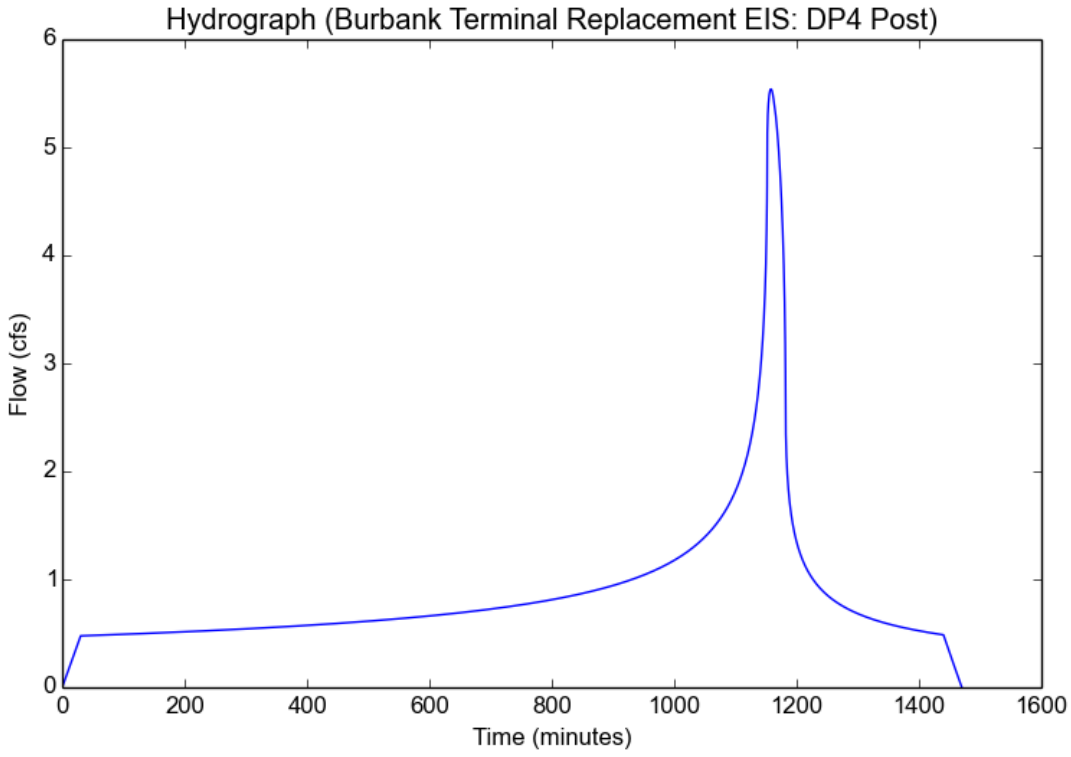
Output Results



Peak Flow Hydrologic Analysis

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Version: HydroCalc 1.0.3

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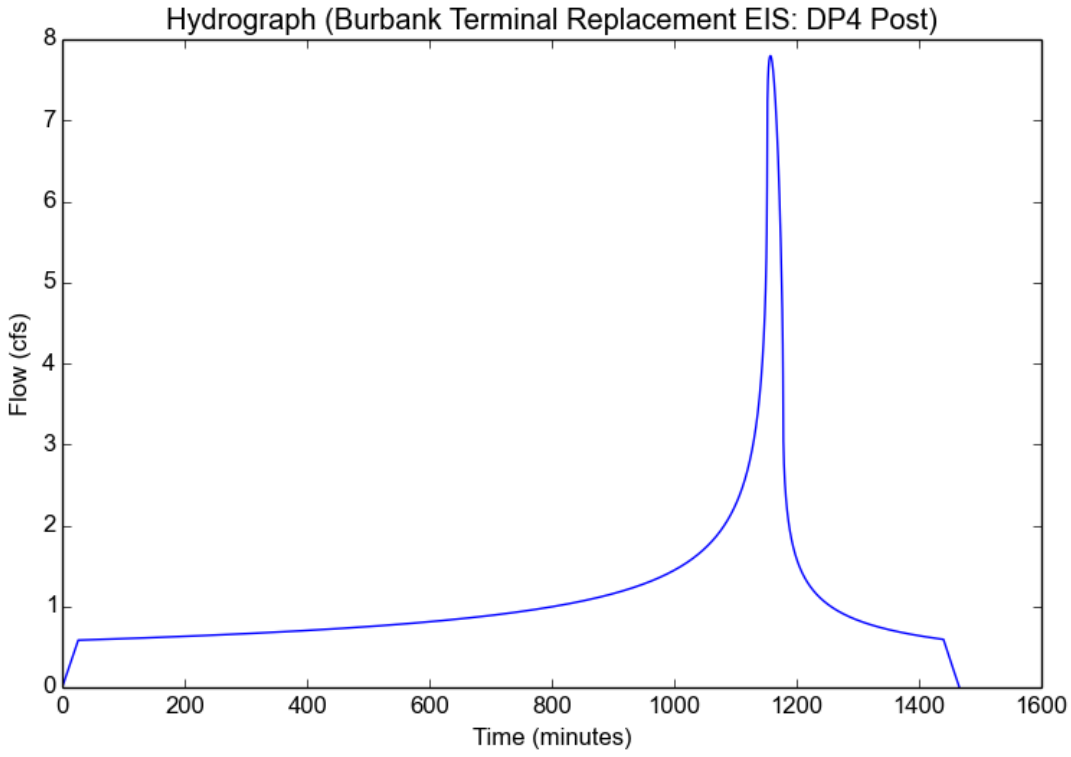
Output Results



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Input Parameters

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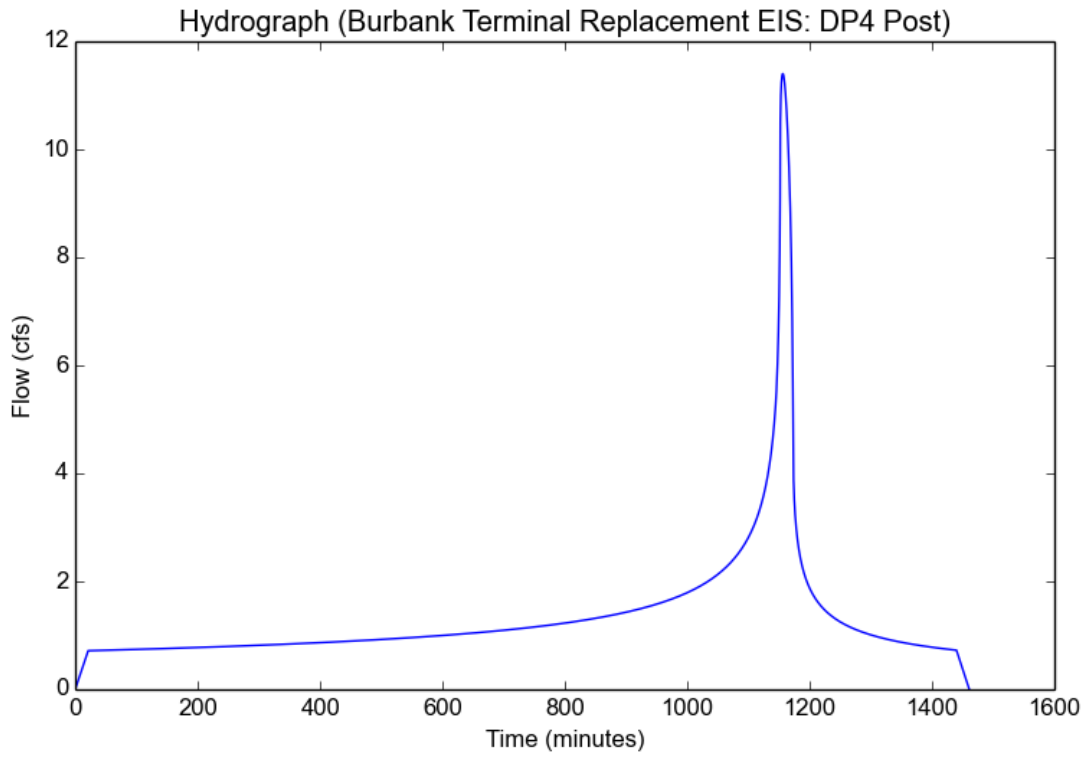

Peak Flow Hydrologic Analysis

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Input Parameters

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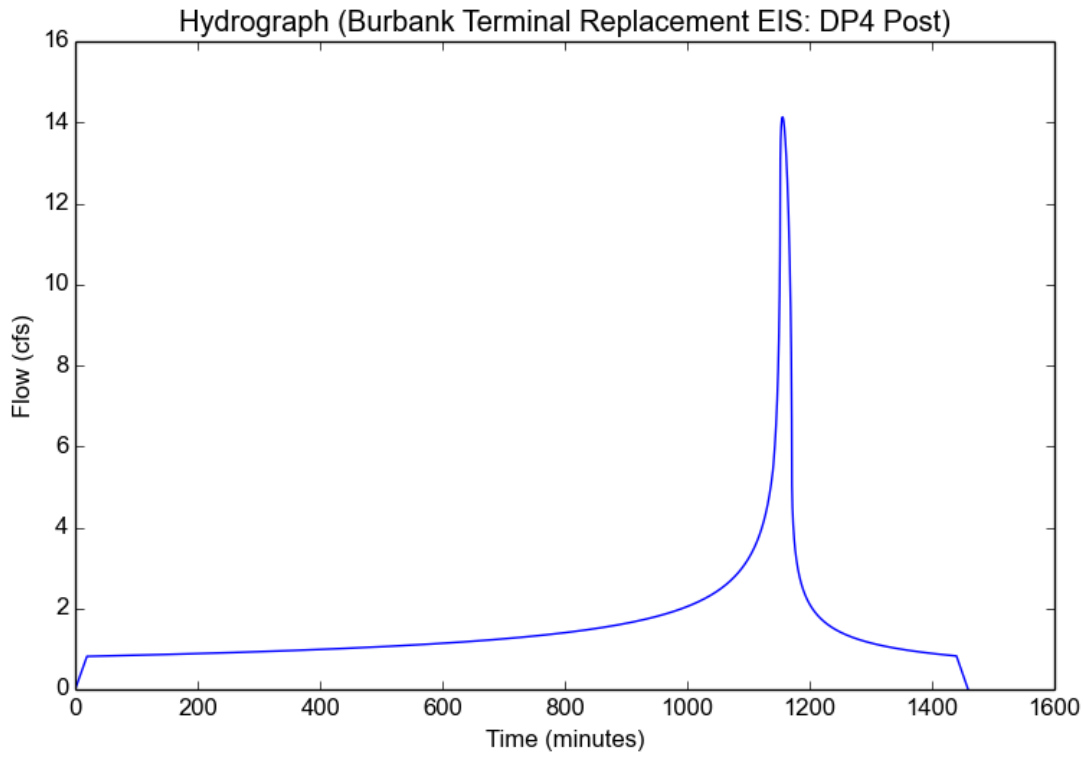

Peak Flow Hydrologic Analysis

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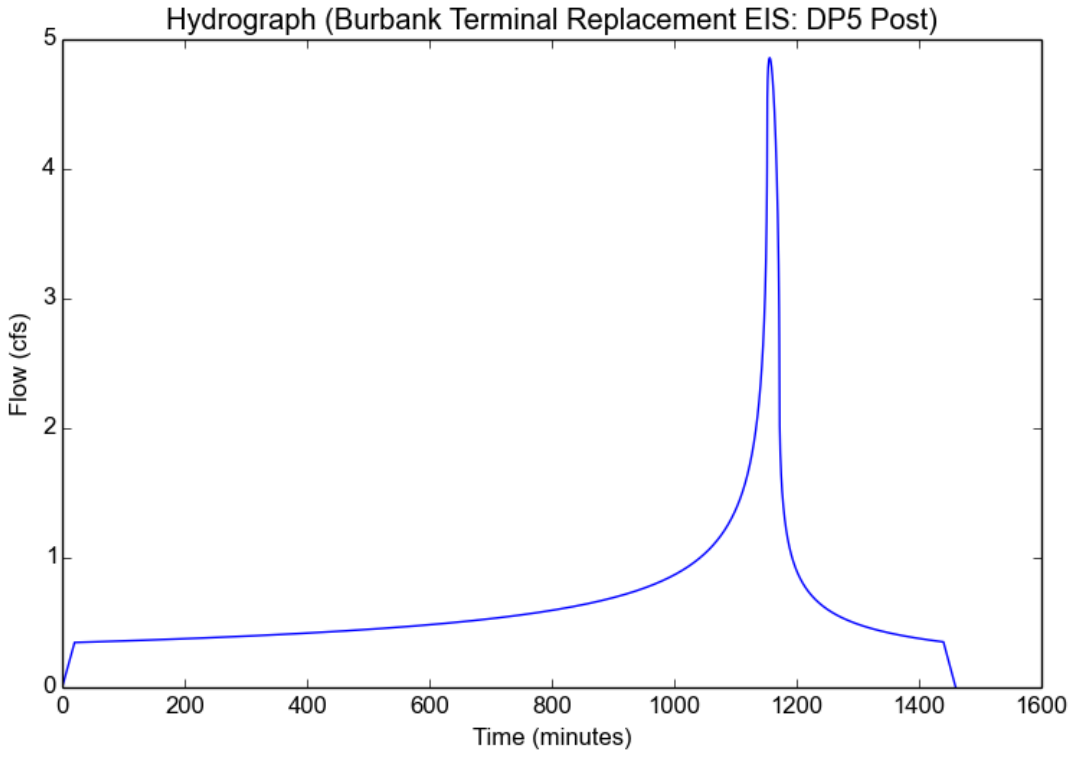

Peak Flow Hydrologic Analysis

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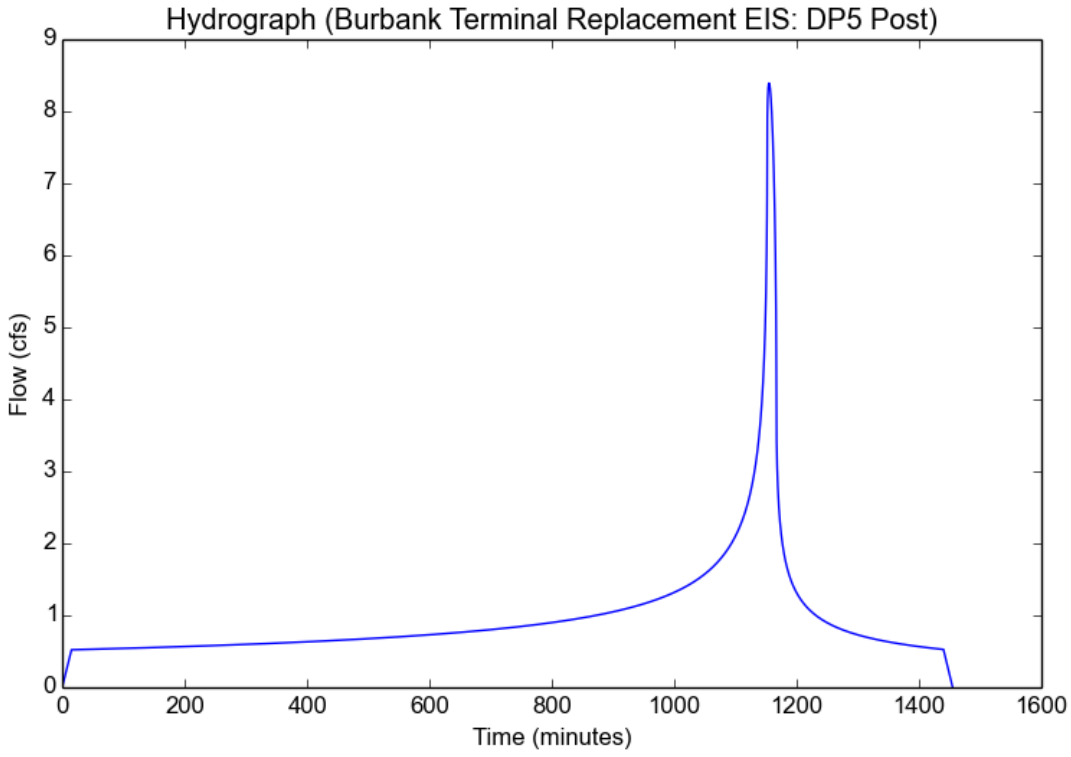
Version: HydroCalc 1.0.3

Input Parameters

IS

Output Results



Peak Flow Hydrologic Analysis

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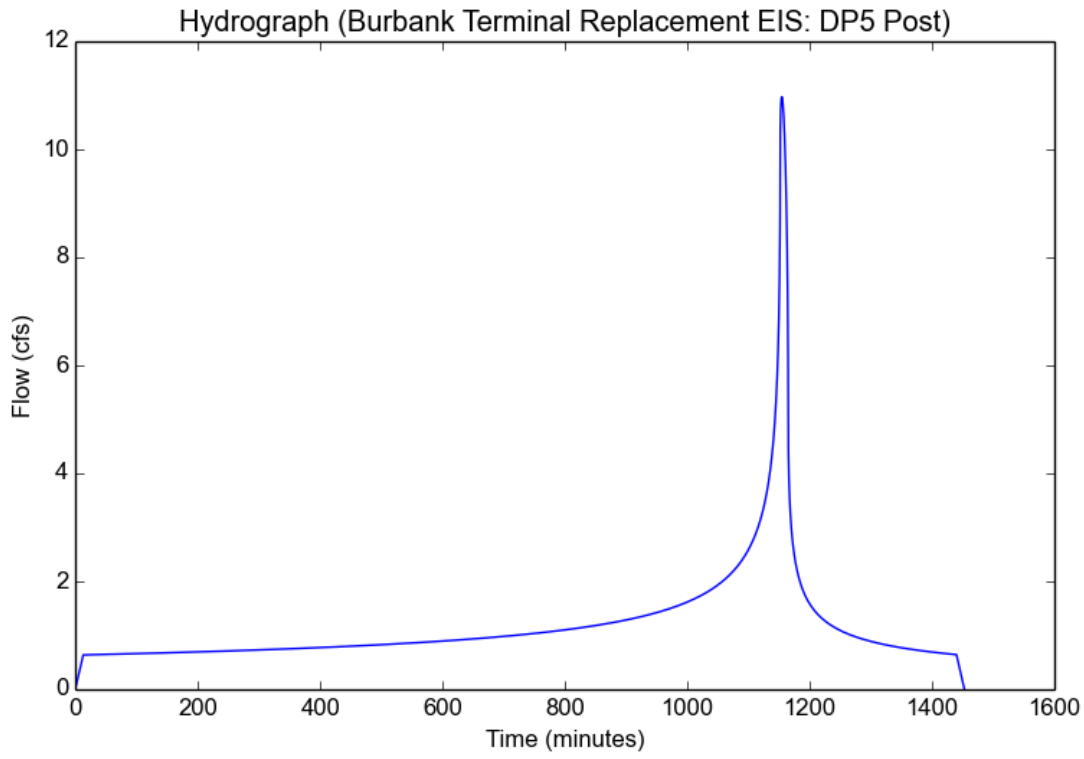

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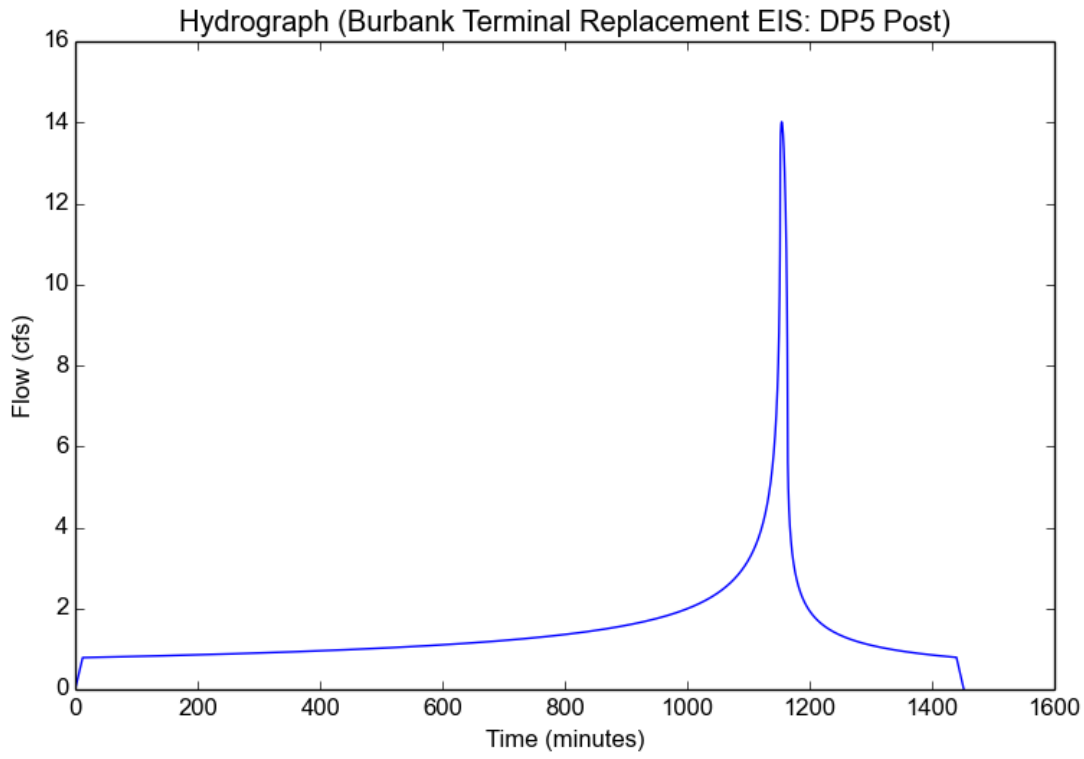

Peak Flow Hydrologic Analysis

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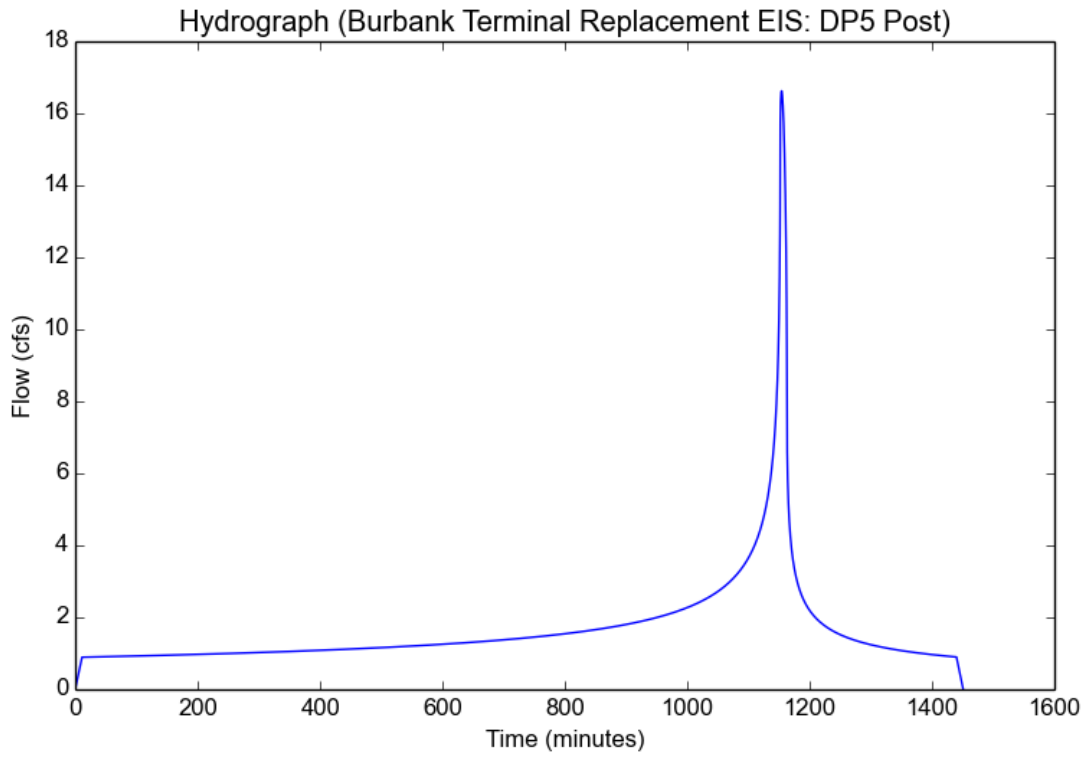

Peak Flow Hydrologic Analysis

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Input Parameters

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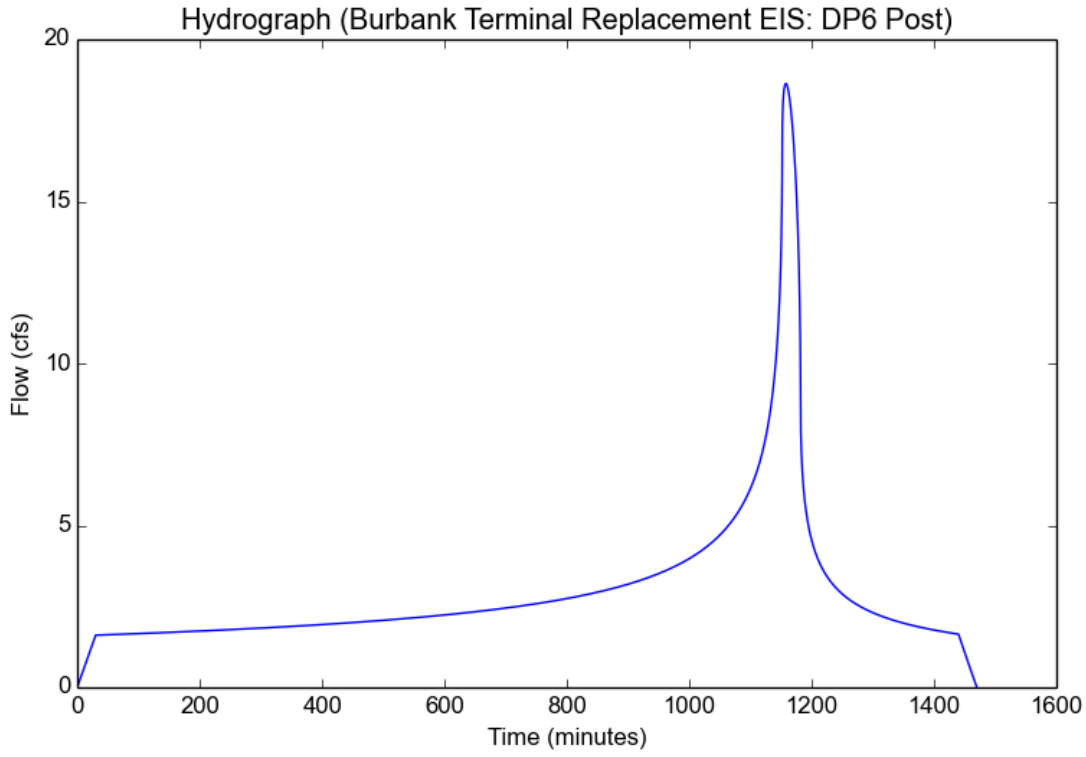
Output Results



Peak Flow Hydrologic Analysis

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Input Parameters

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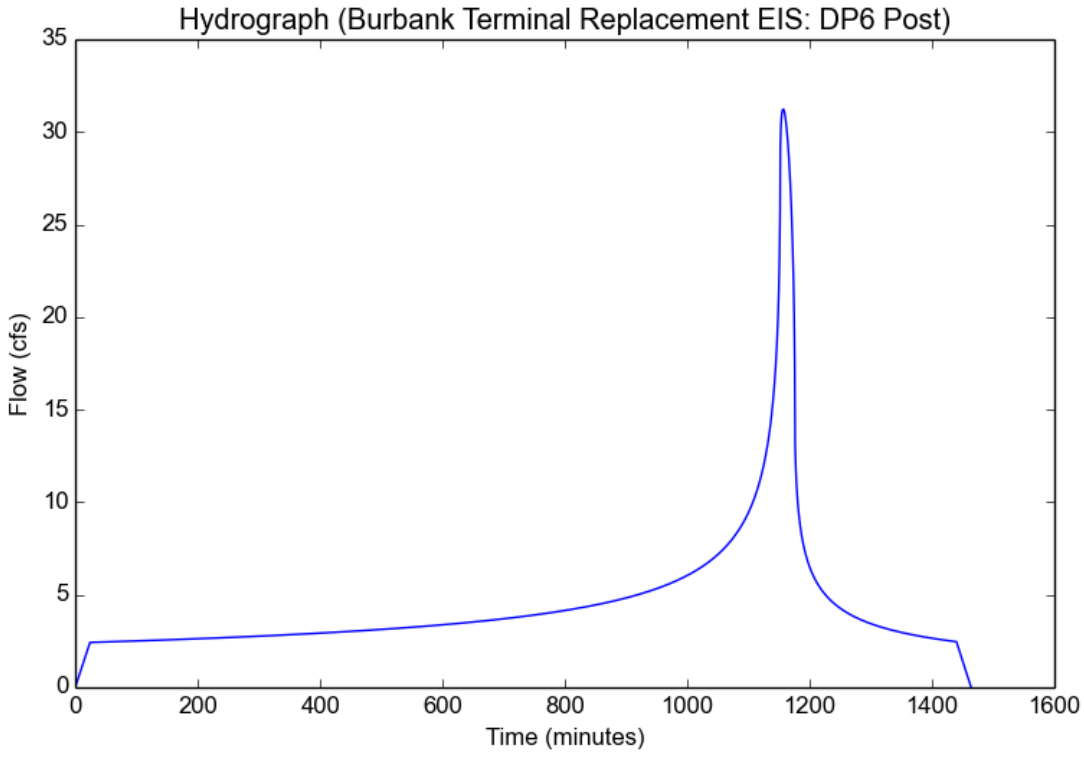
Output Results



Peak Flow Hydrologic Analysis

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Input Parameters

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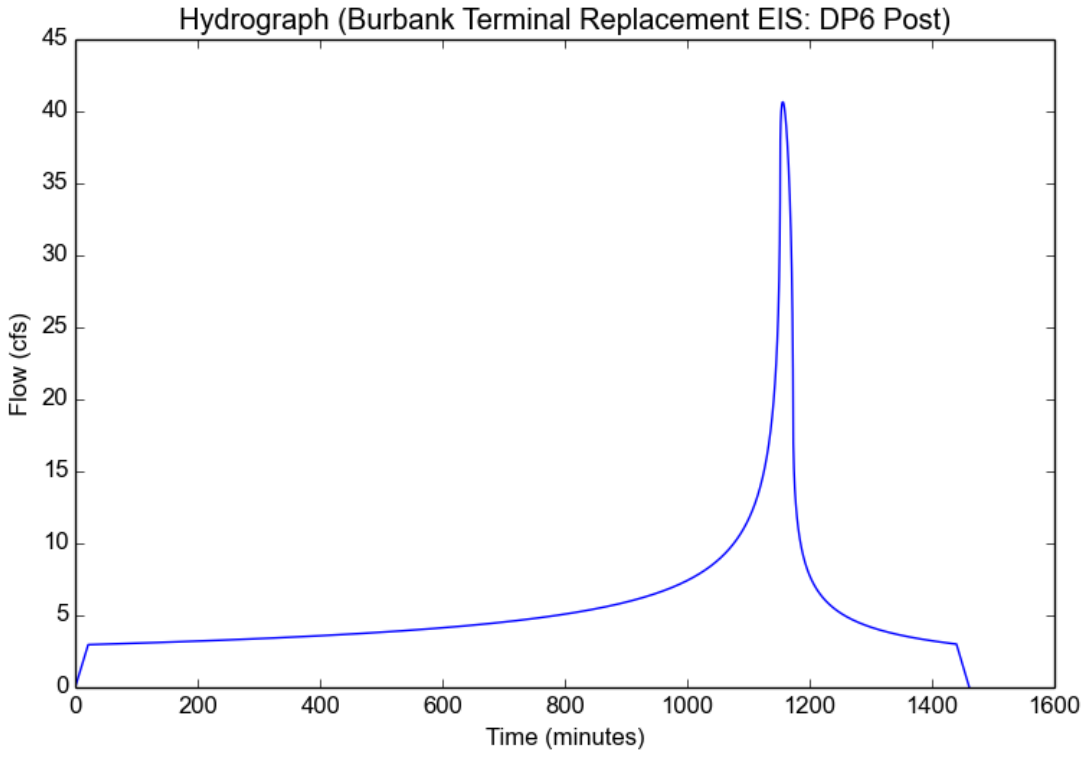
Output Results



Peak Flow Hydrologic Analysis

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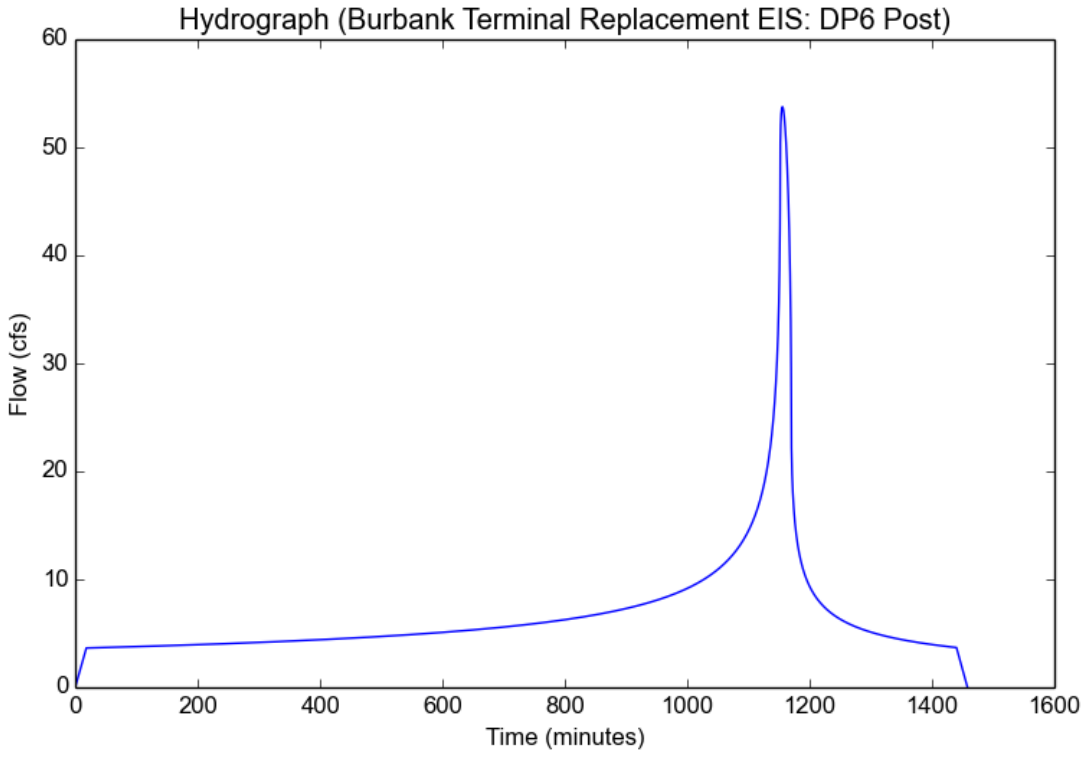

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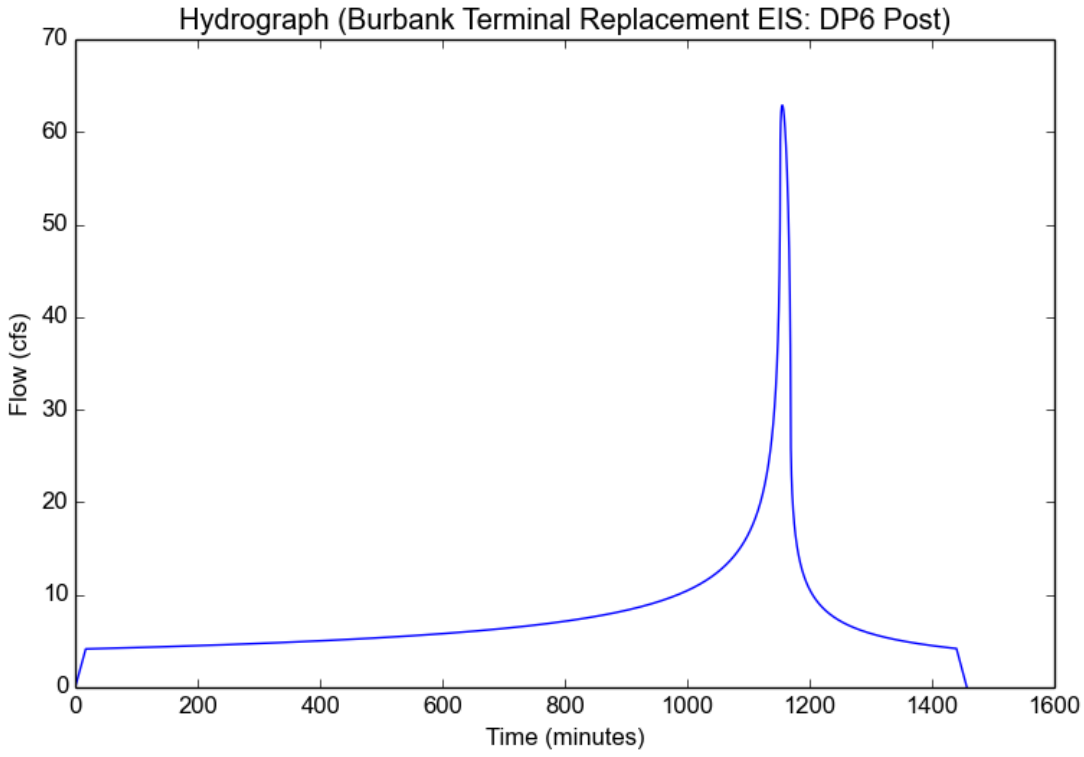

ATTACHMENT C: SUPPORTING DATA

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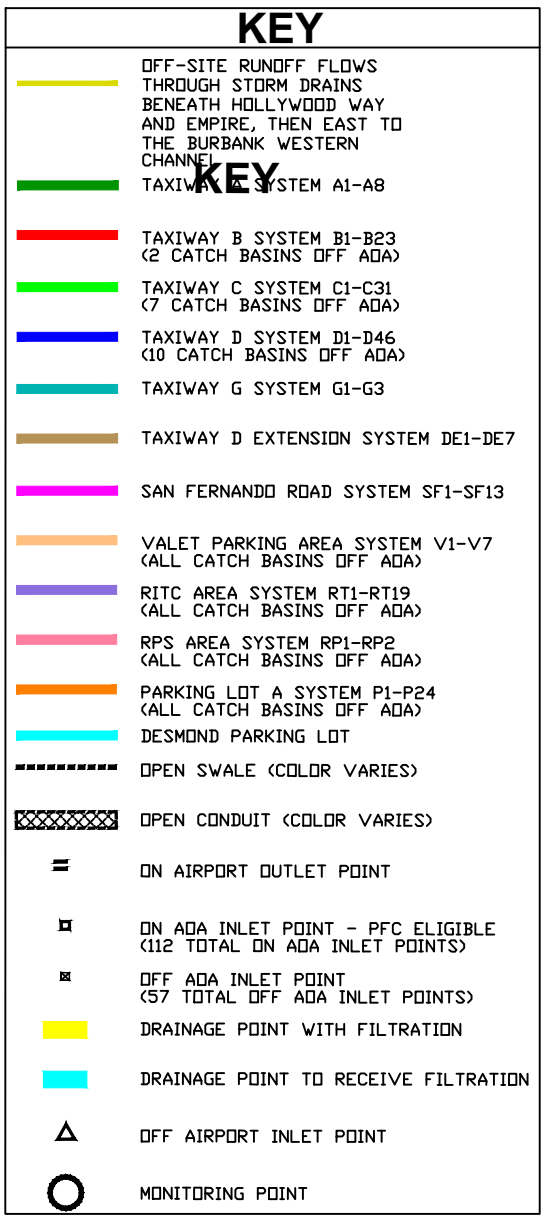
Environmental Impact Statement
Bob Hope "Hollywood Burbank" Airport

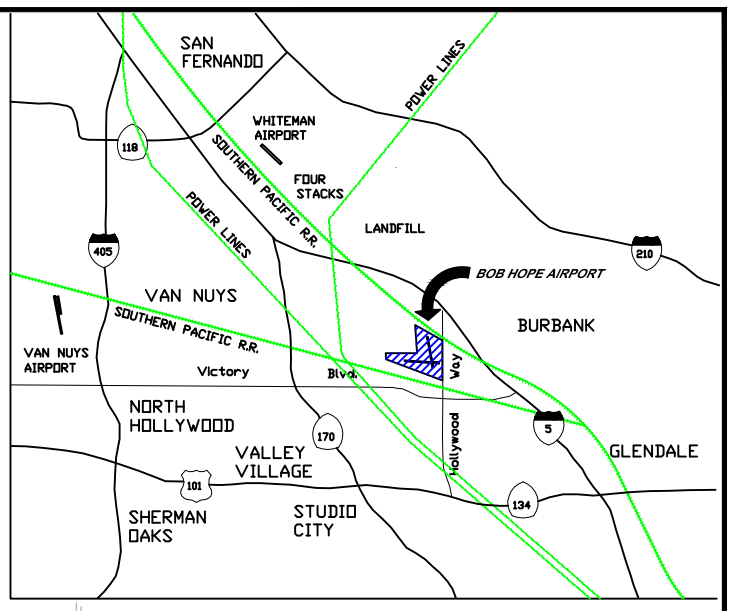
Drainage Map

Appendix A

STORM DRAIN PLAN

Site Map





LOCATION/VICINITY MAP

1 0 1 2 3 4 5
STATUTE MILES

N MAGNETIC 13°

RATE OF CHANGE
1.8'/YR.

300 0 300 600
1"=300'
GRAPHIC SCALE

LEGEND

	EXISTING PROPERTY BOUNDARY
	AIRCRAFT PARKING LIMIT LINE (APLL)
	EXISTING AIRFIELD PAVEMENT
35	EXISTING BUILDING TO REMAIN
	BLAST FENCE
	RAIL ROAD TRACK
	C.L. FENCE
	EMERGENCY GENERATOR (12 TOTAL)

△	DATE	DESCRIPTION	BY
1	06/15	UPDATE MONITORING PTS PER SWPPP	DL
2	10/15	REMOVAL OF 5 MONITORING PTS	DL

BUR

AIRPORT AUTHORITY APPROVAL

PROJECT: STORM WATER SYSTEM

SHEET TITLE: PFC ELIGIBLE FILTRATION SITE PLAN

DATE: 06/15
DRAWN BY:
CHECKED BY:

SHEET No: 1
REV: 2

S:\DRAWINGS\UTILITIES\STORM2015 R2.dwg Oct 12,2015-3:10pm

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

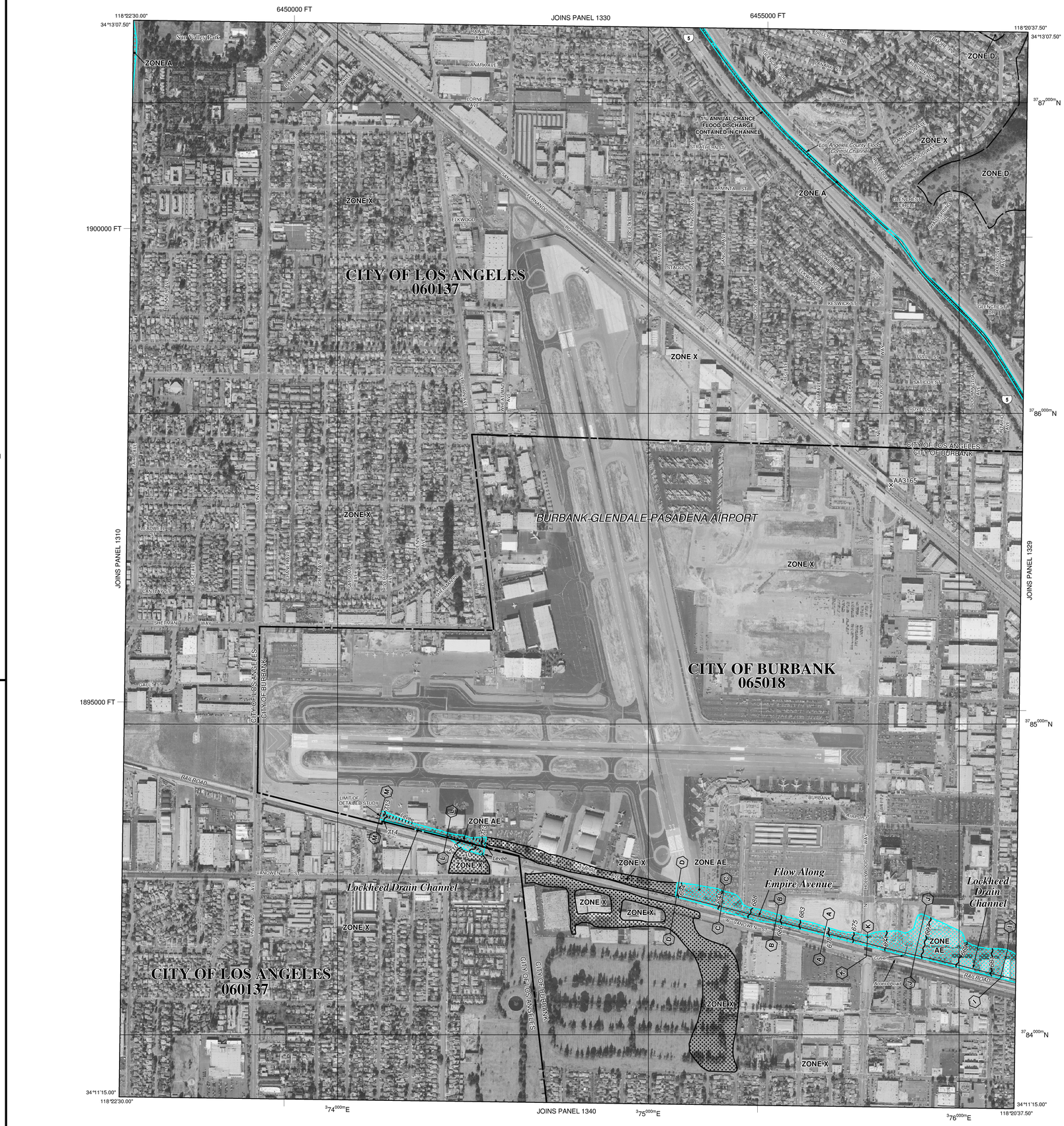
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report,* and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid values, zone 11
- 6000000 FT — 5000-foot grid ticks: California State Plane coordinate system, V zone (FIPSZONE 0405), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 26, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1328F

FIRM
FLOOD INSURANCE RATE MAP
LOS ANGELES COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 1328 OF 2350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BURBANK, CITY OF	065018	1328	F
LOS ANGELES, CITY OF	060137	1328	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C1328F

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency