County of Los Alamos

1000 Central Avenue
Los Alamos, NM 87544

Agenda - Final

Planning and Zoning Commission

Terry Priestley, Chair; Beverly Neal-Clinton, Vice-Chair; Melissa Arias; Jean Dewart; Jessie Dixon; Craig Martin; Neal Martin; and April Wade, Commissioners

Wednesday, July 10, 2019 | **5:30 PM** | **Council Chambers**
1000 Central Avenue

1. CALL TO ORDER/ROLL CALL

2. PUBLIC COMMENT

This section of the agenda is reserved for comments from the public on items that are not otherwise included in this agenda.

3. APPROVAL OF AGENDA

4. PUBLIC HEARING(S)

A. 12122-19 Staff Report_SIT-2019-0036 LASO The Hill
Bernadette Scargall, Santa Fe Engineering Consultants, requests Site Plan and Waiver approval for the construction of 149 new dwelling units totaling 239,225 ft2 to be located at 121 & 141 35th Street. The property consists of approximately 9.23 acres; is currently vacant and is zoned Mixed-Use (MU).

Attachments: Staff Report_SIT-2019-0036 LASO The Hill-complete

5. PLANNING AND ZONING COMMISSION BUSINESS

A. 12121-19 Minutes from the Planning And Zoning Commission Meeting on June 12, 2019

Attachments: P&Z_Minutes_12-June-2019

6. COMMISSION/DIRECTOR COMMUNICATIONS

A. Department Report

B. Chair's Report

D. Board of Adjustment Report

E. Commissioners' Comments

7. PUBLIC COMMENT

8. ADJOURNMENT

PLEASE NOTE: Any action by the Planning and Zoning Commission in granting approval, conditional approval or disapproval of an application may be appealed by the applicant or by persons who have a personal or pecuniary interest adversely affected by the decision as defined by Section 16-454 of the County Code. Such appeals must be filed with the Community Development Department within 15 days of the action in accordance with Section 16-492.

If you are an individual with a disability who is in need of a reader, amplifier, qualified sign language interpreter, or any other form of auxiliary aid or service to attend or participate in the hearing or meeting, please contact the County Human Resources Division at 505-662-8040 at least one week prior to the meeting or as soon as possible.

Public documents, including the agenda and minutes can be provided in various accessible formats. Please contact the personnel in the Community Development Department Office at 505-662-8006 if a summary or other type of accessible format is needed.

County of Los Alamos

Staff Report

July 10, 2019

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.: A.

Index (Council Goals):

Presenters:

Legislative File: **12122-19**

Title

Staff Report_SIT-2019-0036 LASO The Hill
Bernadette Scargall, Santa Fe Engineering Consultants, requests Site Plan and Waiver approval for the construction of 149 new dwelling units totaling 239,225 ft2 to be located at 121 & 141 35th Street. The property consists of approximately 9.23 acres; is currently vacant and is zoned Mixed-Use (MU).

Attachments

A - Staff Report_SIT-2019-0036 LASO The Hill

Los Alamos County
Community Development Department

PLANNING & ZONING COMMISSION

Public Hearing Date:	July 10, 2019
Subject:	Case No. SIT-2019-0036
Property Owner:	Peter Kerwick, LAH Investors Inc.
Applicant:	Bernadette Scargall; Santa Fe Engineering
Case Manager:	Ryan Foster, Principal Planner

Case No. SIT-2019-0036:

Bernadette Scargall, of Santa Fe Engineering Consultants, requests Site Plan approval for the construction of 149 new dwelling units totaling 239,225 ft2 to be located at 121 & 141 35th Street. The property consists of approximately 9.23 acres; is currently vacant and is zoned Mixed-Use (MU).

Motion Option 1:

I move to **approve** Case No. SIT-2019-0036, a request for Site Plan Approval to develop a multi-family market rate rental housing complex, with associated on-site landscaping, parking and traffic circulation, and waivers, located at 121 & 141 35th Street, for the reasons stated in the staff report and per testimony entered at the public hearing, subject to the following conditions of approval:

1. Provide Final Drainage Study at time of building permitting incorporating the following comments:

   (a) Provide analysis of pipe sizing;

   (b) Volume, pond areas/volumes; and

   (c) Erosion control details throughout

   (d) Provide data analysis comparing the pre-development (greenfield development) and the redevelopment of the property as proposed.

   Note: Coordinate outfall volumes and erosion control details with DOE.

2. A revised and replatted Site Plan shall be prepared and submitted prior to filing an application for a Building Permit, incorporating all items as required by the Planning & Zoning Commission at the public hearing.

3. A final utility plan shall be submitted prior to building permitting.

4. All exterior lighting shall comply with County Code §16-276 (Outdoor Lighting) and with the New Mexico Dark Sky Protection Act (Article 74-12 NMSA 1978).

5. Approval of Building Permits is required prior to commencing construction.

I further move to authorize the Chair to sign Findings of Fact for this case and, based on this decision, to be prepared by County staff.

Motion Option 2:

I move to **deny** Case No. SIT-2019-0036, a request for Site Plan Approval to develop a multi-family market rate rental housing complex, with associated on-site landscaping, parking and traffic circulation, and waivers, located at 121 & 141 35th Street, due to the proposal failing to meet the Los Alamos County Code of Ordinances, Chapter 16 – Development Code review criteria specified in §16-152A, for the following reasons:

1. …

SUMMARY

Bernadette Scargall requests Site Plan Approval (SIT) to develop a multi-family market rate rental housing complex addressed as 121 & 141 35th Street, Los Alamos, NM. The subject property contains a total of 9.23 acres of land area. The legal description of the subject property states that it is in the Eastern Area 3 subdivision, lot A-13-2.

In accordance with the provisions of the Los Alamos County Development Code, this Site Plan is required to meet each of the required criteria as found in §16-152A of the Los Alamos County Development Code. In addition, since the subject property is in a Mixed Use District, it must also be in compliance with §16-578, Downtown and mixed-use districts development standards, in order to be approved.

The three waivers submitted as a component of the site plan application are in accordance with §16-53 allowing the Planning & Zoning Commission to either approve or deny waivers with a site plan application. And §16-157 establishes the four criteria upon which waivers are to be considered.

The site to be developed is vacant. The development will include seven apartment buildings with a total of 149 total residential units, two garages, two lofts/garages, one clubhouse with a swimming pool, a pool ramada, and a BBQ ramada.

The subject property is located on the south side of 35th Street approximately 200 feet south of Trinity Drive. It is bordered by the Los Alamos Canyon on the east, south, and west sides, and 35th Street to the North.

The proposed development will have a gross floor area of 239,225 Ft^2. The apartment buildings consist of two Type 1 buildings at 51,510 Ft^2, five Type 2 buildings at 168,400 Ft^2, and two loft/garages at 5,210 Ft^2 for a residential building total of 225,120 Ft^2. The stand-alone garages have gross floor area of 7,392 Ft^2, the clubhouse 7,136 Ft^2, the pool ramada 687 Ft^2, and the BBQ ramada 454 Ft^2. Development density is 16.14 dwelling units per acre.

Sec. 16-9 defines *Height of Structure* as "*Height of structure means the vertical distance between the highest point of any part of the structure and the natural grade or finish cut grade directly below that point, whichever is greater. If a structure is placed on fill, the depth of the fill is included in the height of the structure. If the natural grade is lowered in a cut, the depth of the cut is included in the height of the structure.*" For this site plan application, the greatest height of the roof of the building will be approximately 51' from finished grade, and 73' from natural grade. The maximum allowable structure

height within this District is 50', or 45' if within 150' of the Los Alamos Canyon property line. The applicant has submitted an application for a height waiver: from finished grade, 1'-2" from outside the canyon boundary, and 6'-2" from within the canyon boundary. From natural grade, 23'-6" from outside the canyon boundary, and 28'-6" from within the canyon boundary.

The total structural footprint area of the proposed development is 90,736 Ft^2. This footprint yields a lot coverage factor of 22.56%. There is no maximum lot coverage requirement within this District.

Parking: The applicant's site plan includes two-hundred and seventy-three (273) parking spaces, eight (8) ADA-accessible parking spaces, and fifteen (15) bicycle spaces (3 locations, each with bike racks for 5 bicycles).

Sec. 16-579-t1 Minimum number of off-street parking spaces required in the downtown district—All overlay districts (table) and in the mixed-use district requires for any parking not in the rear, offsite, or in or under the building, per net useable floor area: Residential — 1 space per 750 sf and Commercial Use and Personal Services — 1 space per 500 sf. The required number of parking spaces for the residential 170,912 sf net useable area is 228 spaces, and for the non-residential 7,136 sf net useable area is 14 spaces, for 242 total spaces.

Sec. 16-367 of the development code requires "adequate ingress to and egress from each space shall be provided without moving another vehicle". Therefore, the applicant has submitted an application for a parking waiver for tandem parking to be counted as spaces. The tandem access requested by waiver would be a parking arrangement with garage parking and driveway parking. A vehicle parked in the driveway would need to be moved in order to exit a vehicle from the garage. The use of tandem spaces should not encroach the fire lane.

Sec. 16-369 ADA Parking Requirements are for eight (8) parking spaces for 101-300 regular parking spaces. The Site Plan meets this requirement.

Landscaping: The Landscape Plan submitted in support of this development illustrates that there are approximately 102 trees that will remain on this site – mostly around the perimeter of the site and in the large portion of the site that will not be developed. The landscape palette that is provided on-site in and around the improvements is mostly medium water using plants with a few plants that are low water use and a couple species that are high water use. To transition the landscaping into the surrounding property, a native revegetation seed mix will be used. In addition to the seed mix, a few variety of low water indigenous trees and scrub will be planted intermittently to provide a mix of landscape sizes and heights. Additional trees, shrubs and groundcover will be planted around the buildings, in common spaces, and along the property perimeter. Each tree planted will be at least eight-feet tall at planting. Ground cover will be Verbena Rigida and Creeping Mahonia, and synthetic turf for some outdoor amenities. The landscape design emphasizes native plants that are sufficiently hardy for the Los Alamos area. In addition, submitted plans provide for a drip emitter irrigation to all plantings, excluding turf and native seed revegetation. The system is on a dedicated valve to control the amount of water provided. Lawn areas will be watered with spray irrigation pop-up lawn heads with solid sensors controlling water distribution.

Landscape performance standards include: New trees proposed shall have a minimum trunk caliper of 2-inches to compensate for tree removal and one-inch for additional new trees. Approximately 35% of the site will be landscaped. All landscaping shall be completed prior to the issuance of final Certificate of Occupancy, and no later than three months after construction of all structures, unless approved by the Community Development Director [§16-574(a)(11)].

The Landscape Plan submitted in support of this Site Development Plan meets the Landscape Performance Standards contained in §16-574 of the Los Alamos County Development Code.

The subject property is located within the Mixed Use District. Section 16-582 – Downtown and mixed use District Architectural Standards, of the Los Alamos Development Code, beginning at paragraph (e), states:

(e) Exterior building materials. The exterior walls of buildings and structures shall consist of a mixture of two or more predominant exterior building materials from the list of allowable predominant building materials shown below. For the purposes of this section, "predominant exterior building materials" shall mean those exterior building materials whose total area when taken together constitute 60 percent or more of a building's total exterior wall surfaces visible to public view, excluding windows and doors. Furthermore, except for portions of exterior walls not open to public view, the exterior walls of buildings and structures shall not contain materials from the list of non-permitted exterior building materials also shown below. A variety of other exterior, non-predominant wall materials including window glass, metal panels, and decorative concrete block may be utilized constituting the remaining 40 percent or less of exterior walls. Figure 16-582-2 at the end of this section illustrates materials from each of the three categories of materials listed below.

(1) List of allowable predominant exterior building materials.

a. Stucco or artificial stucco;

b. Natural stone;

c. Clay brick and pre-assembled clay brick panels;

d. Exposed timbers, logs, or wood trim;

e. Any other materials that convincingly match the appearance of these materials.

(2) List of non-permitted exterior building materials.

a. Exposed poured-in-place concrete except that decorative pre-cast units resembling stone shall be allowed;

b. Plain concrete block whether painted or unpainted;

c. Plywood panels whether plain or decorative;

d. Vinyl and aluminum siding and all horizontal lap siding regardless of material.

(3) List of allowed non-predominant exterior building materials.

a. Decorative precast concrete block;

b. Metal panels and trim;

c. Glass;

d. Any other exterior material except those on the non-permitted list in subsection (e)(2) above.

(f) Exterior building wall colors. To avoid visual monotony, all downtown buildings shall feature at least a three-color scheme on exterior walls, consisting of two predominant colors and at least one accent color. The term "exterior color" may either mean the natural color of allowed materials such as stone, or applied colors drawn from a palette of natural earth tones and vegetation tones such as those found in the county natural environment and illustrated in figure 16-582-3 at the end

of this section. Such earth tones include shades of buff, reddish brown, cream, and ochre. Such vegetation tones include shades of olive, green, tan, and light brown and gray-brown. For the purposes of this section, "predominant exterior colors" shall mean two exterior building colors whose total area when taken together constitute 60 percent or more of a building's total exterior wall surfaces open to public view excluding windows and doors. The requirement for a three-color scheme may be met through the use of two predominant exterior colors plus the use of an accent color. There are no limitations on the choice of accent colors but such colors should be carefully chosen to complement the predominant color scheme and character of the building's architectural design.

(g) Roof forms, materials, and colors. A variety of building roof shapes is permitted and the mixture of both flat and sloped roofs on a single building is encouraged to promote visual interest and complex massing as described in subsection (h) below. A variety of building roof materials is permitted with the exception that sloped roofs visible to public view shall be sheathed with shingles, architectural metal panels, decorative clay tiles, or similar decorative materials. Rubber or asphalt roll roofing or tar and gravel roof systems shall not be used except on flat roofs behind parapet walls or on other roof areas not generally visible to public view. A variety of roof colors may be used except that strong primary colors and highly reflective colors and highly reflective metal surfaces are strongly discouraged.

(h) Requirement for complex architectural massing. Architectural massing refers to the way a building is shaped. Building designs featuring a single geometric shape such as a simple rectangle shall not be allowed. The requirement for complex massing may be met by building designs featuring a variety of parapet heights, varying building wall setbacks or balconies, a variety of roof forms, and an irregular building footprint. Figure 16-582-4 illustrates examples of complex massing found in existing county buildings as well as examples of buildings that would not meet this requirement.

(i) Requirement for four-sided design. All sides of a building open to public view shall employ architectural features such as windows, a variety of colors, patterns, and complex massing to achieve visual interest especially at the pedestrian level. Flat, blank walls along public rights-of-way shall not be allowed. Figure 582-5 illustrates examples of existing building that would and would not meet this requirement.

(j) Screening of roof-top mechanical equipment. Roof-top mechanical equipment 12 inches or more in diameter shall be screened by a parapet wall or other devices at least as high as the equipment to be screened. Where such equipment presents a uniform rectangular profile against the sky, the sides of the equipment may function as the screen if such sides are painted to blend with the adjacent parts of the building. The requirement to screen roof-top mechanical equipment shall not apply to electronic communication equipment such as satellite dishes and antennae that rely on a clear line of sight to function, but wherever possible such communication devices should be placed in such a manner as to minimize their impact on public views from surrounding streets. Other provisions notwithstanding, this section requirements shall not be interpreted to mean that roof-top mechanical equipment will never be in view from the ground. Figure 16-582-6 shows existing situations that would and would not meet these screening requirements.

(k) Architectural styles. A variety of architectural styles and design themes are permitted, but to the maximum extent practicable, the design of new buildings in the downtown should reflect or interpret design themes of existing key downtown Los Alamos buildings as illustrated in figure 16-582-1.

Elevations Submitted: To comply with these standards, the proposed construction materials include fiber cement siding with primary color beige, secondary color light red; stucco with primary color light gray, stone veneer in a mix of earth tones; and a standing seam metal roof in a light gray color.

To meet Architectural Massing requirements, each building will include wall pop-outs and several gable roof major and minor sections with different heights, an irregular footprint accented with a well-balanced series of rectangular architectural features that avoids long stretches of flat walls, and the use of multiple types of building materials and colors. Wood trim is a medium brown, with metal trim and railings, and windows will be vinyl frame. The total window surface area does not exceed 40% of the total exterior wall surfaces.

A Waiver, per §16-53 and §16-582, are requested for development of this project. The applicant has requested a waiver to allow for fiber cement lap siding, and states that it helps with the allowable predominant exterior building materials and complements the other materials of stone and stucco. It helps provide texture and scale of materials and colors.

No public comments have been received by the Community Development Department as of Wednesday, July 3, 2019.

LOS ALAMOS COUNTY DEVELOPMENT CODE REQUIREMENTS – SITE PLAN APPROVAL REQUIREMENTS

Sec. 16-152. – Site plan required.

(a) An approved or conditionally approved site plan shall be required for all development(s) of property or alteration or addition to existing structures.

SITE PLAN REVIEW CRITERIA

Sec. 16-152A. – Site plan review criteria.

During the course of their review of any site plan, the IDRC shall utilize the following criteria in formulating a recommendation to the community development director or the planning and zoning commission; and the community development director or the planning and zoning commission shall utilize the following criteria in making its determination of approval, conditional approval or denial:

(a) The site plan shall substantially conform to the comprehensive plan and shall not be materially detrimental to the health, safety and general welfare of the county.

Applicant Response: The site is currently zoned MU- this application is in substantial compliance with the underlying zoning and the goals and potential strategies of the comprehensive plan. The proposed plan seeks to redevelop an underutilized site with market rate housing intended to reduce the existing stockpile of housing, as well as address increased employment and need for more housing. This new development will support spending and tax generation in the community. And due to the site's proximity to the downtown and existing transit, the proposal will support economic diversity, encourage transit use, and allow for a range of housing options to include independent senior housing, workforce housing, and student housing.

Staff Comment: Multi-family uses are permitted in the MU (Mixed Use) zoning district, per the Use Index Table contained in §16-287 of the Los Alamos County Development Code. The MU (Mixed Use) district

does not limit the number of dwelling units per acre. The proposed Site Plan supports several goals and policies in the Comprehensive Plan that support the Comprehensive Plan Goals and Policies 3.1 Housing, Neighborhoods, & Growth:

Housing - Goals: "Provide a variety of housing types, sizes and densities." [Page 62]

Housing - Economic Vitality - Policies: "Promote the development of affordable and workforce housing." [Page 62]

Housing – Land Use – Policies: "Encourage new housing developments in proximity to workplaces." [Page 63]

Housing – Land Use – Potential Strategies: "Identify publicly owned sites suitable for housing, and prioritize use of sites, where appropriate, for housing for lower income individuals." [Page 63]

Neighborhoods – Goals: "Promote the creation of a variety of housing options for all segments of the Los Alamos community." [Page 66].

The proposed Site Plan supports several goals and policies in the Comprehensive Plan that support the Comprehensive Plan Goals and Policies 3.3 Open Space, Trails & Mobility:

Mobility-Goals: "Support streets designed for the safety and comfort of all users." [Page 98]

Mobility-Goals: "Improve bicycle and pedestrian safety and convenience." [Page 98]

The proposed development is in conformance with the core themes, goals, policies and strategies of the 2016 Comprehensive Plan.

(b) Ingress, egress, traffic circulation and parking on the site shall be accomplished with safety for motorists, bicyclists and pedestrians. Provisions shall be made for the safe ingress, egress and circulation of vehicles, bicyclists and pedestrians.

Applicant Response:

This site is in close proximity to the downtown core and is located adjacent to the transit route on Trinity Ave. Adequate on-site circulation including driveways, sidewalks, and trails are incorporated in the design to ensure safe Ingress, egress, and circulation for vehicles, bikes, and pedestrians and to reinforce the comprehensive plan goals of creating a vibrant and pedestrian friendly downtown and to increase residential density in the downtown area. Adequate site distance and turning radii are provided throughout the site that promote safe pedestrian, vehicular, and emergency vehicle access.

Staff Comment: Based on the ratio of required parking per net square feet of usable floor area, specified at one (1) parking space per 750 sf of residential use and per 500 sf of Commercial Uses and Personal Uses use in Sec. 16-579-t1, the number of parking spaces required is two-hundred and forty-two (242). Without the parking waiver consideration, there are two-hundred and seventeen (217) parking spaces, and therefore, twenty-five (25) spaces short of meeting the code requirement. With consideration of the fifty-six (56) tandem parking spaces submitted as a waiver, the total of two-hundred and seventy-three (273) parking spaces would result in a surplus of thirty-one (31) spaces above the code requirement. The waiver application is to allow for tandem parking to be counted as parking spaces, per §16-367 of the development code:

(2) All required parking spaces shall be maintained in conformance with the requirements of this article and adequate ingress to and egress from each space shall be provided without moving another vehicle,

except in single-family, two-family, and low density multi-family districts (R-1-5, P-D 3.5, P-D 2.0, P-D 5.0, P-D 7.0, P-D 12.0, P-D 20.0, R-1-8, R-1-10, R-1-12, R-4, R-5, R-6, R-M, R-A, R-E and R-3-L).

Based on the number of handicap spaces needed for 101-300 regular parking spaces in Sec. 16-369, the eight (8) handicapped spaces illustrated meets the code requirement.

Additional staff comments on criteria (b) include:

- The use of tandem spaces should not encroach the fire lane. [Fire Department]
- A vehicle, bicycle, and pedestrian circulation plan has been submitted with the site plan application.
- A 20' trail easement is indicated on the site plan.
- It is recommended that the placement of a self-contained compactor, be for a wet waste compactor that is compatible with County services (RJ 250 SC). [Public Works, Environmental Services]
- Dumpsters for cardboard and mixed recycle could be located near the compactor. The more residents can recycle, the less often the dumpster needs to be emptied.
- Regarding the Roadway Profile, please provide an explanation of the short (~50') sections at 8% grade areas. Staff recommends this grade be lessened, if possible. [Public Works]
- Street name access to the site, 35th Street will be realigned with 36th on the north side of Trinity and the street name of 36th Street will carry on both sides. Therefore, Finch and 35th street names will no longer apply. Revise plan references appropriately.
- Fire apparatus access roads shall not exceed 10 percent in grade. The angles of approach and departure for fire apparatus access roads shall be within the limits established by the fire code official based on the fire department's apparatus.
- Prior to building permitting, the applicant will coordinate review of traffic analysis with NMDOT D5 Traffic Engineer and County Public Works staff, through the ongoing intersection improvements project. Access improvements to Trinity Dr. (NM502) required by NMDOT shall be made in conjunction with the site development construction and completed by or before certificate of occupancy unless otherwise approved by NMDOT.

(c) The necessary provisions shall be made for controlling stormwater drainage on-site and off-site as required by the county engineer in accordance with the county's storm drainage construction standards or such other ordinances or storm water management plans as may exist.

Applicant Response: The proposed site design will incorporate techniques to minimize the impacts of stormwater and reduce additional stormwater runoff from the site as required.

Staff Comment: The applicant will be required to meet all grading and drainage requirements for the development as determined by the County's subdivision engineer at the time of building permit submittal.

A preliminary drainage plan has been submitted with the site plan application. A Final Drainage Study is required at the time of building permitting, incorporating the following comments:

(a) Provide analysis of pipe sizing;

(b) Volume, pond areas/volumes; and

(c) Erosion control details throughout

(d) Provide data analysis comparing the pre-development (greenfield development) and the redevelopment of the property as proposed.

Note: Coordinate outfall volumes and erosion control details with DOE.

While total flow will be reduced by the development, it is noted that QD6 and QD4+QD4A show additional flow than historic, ensure adequate erosion control is utilized. [Public Works]

(d) The necessary easements shall be provided for both existing and proposed utilities, on-site and off-site. No existing easement shall be terminated without provision of alternate service, and all new services shall be provided.

Applicant Response: Necessary easements shall be provided as required to accommodate all necessary utilities including up- graded utilities to meet the needs of the parcel and under-grounding of all existing above ground utilities on the site. Access and utility easements are provided along driveways through the site, along the existing 16" water transmission line, and for access and maintenance of the proposed wastewater lift station.

Staff Comment: All necessary easements must be established and illustrated on the final plat. [Public Utilities Department]. A preliminary easement plan has been submitted with the site plan application along with a statement that the utilities will be dedicated to the County.

Prior to building permitting, the applicant will provide a re-plat of the site (Tracts A-12/13) providing for vacation of existing LAC easements and/or establishment of new easements. Address any easement encroachments and lot consolidation if applicable—can be deferred to subdivision/plat submittal. Note: Vacation of existing easements requires County Surveyor, County Engineer, Deputy Utilities Manager and Council approval.

(e) The site plan shall include a conceptual landscape plan that will enhance the site and immediate vicinity and provide adequate screening and buffering, if appropriate, between properties. The final landscape plan shall conform to the requirements set forth in sections 16-574 and 16-575.

Applicant Response: Landscaping provided on the Preliminary Landscape Plans conforms to Sections 16-574 and 16-575.

At this time, there have been 196 existing trees that are noted for removal. The Preliminary Landscape Plan has provided 207 total 2" caliper or larger trees to be re-planted back into the site to compensate for the tree removals. There are additional trees specified and these trees are a minimum of 1" caliper. It should be noted that there are approximately 102 trees that will remain on this site – mostly around the perimeter of the site and in the large portion of the site that will not be developed.

The landscape palette that is provided on-site in and around the improvements is mostly medium water using plants with a few plants that are low water use and a couple species that are high water use. To transition the landscaping into the surrounding property, a native revegetation seed mix will be used. In

addition to the seed mix, a few variety of low water indigenous trees and scrub will be planted intermittently to provide a mix of landscape sizes and heights.

The landscaped area on site will be top-dressed with a decomposed granite and the vegetative coverage for these areas is at least 50% coverage as required by code. All non-turf planting areas will be watered using an emitter irrigation system to establish plants. The indigenous plantings around the perimeter of the site will have a dedicated emitter system to establish the plants that are planted from containers.

Staff Comment: The Landscape Plan submitted in support of the revised Site Plan exceeds the minimum five percent requirement for landscaping material, with 35% provided for landscaping, as required by Section 16-574 and Section 16-575 of the Los Alamos County Development Code. In addition, submitted plans provide for a drip emitter irrigation to all plantings, excluding turf and native seed revegetation. The system is on a dedicated valve to control the amount of water provided. Lawn areas will be watered with spray irrigation pop-up lawn heads with solid sensors controlling water distribution.

(f) Parking lots, outside storage areas, outside mechanical equipment and outdoor lighting shall be designed to serve the intended use of the development while minimizing adverse impacts on adjacent properties or public rights-of-way.

Applicant Response: Parking and site lighting shall be designed to reinforce the scenic beauty of the area. Lighting shall be dark sky compliant fixtures which will be adequately shielded to reduce glare and bleeding off site.

Mechanical equipment shall be screened by means of parapet walls, site fences, and landscape materials. No outside storage areas are proposed for this project.

Staff Comment: All exterior lighting shall be compliant with §16-276 of the Los Alamos County (Development) Code as well as the tenets of the New Mexico Night Sky Protection Act (Chapter 74 Article 12 NMSA 1978, Night Sky Protection). [Planning]

A photometric plan has been submitted with the site plan application and is required with the building permit submittal.

(g) Structures, site grading, and all other aspects of the development shall meet all applicable design standards or guidelines, as may be adopted and made a part of this code, and shall preserve, to the extent practical, outstanding topographical features and natural amenities on the site.

Applicant Response: All public services and facilities required to serve this site shall conform with the development standards for Los Alamos County.

Staff Comment: The Final Drainage Report and lighting photometrics will be required with the building permit submittal. [Engineering]

(h) The capacity of those public services and facilities required to serve the proposed development (including but not limited to water, sanitary sewer, electricity, gas, storm sewer, streets, etc.) shall conform with, or if improvements are required, shall be made to conform with the requirements of the county's construction standards.

Applicant Response: All structures, site grading, and other aspects of the development shall conform with the development standards for Los Alamos County and shall preserve the outstanding topographical features and natural amenities of the site to the greatest extent possible.

Staff Comment: A Revised C-301 to depict a new 8" waterline loop is required and has been provided. The plan to install a 12" water line that connects to the original line needs revision. The new line can be reduced to 8" PVC, but cannot connect to the original 6" cast iron pipe (old pipe integrity is questionable). It will need to be replaced with new 8" waterline as well. The entire water loop may be constructed with 8" PVC or ductile-iron, per the LAC DPU water line system construction standards. [Utilities]

The final electrical plan is required at building permitting.

(i) Provisions shall be made to serve the development with tot lots and/or neighborhood parks in accordance with the adopted comprehensive plan. A fee may be paid as approved by county council to accomplish the purpose of a comprehensive plan in lieu of the development of tot lots or neighborhood parks.

Applicant Response: A tot lot shall be provided on site as one of the proposed amenities for use by the residents.

Staff Comment: The site plan application includes a club house with a pool and spa, BBQ facilities, bocce ball, and shade structures. The site plan identifies a 20' trail easement.

LOS ALAMOS COUNTY DEVELOPMENT CODE REQUIREMENTS – WAIVER REQUIREMENTS

Waivers

Three waiver applications have been submitted for approval with the site plan application, for exterior building materials, parking, and building height.

Sec. 16-53. - Planning and zoning commission.

The planning and zoning commission shall have the following powers and duties:

(c) Final action.
1. The planning and zoning commission shall hold a public hearing in accordance with the requirements of article XI and shall have the authority to approve, conditionally approve or disapprove the following applications:

b. Application for approval of a site plan with waiver where the waiver is part of a site plan application and a separate waiver application has not been filed for a hearing with the board of adjustment. The planning and zoning commission may take a single vote to approve the site plan and either approve or deny the waiver. If the planning and zoning commission votes to deny the site plan the waiver shall also be denied. Such powers shall not include the consideration of waiver to design and construction standards promulgated or administered by the public works department as described in section 16-572 nor in association with a special plan (SP) district application.

WAIVER REVIEW CRITERIA:

The Los Alamos County Code of Ordinances, Chapter 16, Development Code, Sec. 16-157 establishes four (4) criteria upon which the Board of Adjustment shall base its decision to approve, approve with conditions and limitations, or deny the waiver request. The Board's decision shall depend upon the

extent to which the request meets or fails to meet these criteria. Please review each of the criteria listed and provide short comments on how your application meets the criteria in the space provided.

Describe the Waiver Request

This request is to allow horizontal fiber cement lap siding. Horizontal lap siding is not a permited exterior finish building material. Fiber cement lap siding is a durable product and helps provide scale to large multifamily buildings. It provides a modern clean look while maintaining a traditional character.

(a) Granting of the waiver will not cause an intrusion into any utility or other easement unless approved by the owner of the easement.

Applicant Response: The waiver to allow fiber cement lap siding will not intrude into utility or other easements.

Staff Comment: Staff concurs with the applicant response.

(b) The waiver request is caused by a practical difficulty or hardship inherent in the lot or lot improvements and the difficulty or hardship has not been self-imposed.

Applicant Response: The use of horizontal fiber cement lap siding helps with the allowable predominant exterior building materials and compliments the other materials of stone and stucco. It helps provide texture and scale of materials and colors.

Staff Comment: Staff concurs with the applicant response.

(c) Granting of the waiver will not create a health or safety hazard or violate building code requirements.

Applicant Response: The granting of the waiver to use fiber cement lap siding will not impact health or safety or violate building code requirements.

Staff Comment: Staff concurs with the applicant response.

(d) Granting of the waiver will not create any significant negative physical impacts on property within 100 yards of the subject property such as reduced sight lines, loss of privacy, decreased security, increased noise, objectionable odors, intrusion of artificial light, the casting of unwanted shadows, or similar negative impacts.

Applicant Response: This request will not create any significant negative impacts on property within 100 yards.

Staff Comment: Staff concurs with the applicant response.

Describe the Waiver Request

This request is to allow a waiver from the requirement for maximum building height to be 45' as measured from adjacent existing grade. The parcel is described in the RFP as being flat, but it is not, there is 45' of vertical fall over the extents of the parcel. Site circulation and accessibility would be severely restricted by that degree of slope. The comprehensive plan goals encourages high quality design and preserving the natural beauty of Los Alamos balanced with the need to provide additional units to compensate for a

housing shortage and to provide a range of housing options that serve seniors, students, and workforce. The comprehensive plan also emphasizes higher density in order to address housing needs. A waiver from the height restriction to allow the maximum height to be 51'-2" as measured from finish grade on the site will allow the proposal to achieve the density and the accessibility as outlined in the comprehensive plan.

(a) Granting of the waiver will not cause an intrusion into any utility or other easement unless approved by the owner of the easement.

Applicant Response: The height waiver will not intrude into utility or other easements.

Staff Comment: Staff concurs with the applicant response.

(b) The waiver request is caused by a practical difficulty or hardship inherent in the lot or lot improvements and the difficulty or hardship has not been self-imposed.

Applicant Response: The site terrain is causing difficulty placing buildings and parking spaces on a safe and accessible slope. The RFP incorrectly identified the site as being flat. The proposed height waver will allow development to meet the comprehensive plan goals of preserving natural beauty, providing a larger range of new housing units, achieving greater connectivity, increasing the number of housing units, and maximizing accessibility as required under the comprehensive plan and the Americans with Disabilities Act.

Staff Comment: Staff concurs with the applicant response, and further notes that the maximum building height is four (4) stories with a 51'-2" maximum building height from finished grade to roof. The height waiver allows for this project to fit on a parcel with development constraints related to topography.

(c) Granting of the waiver will not create a health or safety hazard or violate building code requirements.

Applicant Response: The granting of the height waiver will not impact health or safety or violate building code requirements.

Staff Comment: Staff concurs with the applicant response.

(d) Granting of the waiver will not create any significant negative physical impacts on property within 100 yards of the subject property such as reduced sight lines, loss of privacy, decreased security, increased noise, objectionable odors, intrusion of artificial light, the casting of unwanted shadows, or similar negative impacts.

Applicant Response: This request will not create any significant negative impacts on the property.

Staff Comment: Staff concurs with the applicant response.

Describe the Waiver Request

This request is to allow tandem parking as guest and tenant parking. Site conditions are preventing meeting the required number of parking spaces. The comprehensive plan goals for the MU zoning district encourages higher density to address optional housing needs. This waiver allows increased density and provide viable alternative parking. The site is currently 25 spaces short of the required number. We are proposing to utilize 56 tandem parking spaces which will result in a surplus of 31 spaces.

(a) Granting of the waiver will not cause an intrusion into any utility or other easement unless approved by the owner of the easement.

Applicant Response: The parking waiver will not intrude into utility or other easements.

Staff Comment: Staff concurs with the applicant response.

(b) The waiver request is caused by a practical difficulty or hardship inherent in the lot or lot improvements and the difficulty or hardship has not been self-imposed.

Applicant Response: The site terrain is causing difficulty placing parking spaces on a safe and accessible slope. The proposed tandem guest and tenant parking spaces will provide additional and convenient parking. The addition of 56 tandem spaces will increase the total number of spaces to 31 more than the required minimum parking.

Staff Comment: Staff concurs with the applicant response, and further notes, that the topography and proportions of the project site act as a constraint for development, including for parking spaces. The tandem spaces are designed to park vehicles, but the waiver would allow to count them as parking spaces, since the code requires "adequate ingress to and egress from each space shall be provided without moving another vehicle". The tandem access requested by waiver would be a parking arrangement with garage parking and driveway parking. A vehicle parked in the driveway would need to be moved to exit a vehicle from the garage. The use of tandem spaces would not encroach the fire lane.

(c) Granting of the waiver will not create a health or safety hazard or violate building code requirements.

Applicant Response: The granting of the parking waiver will not impact health or safety or violate building code requirements.

Staff Comment: Staff concurs with the applicant response.

(d) Granting of the waiver will not create any significant negative physical impacts on property within 100 yards of the subject property such as reduced sight lines, loss of privacy, decreased security, increased noise, objectionable odors, intrusion of artificial light, the casting of unwanted shadows, or similar negative impacts.

Applicant Response: This request will not create any significant negative impacts on the property.

Staff Comment: Staff concurs with the applicant response.

STAFF AND INTERDEPARTMENTAL REVIEW COMMITTEE (IDRC) RECOMMENDATION

Staff review has determined that the application meets the criteria for approval of a Site Plan. IDRC review of the SIT application and waiver applications occurred on June 6, 2019. There were several issues that were discussed at the IDRC meeting, including the need for the applicant to work with County staff towards final plans for utilities, grading and drainage, street lighting, and roadworks, sidewalks, landscaping, and the waivers for fiber cement siding, parking, and building height.

By recommending the incorporation of several improvements, the IDRC supports approval of the project, and has forwarded a favorable recommendation to the Planning and Zoning Commission, subject to the conditions outlined within the body of this report and subject to testimony entered at the public hearing.

FINDINGS OF FACT

- The petition is for review and approval of a Site Plan Application for a proposed multi-family market rate rental housing complex, consisting of seven apartment buildings with a total of 149 total residential units, two garages, two lofts/garages, one clubhouse with a swimming pool, a pool ramada, and a BBQ ramada, with associated landscaping, parking and traffic circulation, to be located at 121 & 141 35th Street, Los Alamos, NM.
- The Site Plan Application includes a Waiver Application for mixed-use district architectural standards per §16-122 and §16-53 of the Los Alamos County Development Code.
- The Site Plan Application includes a Waiver Application for mixed-use district parking standards per §16-122 and §16-53 of the Los Alamos County Development Code.
- The Site Plan Application includes a Waiver Application for building height standards per §16-122 and §16-53 of the Los Alamos County Development Code.
- Public notification for this case has been completed in accordance with §16-192 of the Los Alamos County Development Code. Notice of the public hearing was published pursuant to the Los Alamos County Development Code, and notice was mailed to all property owners within one hundred (100) yards/three hundred (300') feet of the subject property boundaries, notifying the public of the place, date, and time of the public hearing.
- The subject property is currently vacant.
- The subject property contains approximately 9.23 acres of land area.
- The subject property is zoned MU (Mixed Use), as described in §16-578 to §16-582 of the Los Alamos County Development Code.
- Multi-family uses are permitted in the MU (Mixed Use) zoning district, per the Use Index Table contained in §16-287 of the Los Alamos County Development Code. The MU (Mixed Use) district does not limit the number of dwelling units per acre.
- Issues brought forward at the IDRC meeting conducted on June 6, 2019 have been or will be adequately addressed by the applicant via the submission of a revised Site Plan that incorporates all IDRC comments.
- A revised and replatted Site Plan shall be prepared and submitted prior to filing an application for a Building Permit, incorporating all items as required by the Planning & Zoning Commission at the public hearing.

EXHIBITS

Exhibit A: Application/Waiver Applications/Vicinity Map/Aerial Photo

Exhibit B: Site Plan; Elevations; Landscape Plan; Civil Set Plans

Exhibit C: Map and List of Property Owners within 100 Yards (300 Feet); IDRC Checklist

Exhibit D: Site Plan Plans

Exhibit E: Preliminary Drainage Report

Exhibit F: Geotechnical Engineering Report

Exhibit A: Application/Vicinity Map/Aerial Photo

LOS ALAMOS
Community Development

SITE PLAN APPLICATION

Los Alamos County Community Development Department
1000 Central Ave, Suite 150, Los Alamos NM 87544
(505) 662-8120

Address and Use of Property to which the application applies:

121 & 141 35th St, Los Alamos, NM 87545

Current Use: ☑ **Vacant** **Other:** _____

Zoning District: MU **Acreage:** 9.23 **Lot Coverage:** 22.56% **Related Applications (if any):**

APPLICANT (Unless otherwise specified, all communication regarding this application shall be to Applicant):

Name: Bernadette Scargall, Santa Fe Engineering Consultants Phone: 982-2845 Cell #: 577-1332
Please Print

Company Name: SANTA FE ENGINEERING CONSULTANTS FOR LAH INVESTORS, INC.

Address: 1599 S. St. Francis, Drive Suite B, Santa Fe, NM 87505 Email: bscargall@santafeengineering.com

B. Scargall 5-24-19
SIGNATURE **DATE**

PROPERTY OWNER ☐ **Check here if same as above**

Name: Peter Kerwick, LAH Investors, Inc. Phone: 983-7997 Cell #: 412-0296
Please Print

Address: 124 E MARCY STREET, SANTA FE, NM 87501 Email: pkerwick@peterscorp.com
Owner's Address

My signature below indicates that I authorize the Applicant to make this Amendment application on my behalf.

Peter 5-24-19
SIGNATURE **DATE**

Pre-Application Meeting Date(s): **IDRC Date:**

March 14, 2019

THIS SECTION TO BE COMPLETED BY THE COMMUNITY DEVELOPMENT DEPARTMENT

Date of Submittal: _____ ***Staff Initial:*** _____

CDD Application Number: _____ ***Fees Paid:*** _____

SITE PLAN REVIEW CRITERIA

The Los Alamos County Code of Ordinances, Chapter 16, Development Code, Sec. 16-152A establishes the following criteria for recommendation by IDRC, or for determination by the CDD Director or P&Z, of approval, conditional approval or denial of the application. Please review each of the criteria listed and provide short comments on how your application meets the criteria in the space provided. (Attach additional sheets if needed.)

(a) The site plan shall substantially conform to the comprehensive plan and shall not be materially detrimental to the health, safety and general welfare of the county.

The site is currently zoned MU- this application is in substantial compliance with the underlying zoning and the goals and potential strategies of the comprehensive plan. The proposed plan seeks to redevelop an underutilized site with market rate housing intended to reduce the existing stockpile of housing, as well as address increased employment and need for more housing. This new development will support spending and tax generation in the community. And due to the site's proximity to the downtown and existing transit, the proposal will support economic diversity, encourage transit use, and allow for a range of housing options to include independent senior housing, workforce housing, and student housing.

(b) Ingress, egress, traffic circulation and parking on the site shall be accomplished with safety for motorists, bicyclists and pedestrians. Provisions shall be made for the safe ingress, egress and circulation of vehicles, bicyclists and pedestrians.

This site is in close proximity to the downtown core and is located adjacent to the transit route on Trinity Ave. Adequate on-site circulation including driveways, sidewalks, and trails are incorporated in the design to ensure safe ingress, egress, and circulation for vehicles, bikes, and pedestrians and to reinforce the comprehensive plan goals of creating a vibrant and pedestrian friendly downtown and to increase residential density in the downtown area. Adequate site distance and turning radii are provided throughout the site site that promote safe pedestrian, vehicular, and emergency vehicle access.

(c) The necessary provisions shall be made for controlling stormwater drainage on-site and off-site as required by the county engineer in accordance with the county's storm drainage construction standards or such other ordinances or storm water management plans as may exist.

The proposed site design will incorporate techniques to minimize the impacts of stormwater and reduce additional stormwater runoff from the site as required.

(d) The necessary easements shall be provided for both existing and proposed utilities, on-site and off-site. No existing easement shall be terminated without provision of alternate service, and all new services shall be provided.

Necessary easements shall be provided as required to accommodate all necessary utilities including up-graded utilities to meet the needs of the parcel and under-grounding of all existing above ground utilities on the site. Access and utility easements are provided along driveways through the site, along the existing 16" water transmission line, and for access and maintenance of the proposed wastewater lift station.

Revised: 1/26/16

(e) ***The site plan shall include a conceptual landscape plan that will enhance the site and immediate vicinity and provide adequate screening and buffering, if appropriate, between properties. The final landscape plan shall conform to the requirements set forth in sections 16-574 and 16-575.***

Landscaping provided on the Preliminary Landscape Plans conforms to Sections 16-574 and 16-575.
At this time, there have been 196 existing trees that are noted for removal. The Preliminary Landscape Plan has provided 207 total 2" caliper or larger trees to be re-planted back into the site to compensate for the tree removals. There are additional trees specified and these trees are a minimum of 1" caliper. It should be noted that there are approximately 102 trees that will remain on this site – mostly around the perimeter of the site and in the large portion of the site that will not be developed.

The landscape palette that is provided on-site in and around the improvements is mostly medium water using plants with a few plants that are low water use and a couple species that are high water use. To transition the landscaping into the surrounding property, a native revegetation seed mix will be used. In addition to the seed mix, a few variety of low water indigenous trees and scrub will be planted intermittently to provide a mix of landscape sizes and heights.

The landscaped areas on site will be top-dressed with a decomposed granite and the vegetative coverage for these areas is at least 50% coverage as required by code. All non-turf planting areas will be watered using an emitter irrigation system to establish plants. The indigenous plantings around the perimeter of the site will have a dedicated emitter system to establish the plants that are planted from containers.

(f) ***Parking lots, outside storage areas, outside mechanical equipment and outdoor lighting shall be designed to serve the intended use of the development while minimizing adverse impacts on adjacent properties or public rights-of-way.***

Parking and site lighting shall be designed to reinforce the scenic beauty of the area. Lighting shall be dark sky compliant fixtures which will be adequately shielded to reduce glare and bleeding off site. Mechanical equipment shall be screened by means of parapet walls, site fences, and landscape materials. No outside storage areas are proposed for this project.

(g) ***The capacity of those public services and facilities required to serve the proposed development (including but not limited to water, sanitary sewer, electricity, gas, storm sewer, streets, etc.) shall conform with, or if improvements are required, shall be made to conform with the requirements of the county's construction standards.***

All public services and facilities required to serve this site shall conform with the development standards for Los Alamos County.

(h) ***Structures, site grading, and all other aspects of the development shall meet all applicable design standards or guidelines, as may be adopted and made a part of this code, and shall preserve, to the extent practical, outstanding topographical features and natural amenities on the site.***

All structures, site grading, and other aspects of the development shall conform with the development standards for Los Alamos County and shall preserve the outstanding topographical features and natural amenities of the site to the greatest extent possible.

Revised: 1/26/16

(i) Provisions shall be made to serve the development with tot lots and/or neighborhood parks in accordance with the adopted comprehensive plan. A fee may be paid as approved by county council to accomplish the purpose of a comprehensive plan in lieu of the development of tot lots or neighborhood parks.

A tot lot shall be provided on site as one of the proposed amenities for use by the residents.

SUBMITTALS:

Provide all information necessary for a complete review of the Site Plan request. Check each of the boxes to indicate which information you have provided. Provide two hard copies of all plans and also provide one complete copy of all materials on disk:

- ☑ **Agent Authorization, if applicable.**
- ☑ **Proof of property ownership (Warranty deed, recorded Plat, etc.).**
- ☑ **Scaleable copies of Site Plan drawings including:**
  - ☑ **Footprint and square footage of all buildings and structures on the site.**
  - ☑ **Building/structure elevations.**
  - ☑ **Existing and proposed lot coverage.**
  - ☑ **All existing and proposed easements.**
  - ☑ **All existing and proposed setbacks.**
  - ☑ **Existing and proposed trails.**
- ☑ **Preliminary Landscape Plan.**
- ☑ **Preliminary Grading and Drainage Plan.**
- ☑ **Preliminary Utilities Plan.**

Note: Final construction plan set will be required at Building Permit.
Additionally, per Sec. 16-571, at or before the first IDRC meeting, the County Engineer may require the following Impact Studies:

- ☐ **Traffic impact analysis (TIA).**
- ☑ **Stormwater drainage report.**
- ☐ **Utility capacity analysis.**
- ☐ **Soils report.**
- ☐ **Other. Describe:** _____

You are advised to meet with the County Engineer early in the planning process to determine which studies will be required.

Please provide any other information that you believe is relevant to or supports this application.

The proposed development supports the comprehensive plan goals as follows:
1. Promoting a high quality design, cohesive architecture, and a site plan that creates a sense of place though environmental sustainability and preserving the natural beauty of Los Alamos.
2. Provide another housing option to the palette of available living opportunities in support of the goal to provide affordable housing options for workforce, seniors, and students.
3. Provide a design that supports bikes, pedestrians, and connection to the transit system in addition to supporting vehicular access.
4. Provide new housing units to increase the number of total units available in Loas Alamos County.

Revised: 1/26/16

LOS ALAMOS
Community Development

WAIVER APPLICATION

Los Alamos County Community Development Department
1000 Central Ave, Suite 150, Los Alamos NM 87544
(505) 662-8120

Note: The Board of Adjustment considers Applications for Waivers at a public hearing. Waiver means an adjustment of dimensional requirements, parking regulations, or design standards contained in the Land Development Code. Waivers shall not apply to regulations controlling density or land use.

Describe the Waiver request:

This request is to allow horizontal fiber cement lap siding. Horizontal lap siding is not a permited exterior finish building material. Fiber cement lap siding is a durable product and helps provide scale to large multifamily buildings. It provides a modern clean look while maintaining a traditional character.

Address of Property to which the Waiver Request applies:

121 & 141 35th St. Los Alamos, NM 87545

Zoning District: MU **Acreage:** 9.23 **Lot Coverage:** 22.56% **Related Applications (if any):**

APPLICANT (Unless otherwise specified, all communication regarding this application shall be to Applicant):

Name: Bernadette Scargall, Santa Fe Engineering Consultants Phone: 982-2845 Cell #: 577-1332
Please Print

Address: 1599 S. St. Francis Drive, Suite B Email: bscargall@santafeengineering.com

B. Scargall 5.24.19
SIGNATURE **DATE**

PROPERTY OWNER (If different from Applicant) ☐ **Check here if same as above**

Name: Peter Kerwick, LAH Investors, Inc. Phone: 983-7997 Cell #: 412-0296
Please Print

Address: 124 E Marcy St, Santa Fe, NM 87501 Email: pkerwick@peterscorp.com
Owner's Address

My signature below indicates that I authorize the Applicant to make this Waiver application on my behalf.

Peter Kerwick 5-24-19
SIGNATURE **DATE**

THIS SECTION TO BE COMPLETED BY THE COMMUNITY DEVELOPMENT DEPARTMENT

For County Use:

Date of Submittal: _____ ***Staff Initial:*** _____

CDD Application Number: _____ ***Fees Paid:*** _____

Revised: 12/30/15

WAIVER REVIEW CRITERIA:

The Los Alamos County Code of Ordinances, Chapter 16, Development Code, Sec. 16-157 establishes four (4) criteria upon which the Board of Adjustment shall base its decision to approve, approve with conditions and limitations, or deny the waiver request. The Board's decision shall depend upon the extent to which the request meets or fails to meet these criteria. Please review each of the criteria listed and provide short comments on how your application meets the criteria in the space provided. (Attach additional sheets if needed.)

(a) Granting of the waiver will not cause an intrusion into any utility or other easement unless approved by the owner of the easement; and

The waiver to allow fiber cement lap siding will not intrude into utility or other easements.

(b) The waiver request is caused by a practical difficulty or hardship inherent in the lot or lot improvements and the difficulty or hardship has not been self-imposed; and

The use of horizontal fiber cement lap siding helps with the allowable predominant exterior building materials and compliments the other materials of stone and stucco. it helps provide texture and scale of materials and colors.

(c) Granting of the waiver will not create a health or safety hazard or violate building code requirements; and

The granting of the waiver to use fiber cement lap siding will not impact health or safety or violate building code requirements.

(d) Granting of the waiver will not create any significant negative physical impacts on property within 100 yards of the subject property such as reduced sight lines, loss of privacy, decreased security, increased noise, objectionable odors, intrusion of artificial light, the casting of unwanted shadows, or similar negative impacts.

This request will not create any significant negative impacts on property within 100 yards.

SUBMITTALS:

Provide all information necessary for a complete review of the Waiver request. Check each of the boxes to indicate which information you have provided, and, if possible, also provide one complete copy of all materials on disk:

- ☑ **Proof of property ownership.**
- ☑ **A scaleable drawing including all information pertinent to the waiver request:**
  - ☑ **Existing and proposed lot coverage.**
  - ☑ **Show and label the footprint of all existing buildings and structures on the site.**
  - ☑ **Show, dimension and label all existing and proposed easements.**
  - ☑ **Show, dimension and label all existing and proposed setbacks.**
  - ☑ **Show, dimension and label building/structure elevations.**
- ☐ **Other. Describe:** _____

Revised: 12/30/15

LOS ALAMOS
Community Development

WAIVER APPLICATION

Los Alamos County Community Development Department
1000 Central Ave, Suite 150, Los Alamos NM 87544
(505) 662-8120

Note: The Board of Adjustment considers Applications for Waivers at a public hearing. Waiver means an adjustment of dimensional requirements, parking regulations, or design standards contained in the Land Development Code. Waivers shall not apply to regulations controlling density or land use.

Describe the Waiver request:

This request is to allow a waiver from the requirement for maximum building height to be 45' as measured from adjacent existing grade. The parcel is described in the RFP as being flat but it is not, there is 45' of vertical fall over the extents of the parcel. Site circulation and accessibility would be severely restricted by that degree of slope. The comprehensive plan goals encourages high quality design and preserving the natural beauty of Los Alamos balanced with the need to provide additional units to compensate for a housing shortage and to provide a range of housing options that serve seniors, students, and workforce. The comprehensive plan also emphasizes higher density in order to address housing needs. A waiver from the height restriction to allow the maximum height to be 51'-2" as measured from finish grade on the site will allow the proposal to achieve the density and the accessibility as outlined in the comprehensive plan.

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APPLICANT (Unless otherwise specified, all communication regarding this application shall be to Applicant):

Name: Bernadette Scargall, Santa Fe Engineering Consultants, LLC. Phone: 982-2845 Cell #: 577-1332
Please Print

Address: 1599 S St. Francis, Drive, Suite B, Santa Fe, NM 87505 Email: bscargall@santafeengineering.com

B. Scargall 6/26/19
SIGNATURE **DATE**

PROPERTY OWNER (If different from Applicant) ☐ **Check here if same as above**

Name: Peter Kerwick, LAH Investors, Inc. Phone: 983-7997 Cell #: 412-0296
Please Print

Address: 124 E. Marcy St, Santa Fe, NM 87501 Email: pkerwick@peterscorp.com
Owner's Address

My signature below indicates that I authorize the Applicant to make this Waiver application on my behalf.

Peter Vice President 6.26.19
SIGNATURE **DATE**

THIS SECTION TO BE COMPLETED BY THE COMMUNITY DEVELOPMENT DEPARTMENT

For County Use:

Date of Submittal: _____ ***Staff Initial:*** _____

CDD Application Number: _____ ***Fees Paid:*** _____

Revised: 12/30/15

WAIVER REVIEW CRITERIA:

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The site terrain is causing difficulty placing buildings and parking spaces on a safe and accessible slope. The RFP incorrectly identified the site as being flat. The proposed height waver will allow development to meet the comprehensive plan goals of preserving natural beauty, providing a larger range of new housing units, acheiving greater connectivity, increasing the number of housing units, and maximizing accessibility as required under the comprehensive plan and the Americans with Disabilities Act.

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The granting of the height waiver will not impact health or safety or violate building code requirements.

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This request will not create any significant negative impacts on the property.

SUBMITTALS:

Provide all information necessary for a complete review of the Waiver request. Check each of the boxes to indicate which information you have provided, and, if possible, also provide one complete copy of all materials on disk:

- ☑ **Proof of property ownership.**
- ☑ **A scaleable drawing including all information pertinent to the waiver request:**
  - ☑ **Existing and proposed lot coverage.**
  - ☑ **Show and label the footprint of all existing buildings and structures on the site.**
  - ☑ **Show, dimension and label all existing and proposed easements.**
  - ☑ **Show, dimension and label all existing and proposed setbacks.**
  - ☑ **Show, dimension and label building/structure elevations.**
- ☐ **Other. Describe:** _____

Revised: 12/30/15

LOS ALAMOS
Community Development

WAIVER APPLICATION

Los Alamos County Community Development Department
1000 Central Ave, Suite 150, Los Alamos NM 87544
(505) 662-8120

Note: The Board of Adjustment considers Applications for Waivers at a public hearing. Waiver means an adjustment of dimensional requirements, parking regulations, or design standards contained in the Land Development Code. Waivers shall not apply to regulations controlling density or land use.

Describe the Waiver request:

This request is to allow tandem parking as quest and tenant parking. Site conditions are preventing meeting the required number of parking spaces. The comprehensive plan goals for the MU zoning district encourages higher density to address optional housing needs. This waiver allows increased density and provide viable alternative parking . The site is currently 25 spaces short of the required number. We are proposing to utilize 56 tandem parking spaces which will result in a surplus of 31 spaces.

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Address: 1599 S. St. Francis Drive, Suite B, Santa Fe, NM 87505 Email: bscargall@santafeengineering.com

B. Scargall 5-24-19
SIGNATURE **DATE**

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Name: Peter Kerwick, LAH Inevestors, Inc. Phone: 983-7997 Cell #: 412-0296
Please Print

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Peter Kerwick 5-24-19
SIGNATURE **DATE**

THIS SECTION TO BE COMPLETED BY THE COMMUNITY DEVELOPMENT DEPARTMENT

For County Use:

Date of Submittal: _____ ***Staff Initial:*** _____

CDD Application Number: _____ ***Fees Paid:*** _____

Revised: 12/30/15

WAIVER REVIEW CRITERIA:

The Los Alamos County Code of Ordinances, Chapter 16, Development Code, Sec. 16-157 establishes four (4) criteria upon which the Board of Adjustment shall base its decision to approve, approve with conditions and limitations, or deny the waiver request. The Board's decision shall depend upon the extent to which the request meets or fails to meet these criteria. Please review each of the criteria listed and provide short comments on how your application meets the criteria in the space provided. (Attach additional sheets if needed.)

(a) Granting of the waiver will not cause an intrusion into any utility or other easement unless approved by the owner of the easement; and

The parking waiver will not intrude into utility or other easements.

(b) The waiver request is caused by a practical difficulty or hardship inherent in the lot or lot improvements and the difficulty or hardship has not been self-imposed; and

The site terrain is causing difficulty placing parking spaces on a safe and accessible slope. The proposed tandem guest and tenant parking spaces will provide additional and convenient parking . The addition of 56 tandem spaces will increase the total number of spaces to 31 in excess of the required minimum parking.

(c) Granting of the waiver will not create a health or safety hazard or violate building code requirements; and

The granting of the parking waiver will not impact thealth or safety or violate building code requirements.

(d) Granting of the waiver will not create any significant negative physical impacts on property within 100 yards of the subject property such as reduced sight lines, loss of privacy, decreased security, increased noise, objectionable odors, intrusion of artificial light, the casting of unwanted shadows, or similar negative impacts.

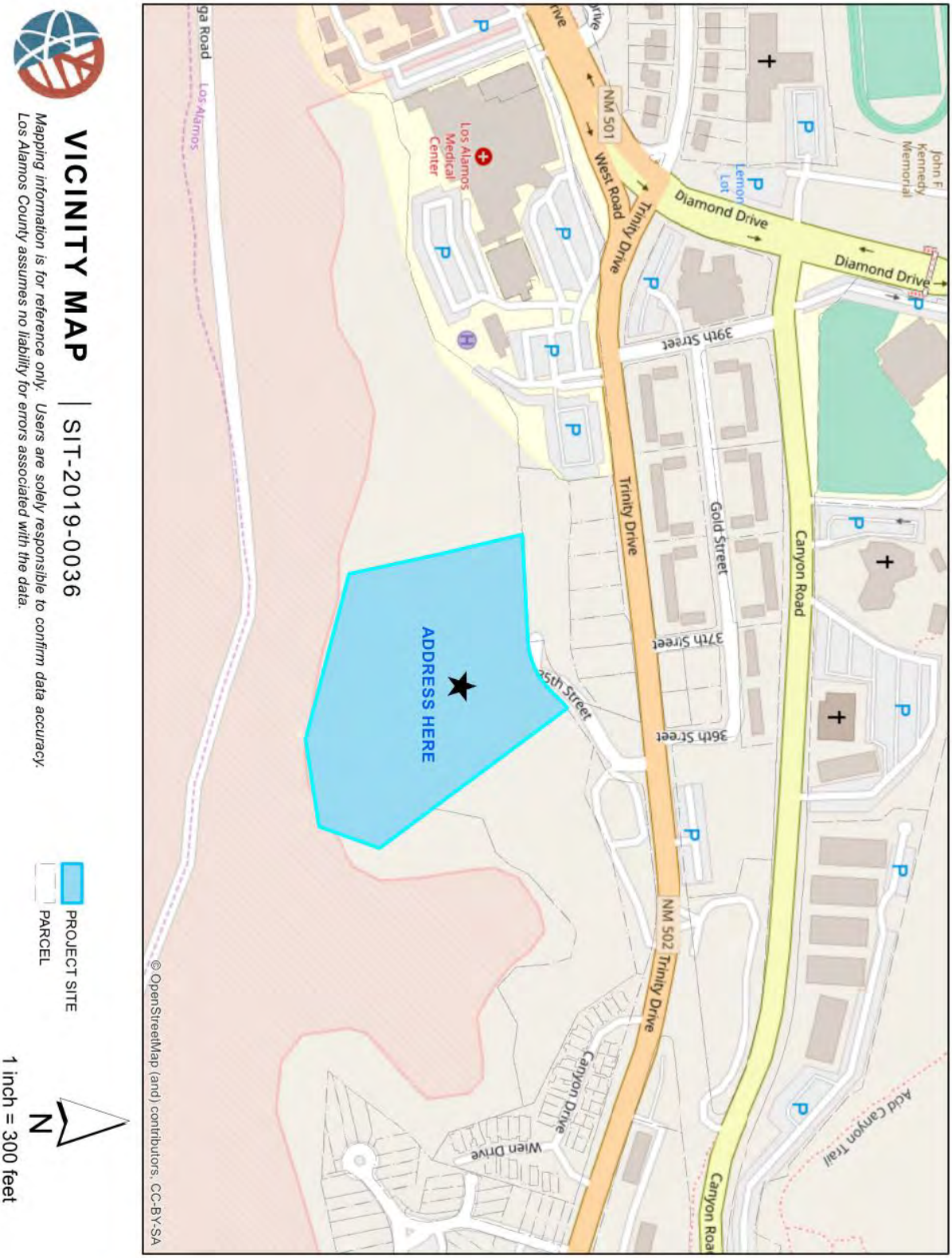
This request will not create any significant negative impacts on the property.

SUBMITTALS:

Provide all information necessary for a complete review of the Waiver request. Check each of the boxes to indicate which information you have provided, and, if possible, also provide one complete copy of all materials on disk:

- ☑ **Proof of property ownership.**
- ☑ **A scaleable drawing including all information pertinent to the waiver request:**
  - ☑ **Existing and proposed lot coverage.**
  - ☑ **Show and label the footprint of all existing buildings and structures on the site.**
  - ☑ **Show, dimension and label all existing and proposed easements.**
  - ☑ **Show, dimension and label all existing and proposed setbacks.**
  - ☑ **Show, dimension and label building/structure elevations.**
- ☐ **Other. Describe: _____**

Revised: 12/30/15



VICINITY MAP

SIT-2019-0036

Mapping information is for reference only. Users are solely responsible to confirm data accuracy. Los Alamos County assumes no liability for errors associated with the data.

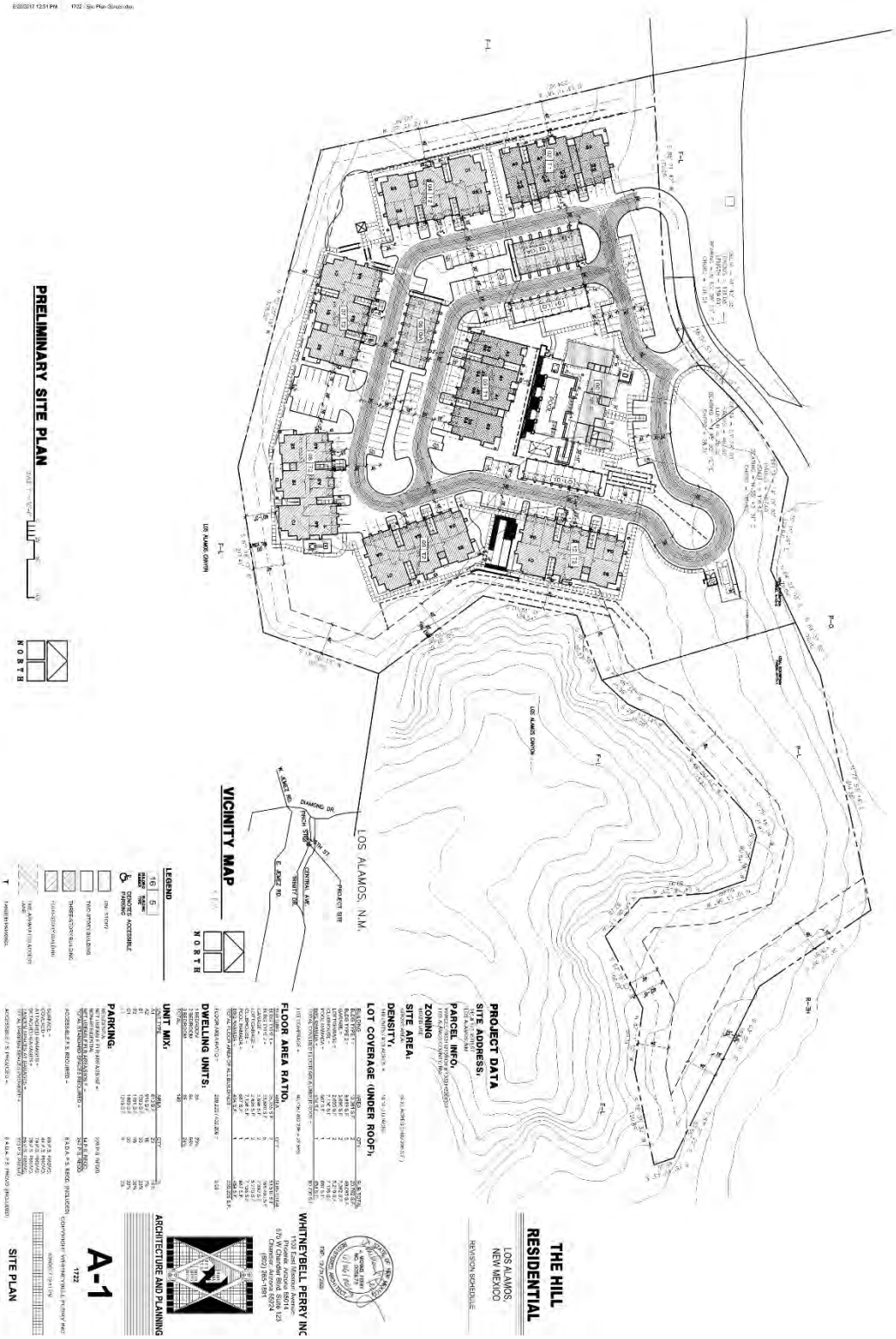
PROJECT SITE

PARCEL

N

1 inch = 300 feet

Exhibit B: Site Plan; Elevations; Landscape Plan; Civil Set Plans



PLANT PALETTE: (FOR THIS SHEET ONLY)

TREES:

PINUS NIGRA AUSTRIAN BLACK PINE	24" BOX MATCHING 8' HT, 5' SP, 2" CAL	
POPULUS TREMULOIDES ASPEN	5 GALLON 8' HT, 3' SP, 1" CAL	
ERANAUS VELUTINA ARIZONA ASH	24" BOX MATCHING 8' HT, 5' SP, 2" CAL	
ULMUS PARVIFOLIA LACEBARK ELM	36" BOX MATCHING 12' HT, 8' SP, 3½" CAL	
PINUS THUNBERGI JAPANESE BLACK PINE	24" BOX MATCHING 8' HT, 4½' SP, 2" CAL	
CRATAEGUS PHAENOPYRUM WASHINGTON HAWTHORNE	24" BOX 8' HT, 5' SP, 2" CAL	
PYRUS CALLERYANA 'BRADFORD' BRADFORD PEAR	5 GALLON 8' HT, 4' SP, 1" CAL	

SHRUBS / VINES:

COTONEASTER DAMMERI BEARBERRY COTONEASTER	1 GALLON FULL PLANT CAN
JUNIPERUS HORIZONTALIS 'WILTONII' BLUE CARPET JUNIPER	5 GALLON FULL PLANT CAN
PINUS MUGO 'MUGO' MUGO PINE	5 GALLON FULL PLANT CAN
JUNIPERUS SABINA BROADMOOR BROADMOOR JUNIPER	5 GALLON FULL PLANT CAN
MAHLENBERGIA RIGENS DEER GRASS	1 GALLON FULL PLANT CAN
PYRACANTHA GOODNESS 'LOU BOY' FIRETHORN HYBRID	1 GALLON FULL PLANT CAN
MAHONIA AQUIFOLIUM OREGON GRAPE	5 GALLON FULL PLANT CAN
RHODODENDRON 'LORD ROBERTS' HYBRID RHODODENDRON	5 GALLON FULL PLANT CAN
FORSYTHIA SUSPENSA FORSYTHIA	5 GALLON FULL PLANT CAN
PHOTINIA FRASERI FRASERS PHOTINIA	5 GALLON FULL PLANT CAN
RHUS TRILOBATA THREE LEAF SUMAC	5 GALLON FULL PLANT CAN
RIBES AUREUM GOLDEN CURRANT	5 GALLON FULL PLANT CAN

GROUNDCOVERS AND ACCENTS:

VERBENA RIGIDA SANDPAPER VERBENA	1 GALLON FULL PLANT CAN
MAHONIA REPENS CREEPING MAHONIA	1 GALLON FULL PLANT CAN

SODDED TURF

NATIVE PLANT REVEGETATION

NATIVE PLANTS:

QUERCUS GAMBELLI GAMBEL'S OAK	5 GALLON LOW WATER USE
JUNIPERUS SCOPULORUM ROCKY MOUNTAIN JUNIPER	5 GALLON LOW WATER USE
ARCTOSTAPHYLOS PATULA POINTLEAF MANZANITA	5 GALLON LOW/MEDIUM WATER USE
CAMPHORA PRUTICOSA SHRUBBY CINQUEFOIL	1 GALLON LOW WATER USE

PROJECT DATA

SITE ADDRESS:
141 & 151 15TH ST
LOS ALAMOS, NM

PARCEL INFO:
PARCEL 1(0301101 & 0301103)
LOS ALAMOS COUNTY, NM

ZONING
MIXED USE

SITE AREA:
GROSS AREA: 19.23 ACRES (837,998 S.F.)

DENSITY:
108 UNITS / 9.23 ACRES = 11.7 D.U./ACRE

LOT COVERAGE (UNDER ROOF):

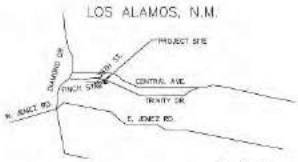
BUILDING	AREA	QTY	SUB-TOTAL
BLDG TYPE 1 =	10,381 S.F.	2	20,762 S.F.
BLDG TYPE 2 =	9,819 S.F.	5	49,095 S.F.
GARAGE =	3,696 S.F.	2	7,392 S.F.
LOFT GARAGE =	2,696 S.F.	2	5,392 S.F.
CLUBHOUSE =	7,136 S.F.	1	7,136 S.F.
POOL PAVILION =	897 S.F.	1	897 S.F.
MEG PAVILION =	494 S.F.	1	494 S.F.
TOTAL COVERED FLOOR AREA UNDER ROOF =			91,706 S.F.

LOT COVERAGE = 91,706 / 837,998 = 10.94%

FLOOR AREA RATIO:

BUILDING	AREA	QTY	SUB-TOTAL
BLDG TYPE 1 =	20,762 S.F.	2	41,524 S.F.
BLDG TYPE 2 =	32,949 S.F.	5	164,745 S.F.
GARAGE =	3,696 S.F.	2	7,392 S.F.
LOFT GARAGE =	2,696 S.F.	2	5,392 S.F.
CLUBHOUSE =	7,136 S.F.	1	7,136 S.F.
POOL PAVILION =	897 S.F.	1	897 S.F.
MEG PAVILION =	494 S.F.	1	494 S.F.
TOTAL FLOOR AREA FOR ALL BUILDINGS			226,579 S.F.

FLOOR AREA RATIO = 226,579 / 837,998 = 0.27



VICINITY MAP
N.T.S.

NORTH

DWELLING UNITS:

1 BEDROOM	30	27%
2 BEDROOM	54	50%
3 BEDROOM	24	22%
TOTAL	108	

UNIT MIX:

UNIT TYPE	AREA	QTY	%
A1	613 S.F.	20	18%
A2	818 S.F.	15	14%
B1	1183 S.F.	30	28%
B2	1191 S.F.	40	36%
C1	1460 S.F.	3	3%
L1	1243 S.F.	4	3%

PARKING:

RESIDENTIAL	
NET LEASABLE FLR AREA (NSF) =	328 P.S. REQD.
NON RESIDENTIAL	
NET LEASABLE FLR AREA (NSF) =	15 P.S. REQD.
TOTAL STANDARD SPACES REQUIRED =	342 P.S. REQD.
ACCESSIBLE P.S. REQUIRED =	8 A.D.A. P.S. REQD. (INCLUDED)
SURFACE =	80 P.S. PROVD.
CONVERED =	48 P.S. PROVD.
ATTACHED GARAGES =	79 P.S. PROVD.
DETACHED GARAGES =	39 P.S. PROVD.
TANDEM SPACES AT GARAGES =	59 P.S. PROVD.
TOTAL PARKING SPACES PROVIDED =	375 P.S. PROVD.
ACCESSIBLE P.S. PROVIDED =	8 A.D.A. P.S. PROVD. (INCLUDED)

LEGEND

16 | 5
BUILDING NUMBER | BUILDING TYPE

DENOTES ACCESSIBLE PARKING

ONE STORY

TWO STORY BUILDING

THREE STORY BUILDING

FOUR STORY BUILDING

Preliminary Landscape/Site Plan
Scale 1:40
40 20 0 40
GRAPHIC SCALE

NORTH

phillip r. ryan
landscape architect p.c.
landscape architecture & planning
4916 s. quiet way
phx, arizona 85296
(480) 884-9812 fax (480) 963-3814

THE HILL APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

PRELIMINARY

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

ARCHITECTURE AND PLANNING

L-1

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PRELIMINARY LANDSCAPE PLAN

BUILDING TYPE 1 - REAR ELEVATION
BUILDING TYPE 1 - LEFT ELEVATION
EXTERIOR FINISH SCHEDULE
THE HILL RESIDENTIAL
LUXURY APARTMENTS
LOS ALAMOS, NEW MEXICO
REVISION SCHEDULE
WHITNEYBELL PERRY INC
ARCHITECTURE AND PLANNING
A-3c
BUILDING TYPE 1 - EXTERIOR ELEVATIONS

Exhibit C: Map and List of Property Owners within 100 Yards (300 Feet); IDRC Checklist

List of Property Owners within 100 yards (300 feet)

Name	Address
COURTRIGHT INVESTMENTS LLC	3785 GOLD ST
SOENKE EDWARD H & GAIL M(EHS ENTERPRISES	3500 TRINITY DR
CAP INVESTORS LIMITED PARTNERSHIP	3707 GOLD ST
KURNATH NANCY P REVOC TRUST	715 36TH ST
C DE BACA ELMO REVOC TRUST	720 37TH ST
TRINITY GROUP HOLDINGS LLC	3491 TRINITY DR
INCORPORATED COUNTY OF LOS ALAMOS	3661 TRINITY DR
INCORPORATED COUNTY OF LOS ALAMOS	145 35TH ST
INCORPORATED COUNTY OF LOS ALAMOS	3689 TRINITY DR
FLYNN PAULINE	3705 TRINITY DR
EFREMOVA-LINDEN NATALIA A	3711 TRINITY DR
JADRICH RYAN & LINDQUIST BETH	3717 TRINITY DR
SCHAUMBERG JOSEPH B	3745 TRINITY DR
HALL GEORGIA A	3773 TRINITY DR
LOS ALAMOS COUNTY	120 35TH ST
LOS ALAMOS COUNTY	141 35TH ST
LOS ALAMOS NATIONAL LABORATORY	4200 W JEMEZ RD
PHC-LOS ALAMOS INC	3917 WEST RD

IDRC Checklist

IDRC REPORT

Case: SIT-2019-0036 The Hill

Date of Meeting: June 6, 2019

Member/ Alternate	Dept.	Attended	Recommended Conditions/Comments	Approved	Approved w conditions	Denied
R. Foster	Planning	x	See condition 5. See additional comment 8. 9, and 10.		x	
D. Martinez	Building	x				
A. Barela	Planning	x				
J. Rael	Traffic	x	See requirement for building permitting 2. See additional comment 11.		x	
C. Moseley	Utilities	x	See conditions 2, 3, and 4. See requirement for building permitting 1.		x	
A. Gurule	Env. Serv.	x	See additional comment 6 and 7.		x	
E. Martinez	PW		See condition 1. See additional comment 1, 2, 3, 4, and 5.			
M. Arellano	Building					
S. Rinaldi	Fire	x			x	
J. Alarid	Utilities					
W. Servey	Fire					
D. Erikson	PROS					
P. Guerreroritz	Utilities					
OTHERS ATTENDING:						
P. Andrus	CDD	x				
D. J. Lujan	Planning	x				
J. Ahlers	ED	x				
D.L. Lujan	PW	x	See condition 1. See requirement for building permitting 2.			
J. Romero	PW	x	See requirement for building permitting 1.			
B. Schilling	LANL	x				
B. Narushof		x				
S. Loftin	LANL	x				
C. Begay	NNSA	x				

MOTION: S. Rinaldi moved and R. Foster seconded that the case be forwarded to the P&Z Commission with a recommendation for Approval. Motion passed 5 to 0.

IDRC CONDITIONS & COMMENTS
June 6, 2019 – The Hill

CONDITIONS PRIOR TO PLANNING & ZONING COMMISION

1	Provide **Final Drainage Study** at time of building permitting incorporating the following comments: (a) Provide analysis of pipe sizing; (b) Volume, pond areas/volumes; and (c) Erosion control details throughout (d) Provide data analysis comparing the pre-development (greenfield development) and the redevelopment of the property as proposed. Note: Coordinate outfall volumes and erosion control details with DOE.
2	**Site Electrical Plan** submitted on its own sheet (already provided by Los Alamos County Utilities Department).
3	**Revised C-301** to depict a new 8" waterline loop. The plan to install a 12" water line that connects to the original line needs revision. The new line can be reduced to 8" PVC, but cannot connect to the original 6" cast iron pipe (old pipe integrity is questionable). It will need to be replaced with new 8" waterline as well. The entire water loop may be constructed with 8" PVC or ductile-iron, per the LAC DPU water line system construction standards.
4	Statement regarding ownership of the sewer utilities (turning over to the County?) and illustration of easement.
5	Provide the methodology and/or illustrations used to determine the building height waiver request. Shall be discussed with staff to determine adequate height without affecting water pressure and other impacts.

REQUIREMENTS PRIOR TO BUILDING PERMITTING

1	Provide a re-plat of the site (Tracts A-12/13) providing for vacation of existing LAC easements and/or establishment of new easements. Address any easement encroachments and lot consolidation if applicable—Can be deferred to subdivision/plat submittal. Note: Vacation of existing easements requires County Surveyor, County Engineer, Deputy Utilities Manager and Council approval.

2	Coordinate review of traffic analysis with NMDOT D5 Traffic Engineer and County Public Works staff, through the ongoing intersection improvements project. Access improvements to Trinity Dr. (NM502) required by NMDOT shall be made in conjunction with the site development construction and completed by or before certificate of occupancy unless otherwise approved by NMDOT.

ADDITIONAL COMMENTS

1	While total flow will be reduced by the development, it is noted that QD6 and QD4+QD4A show additional flow than historic, ensure adequate erosion control is utilized.
2	Provide a key to better navigate from Grading and Drainage plans to Storm Drain profile sheets. Stations were utilized on plan and profile, this might be helpful to reference on grading and drainage plan.
3	No SD Manholes were observed in the plan.
4	Roadway Profile - explanation of short (~50') 8% graded areas? Recommend this grade be lessened, if possible.
5	Street name access to the site: 35th Street will be realigned with 36th on the north side of Trinity and the street name of 36th Street will carry on both sides. Therefore, Finch and 35th street names will no longer apply. Revise plan references appropriately.
6	The placement of a self-contained compactor for wet waste (RJ 250 SC).
7	Dumpsters for cardboard and mixed recycle could be located near the compactor. The more residents can recycle, the less often the dumpster needs to be emptied.
8	It is highly recommended that a color illustration/elevation be provided identifying the requested waiver for horizontal fiber cement lap siding as it relates to the entire building façade.
9	Regarding the parking waiver, it is recommended that it is clarified where tandem spaces are located and be clear that they will not interfere with the fire lane.

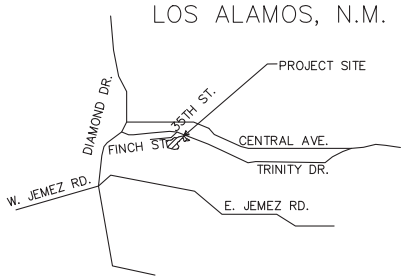
10	It is recommended that pedestrian and bicycle circulation is added to the vehicle circulation plan.
11	**Sheet 401**, there is extra pipe going into the road twice, which would cost more for construction and maintenance.

THE HILL RESIDENTIAL

LOS ALAMOS , NEW MEXICO

CONCEPT SKETCH

VICINTY MAP



PROJECT DIRECTORY

OWNER :

THE PETERS CORPORATION
124 E. MERCY STREET
SANTA FE, NM 87501
PH: (505) 412-0296
CONTACT: PETER KERWICK

CIVIL :

SANTA FE ENGINEERING
1599 S. SAINT FRANCIS DRIVE, SUITE B
SANTA FE, NM 87505
PH: (505) 982-2845
CONTACT: ERIC CORNELIUS

ARCHITECTURAL :

WHITNEYBELL PERRY INC
1102 EAST MISSOURI AVE.
PHOENIX, ARIZONA 85014-2784
PH: (602) 265-1891
FAX: (602) 230-8458
CONTACT: TERESA HILL

LANDSCAPE :

RYAN AND ASSOCIATES
4916 S. QUIET WAY
GILBERT, AZ 85298
PH: (480) 899-5813
CONTACT: PHIL RYAN

ELECTRICAL/SITE LIGHTING :

NP ENGINEERING, INC.
4115 NORTH 15TH AVE.
PHOENIX, ARIZONA 85015
PH: (602) 265-1559
FAX: (602) 265-1605
ATTN: RICHARD PANOPIO

SHEET INDEX

SH. #	SHEET NAME
G-001	COVER SHEET

ARCHITECTURAL

SH. #	SHEET NAME
A-1	SITE PLAN
A-2	BUILDING TYPE 1 - EXTERIOR ELEVATIONS
A-3	BUILDING TYPE 1 - EXTERIOR ELEVATIONS
A-4	BUILDING TYPE 2 - EXTERIOR ELEVATIONS
A-5	BUILDING TYPE 2 - EXTERIOR ELEVATIONS
A-6	LOFT BUILDING - EXTERIOR ELEVATIONS
A-7	CLUBHOUSE - EXTERIOR ELEVATIONS
A-8	GARAGE BUILDING - EXTERIOR ELEVATIONS
A-9	SITE SECTION

CIVIL

SH. #	SHEET NAME
C-100	CIVIL SITE PLAN
C-101	CERTIFIED TOPOGRAPHY
C-200	DEMOLITION PLAN
C-201 TO C-203	TYPICAL SECTIONS, NOTES AND DETAILS
C-204	GEOMETRICS PLAN
C-206	TRAFFIC CIRCULATION PLAN
C-301	MASTER UTILITY PLAN
C-302	FIRE APPARATUS ACCESS PLAN
C-400 TO C-404	GRADING AND DRAINAGE PLANS
C-500 TO C-502	ROADWAY AND DRIVEWAY PLAN AND PROFILES
C-600 TO C-601	SANITARY SEWER PLAN AND PROFILES
C-602 TO C-603	LIFT STATION NOTES AND DETAILS
C-604 TO C-613	STORM SEWER PLAN AND PROFILES
C-700 TO C-707	SITE CROSS SECTIONS
C-800	STORM WATER POLLUTION PREVENTION PLAN
C-801	TESCM PLAN
C-802	STORM WATER CONTROL DETAILS
C-803 TO C-804	TESCM DETAILS

LANDSCAPE

SH. #	SHEET NAME
L-C	LANDSCAPE COVER SHEET
L-1	PRELIMINARY LANDSCAPE PLAN
L-2	PRELIMINARY LANDSCAPE PLAN
L-3	PRELIMINARY LANDSCAPE PLAN
LSI-1	LANDSCAPE INVENTORY PLAN

ELECTRICAL/LIGHTING

SH. #	SHEET NAME
E1.0	PRELIMINARY SITE LIGHTING PLAN
E2.0	ELECTRICAL SITE LIGHTING CUTSHEETS

THE HILL RESIDENTIAL

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

ARCHITECTURE AND PLANNING

G-001

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COVER SHEET

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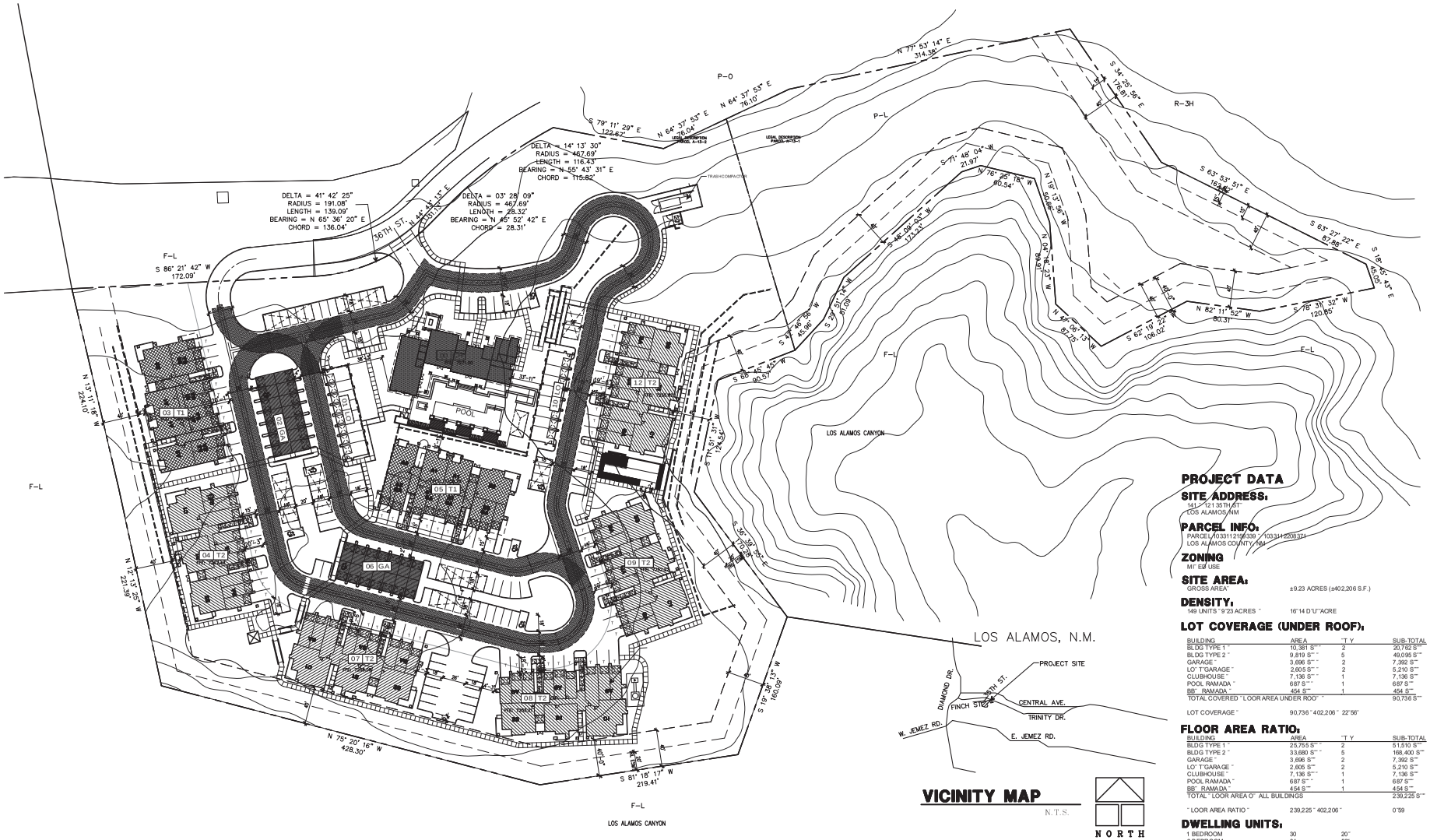

VICINITY MAP

N.T.S.

NORTH

PRELIMINARY SITE PLAN

SCALE: 1" = 50'-0" 0 25' 50' 100'

NORTH

LEGEND

16	5
BUILDING NUMBER	BUILDING TYPE

DENOTES ACCESSIBLE PARKING

ONE STORY

TWO-STORY BUILDING

THREE-STORY BUILDING

FOUR-STORY BUILDING

FIRE APPARATUS ACCESS LANE

T TANDEM PARKING

PROJECT DATA

SITE ADDRESS:

141 - 121 35TH ST
LOS ALAMOS, NM

PARCEL INFO:

PARCEL 103311215339 / 103311208371
LOS ALAMOS COUNTY, NM

ZONING

MIXED USE

SITE AREA:

GROSS AREA: ±9.23 ACRES (±402,206 S.F.)

DENSITY:

149 UNITS / 9.23 ACRES = 16.14 DU/ACRE

LOT COVERAGE (UNDER ROOF):

BUILDING	AREA	# Y	SUB-TOTAL
BLDG TYPE 1	10,381 SF	2	20,762 SF
BLDG TYPE 2	9,819 SF	5	49,095 SF
GARAGE	3,696 SF	2	7,392 SF
LOW TGARAGE	2,605 SF	2	5,210 SF
CLUBHOUSE	7,136 SF	1	7,136 SF
POOL RAMADA	687 SF	1	687 SF
BBQ RAMADA	454 SF	1	454 SF
TOTAL COVERED LOOR AREA UNDER ROOF			90,736 SF
LOT COVERAGE	90,736 / 402,206		22.56%

FLOOR AREA RATIO:

BUILDING	AREA	# Y	SUB-TOTAL
BLDG TYPE 1	25,755 SF	2	51,510 SF
BLDG TYPE 2	33,680 SF	5	168,400 SF
GARAGE	3,696 SF	2	7,392 SF
LOW TGARAGE	2,605 SF	2	5,210 SF
CLUBHOUSE	7,136 SF	1	7,136 SF
POOL RAMADA	687 SF	1	687 SF
BBQ RAMADA	454 SF	1	454 SF
TOTAL LOOR AREA OF ALL BUILDINGS			239,225 SF
LOOR AREA RATIO	239,225 / 402,206		0.59

DWELLING UNITS:

1 BEDROOM	30	20%
2 BEDROOM	84	56%
3 BEDROOM	35	24%
TOTAL	149	

UNIT MIX:

UNIT TYPE	AREA	# Y	%
A1	813 SF	20	14%
A2	918 SF	10	7%
B1	1083 SF	35	23%
B2	1191 SF	45	30%
C1	1400 SF	35	23%
L1	1243 SF	4	3%

PARKING:

RESIDENTIAL	
NET USEABLE LIVING AREA 750 SF	228 PARKING
NON-RESIDENTIAL	
NET USEABLE LIVING AREA 500 SF	14 PARKING
TOTAL STANDARD SPACES REQUIRED	242 PARKING
ACCESSIBLE PARKING REQUIRED	8 ADA PARKING (INCLUDED)
SURFACE	66 PARKING PROVIDED
COVERED	44 PARKING PROVIDED
ATTACHED GARAGES	79 PARKING PROVIDED
DETACHED GARAGES	28 PARKING PROVIDED
TANDEM SPACES AT GARAGES	56 PARKING PROVIDED
TOTAL PARKING SPACES PROVIDED	273 PARKING PROVIDED
ACCESSIBLE PARKING PROVIDED	8 ADA PARKING PROVIDED (INCLUDED)

THE HILL RESIDENTIAL

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

STATE OF NEW MEXICO
A. MICHAEL PERRY
NO. 005673
6/29/2017
REGISTERED ARCHITECT
EXP. 12/31/2020

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

ARCHITECTURE AND PLANNING

A-1

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SITE PLAN

BUILDING TYPE 1 - FRONT ELEVATION

1/8" = 1'-0"

BUILDING TYPE 1 - RIGHT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER - OLD COUNTRY FIELDSTONE CHARDONNAY
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

WHITNEYBELL PERRY INC
1102 EAST MISSOURI AVENUE
PHOENIX, ARIZONA 85014
602.265.1891

ARCHITECTURE AND PLANNING

A-2

1722

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BUILDING TYPE 1 - EXTERIOR ELEVATIONS

BUILDING TYPE 1 - FRONT ELEVATION
1/8" = 1'-0"

BUILDING TYPE 1 - RIGHT ELEVATION
1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

THE HILL RESIDENTIAL
LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

STATE OF NEW MEXICO
J. MICHAEL PERRY
NO. 005673
6/26/20
REGISTERED ARCHITECT
EXP. 12/31/2020

WHITNEYBELL PERRY INC
1102 EAST MISSOURI AVENUE
PHOENIX, ARIZONA 85014
602.265.1891

ARCHITECTURE AND PLANNING

A-2c

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BUILDING TYPE 1 - EXTERIOR ELEVATIONS

BUILDING TYPE 1 - REAR ELEVATION

1/8" = 1'-0"

BUILDING TYPE 1 - LEFT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER - OLD COUNTRY FIELDSTONE CHARDONNAY
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

WHITNEYBELL PERRY INC
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ARCHITECTURE AND PLANNING

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BUILDING TYPE 1 - EXTERIOR ELEVATIONS

BUILDING TYPE 1 - REAR ELEVATION

1/8" = 1'-0"

BUILDING TYPE 1 - LEFT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

STATE OF NEW MEXICO
J. MICHAEL PERRY
NO. 005673
REGISTERED ARCHITECT
6/26/20

EXP. 12/31/2020

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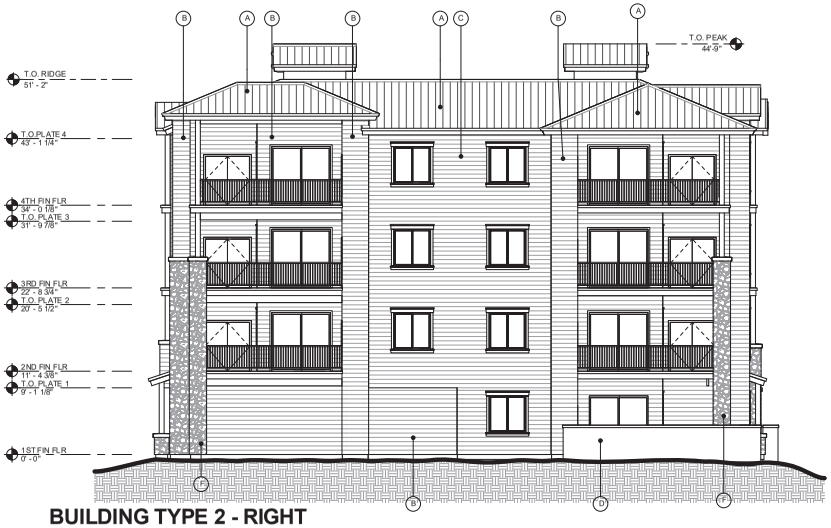
BUILDING TYPE 1 - EXTERIOR ELEVATIONS

BUILDING TYPE 2 - FRONT ELEVATION

1/8" = 1'-0"



BUILDING TYPE 2 - RIGHT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER - OLD COUNTRY FIELDSTONE CHARDONNAY
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

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BUILDING TYPE 2 - EXTERIOR ELEVATIONS

BUILDING TYPE 2 - FRONT ELEVATION

1/8" = 1'-0"

BUILDING TYPE 2 - RIGHT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

STATE OF NEW MEXICO
J. MICHAEL PERRY
NO. 005673
6/26/20
REGISTERED ARCHITECT

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WHITNEYBELL PERRY INC
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BUILDING TYPE 2 - EXTERIOR ELEVATIONS

BUILDING TYPE 2 - REAR ELEVATION

1/8" = 1'-0"

BUILDING TYPE 2 - LEFT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER - OLD COUNTRY FIELDSTONE CHARDONNAY
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
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THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

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BUILDING TYPE 2 - EXTERIOR ELEVATIONS

BUILDING TYPE 2 - REAR ELEVATION

1/8" = 1'-0"

BUILDING TYPE 2 - LEFT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

STATE OF NEW MEXICO
J. MICHAEL PERRY
NO. 005673
6/26/20
REGISTERED ARCHITECT

EXP. 12/31/2020

WHITNEYBELL PERRY INC
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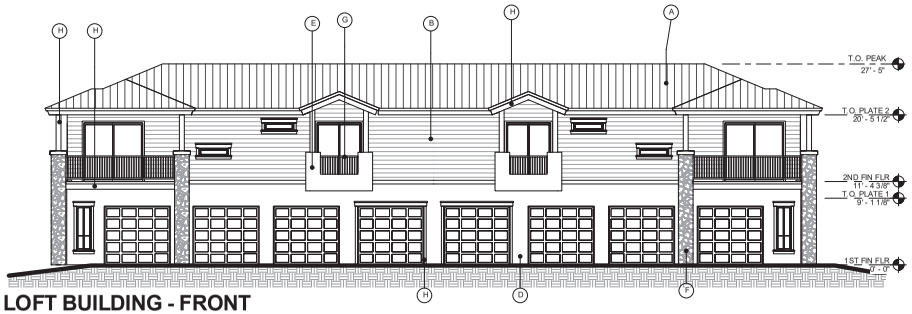
BUILDING TYPE 2 - EXTERIOR ELEVATIONS

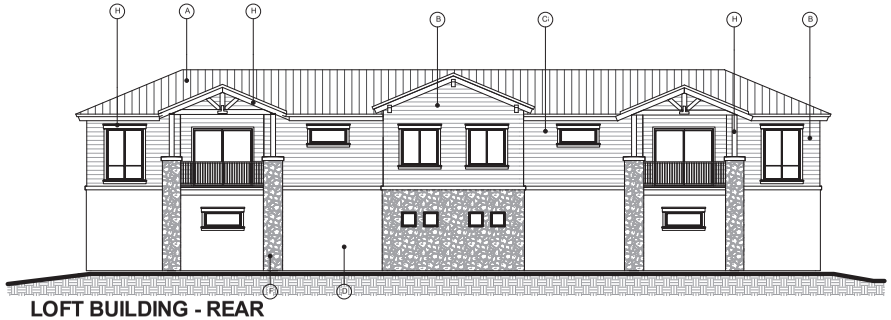


LOFT BUILDING - FRONT

1/8" = 1'-0"

LOFT BUILDING - SIDES

1/8" = 1'-0"



LOFT BUILDING - REAR

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
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THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

WHITNEYBELL PERRY INC

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LOFT BUILDING - EXTERIOR ELEVATIONS

CLUBHOUSE - FRONT

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
C	MAIN BODY 2 - FIBER CEMENT SIDING - COLOR 2
D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
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G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
H	WOOD TRIM - PAINTED COLOR 6
J	VINYL WINDOW FRAMES AND LOW-E INSULATED GLASS

CLUBHOUSE - REAR

1/8" = 1'-0"

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LOS ALAMOS,
NEW MEXICO

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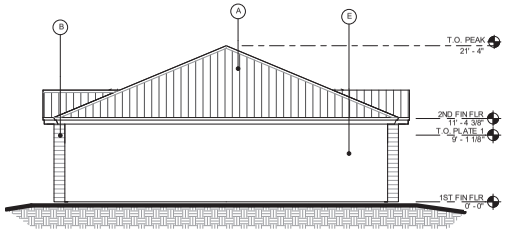
CLUBHOUSE - EXTERIOR ELEVATIONS

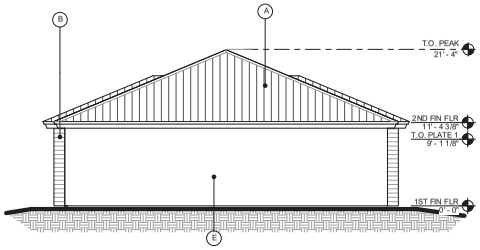
GARAGE - FRONT ELEVATION

1/8" = 1'-0"



GARAGE - LEFT ELEVATION

1/8" = 1'-0"



GARAGE - RIGHT ELEVATION

1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

A	ROOF - STANDING SEAM METAL ROOF
B	MAIN BODY 1 - FIBER CEMENT SIDING - COLOR 1
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D	1 COAT STUCCO - PAINTED COLOR 3
E	1 COAT STUCCO - PAINTED COLOR 4
F	STONE VENEER - OLD COUNTRY FIELDSTONE CHARDONNAY
G	METAL TRIM AND RAILINGS - PAINTED COLOR 5
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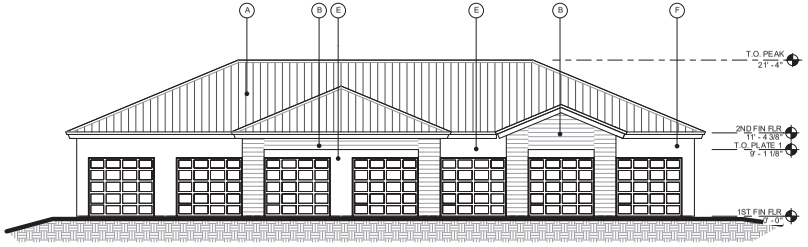

GARAGE - REAR ELEVATION

1/8" = 1'-0"

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LUXURY APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

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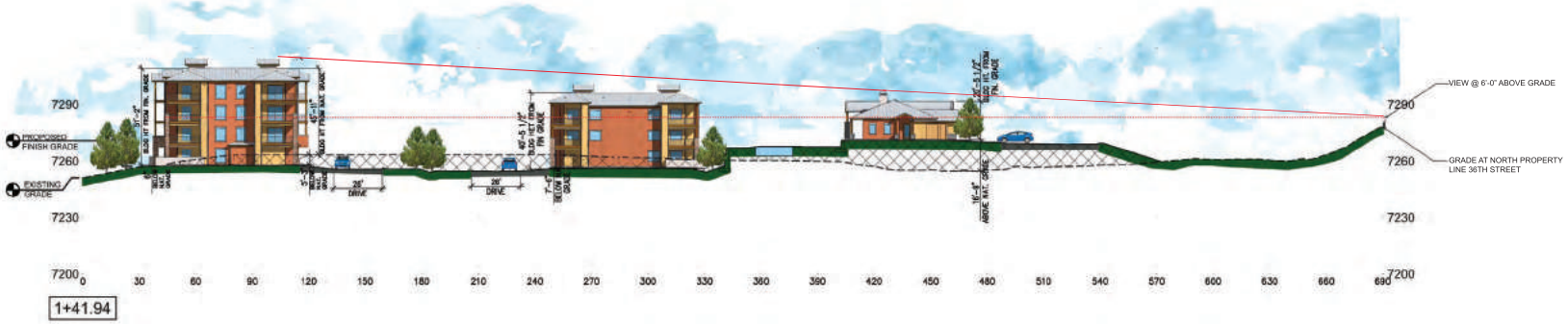
GARAGE BUILDING - EXTERIOR ELEVATIONS

SITE SECTION

SCALE: 1" = 30'-0"



SITE SECTION

SCALE: 1" = 30'-0"

THE HILL RESIDENTIAL

LUXURY APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

STATE OF NEW MEXICO
J. MICHAEL PERRY
NO. 006673
6/26/20
REGISTERED ARCHITECT

EXP. 12/31/2020

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

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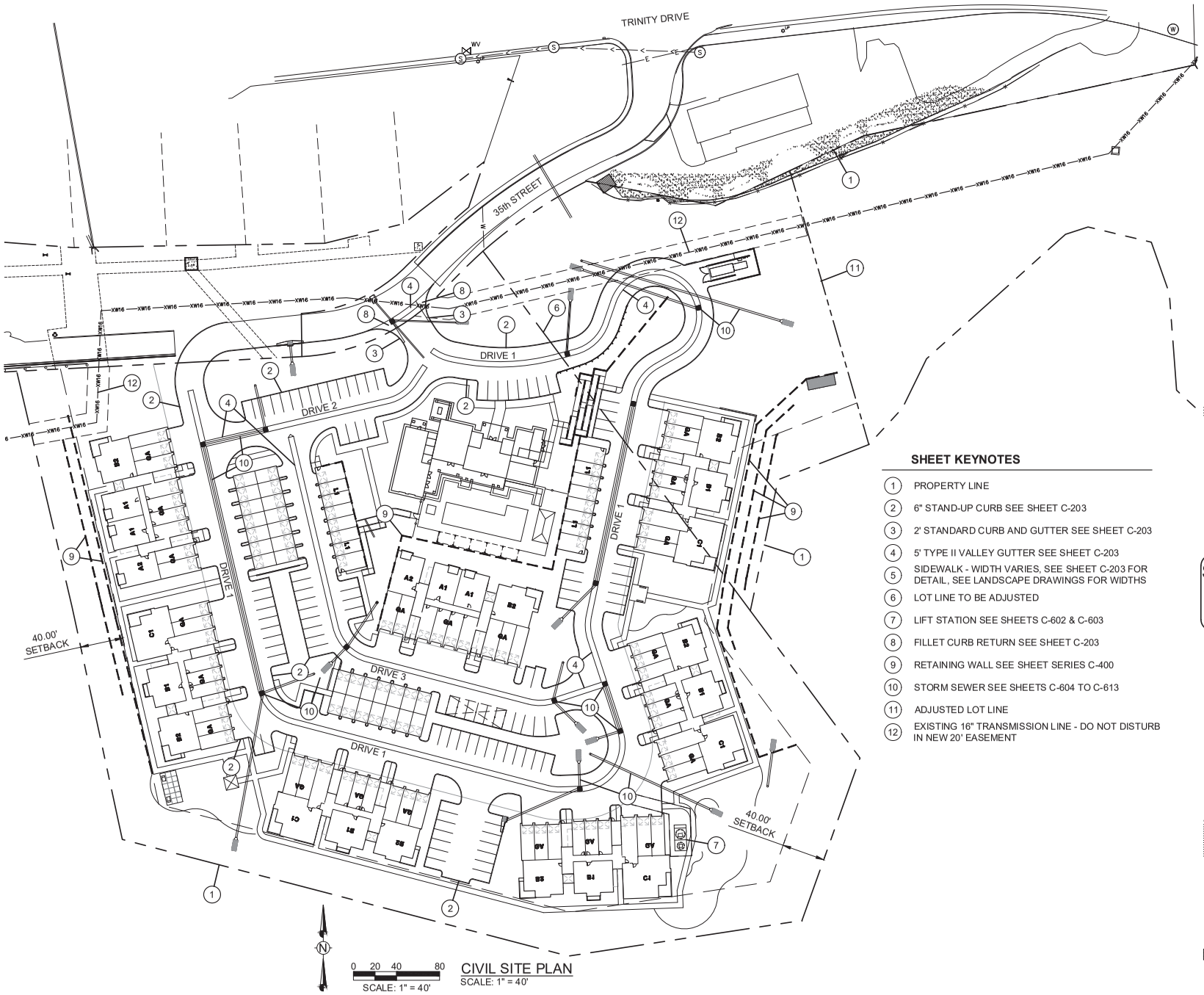
SITE SECTIONS



CIVIL SITE PLAN
SCALE: 1" = 40'

Contractor must verify all dimensions at project before proceeding with this work.
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LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

SHEET KEYNOTES

1. PROPERTY LINE
2. 6" STAND-UP CURB SEE SHEET C-203
3. 2' STANDARD CURB AND GUTTER SEE SHEET C-203
4. 5' TYPE II VALLEY GUTTER SEE SHEET C-203
5. SIDEWALK - WIDTH VARIES, SEE SHEET C-203 FOR DETAIL, SEE LANDSCAPE DRAWINGS FOR WIDTHS
6. LOT LINE TO BE ADJUSTED
7. LIFT STATION SEE SHEETS C-602 & C-603
8. FILLET CURB RETURN SEE SHEET C-203
9. RETAINING WALL SEE SHEET SERIES C-400
10. STORM SEWER SEE SHEETS C-604 TO C-613
11. ADJUSTED LOT LINE
12. EXISTING 16" TRANSMISSION LINE - DO NOT DISTURB IN NEW 20' EASEMENT

Santa Fe Engineering Consultants, LLC
1599 St. Francis Drive, Suite B
Santa Fe, N. M. 87505
(505) 982-2845 F:(505) 982-2641
http://www.SFENGR.com

WHITNEYBELL PERRY INC
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Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
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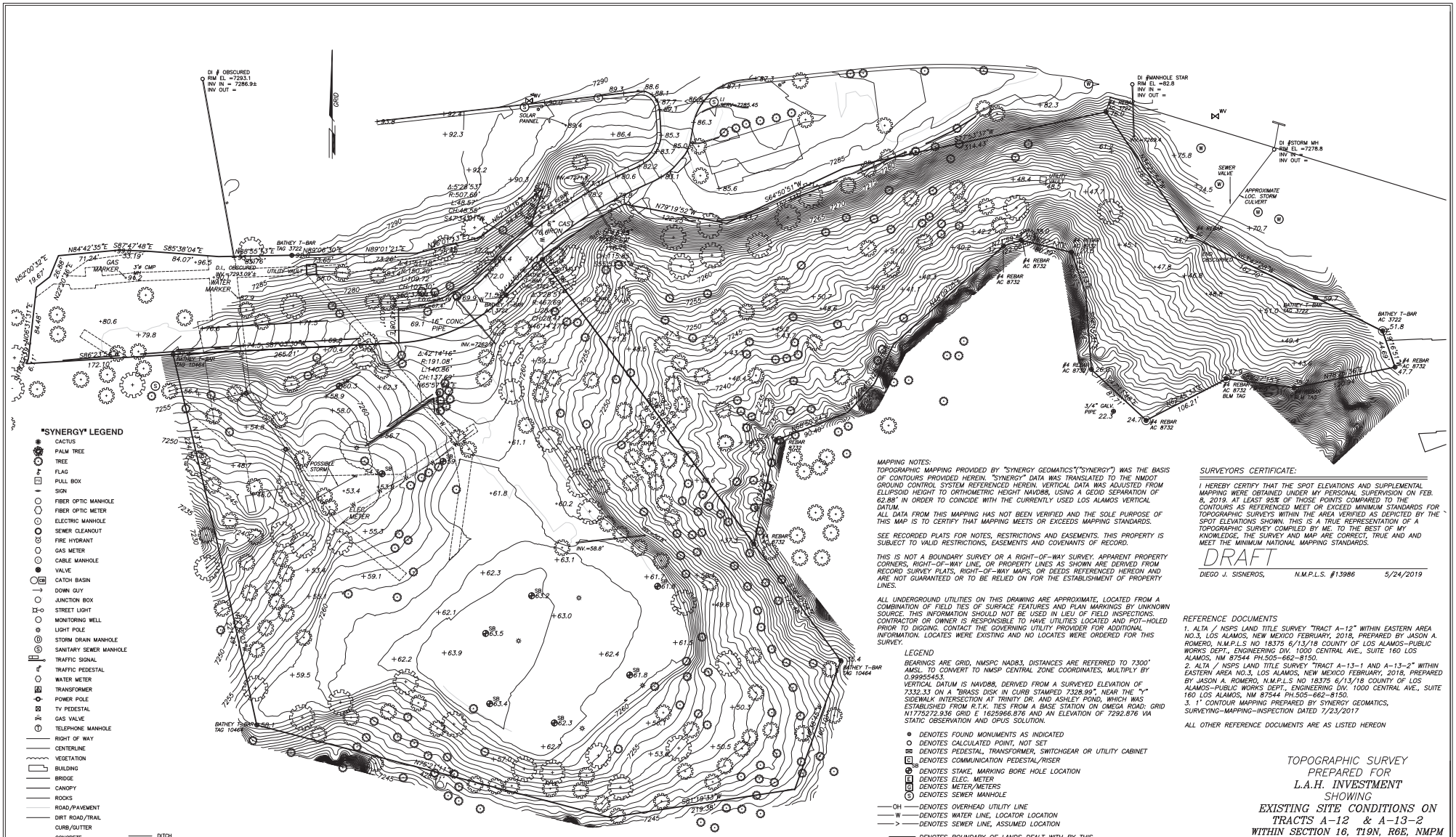
CIVIL SITE PLAN



"SYNERGY" LEGEND

- CACTUS
- PALM TREE
- TREE
- FLAG
- PULL BOX
- SIGN
- FIBER OPTIC MANHOLE
- FIBER OPTIC METER
- ELECTRIC MANHOLE
- SEWER CLEANOUT
- FIRE HYDRANT
- GAS METER
- CABLE MANHOLE
- VALVE
- CATCH BASIN
- DOWN GUY
- JUNCTION BOX
- STREET LIGHT
- MONITORING WELL
- LIGHT POLE
- STORM DRAIN MANHOLE
- SANITARY SEWER MANHOLE
- TRAFFIC SIGNAL
- TRAFFIC PEDESTAL
- WATER METER
- TRANSFORMER
- POWER POLE
- TV PEDESTAL
- GAS VALVE
- TELEPHONE MANHOLE
- RIGHT OF WAY
- CENTERLINE
- VEGETATION
- BUILDING
- BRIDGE
- CANOPY
- ROCKS
- ROAD/PAVEMENT
- DIRT ROAD/TRAIL
- CURB/GUTTER
- CONCRETE
- CONCRETE SIDEWALK
- RAILROAD
- FENCE
- WALL
- GUARD RAIL
- MAJOR CONTOUR
- MINOR CONTOUR
- FIELD/GRASS
- WASH/WATER
- DITCH
- OVERHEAD ELECTRIC LINE
- GAS LINE
- FIBER OPTIC LINE
- TELEPHONE LINE
- ELECTRIC POWER LINE
- SANITARY SEWER LINE
- WATER LINE
- EXISTING UNDERGROUND CABLE TV
- EXISTING STORM

MAPPING NOTES:
TOPOGRAPHIC MAPPING PROVIDED BY "SYNERGY GEOMATICS"("SYNERGY") WAS THE BASIS OF CONTOURS PROVIDED HEREIN. "SYNERGY" DATA WAS TRANSLATED TO THE NMDOT GROUND CONTROL SYSTEM REFERENCED HEREIN. VERTICAL DATA WAS ADJUSTED FROM ELLIPSOID HEIGHT TO ORTHOMETRIC HEIGHT NAVD88, USING A GEOID SEPARATION OF 62.88' IN ORDER TO COINCIDE WITH THE CURRENTLY USED LOS ALAMOS VERTICAL DATUM.
ALL DATA FROM THIS MAPPING HAS NOT BEEN VERIFIED AND THE SOLE PURPOSE OF THIS MAP IS TO CERTIFY THAT MAPPING MEETS OR EXCEEDS MAPPING STANDARDS.

SEE RECORDED PLATS FOR NOTES, RESTRICTIONS AND EASEMENTS. THIS PROPERTY IS SUBJECT TO VALID RESTRICTIONS, EASEMENTS AND COVENANTS OF RECORD.

THIS IS NOT A BOUNDARY SURVEY OR A RIGHT-OF-WAY SURVEY. APPARENT PROPERTY CORNERS, RIGHT-OF-WAY LINE, OR PROPERTY LINES AS SHOWN ARE DERIVED FROM RECORD SURVEY PLATS, RIGHT-OF-WAY MAPS, OR DEEDS REFERENCED HEREON AND ARE NOT GUARANTEED OR TO BE RELIED ON FOR THE ESTABLISHMENT OF PROPERTY LINES.

ALL UNDERGROUND UTILITIES ON THIS DRAWING ARE APPROXIMATE, LOCATED FROM A COMBINATION OF FIELD TIES OF SURFACE FEATURES AND PLAN MARKINGS BY UNKNOWN SOURCE. THIS INFORMATION SHOULD NOT BE USED IN LIEU OF FIELD INSPECTIONS. CONTRACTOR OR OWNER IS RESPONSIBLE TO HAVE UTILITIES LOCATED AND POT-HOLED PRIOR TO DIGGING. CONTACT THE GOVERNING UTILITY PROVIDER FOR ADDITIONAL INFORMATION. LOCATES WERE EXISTING AND NO LOCATES WERE ORDERED FOR THIS SURVEY.

LEGEND

BEARINGS ARE GRID, NMSPC NAD83, DISTANCES ARE REFERRED TO 7300' AMSL. TO CONVERT TO NMSP CENTRAL ZONE COORDINATES, MULTIPLY BY 0.9995453.
VERTICAL DATUM IS NAVD88, DERIVED FROM A SURVEYED ELEVATION OF 7332.33 ON A "BRASS DISK IN CURB STAMPED 7328.99", NEAR THE "Y" SIDEWALK INTERSECTION AT TRINITY DR. AND ASHLEY POND, WHICH WAS ESTABLISHED FROM R.T.K. TIES FROM A BASE STATION ON OMEGA ROAD: GRID N1775272.936 GRID E 1625966.876 AND AN ELEVATION OF 7292.876 VIA STATIC OBSERVATION AND OPUS SOLUTION.

- DENOTES FOUND MONUMENTS AS INDICATED
- DENOTES CALCULATED POINT, NOT SET
- DENOTES PEDESTAL, TRANSFORMER, SWITCHGEAR OR UTILITY CABINET
- DENOTES COMMUNICATION PEDESTAL/RISER
- DENOTES STAKE, MARKING BORE HOLE LOCATION
- DENOTES ELEC. METER
- DENOTES METER/METERS
- DENOTES SEWER MANHOLE
- OH — DENOTES OVERHEAD UTILITY LINE
- W — DENOTES WATER LINE, LOCATOR LOCATION
- > — DENOTES SEWER LINE, ASSUMED LOCATION
- DENOTES BOUNDARY OF LANDS DEALT WITH BY THIS PLAT. INFORMATION OUTSIDE THIS BOUNDARY IS BACKGROUND INFORMATION ONLY, NOT VERIFIED FOR ACCURACY AND IS NOT PART OF THIS PLAT.

FLOOD ZONE:

THIS PROPERTY LIES WITHIN OTHER AREAS ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN AS GRAPHICALLY DEPICTED FROM ELECTRONIC COUNTY GIS FILES, REFER TO F.I.R.M. PANEL 0045 BEARING MAP #35028C0045C HAVING AN EFFECTIVE DATE OF JULY 18, 2011

SURVEYORS CERTIFICATE:

I HEREBY CERTIFY THAT THE SPOT ELEVATIONS AND SUPPLEMENTAL MAPPING WERE OBTAINED UNDER MY PERSONAL SUPERVISION ON FEB. 8, 2019. AT LEAST 95% OF THOSE POINTS COMPARED TO THE CONTOURS AS REFERENCED MEET OR EXCEED MINIMUM STANDARDS FOR TOPOGRAPHIC SURVEYS WITHIN THE AREA VERIFIED AS DEPICTED BY THE SPOT ELEVATIONS SHOWN. THIS IS A TRUE REPRESENTATION OF A TOPOGRAPHIC SURVEY COMPILED BY ME. TO THE BEST OF MY KNOWLEDGE, THE SURVEY AND MAP ARE CORRECT, TRUE AND AND MEET THE MINIMUM NATIONAL MAPPING STANDARDS.

DRAFT

DIEGO J. SISNEROS, N.M.P.L.S. #13986 5/24/2019

REFERENCE DOCUMENTS

1. ALTA / NSPS LAND TITLE SURVEY "TRACT A-12" WITHIN EASTERN AREA NO.3, LOS ALAMOS, NEW MEXICO FEBRUARY, 2018, PREPARED BY JASON A. ROMERO, N.M.P.L.S NO 18375 6/13/18 COUNTY OF LOS ALAMOS-PUBLIC WORKS DEPT., ENGINEERING DIV. 1000 CENTRAL AVE., SUITE 160 LOS ALAMOS, NM 87544 PH.505-662-8150.
2. ALTA / NSPS LAND TITLE SURVEY "TRACT A-13-1 AND A-13-2" WITHIN EASTERN AREA NO.3, LOS ALAMOS, NEW MEXICO FEBRUARY, 2018, PREPARED BY JASON A. ROMERO, N.M.P.L.S NO 18375 6/13/18 COUNTY OF LOS ALAMOS-PUBLIC WORKS DEPT., ENGINEERING DIV. 1000 CENTRAL AVE., SUITE 160 LOS ALAMOS, NM 87544 PH.505-662-8150.
3. 1' CONTOUR MAPPING PREPARED BY SYNERGY GEOMATICS, SURVEYING-MAPPING-INSPECTION DATED 7/23/2017

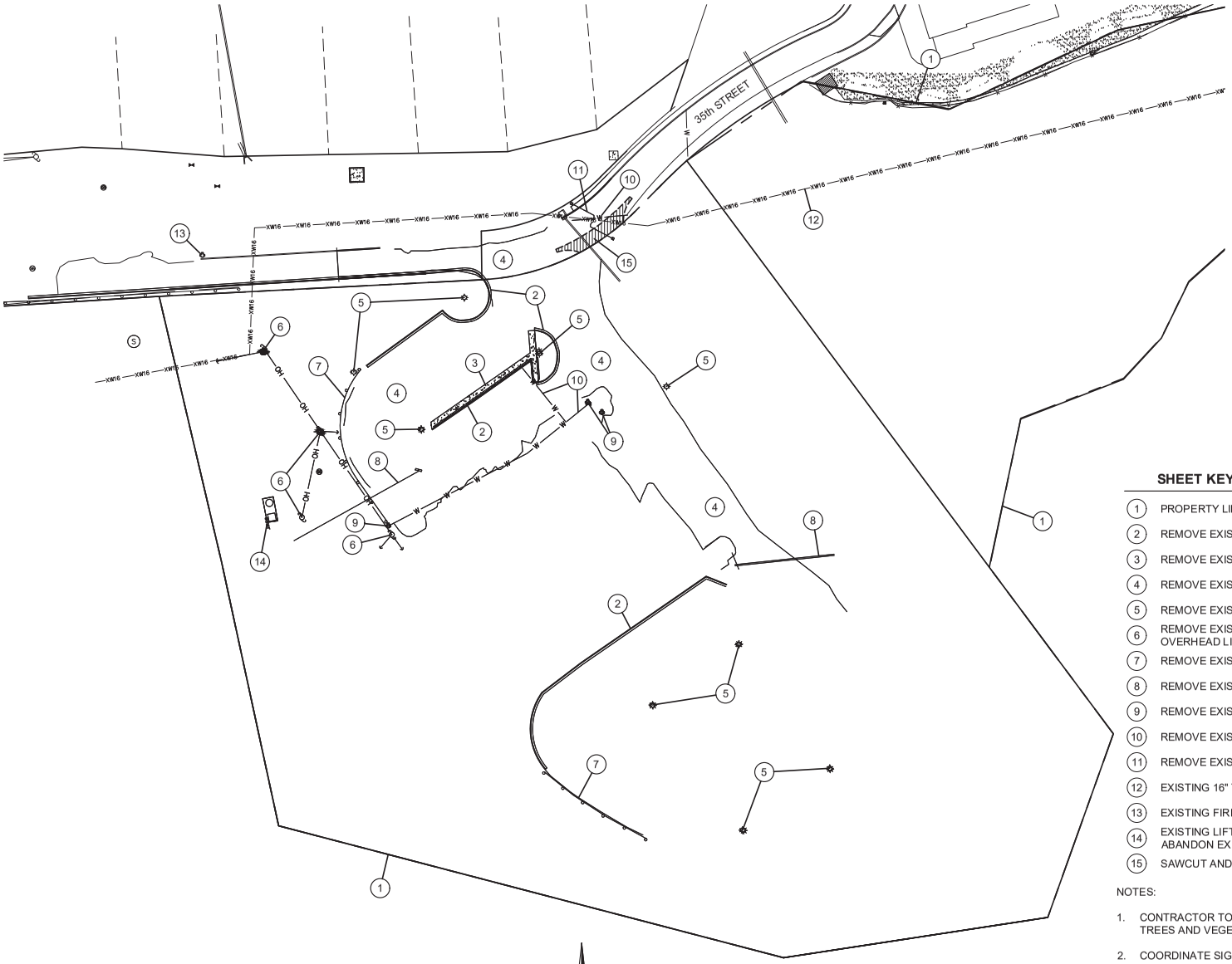
ALL OTHER REFERENCE DOCUMENTS ARE AS LISTED HEREON

TOPOGRAPHIC SURVEY
PREPARED FOR
L.A.H. INVESTMENT
SHOWING
EXISTING SITE CONDITIONS ON
TRACTS A-12 & A-13-2
WITHIN SECTION 16, T19N, R6E, NMPM
CITY & COUNTY OF LOS ALAMOS, N.M.

SCALE 1"=50' FEET
50' 0 50'

C-101

DAWSON SURVEYS INC.
PROFESSIONAL LAND SURVEYORS
2502 A CAMINO ENTRADA
SANTA FE, N.M., 87507
FILE#10326TOPO DATE:5/24/2019
PH:505-471-6660
EMAIL: DAWSONSURVEYS@GMAIL.COM



N

0 20 40 80
SCALE: 1" = 40'

DEMOLITION PLAN
SCALE: 1" = 40'

SHEET KEYNOTES

1. PROPERTY LINE
2. REMOVE EXISTING CURB AND GUTTER
3. REMOVE EXISTING SIDEWALK
4. REMOVE EXISTING ASPHALT
5. REMOVE EXISTING LUMINAIRE
6. REMOVE EXISTING POWER POLES, OVERHEAD LINES AND GUY WIRES
7. REMOVE EXISTING GUARD RAIL
8. REMOVE EXISTING STORM SEWER AND INLET
9. REMOVE EXISTING HYDRANTS
10. REMOVE EXISTING WATER LINE
11. REMOVE EXISTING GATE
12. EXISTING 16" TRANSMISSION LINE DO NOT DISTURB
13. EXISTING FIRE HYDRANT DO NOT DISTURB
14. EXISTING LIFT STATION TO BE REMOVED. CAP AND ABANDON EXISTING APPURTENANCES
15. SAWCUT AND REMOVE EXISTING ASPHALT

NOTES:

1. CONTRACTOR TO REMOVE ALL NON-SIGNIFICANT TREES AND VEGETATION WITHIN GRADING LIMITS.
2. COORDINATE SIGNIFICANT TREE PROTECTION MEASURES WITH LANDSCAPE ARCHITECT.
3. EXISTING UTILITIES ENCOUNTERED WITHIN THE PROJECT LIMITS ARE TO BE REMOVED OR CAPPED AND ABANDONED IN PLACE AT THE DIRECTION OF THE PROJECT MANAGER.

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DATE: 05-24-19

DEMOLITION PLAN

GENERAL CONSTRUCTION NOTES

1. All construction shall conform to the requirements of Los Alamos Standard Drawings and Specifications as applicable.
2. Utility construction shall conform to applicable sections of the APWA's "New Mexico Standard Specifications for Public Works Construction, 2006 edition including latest published amendments and Los Alamos County Public Works Specifications.
3. Infrastructure construction shall conform to applicable sections of the New Mexico Department of Transportation's "Standard Specifications for Highway and Bridge Construction, 2014 Edition (SSHBC).
4. The order of precedence shall be, listed in order of highest precedence, the project specifications, plans, Los Alamos County Standard Drawings and Public Works Specifications, SSHBC, and APWA.
5. In the case of conflicts between plans and specifications resolution shall be by using the more restrictive requirement as determined by the project engineer and approved by Los Alamos County.
6. The project plans shall be approved for construction by Los Alamos County prior to any construction activity and scheduling a pre-construction meeting.
7. The construction Project Engineer shall be a New Mexico licensed Professional Engineer in the appropriate category for the type of work represented by the project plans. The Project Engineer shall arrange for a pre-construction meeting prior to the start of construction or mobilization of equipment on-site and after receipt of the financial guaranty. At the pre-construction meeting, the Project Engineer shall submit a letter providing the name(s) of specific individuals who will be performing what type of inspections and respective telephone contact number(s); this includes preparation of the record drawings. The pre-construction meeting shall be scheduled a minimum of 10 calendar days in advance of the meeting date.
8. Attendance at the pre-construction meeting is mandatory.
9. The Contractor shall provide a list of contact personnel responsible for site construction including position, telephone numbers, and at least one emergency telephone number active on a 24 hour basis.
10. If an EPA Notice of Intent (NOI) is applicable, a copy of the mailed permit application shall be presented at the pre-construction meeting along with a written statement giving the mailing date.
11. The Contractor shall be responsible for maintaining the integrity of all underground utilities during the course of work regardless of any location shown on the plans or other field evidence, or lack thereof. Notification to New Mexico One Call at 1-800-321-2537 for utility locates a minimum of 48 hours in advance of any excavation is required. Maintenance of utility locates shall be continued throughout the project life.
12. The Owner shall be responsible for all changes in construction deemed necessary for any reason and shall have appropriate plans and/or specifications, including applicable design criteria, prepared by a New Mexico Professional Engineer and submitted to Los Alamos County for approval. Upon approval, said changes may be incorporated into the project.
13. Final Record Drawings, reflecting substantial changes to the original design drawings, shall be submitted by the Contractor's Surveyor for approval to the Engineer.Said plans shall be approved by applicable County Divisions prior to final acceptance of project work for maintenance responsibility and the beginning of the warranty period. Under no circumstances will partial acceptance and/or warranty commencement begin for any component of project scope be provided.
14. All Contractor work activity shall be confined to the construction limits of the project. There shall be no encroachment onto adjacent properties, either construction or marshaling yard(s) unless legal easements(s)/agreement(s) is/are executed and approved by the Engineering Supervisor.
15. All cut and fill slopes, including setback requirements, shall conform to the requirements of Chapter 33 of the Uniform Building Code, 1997 edition unless otherwise noted on the approved construction plans.
16. The Contractor is responsible for any damage caused by construction activities to public or private property, including utilities.
17. Material quality testing shall be completed by the Contractor, through a recognized testing laboratory. The laboratory shall be under the auspices of a New Mexico Professional Engineer.
18. Compaction testing of soil and similar materials, including optimum moisture-density relationships, shall be performed in accordance with the referenced specifications and/or plans. Unless specified in individual project plans, the frequency of compaction testing shall be one (1) test per 1.5 vertical feet of fill or backfill of similar material; within two (2) horizontal feet of structures; for each 500 linear feet of trench backfill or each days compactive effort, whichever results in the greatest quantity of tests; or for each 500 cubic yards of fill of similar material; or as directed by the Engineer.
19. Concrete sample set shall consist of a minimum of three (3) cylinders. One sample set shall be obtained for each 500 linear feet cast, 50 cast cubic yards, or one (1) set per calendar day, whichever is greatest; or as directed by the Engineer. Cylinders shall be tested at 7, 28, and 56 day intervals; the 56 day interval need not be tested if any previous test result exceeds the design value.
20. Traffic control devices, as per approved plan, shall be installed, maintained, and removed by the Contractor. Said devices shall conform to the latest published edition of the Manual of Uniform Traffic Control Devices and to written directions from the Los Alamos County Traffic Engineer.
21. Site erosion and/or sediment control, as per approved plan, shall be installed, maintained, and removed by the Contractor. The Contractor's attention is directed to the SSHBC's Section 603 for other requirements relating to dust abatement and similar issues.
22. Utility lines must be bored under all existing street Pcc street appurtenances. A minimum of 12" separation must be maintained between utility lines. Any curb, gutter, or other damage must be repaired before final inspection will be given.
23. ASTM, ASHTO, or independent laboratory certificates of material compliance are to be provided to the Project Engineer to bringing applicable material on site.
24. Aggregate base course material shall conform to the SSHBC's Section 304 using Gradation I.
25. Hot Mix Asphalt (HMA) proposed to be used for the project shall conform to a mix design prepared by a New Mexico Professional Engineer conforming to SSHBC's Section 423 using Aggregated Classification(s) called for in the project plans. The design shall be provided to the Project Engineer for approval a minimum of 14 calendar days prior to scheduling the initial paving operation.
26. Compaction testing of subgrade, aggregate base course, and each lift of HMA material shall be completed for every 100 linear feet of roadway length excepting for HMA material in which case provide one (1) test for every 100 linear feet of laydown machine pass; or as directed by the Engineer.
27. HMA material quality test samples (wet) shall be obtained and tested for every 500 tons or fraction thereof or one (1) sample per day.
28. Utility appurtenance such as telephone pedestals, electrical transformers, gas, and cable TV pedestals shall be placed outside the public right-of-way and within utility easements. The Owner is responsible for relocating mis-placed utility structures prior to requesting a pre-final inspection. Water meter boxes and fire hydrants may be placed between the sidewalk and curb. Water valve and meter boxes are not to be placed within maintenance areas of semi-improved (gravel or equal) roads.
29. Construction debris and/or excess material shall be stored in an on-site area and appropriately contained. Said debris shall not be a nuisance to the surrounding neighborhood. Disposal of debris shall be either within the Los Alamos County limits under separate grading permit or at a designated NMED approved disposal site. The Contractor shall provide written notice as to proposed debris disposal site location(s). All debris and/or excess material shall be removed from the site prior to scheduling a pre-final inspection with the Project Engineer.
30. Interim terrain and stormwater management inspections shall be arranged for at the following events:
    a. Completion of temporary erosion control best management installations and prior to any earthwork (clearing, grubbing, etc.)
    b. Final stormwater management features are constructed
    c. Final site restoration measures are completed
31. The Contractor shall make written request for a pre-final inspection of terrain management and infrastructure works a minimum of 14 calendar days in advance with the Project Engineer. Any deficiencies will be noted in a "punchlist" and provided to the Contractor for correction. When all punchlist items are completed the Contractor shall file a written statement to that effect and a final inspection will be held by the Project Engineer. Upon acceptance, an acceptance letter will be provided wherein all work will be accepted for maintenance by Los Alamos County and the commencement of the warranty period initiated.
32. All surveys to be performed under the supervision of a Professional Land Surveyor, licensed in the State of New Mexico.

ADDITIONAL CONSTRUCTION NOTES

1. The contractors surveyor shall coordinate with Dawson Surveys, Inc. The contractors surveyor shall verify proposed grades. Invert elevations, Flow lines, Alignments, Property lines, Right of Way, Setbacks, and topography Prior to construction. Any deviations shall be reported to the engineer.
2. The contractor shall maintain existing fencing, or build new fencing to insure that the site is secure at all times.
3. It is solely the contractors responsibility to meet OSHA requirements and to maintain a safe working condition.
4. Santa Fe Engineering Consultants, Inc. waives any and all responsibility and is not liable for problems which arise from failure to follow these plans, Specifications and the design intent they convey or for problems which arise from failure to obtain and/or follow SFEC guidance with respect to any errors, omissions, inconsistencies, ambiguities or conflicts.
5. Television inspection to be provided by private contractor, not Los Alamos County.
6. Pot holing, construction water, T.V. inspections, flushing and cleaning of sanitary sewer lines or storm sewers are incidental to the work and no separate payment will be made.
7. The existing utility locations shown on these plans have been compiled from multiple sources, including utility locates, and field surveys. It is the contractor's responsibility to verify and pothole any potential utility conflicts. The contractor is responsible for any damage caused by construction activities to public or private property, including utilities.

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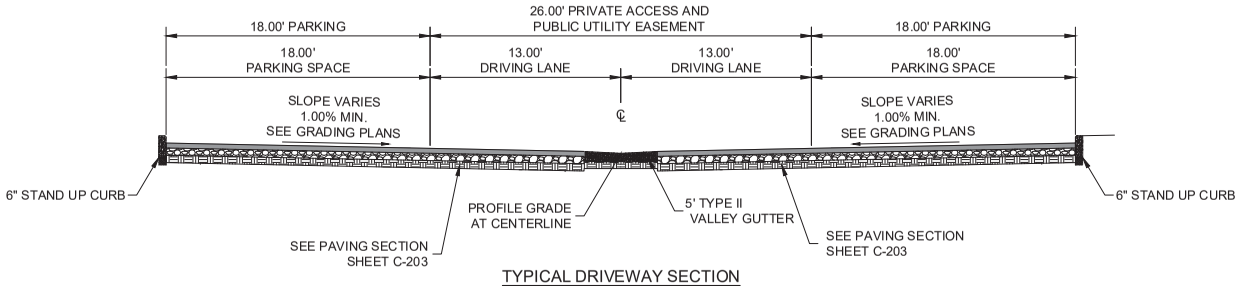
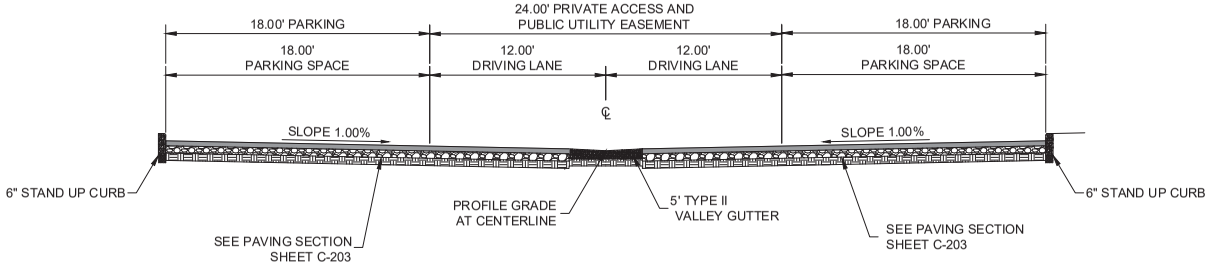
GENERAL NOTES



TYPICAL DRIVEWAY SECTION
26' ROADWAY



TYPICAL DRIVEWAY SECTION
24' ROADWAY

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TYPICAL SECTIONS

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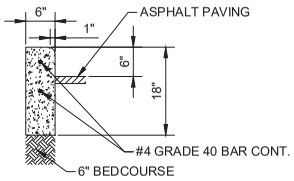
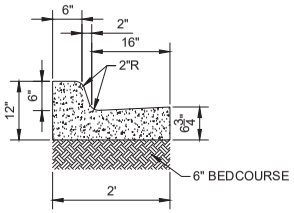
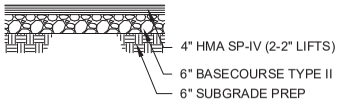


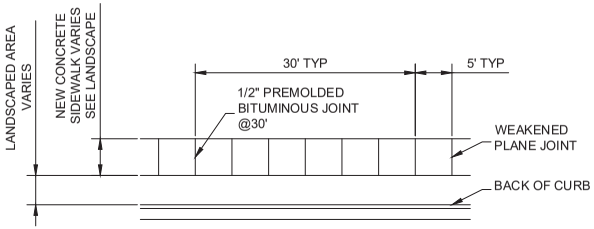
6" STAND-UP CURB



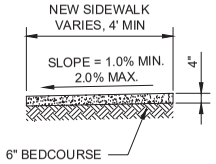
STANDARD 2' CURB AND GUTTER



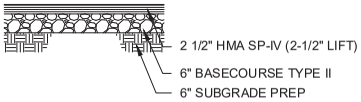
TYPICAL PAVING SECTION - TRAFFIC AREAS



TYPICAL SIDEWALK PLAN

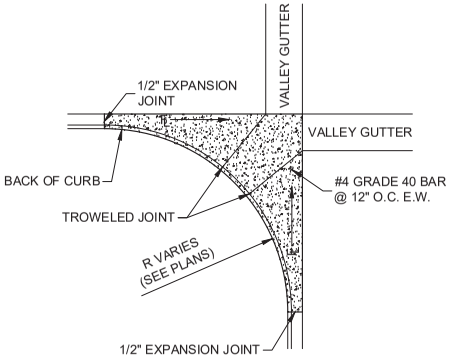


TYPICAL SIDEWALK SECTION



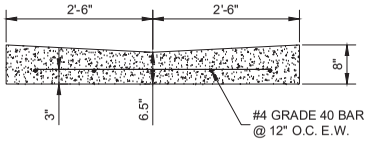
TYPICAL PAVING SECTION - PARKING AREAS

NOTE: PAVEMENT DESIGN IS BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. SEE REPORT TITLED "GEOTECHNICAL ENGINEERING REPORT, THE HILL APARTMENTS, TRINITY DRIVE AND 35TH STREET, LOS ALAMOS, NM, TERRACON PROJECT NO. 66185216", DATED APRIL 12, 2019.



NOTES:
1. POUR FILLETS MONOLITHICALLY
2. PROVIDE A REINFORCING CONTINUATION BETWEEN FILLETS AND VALLEY GUTTERS WITH A 30" REBAR LAP BETWEEN FILLETS AND VALLEY GUTTERS BEING CAST WITHIN 30 CALENDAR DAYS.

FILLET CURB RETURN



5' - TYPE II VALLEY GUTTER

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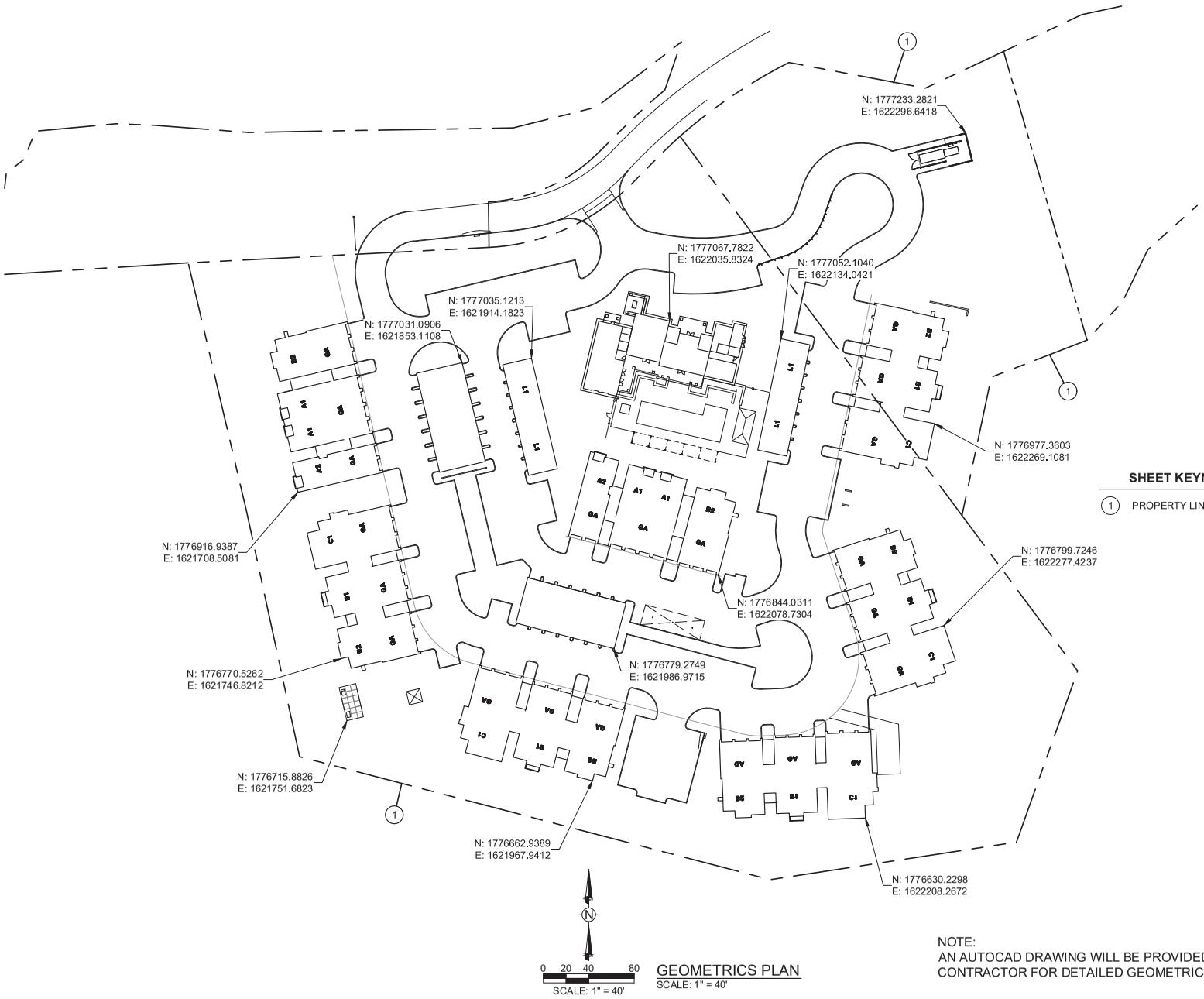
TYPICAL DETAILS



GEOMETRICS PLAN
SCALE: 1" = 40'

SHEET KEYNOTES

1 PROPERTY LINE

NOTE:
AN AUTOCAD DRAWING WILL BE PROVIDED TO THE CONTRACTOR FOR DETAILED GEOMETRICS AND GRADING.

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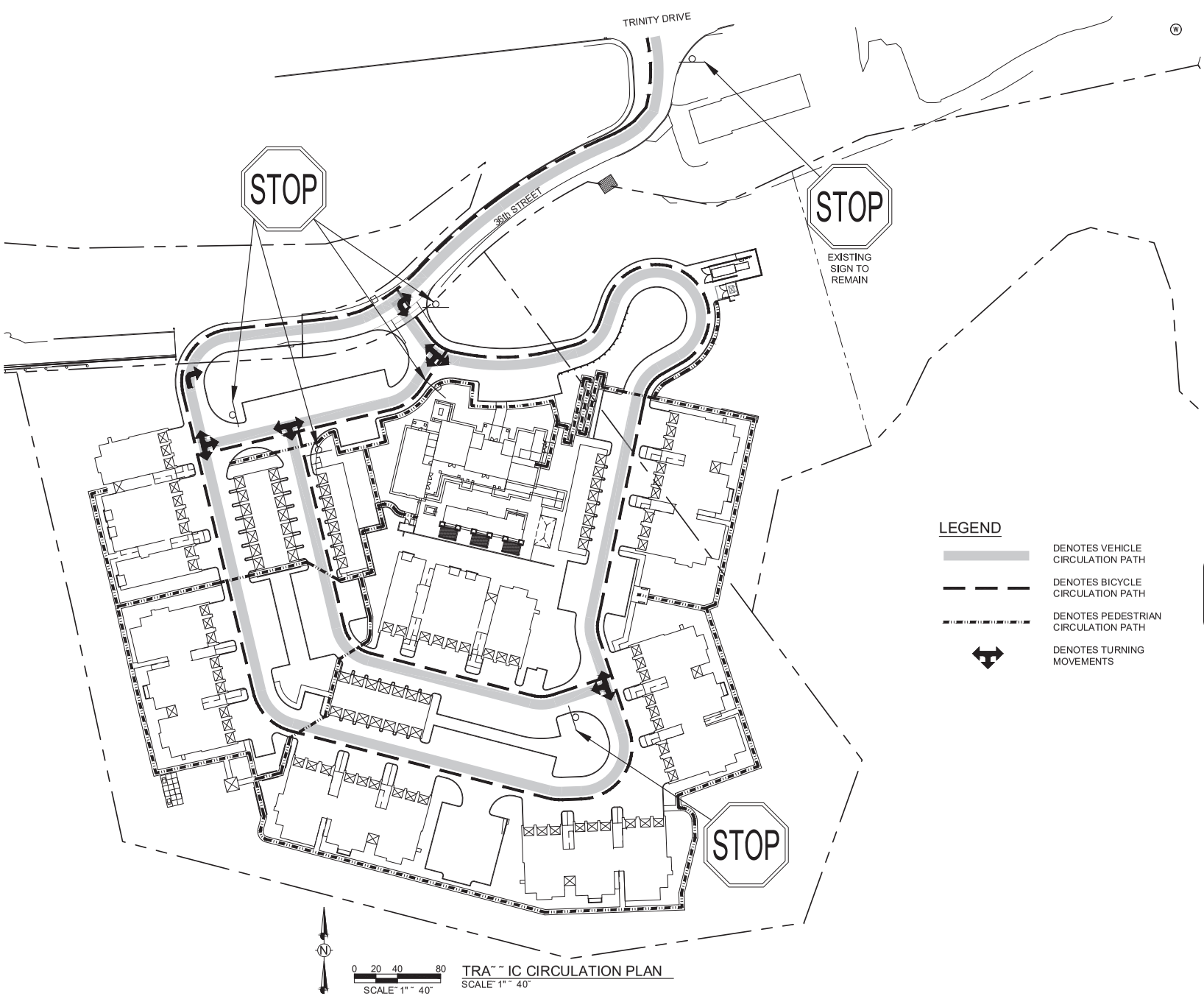
GEOMETRICS PLAN



TRA IC CIRCULATION PLAN
SCALE 1" 40

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LEGEND

- DENOTES VEHICLE CIRCULATION PATH
- DENOTES BICYCLE CIRCULATION PATH
- DENOTES PEDESTRIAN CIRCULATION PATH
- DENOTES TURNING MOVEMENTS

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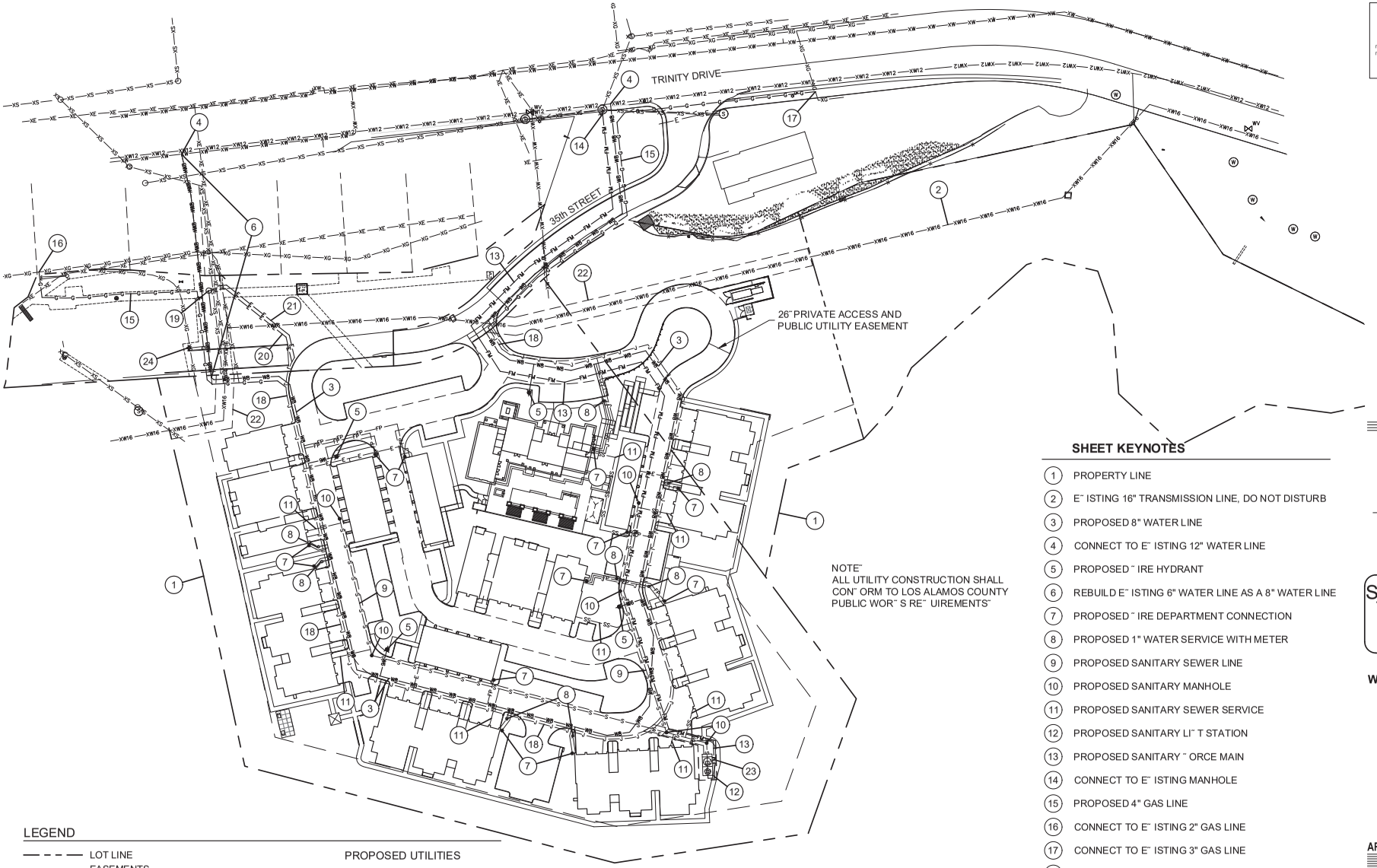
TRA IC CIRCULATION PLAN



NOTE˜
ALL UTILITY CONSTRUCTION SHALL
CON˜ ORM TO LOS ALAMOS COUNTY
PUBLIC WOR˜ S RE˜ UIREMENTS˜

LEGEND

- LOT LINE
- EASEMENTS

E˜ ISTING UTILITIES

- E˜ ISTING SANITARY SEWER LINE
- E˜ ISTING OVERHEAD ELECTRIC LINE
- ASSUMED E˜ ISTING WATER LINE
- ASSUMED E˜ ISTING GAS LINE
- E˜ ISTING POWER POLE
- E˜ ISTING WATER VALVE
- E˜ ISTING MANHOLE

PROPOSED UTILITIES

- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED SANITARY SEWER SERVICE˜
- PROPOSED ˜OINT UTILITY TRENCH
- PROPOSED TELEPHONE SERVICE
- PROPOSED ELECTRIC LINE
- PROPOSED 4" GAS LINE
- PROPOSED ˜ IRE PROTECTION LINE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ˜ IRE HYDRANT
- PROPOSED LUMINAIRE

0 25 50 100
SCALE˜ 1" ˜ 50˜

MASTER UTILITY PLAN

SCALE˜ 1" ˜ 50˜

SHEET KEYNOTES

1. PROPERTY LINE
2. E˜ ISTING 16" TRANSMISSION LINE, DO NOT DISTURB
3. PROPOSED 8" WATER LINE
4. CONNECT TO E˜ ISTING 12" WATER LINE
5. PROPOSED ˜ IRE HYDRANT
6. REBUILD E˜ ISTING 6" WATER LINE AS A 8" WATER LINE
7. PROPOSED ˜ IRE DEPARTMENT CONNECTION
8. PROPOSED 1" WATER SERVICE WITH METER
9. PROPOSED SANITARY SEWER LINE
10. PROPOSED SANITARY MANHOLE
11. PROPOSED SANITARY SEWER SERVICE
12. PROPOSED SANITARY LI˜ T STATION
13. PROPOSED SANITARY ˜ ORCE MAIN
14. CONNECT TO E˜ ISTING MANHOLE
15. PROPOSED 4" GAS LINE
16. CONNECT TO E˜ ISTING 2" GAS LINE
17. CONNECT TO E˜ ISTING 3" GAS LINE
18. PROPOSED ˜ OINT TRENCH
19. PROPOSED 3-PHASE POLE WITH DEADEND AND GUY˜ANCHOR AND 3-PHASE PRIMARY RISER
20. PROPOSED 6" PVC SP CONDUIT
21. PROPOSED 4" PVC SP CONDUIT
22. NEW 20˜ WATER EASEMENT
23. NEW ACCESS AND UTILITY EASEMENT
24. RECONNECT E˜ ISTING ˜ IRE HYDRANT TO NEW 8" WATER LINE

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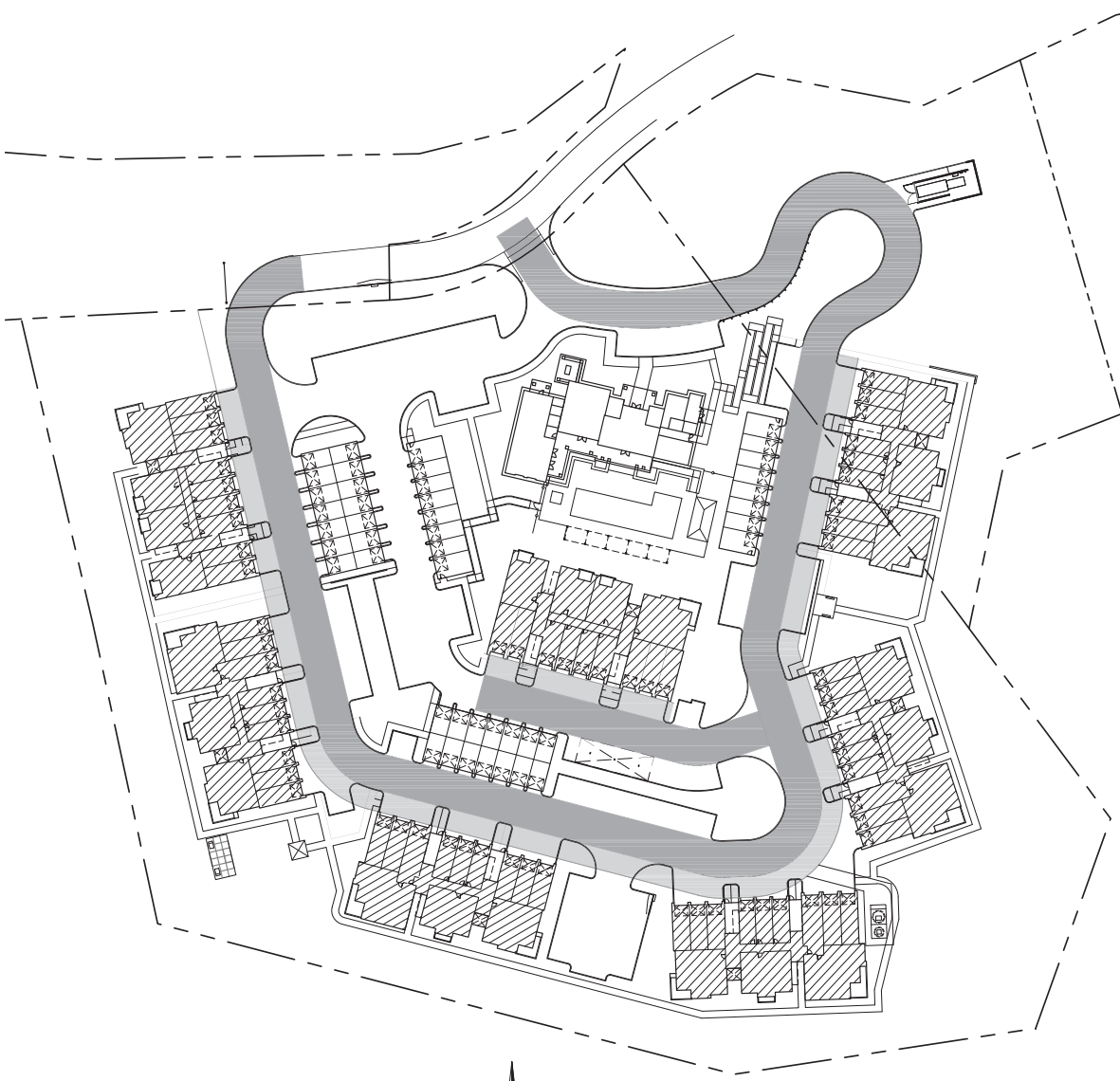
MASTER UTILITY PLAN



0 20 40 80
SCALE: 1" = 40'

FIRE APPARATUS ACCESS PLAN
SCALE: 1" = 40'

NOTE:

THIS PLAN SHOWS PROXIMITY OF FIRE APPARATUS LANES TO BUILDINGS AND LOCATIONS OF FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS AS COORDINATED WITH THE CITY OF SANTA FE FIRE DEPARTMENT AND THE CITY OF SANTA FE WATER DIVISION. SEE PLUMBING PLANS AND FIRE PROTECTION PLANS FOR FIRE SERVICES AND SPRINKLER SYSTEM DETAILS.

LEGEND:

- INDICATES 26 FT. WIDE FIRE APPARATUS ACCESS ROAD (D105.2)
- INDICATES BUILDING GREATER THAN 30 FT. IN HEIGHT (D105.1)
- INDICATES 15 FT. MIN. AND 30 FT. MAX. PROXIMITY TO AT LEAST ONE SIDE OF THE BUILDING (D105.3)

FIRE APPARATUS ACCESS NOTES:

2009 INTERNATIONAL FIRE CODE

D103.6 FIRE LANE SIGNS

WHERE REQUIRED BY THE FIRE CODE OFFICIAL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED WITH PERMANENT NO PARKING "FIRE LANE SIGNS" COMPLYING WITH FIGURE D103.6. SIGNS SHALL HAVE A MINIMUM DIMENSION OF 12 INCHES (305 MM) WIDE BY 18 INCHES (457 MM) HIGH AND HAVE RED LETTERS ON A WHITE REFLECTIVE BACKGROUND. SIGNS SHALL BE POSTED ON ONE OR BOTH SIDES OF THE FIRE APPARATUS ROAD AS REQUIRED BY SECTION D103.6.1 OR D103.6.2.

D103.6.1 ROADS 20 TO 26 IN WIDTH

FIRE APPARATUS ACCESS ROAD 20 TO 26 FEET WIDE (6096 TO 7925 MM) SHALL BE POSTED ON BOTH SIDES AS A FIRE LANE.

SECTION D105
AERIAL FIRE APPARATUS ACCESS ROADS

D105.1 WHERE REQUIRED. BUILDINGS OR PORTIONS OF BUILDINGS OR FACILITIES EXCEEDING 30 FEET (9144 MM) IN HEIGHT ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS SHALL BE PROVIDED WITH APPROVED FIRE APPARATUS ACCESS ROADS CAPABLE OF ACCOMMODATING FIRE DEPARTMENT AERIAL APPARATUS. OVERHEAD UTILITY AND POWER LINES SHALL NOT BE LOCATED WITHIN THE AERIAL FIRE APPARATUS ACCESS ROADWAY.

D105.2 WIDTH. AERIAL FIRE APPARATUS ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 26 FEET (7925 MM), EXCLUSIVE OF SHOULDERS, IN THE IMMEDIATE VICINITY OF ANY BUILDING OR PORTION OF BUILDING MORE THAN 30 FEET (9144 MM) IN HEIGHT.

D105.3 PROXIMITY TO BUILDING. AT LEAST ONE OF THE REQUIRED ACCESS ROUTES MEETING THIS CONDITION SHALL BE LOCATED WITHIN A MINIMUM OF 15 FEET (4572 MM) AND A MAXIMUM OF 30 FEET (9144 MM) FROM THE BUILDING, AND SHALL BE POSITIONED PARALLEL TO ONE ENTIRE SIDE OF THE BUILDING.

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FIRE APPARATUS ACCESS PLAN

OVERALL GRADING AND DRAINAGE PLAN
SCALE: 1" = 40' CONTOUR INTERVAL = 5'

GRADING NOTES

1. THE LIMITS OF CONSTRUCTION AND LOCATIONS OF THE CONTRACTORS STAGING AREAS SHALL BE IDENTIFIED BY THE CONTRACTOR AND APPROVED BY THE OWNER. THE LIMITS OF CONSTRUCTION SHALL BE CLEARLY DELINEATED AND SHALL BE THE MINIMUM REQUIRED TO MAINTAIN ALL WORKERS IN A SAFE CONDITION, TO PROVIDE ACCESS, AND TO MEET O.S.H.A. REGULATIONS.
2. CONTRACTOR IS REQUIRED TO PROVIDE DUST AND EROSION CONTROL PROTECTION.
3. GRADING SETBACKS TO EXTERIOR PROPERTY LINES ARE AS FOLLOWS:
   TOP OF VERTICAL SLOPE = ONE FIFTH THE VERTICAL HEIGHT OF CUT WITH A MINIMUM OF 2 FEET AND A MAXIMUM OF 15 FEET.
   TOE OF FILL SLOPE = ONE HALF THE HEIGHT OF THE SLOPE WITH A MINIMUM OF 2 FEET AND A MAXIMUM OF 15 FEET.
4. THE SURVEYOR SHALL VERIFY SETBACKS, TIE IN ELEVATIONS, AND TOPOGRAPHY WHEN STAKING PROJECT.
5. UNSUITABLE MATERIAL FROM SITE GRADING AND REMOVAL OPERATIONS, SHALL BE DISPOSED OF AT AN APPROVED LANDFILL.
6. ALL DISTURBED AREAS SHALL BE REVEGETATED AND COORDINATED WITH THE LANDSCAPING PLAN.
7. ALL FILL MATERIAL SHALL MEET THE REQUIREMENTS OF THE N.M.D.O.T. OR SITE SPECIFIC GEOTECHNICAL SPECIFICATIONS. THE FILL SHALL BE COMPACTED AS PER N.M.D.O.T. SPECIFICATIONS.
8. SEE REPORT TITLED "GEOTECHNICAL ENGINEERING REPORT, THE HILL APARTMENTS, TRINITY DRIVE AND 35TH STREET, LOS ALAMOS, NM, TERRACON PROJECT NO. 66185216", DATED APRIL 12, 2019.

LOS ALAMOS COUNTY REQUIREMENTS

LOS ALAMOS COUNTY REGULATIONS REQUIRE THAT PEAK DISCHARGE AFTER DEVELOPMENT MUST NOT EXCEED PEAK DISCHARGE BEFORE DEVELOPMENT. EXCESS RUNOFF FROM NEW IMPERVIOUS AREAS (ROOFS, SIDEWALKS, PATIOS, ETC.) WILL BE MITIGATED BY TEMPORARY DETENTION IN LANDSCAPED PONDING AREAS AND SWALES AS DETAILED IN THE "PRELIMINARY DRAINAGE REPORT, SOILS, DRAINAGE, AND GRADING FOR THE HILL RESIDENTIAL SITE APPLICATION SUBMITTAL, LOS ALAMOS, NM, PREPARED BY SANTA FE ENGINEERING CONSULTANTS, DATED MAY 2019".

PRE DEVELOPED PEAK DISCHARGE = 54.90 CFS
POST DEVELOPED PEAK DISCHARGE = 39.06 CFS

EARTHWORK NOTES:

1. ALL WORK SHALL CONFORM TO THE RECOMMENDATIONS IN THE REPORT ENTITLED "GEOTECHNICAL ENGINEERING REPORT, THE HILL APARTMENTS, TRINITY DRIVE AND 35TH STREET, LOS ALAMOS, NM, TERRACON PROJECT NO. 66185216", DATED APRIL 12, 2019.
2. UNADJUSTED EARTHWORK VOLUMES (NOT INCLUDING SUB EXCAVATION IF REQUIRED):
   2.1. CUT = 27,000 C.Y.
   2.2. FILL = 60,000 C.Y.

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OVERALL GRADING AND DRAINAGE PLAN

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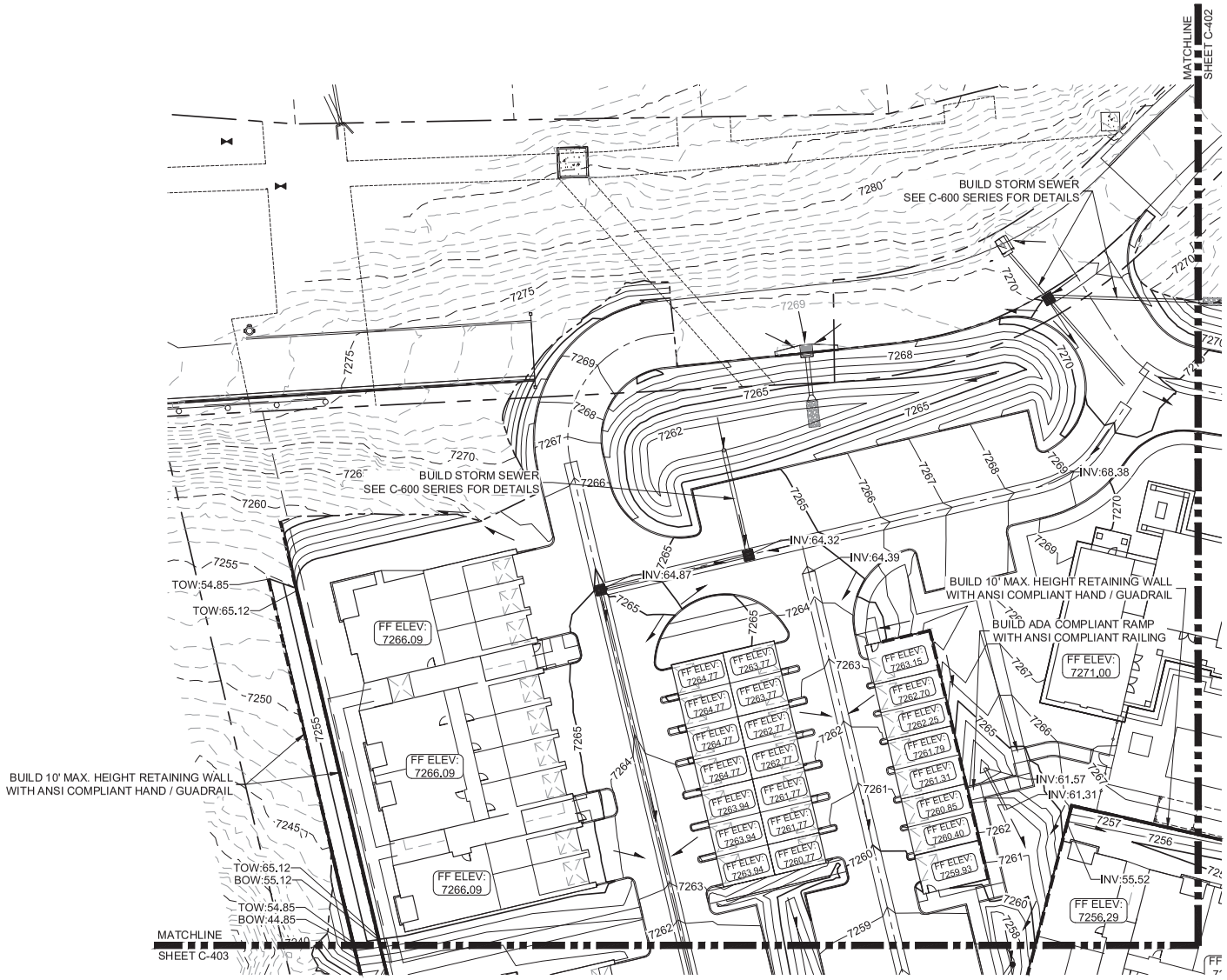

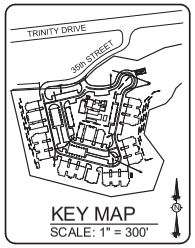

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LEGEND

	FINISHED CONTOUR	FF ELEV:	FINISHED FLOOR ELEVATION
	EXISTING CONTOUR	TOC:	TOP OF CURB ELEVATION
	DIRECTION OF FLOW	TOA:	TOP OF ASPHALT ELEVATION
	RETAINING WALL	INV:	INVERT / FLOWLINE ELEVATION
	PROPERTY LINE / ROW	TOW:	FINISHED GROUND AT TOP OF WALL
		BOW:	FINISHED GROUND BOTTOM OF WALL

DETAILED GRADING AND DRAINAGE PLAN

SCALE: 1' = 20' CONTOUR INTERVAL = 1'
EXISTING CONTOURS WITHIN GRADING LIMITS OMITTED FOR CLARITY

0 10 20 40
SCALE: 1" = 20'

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GRADING AND DRAINAGE PLAN

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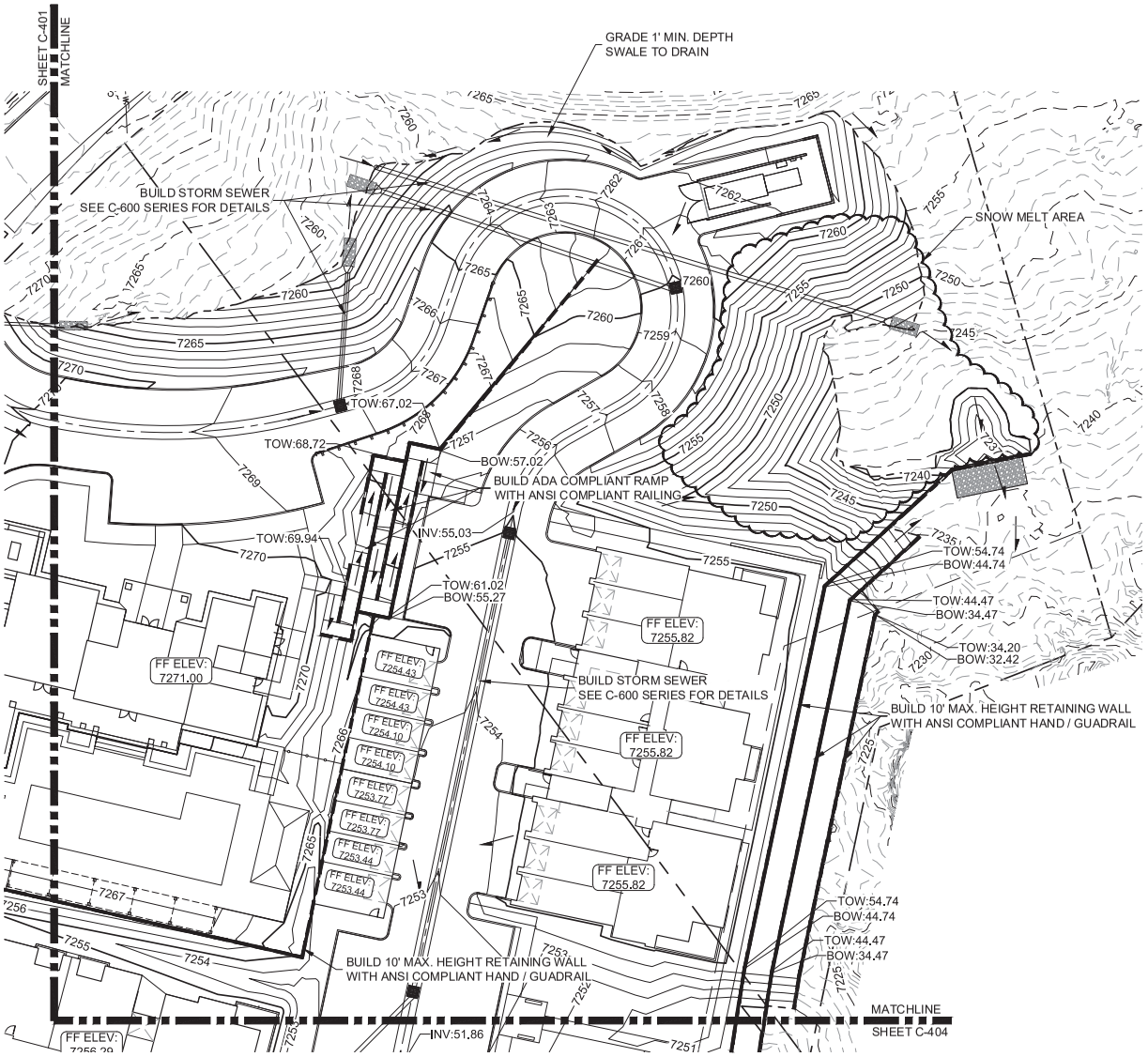

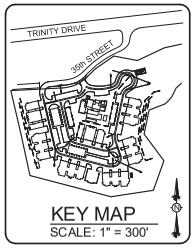

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LEGEND

	FINISHED CONTOUR	FF ELEV:	FINISHED FLOOR ELEVATION
	EXISTING CONTOUR	TOC:	TOP OF CURB ELEVATION
	DIRECTION OF FLOW	TOA:	TOP OF ASPHALT ELEVATION
	RETAINING WALL	INV:	INVERT / FLOWLINE ELEVATION
	PROPERTY LINE / ROW	TOW:	FINISHED GROUND AT TOP OF WALL
		BOW:	FINISHED GROUND BOTTOM OF WALL

DETAILED GRADING AND DRAINAGE PLAN (CONT'D)

SCALE: 1' = 20' CONTOUR INTERVAL = 1'
EXISTING CONTOURS WITHIN GRADING LIMITS OMITTED FOR CLARITY

0 10 20 40
SCALE: 1" = 20'

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GRADING AND DRAINAGE PLAN (CONT'D)

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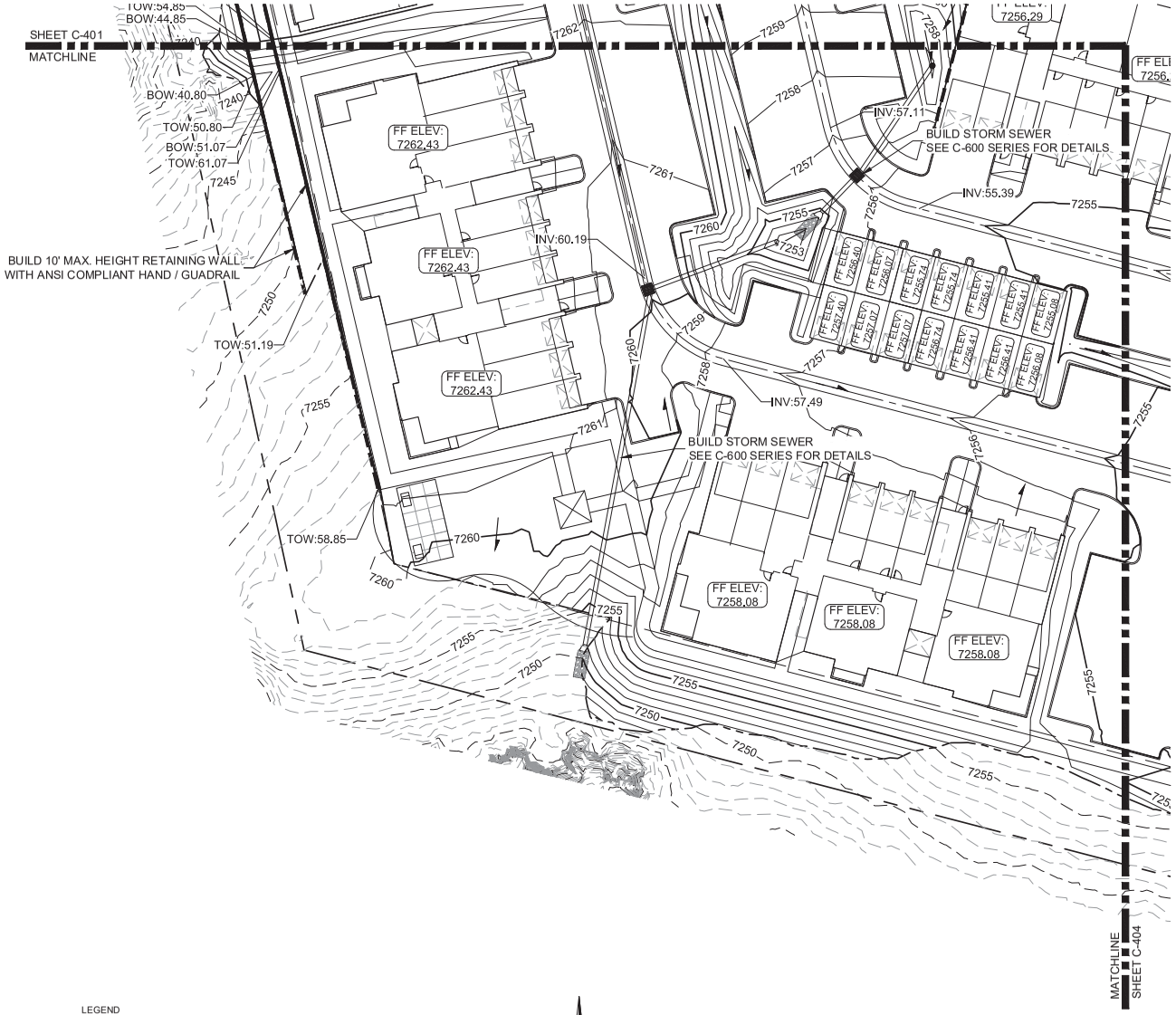

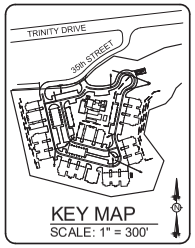

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LEGEND

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	EXISTING CONTOUR	TOC:	TOP OF CURB ELEVATION
	DIRECTION OF FLOW	TOA:	TOP OF ASPHALT ELEVATION
	RETAINING WALL	INV:	INVERT / FLOWLINE ELEVATION
	PROPERTY LINE / ROW	TOW:	FINISHED GROUND AT TOP OF WALL
		BOW:	FINISHED GROUND BOTTOM OF WALL

DETAILED GRADING AND DRAINAGE PLAN (CONT'D)

SCALE: 1' = 20' CONTOUR INTERVAL = 1'
EXISTING CONTOURS WITHIN GRADING LIMITS OMITTED FOR CLARITY

0 10 20 40
SCALE: 1" = 20'

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GRADING AND DRAINAGE PLAN (CONT'D)

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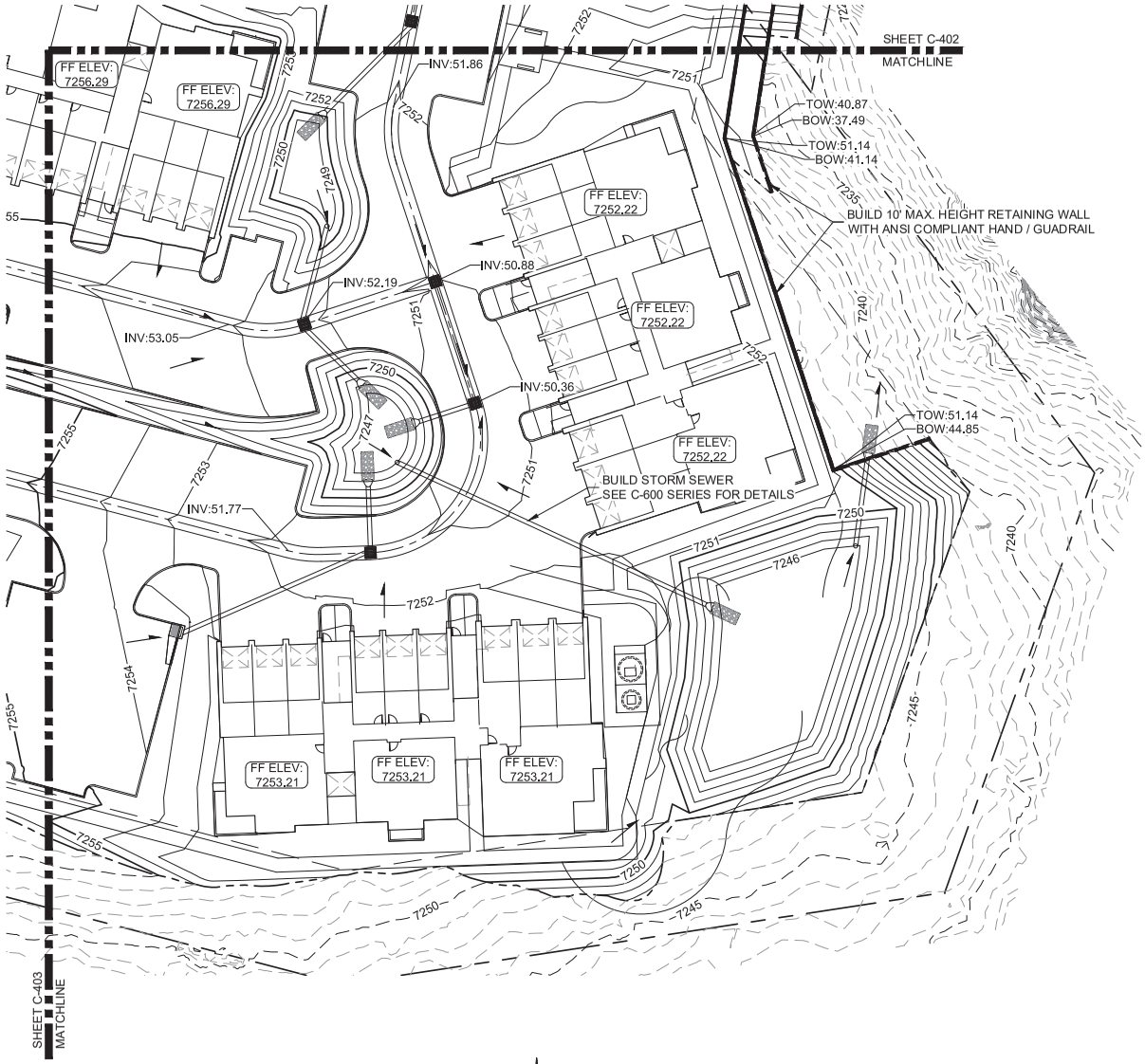

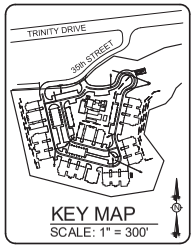

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LEGEND

	FINISHED CONTOUR	FF ELEV:	FINISHED FLOOR ELEVATION
	EXISTING CONTOUR	TOC:	TOP OF CURB ELEVATION
	DIRECTION OF FLOW	TOA:	TOP OF ASPHALT ELEVATION
	RETAINING WALL	INV:	INVERT / FLOWLINE ELEVATION
	PROPERTY LINE / ROW	TOW:	FINISHED GROUND AT TOP OF WALL
		BOW:	FINISHED GROUND BOTTOM OF WALL

DETAILED GRADING AND DRAINAGE PLAN (CONT'D)

SCALE: 1' = 20' CONTOUR INTERVAL = 1'
EXISTING CONTOURS WITHIN GRADING LIMITS OMITTED FOR CLARITY

0 10 20 40
SCALE: 1" = 20'

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GRADING AND DRAINAGE PLAN (CONT'D)

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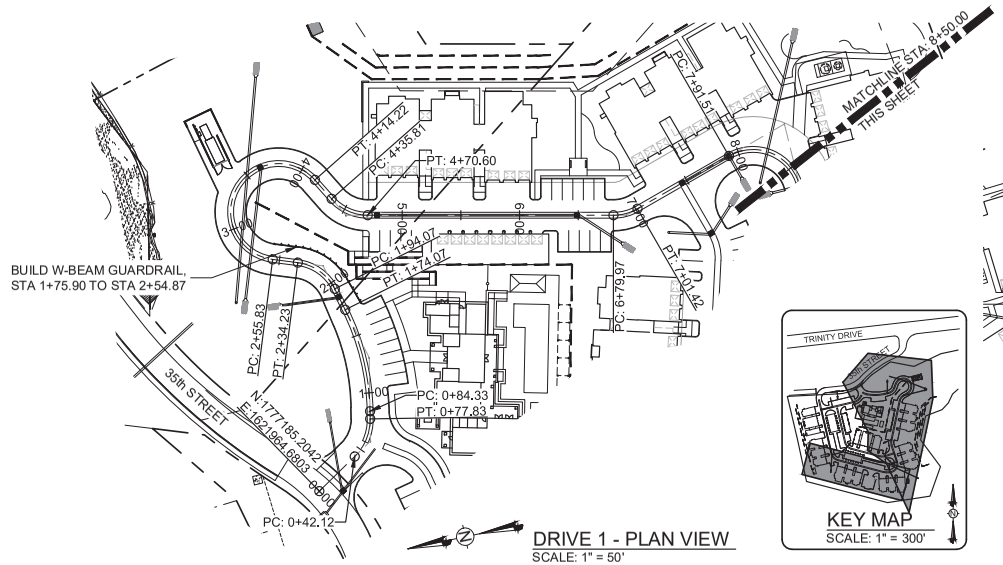
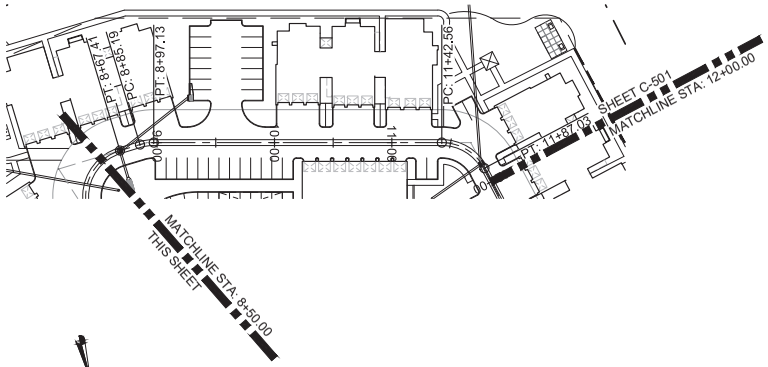
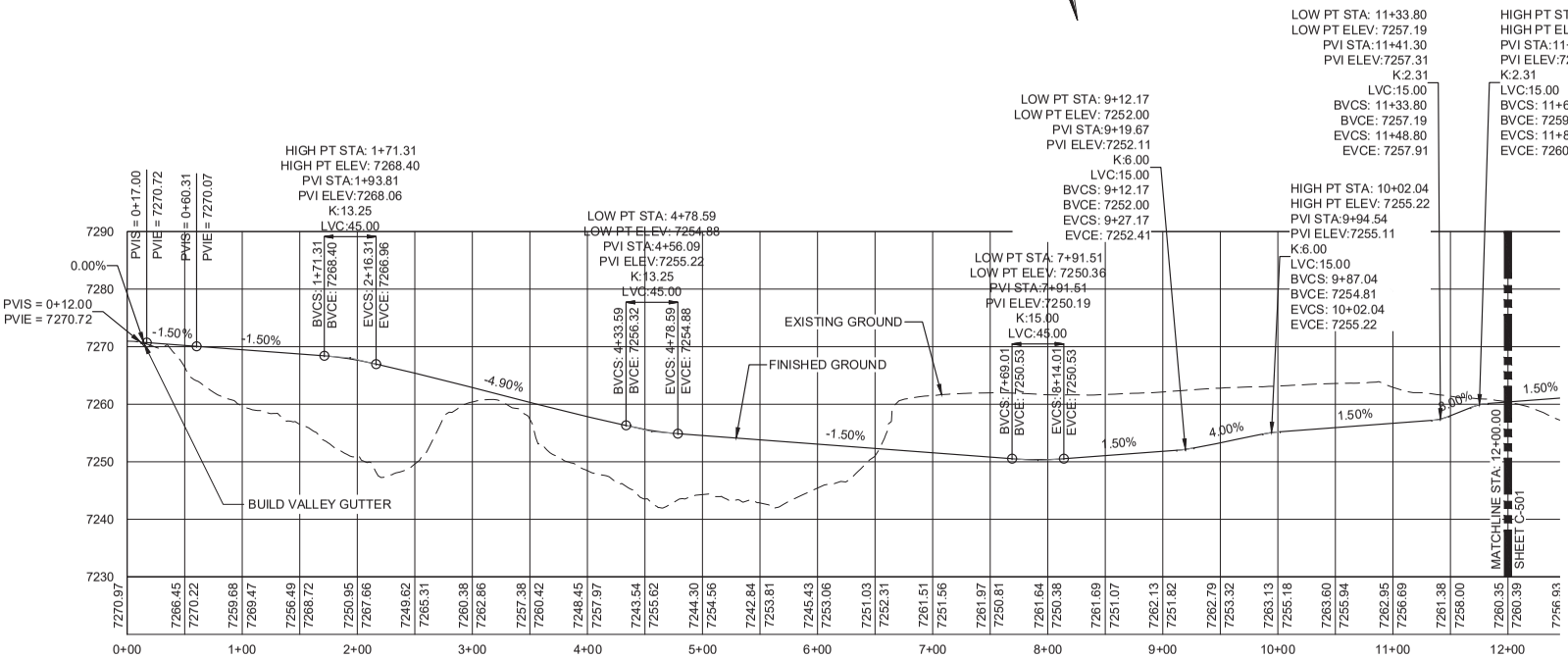


DRIVE 1 - PLAN VIEW
SCALE: 1" = 50'

KEY MAP
SCALE: 1" = 300'



DRIVE 1 - PLAN VIEW (CONT'D)
SCALE: 1" = 50'



DRIVE 1 - PROFILE VIEW
SCALE HORIZ: 1" = 50'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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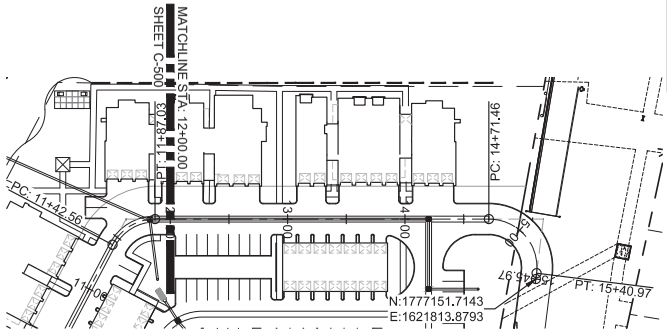
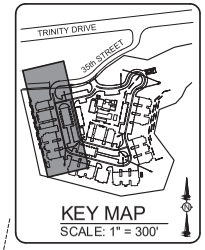
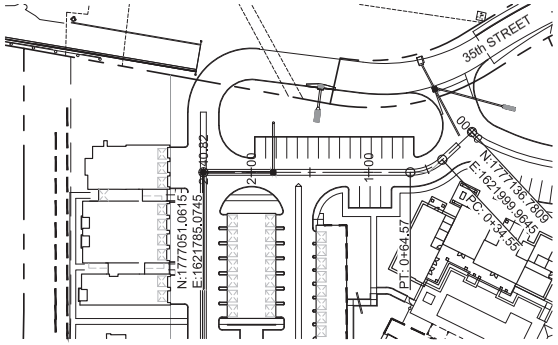
ROADWAY PLANS AND PROFILES



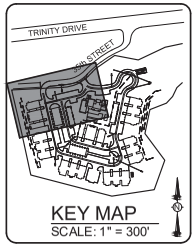
DRIVE 1 - PLAN VIEW
SCALE: 1" = 50'



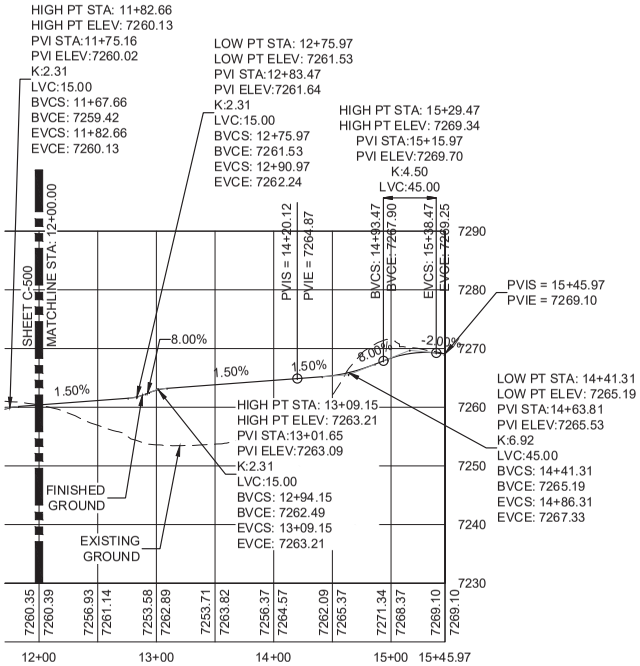
KEY MAP
SCALE: 1" = 300'



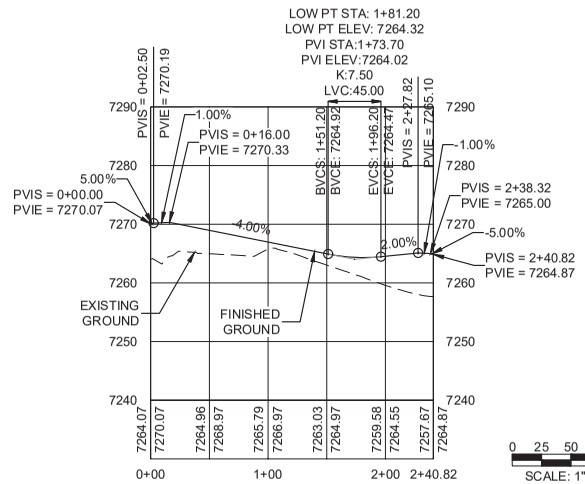
DRIVE 2 - PLAN VIEW
SCALE: 1" = 50'



KEY MAP
SCALE: 1" = 300'



DRIVE 1 - PROFILE VIEW
SCALE HORIZ: 1" = 50'
VERT: 1" = 10'



DRIVE 2 - PROFILE VIEW
SCALE HORIZ: 1" = 50'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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ROADWAY PLANS AND PROFILES

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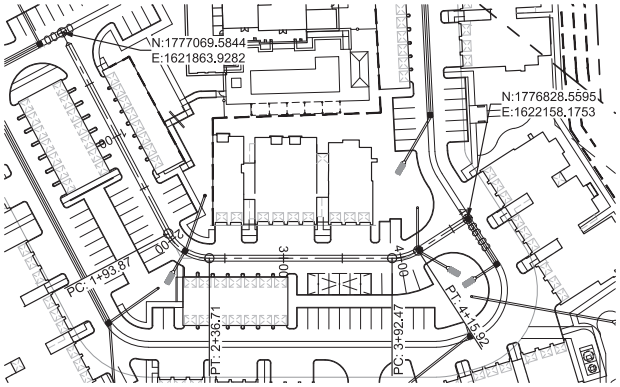
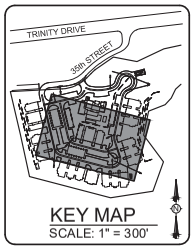
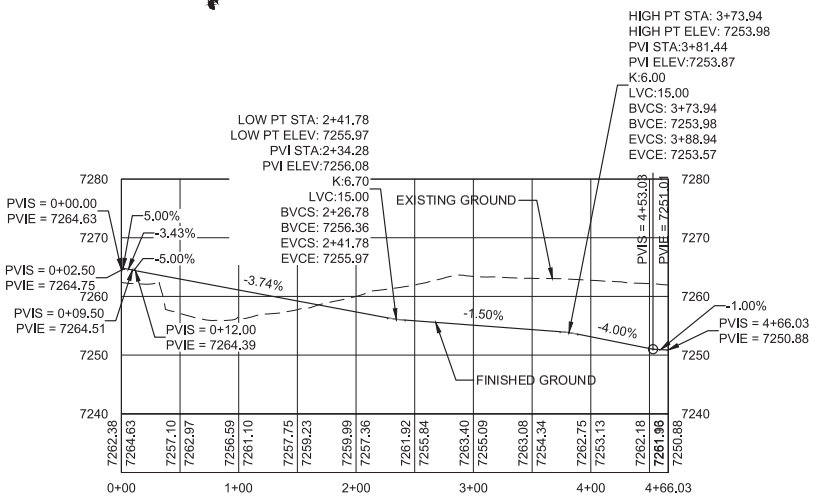




KEY MAP
SCALE: 1" = 300'

DRIVE 3 - PLAN VIEW
SCALE: 1" = 50'



DRIVE 3 - PROFILE VIEW
SCALE HORIZ: 1" = 50'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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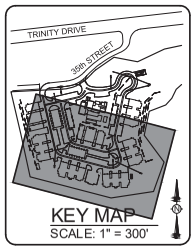
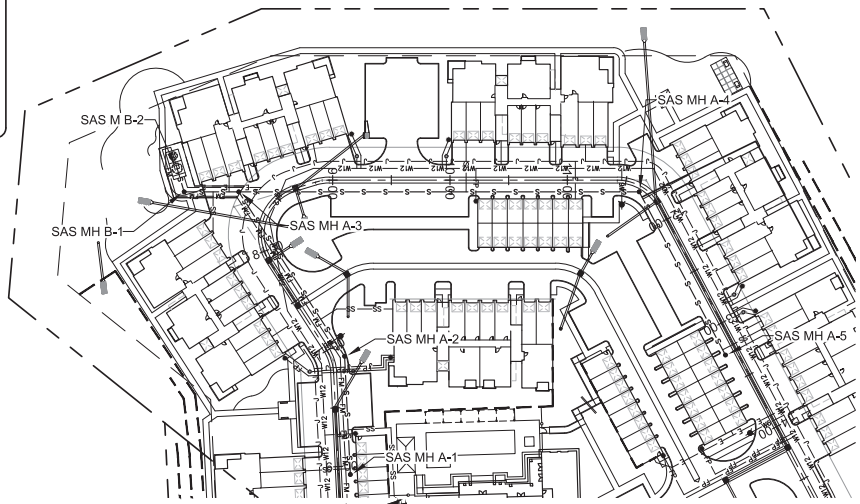
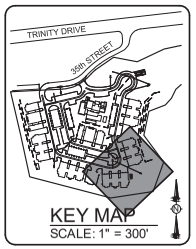




DRIVE 1 - PLAN VIEW
SCALE: 1" = 50'



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SCALE: 1" = 50'

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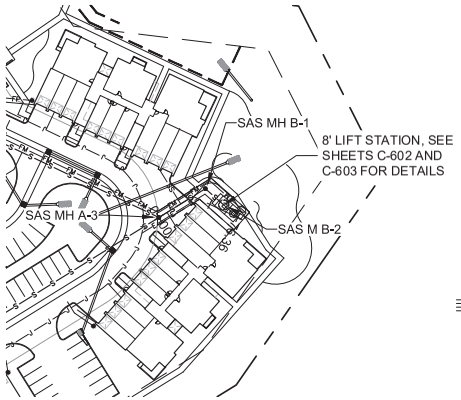
SCALE: 1" = 10'



SANITARY SEWER TO LIFT STATION - PLAN VIEW
SCALE HORIZ: 1" = 50'
VERT: 1" = 10'

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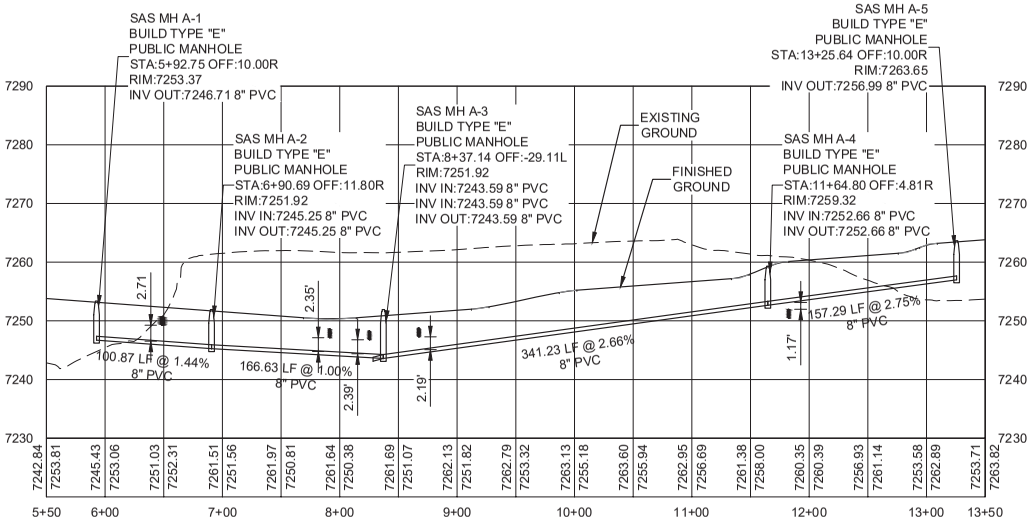

DRIVE 1 - PROFILE VIEW
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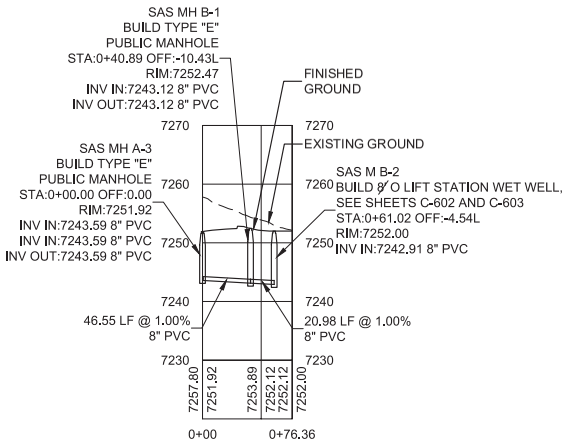
VERT: 1" = 10'



SANITARY SEWER TO LIFT STATION - PROFILE VIEW
SCALE HORIZ: 1" = 50'
VERT: 1" = 10'

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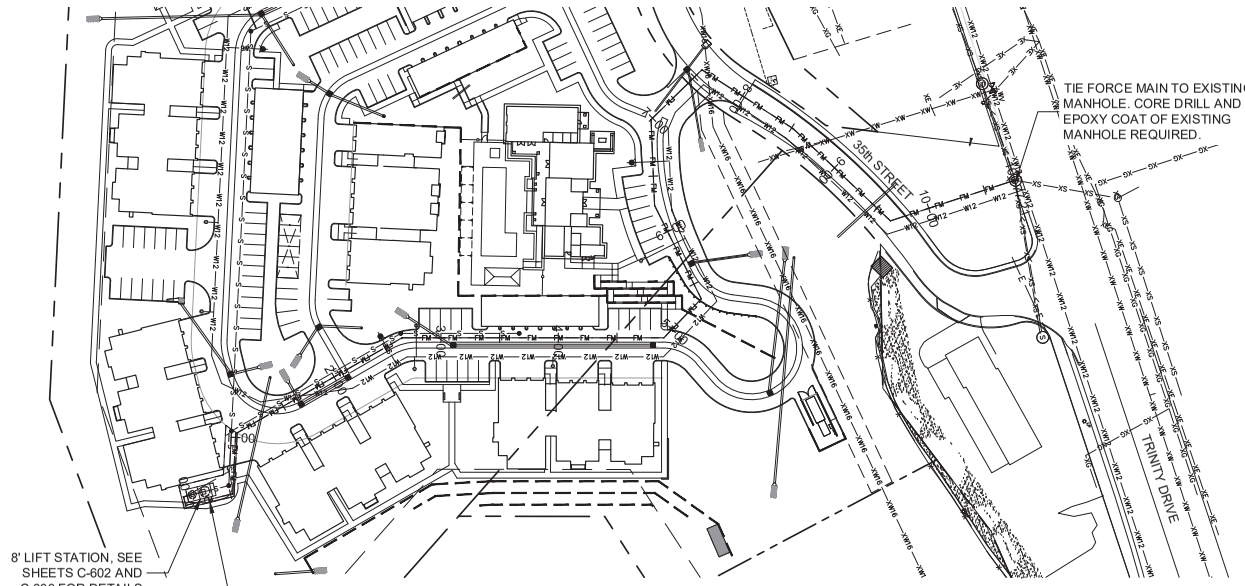
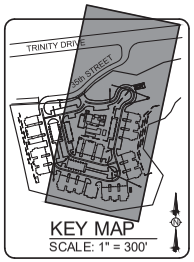
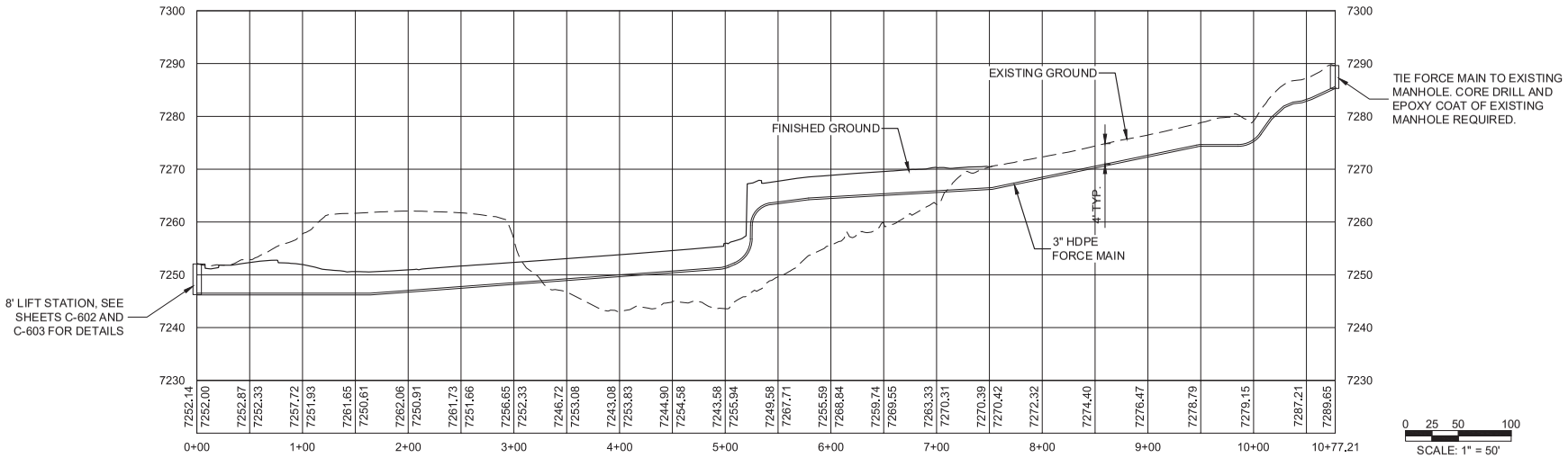


FORCE MAIN - PLAN VIEW
SCALE: 1" = 50'



KEY MAP
SCALE: 1" = 300'



FORCE MAIN - PROFILE VIEW
SCALE HORIZ: 1" = 50'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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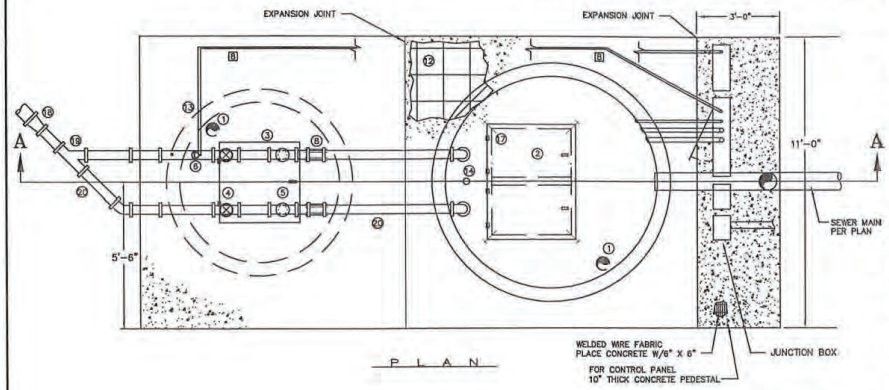
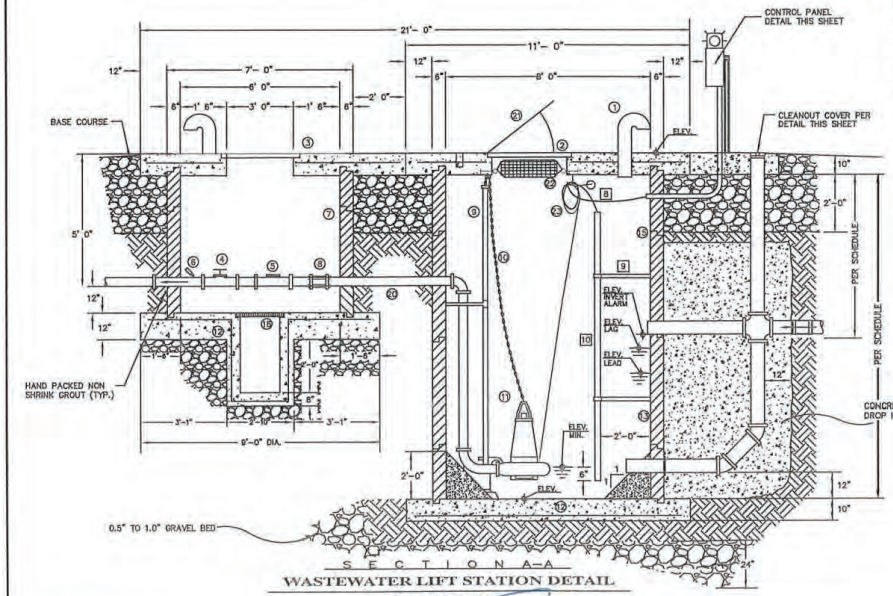
STANDARD WASTEWATER LIFT STATION DETAIL



P L A N



S E C T I O N A–A

WASTEWATER LIFT STATION DETAIL

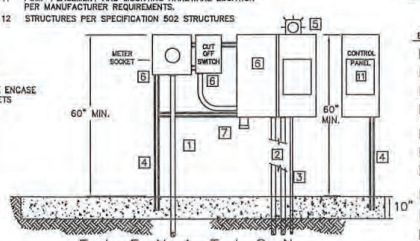
NOT TO SCALE

KEYED NOTES:

1. 6" DIA. SCH.40 STEEL VENT PIPE W/EXPAND MESH BUG SCREEN WELDED TO VENT ON THE INSIDE OF UPPER PORTION OF VENT PIPE.
2. ALUMINUM COVER WITH 90° LOCKING HINGED ACCESS DOOR AND LIFTING RINGS ON EACH CORNER (PROVIDED BY PUMP VENDOR) PER SCHEDULE
3. ALUMINUM COVER WITH 90° LOCKING HINGED ACCESS DOOR AND LIFTING RINGS ON EACH CORNER (PROVIDED BY PUMP VENDOR) PER SCHEDULE
4. ISOLATION PLUG VALVE BALLCENTRIC, DE ZURICK (TYP. OF 2 – PROVIDED BY PUMP VENDOR) SIZE AS NEEDED.
5. SPRING LOADED SWING CHECK VALVE (TYP. OF 2 – PROVIDED BY PUMP VENDOR) SIZE AS NEEDED.
6. 0 TO 50 PSI 4" LIQUID FILLED PRESSURE GAUGE MOUNTED AT 45° TO ALLOW VISIBILITY FROM TOP OF PIT(TYP. OF 1 PROVIDED BY PUMP VENDOR).PERSCHEDULE
7. 8' MIN. DIAMETER PRECAST CONCRETE MANHOLE SECTIONS FOR VAULT
8. DRESSER COUPLINGS (TYP. OF 2) OR M.J. HARD SLEEVE, ALL STAINLESS STEEL
9. STAINLESS STEEL GUIDE RAILS (TYP. OF 4 – PROVIDED BY PUMP VENDOR)
10. STAINLESS STEEL LIFTING CHAINS (TYP. OF 2 – PROVIDED BY PUMP VENDOR)
11. SUBMERSIBLE PUMP, DISCHARGE, EQUIPPED WITH MIX/FLUSH VALVE ON ONE PUMP, MODEL & TYPE PER SCHEDULE, SIZE DISCHARGE AS NEEDED.
12. #5 BARS @ 12" O.C. EACH WAY, WITH ONE 36" #5 BAR DIAGONAL AT EACH CORNER OF OPENING ON TOP SLAB
13. PRESSURE TRANSDUCER WITH 4–20MA SIGNAL WIRE TO CONTROL PANEL IN 2" RMC CONDUIT.
14. 2 7/8" I.D. GALVANIZED SCH. 40 STEEL PIPE SOCKET FOR LIFTING HOIST (SEE GENERAL NOTE 1)
15. 6' DIAMETER PRECAST CONCRETE MANHOLE SECTIONS FOR WET WELL
16. 1" x 1" CHANNEL FRAME AROUND SUMP W/ALUMINUM REMOVABLE GRATING OVER OPENING
17. 1/2"Ø x 8"L STAINLESS STEEL EYE BOLTS ANCHORED INTO CONCRETE LID AT EACH CORNER
18. DUCTILE IRON M.J. REDUCER SIZED PER PLANS
19. DUCTILE IRON M.J. WYE SIZED PER SCHEDULE
20. DUCTILE IRON PIPE WITH O–RING RUBBER GASKET JOINT R/W STRUCTURES FITTINGS SIZED PER SCHEDULE
21. ACCESS DOOR SHALL OPEN AWAY FROM CONTROL PANEL TO ALLOW VIEW INTO WET WELL FROM CONTROL PANEL
22. RETRACTABLE FALL THROUGH PREVENTION RAIL AND NET SYSTEM SHALL BE INSTALLED. MUST MEET ALL FEDERAL, STATE AND LOCAL PERSONNEL SAFETY NETTING SPECIFICATIONS.
23. PUMP CONTROL CABLE FROM CONTROLS. CABLE/CONDUIT THROUGH WETWELL SIDEWALL AND HANG CABLE FROM HOOK ANCHORED IN TOP SLAB (TYP. OF 2).

GENERAL NOTES:

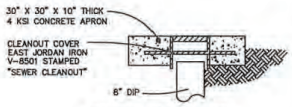
1. INSTALL 2 7/8" I.D. SOCKET, 8" DEEP, FINAL LOCATION TO BE DETERMINED BY LOS ALAMOS COUNTY ACCORDING TO PUMP SIZE FROM CENTER OF PUMPS FOR USE OF A LIFTING HOIST
2. CONCRETE TOP OF WET WELL TO BE 4000 PSI WITH BROOM FINISH, AND CLEAR SEALER APPLIED
3. GRADE GROUND SURFACE TO DRAIN AWAY FROM LIFT STATION IN ALL DIRECTIONS
4. SURFACES OF ALUMINUM IN CONTACT WITH CONCRETE TO BE PAINTED OR OTHERWISE COATED WITH A PROTECTIVE COATING
5. DUPLEX SUBMERSIBLE PUMP SYSTEM EQUIPPED WITH THE MIX/FLUSH VALVE FEATURE ON ONE PUMP
6. PUMP VENDOR TO SUPPLY ALUMINUM ACCESS COVERS 1/4" THICK WITH A 90° LOCKING MECHANISM, STAINLESS STEEL LIFTING CHAINS, BALL CHECK VALVES AND ISOLATION VALVES, STAINLESS STEEL GUIDE BARS, GUIDE BAR BRACKETS, AND CAST IRON PEDESTAL ELBOWS FOR PUMPS
7. ALL FASTENERS AND MOUNTING BRACKETS TO BE STAINLESS STEEL
8. ALL PUMP DISCHARGE PIPING TO BE DUCTILE IRON OR SCHEDULE 40 STEEL WITH COATING ON PIPING INSIDE WET WELL TO MATCH STRUCTURE
9. CONTRACTOR/INSTALLER TO PROVIDE L.A.C.U. WITH CONTROL PANEL, AND MOTOR OPERATING MANUALS.
10. CONTROLS SHALL BE PROVIDED BY PUMP VENDOR.
11. PUMP PLACEMENT AND MOUNTING HARDWARE LOCATION PER MANUFACTURER REQUIREMENTS.
12. STRUCTURES PER SPECIFICATION 502 STRUCTURES



E L E V A T I O N

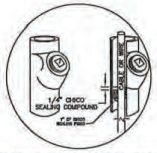
ELECTRICAL CONTROL PANEL DETAIL

NOT TO SCALE



SEWER CLEANOUT

NOT TO SCALE



EXPLOSION PROOF FITTING DETAIL

NOT TO SCALE

ELECTRICAL NOTES:

1. CONTROL PANEL TO BE NEMA 4 RATED WITH EXTERNAL CONNECTION FOR GENERATOR DURING EMERGENCY OPERATION. TO BE DETERMINED BY L.A.C.U. ENGINEERING, LOCATION IS SITE SPECIFIC.
2. LIGHTNING ARRESTOR, POWER SUPPLY, AND PRESSURE TRANSDUCER CONTROLS TO BE MOUNTED IN CONTROL PANEL
3. CONTROL PANEL FRONT BLANK. LOCAL DEPTH GAUGE, PUMP RUN STATUS LIGHTS, HOA SWITCHES, AMPMETER AND RUN TIME METERS FOR EACH PUMP MOUNTED ON INNER DOOR.
4. PUMP CONTROLS TO HAVE LEAD/LAG ALTERNATOR, TIME DELAY ON RE–START AFTER POWER FAILURE, AND PHASE/LOW VOLTAGE MONITOR
5. CONTACTS PROVIDED IN CONTROL PANEL FOR FUTURE TELEMETERING OF POWER FAIL AND HIGH WATER ALARMS TO A REMOTE MONITORING STATION
6. ANTI–CONDENSATION HEATER INSIDE PANEL, 100 WATT, THERMOSTAT CONTROLLED
7. PANEL MOUNTED 15 AMP, 110V CONVENIENCE GFI OUTLET WITH 20 AMP CIRCUIT BREAKER / DRY TRANSFORMER 110V
8. CONTRACTOR TO INSTALL 3" RMC CONDUIT AND WIRING AS NECESSARY TO CONNECT CONTROL PANEL TO NEW ELECTRIC SERVICE METER SOCKET.
9. CONTROL PANEL IS TO BE SET OFF TO EITHER SIDE OF CENTER LINE LIFT STATION WET WELL. ALL OTHER ELECTRICAL EQUIP. LOCATIONS ARE TO BE DETERMINED BY L.A.C.U. ENGINEERING.
10. LACU TO SUPPLY SCADA PANEL AND ANCILLARY EQUIPMENT CONTRACTOR TO INSTALL PANEL, CONDUIT, CABLE AND SENSING EQUIPMENT AND COMPLETE TERMINATIONS.

ELECTRIC KEYED NOTES:

1. 3" STATION POWER SUPPLY RMC CONDUIT
2. 2 – 2" PUMP POWER SUPPLY RMC CONDUIT
3. 2" RMC CONDUIT FOR PUMP CONTROL WIRE
4. 2" SQUARE GALVANIZED TUBE COLUMN (TYP. OF 2) OR UNISTRUT
5. HIGH–LEVEL WATER ALARM LIGHT
6. ALL NEW MATERIALS
7. BRYANT STANDBY GENERATOR POWER CONNECTOR IEC 309 SERIES I + II RECEPTACLE.
8. TRANSDUCER CABLE
9. 2" SCH 40 PVC
10. PRE MANUFACTURED PIPE HANGER ANCHORED PER MANUFACTURERS RECOMMENDATIONS
11. SCADA PANEL

DATE: APRIL 2018	APPROVED BY:	REVISION:	DATE:	No.

UTILITY CONSTRUCTION STANDARDS – SEWER

SECTION 5000 5014A

WASTEWATER LIFT STATION

LOS ALAMOS Department of Public Utilities Electric, Gas, Water, and Wastewater Services

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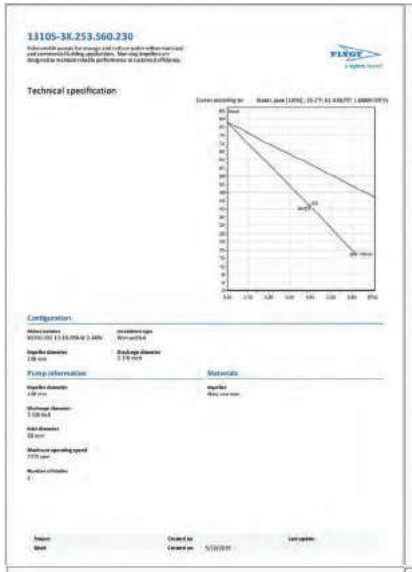
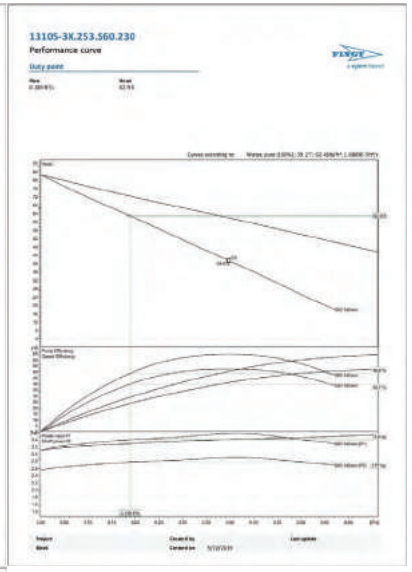
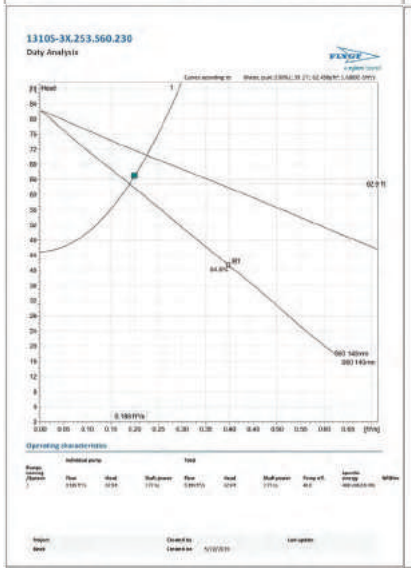
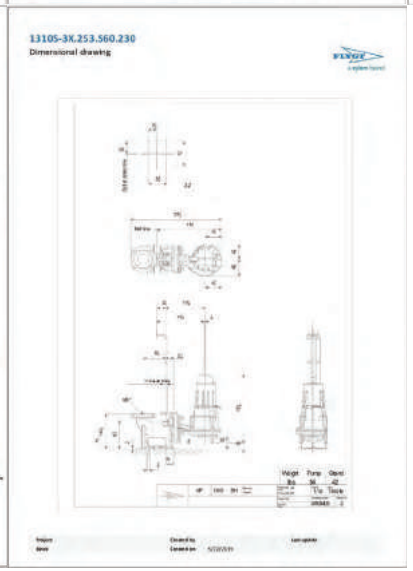
LIFT STATION NOTES



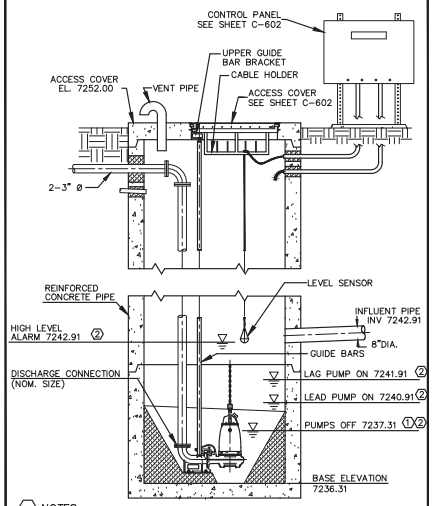






Duplex Lift Station Layout

e-Catalog	FLYGT	Lift Station Guide Lines	Issued: 5/05	Supersedes:



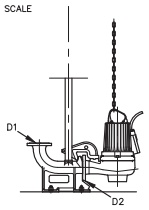
NOTES:

1. MIN. LIQUID LEVEL MUST NOT FALL BELOW TOP OF VOLUTE.
2. ITT FLYGT LIQUID LEVEL CONTROL MONITORING SYSTEM.

SCALE : NOT TO SCALE

PUMP MODEL FLYGT 1310-S NON-CLOG 3ø

SCALE : NOT TO SCALE



IMPELLER DIAM	HP RATING	VAC	D1	D2
140 mm	3.2	230	3"	3"

NOTES:

1. LIFT STATION TO BE SITE BUILT WITH THE FOLLOWING EQUIPMENT:
   - DUPLEX FLYGT SUBMERSIBLE PUMPS
   - PUMP DISCONNECT PANEL & STAND
   - MULTITRODE LIQUID LEVEL SENSING PROBES
   - ONYX PRESSURE SENSOR PSW SERIES WITH ASHCROFT GAUGE
   - U.L. LISTED CONTROL PANEL
3. ANY MANUFACTURER OR SUPPLIER MAY BE USED, PROVIDED THAT THE EQUAL OR BETTER. SHOP DRAWINGS SHALL BE REQUIRED.
4. ALL ELECTRICAL CONNECTIONS TO BE MADE BY A LICENSED ELECTRICAL CONTRACTOR.
5. ANY EQUIPMENT, MATERIALS, OR APPURTENANCES REQUIRED TO COMPLETE THE LIFT STATION THAT ARE NOT LISTED WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY.
6. THIS DRAWING IS PROVIDED FOR INFORMATION ONLY.

THE HILL STATION CALCULATIONS

NAME	DESIGN FLOW (GPM)	LENGTH OF FORCE MAIN	FORCE MAIN SIZE	KINETIC HEAD	ELEVATION HEAD	TOTAL HEAD
PUMP 1	90	1000 LF	3"	20	45	65

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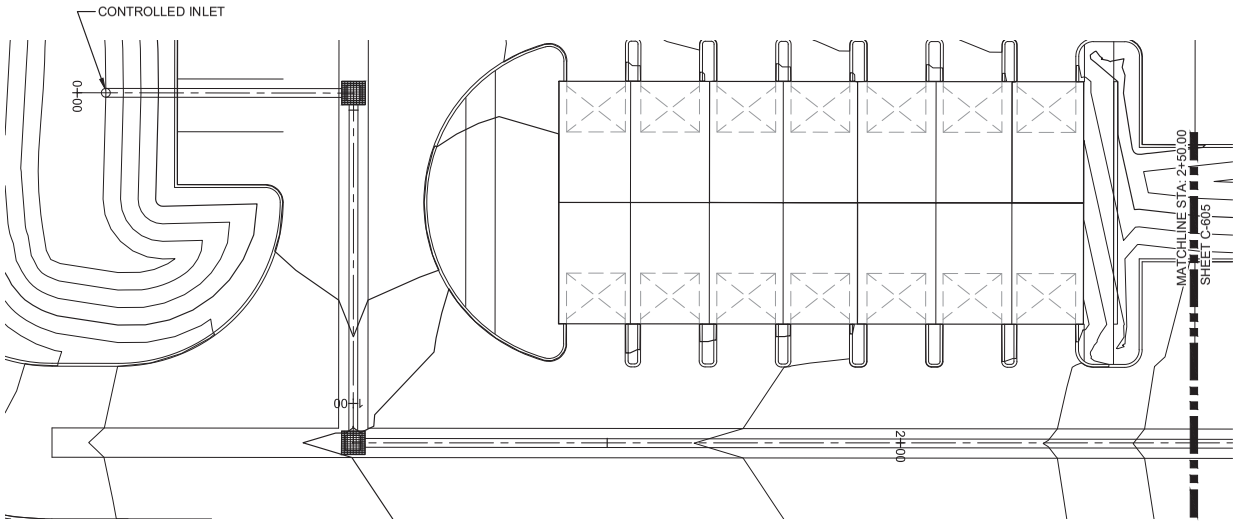
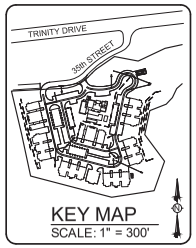


STORM SEWER LINE 1 - PLAN VIEW
SCALE: 1" = 10'



KEY MAP
SCALE: 1" = 300'

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NEW MEXICO

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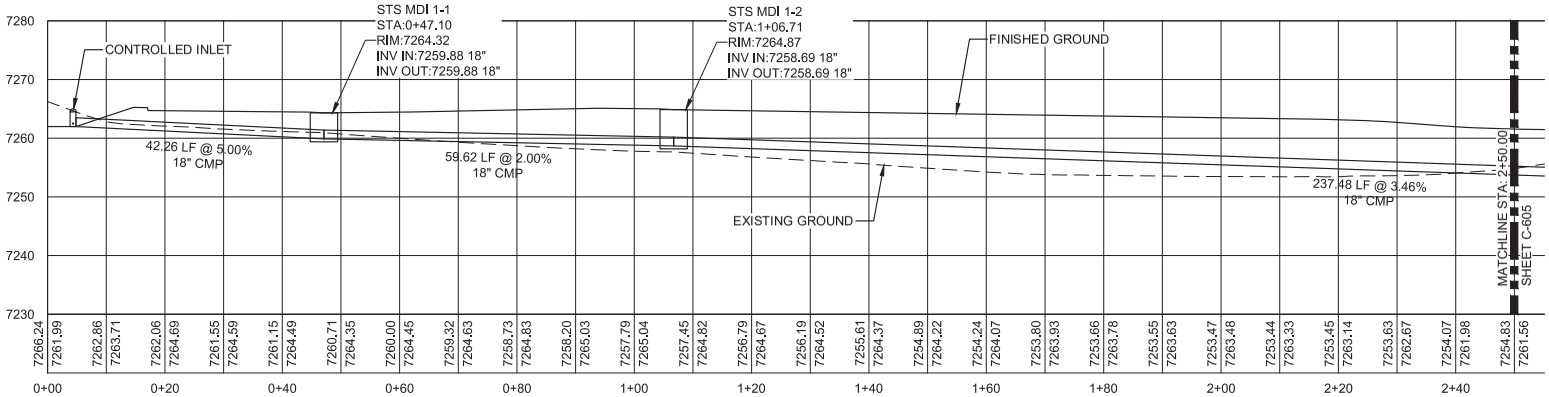

STORM SEWER LINE 1 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

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0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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STORM SEWER PLAN AND PROFILES

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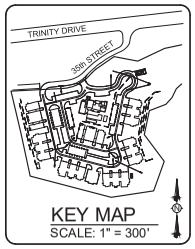

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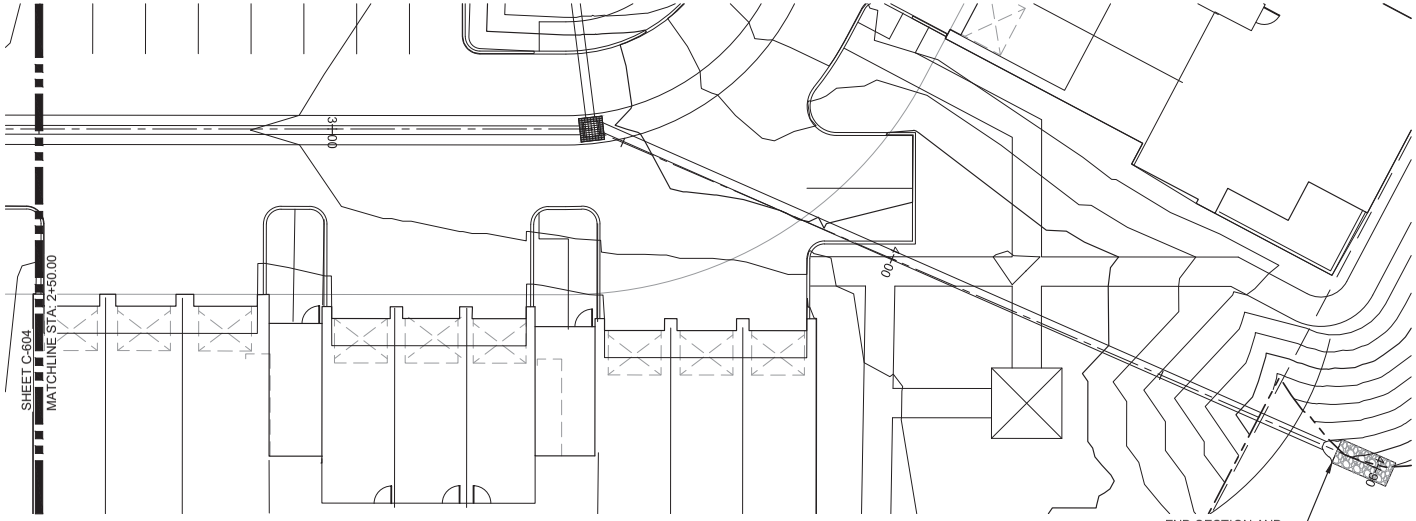
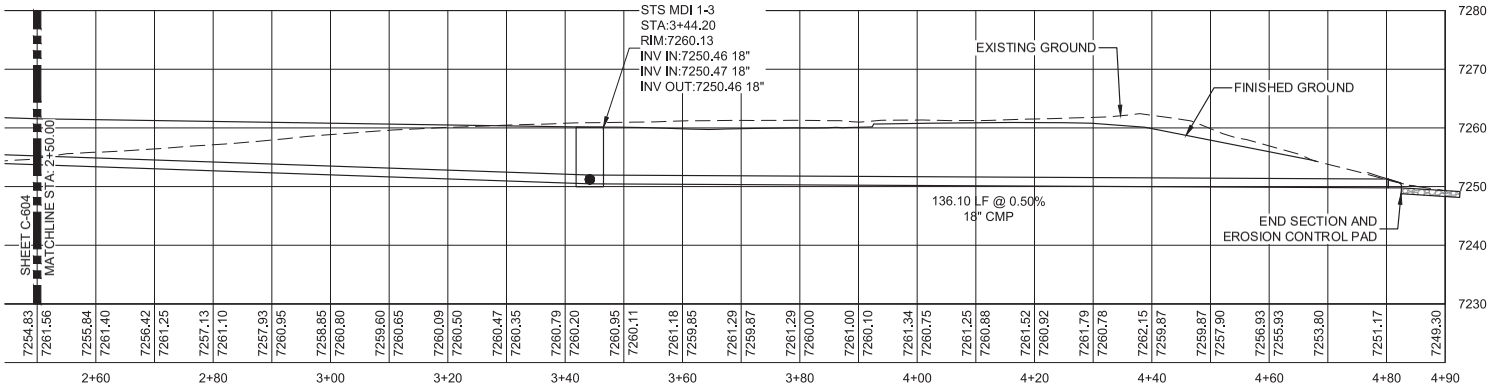


STORM SEWER LINE 1 - PLAN VIEW (CONT'D)
SCALE: 1" = 10'



STORM SEWER LINE 1 - PROFILE VIEW (CONT'D)
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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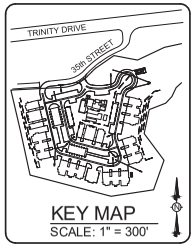

KEY MAP
SCALE: 1" = 300'

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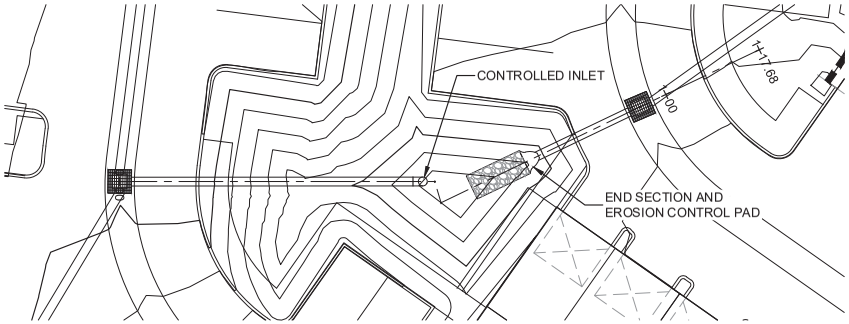
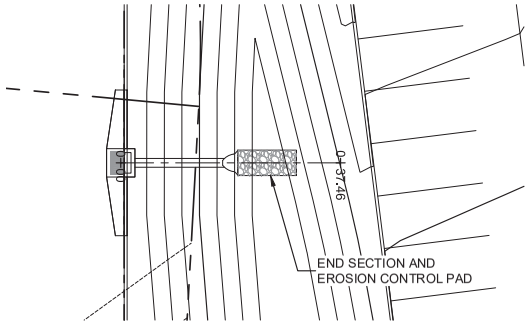
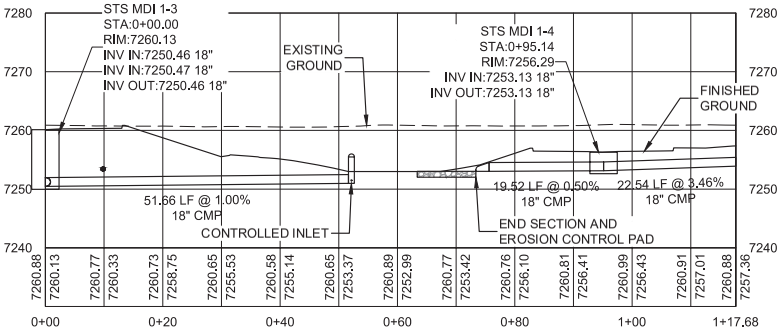


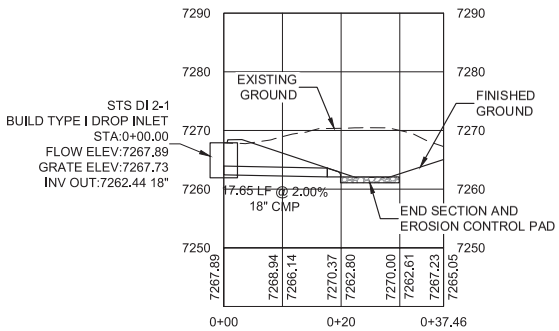
STORM SEWER LINE 1A - PLAN VIEW
SCALE: 1" = 10'



STORM SEWER LINE 2 - PLAN VIEW
SCALE: 1" = 10'



STORM SEWER LINE 1A - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'



STORM SEWER LINE 2 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

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0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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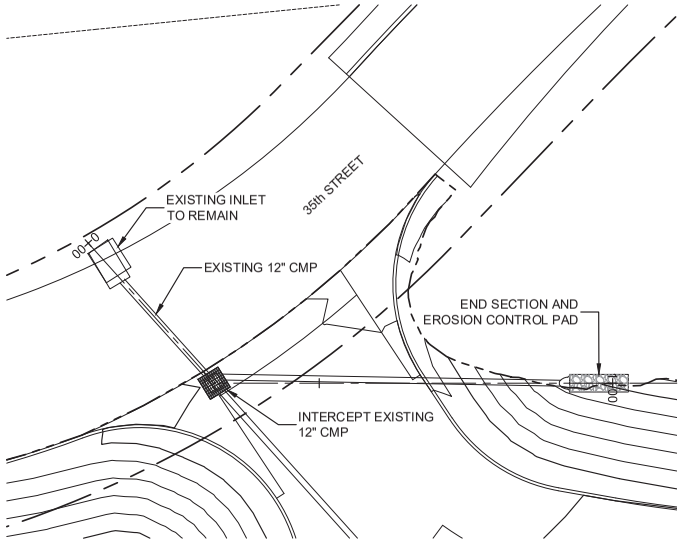
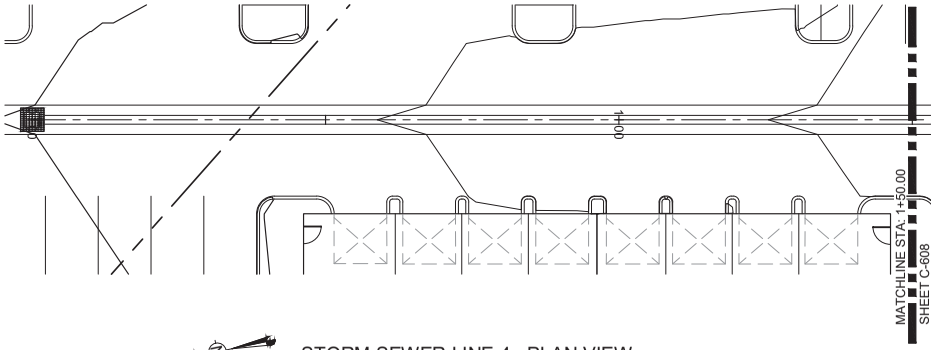
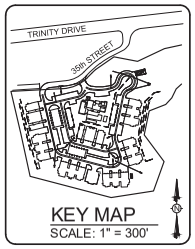


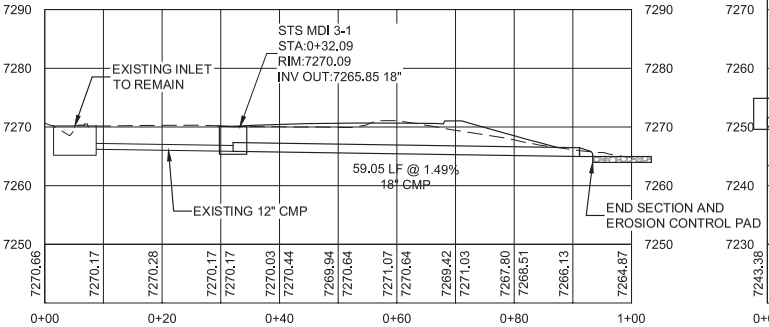
STORM SEWER LINE 3 - PLAN VIEW
SCALE: 1" = 10'



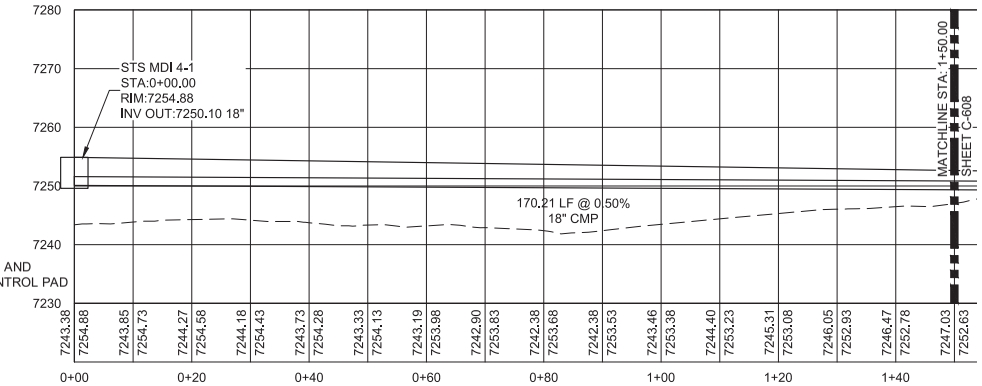
STORM SEWER LINE 4 - PLAN VIEW
SCALE: 1" = 50'



KEY MAP
SCALE: 1" = 300'



STORM SEWER LINE 3 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'



STORM SEWER LINE 4 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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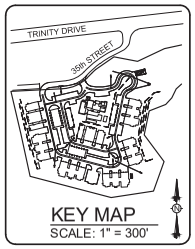

KEY MAP
SCALE: 1" = 300'

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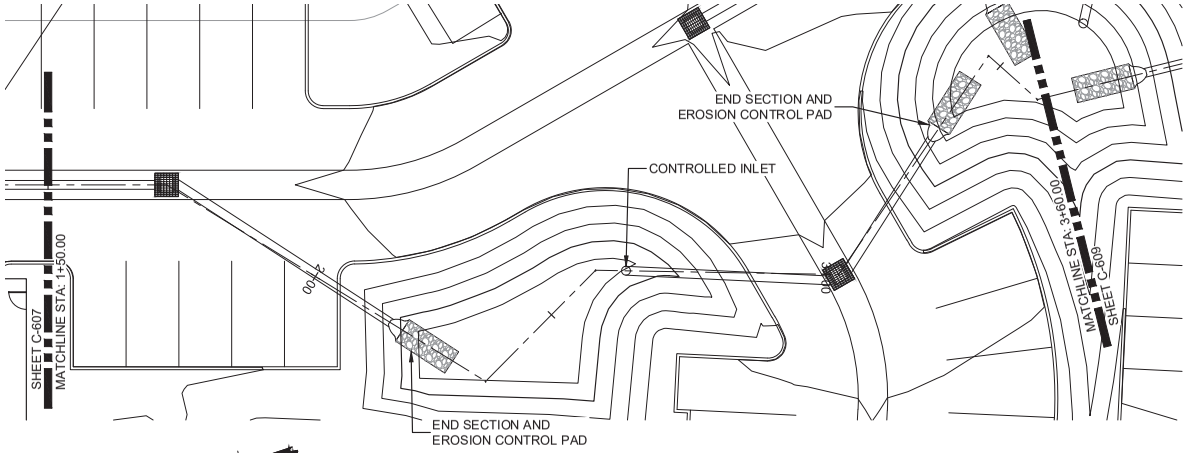
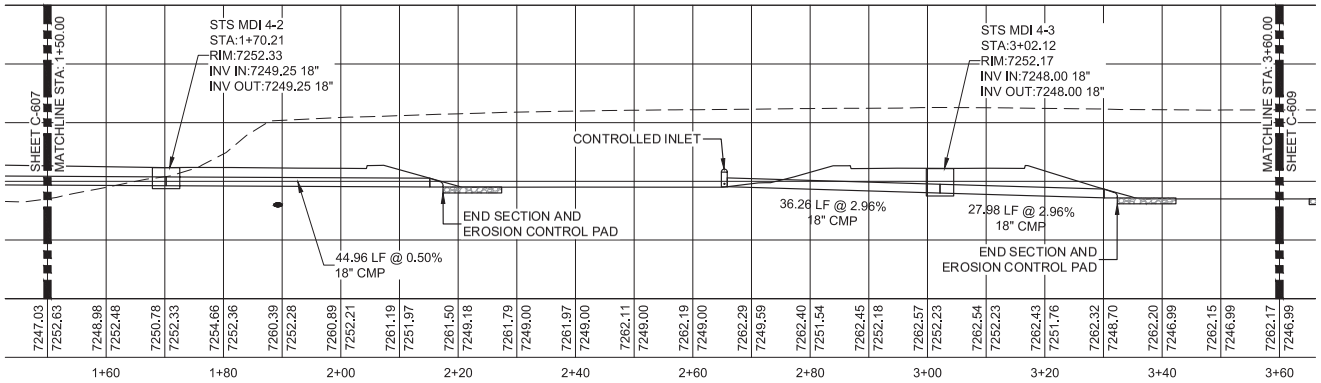


STORM SEWER LINE 4 - PLAN VIEW (CONT'D)
SCALE: 1" = 50'



STORM SEWER LINE 4 - PROFILE VIEW (CONT'D)
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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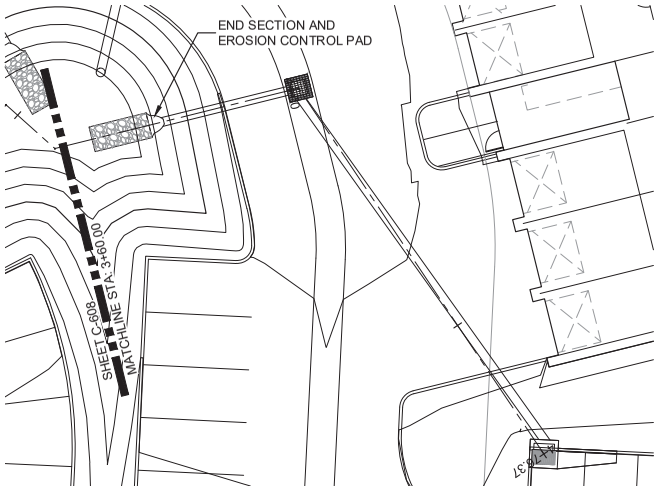
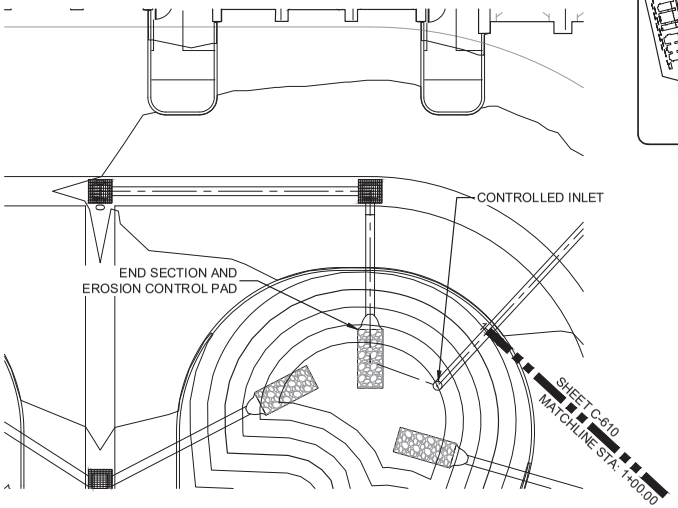
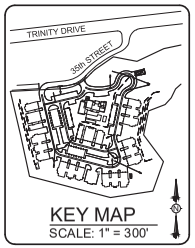
STORM SEWER PLAN AND PROFILES (CONT'D)



STORM SEWER LINE 4 - PLAN VIEW (CONT'D)
SCALE: 1" = 50'



STORM SEWER LINE 5 - PLAN VIEW
SCALE: 1" = 50'



KEY MAP
SCALE: 1" = 300'

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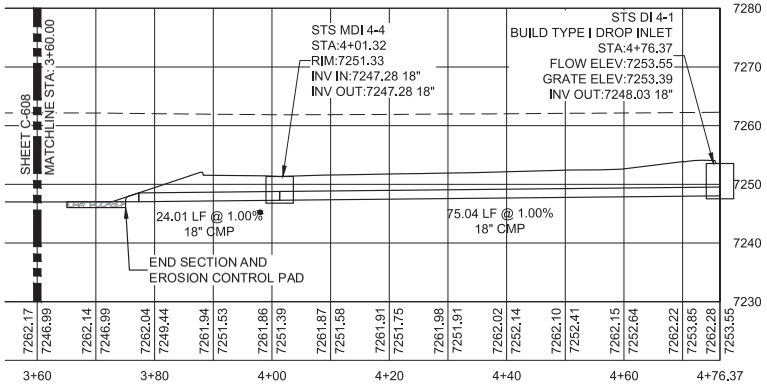
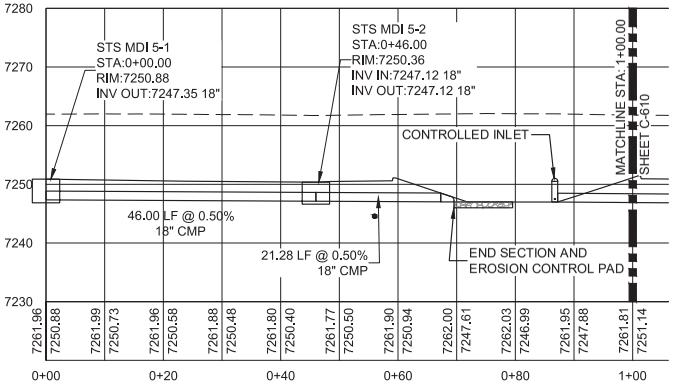


STORM SEWER LINE 4 - PROFILE VIEW (CONT'D)
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'



STORM SEWER LINE 5 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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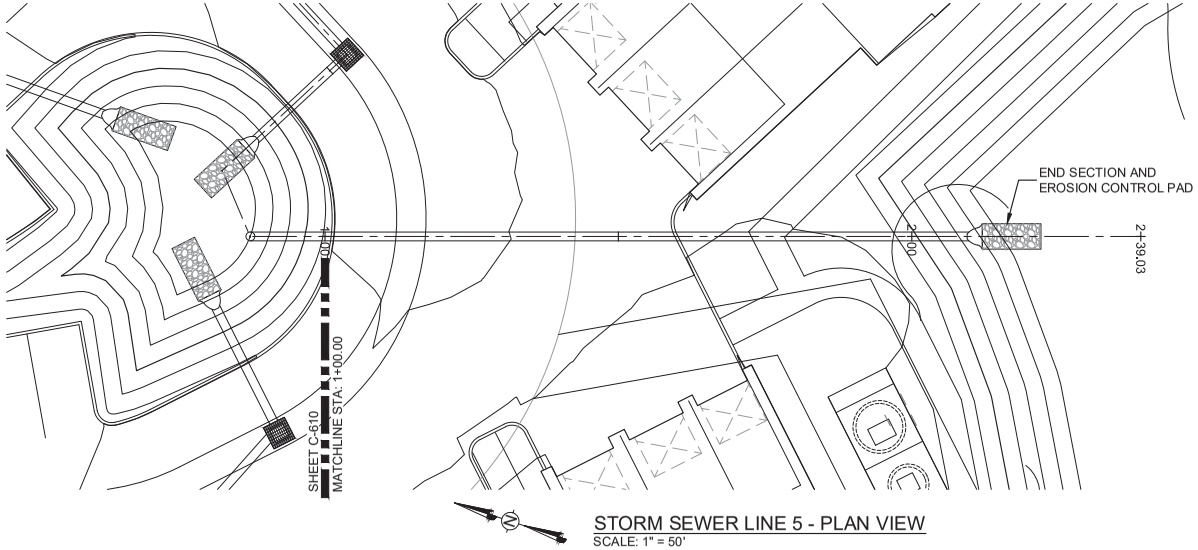
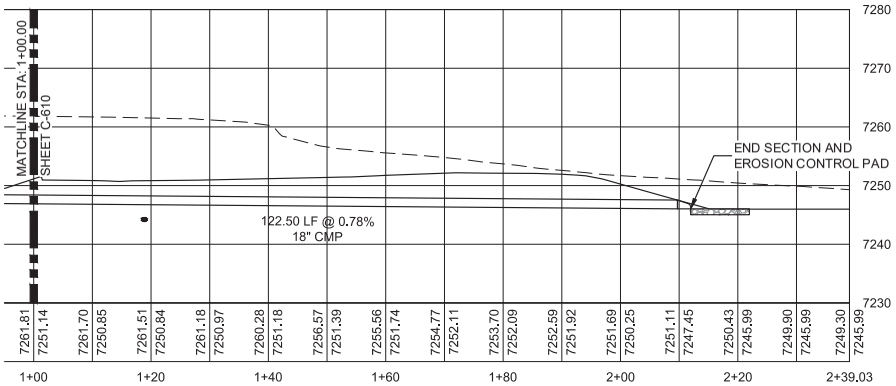
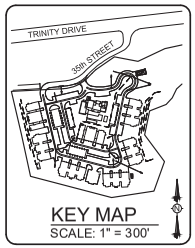


STORM SEWER LINE 5 - PLAN VIEW
SCALE: 1" = 50'



STORM SEWER LINE 5 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'



KEY MAP
SCALE: 1" = 300'

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0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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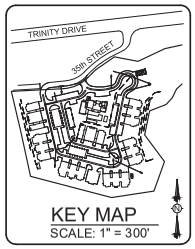

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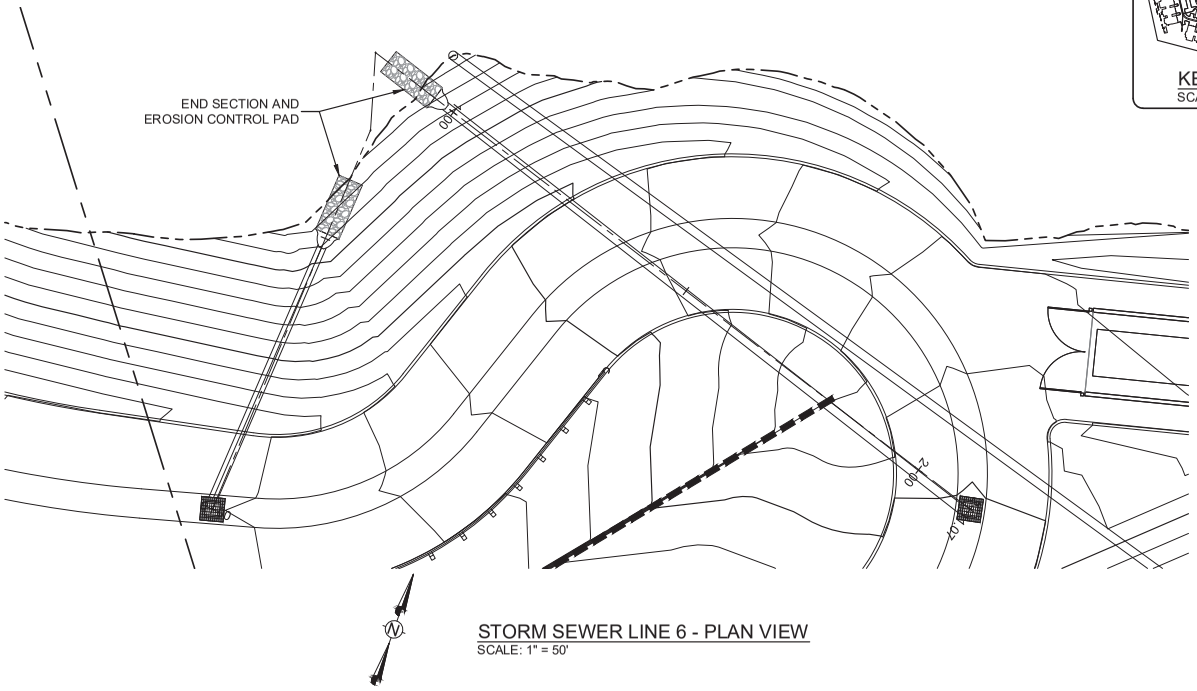
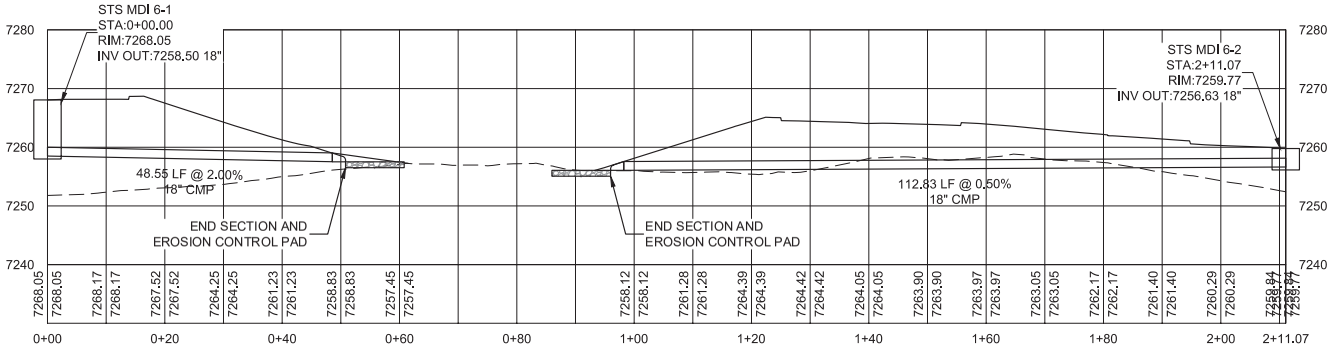


STORM SEWER LINE 6 - PLAN VIEW
SCALE: 1" = 50'



STORM SEWER LINE 6 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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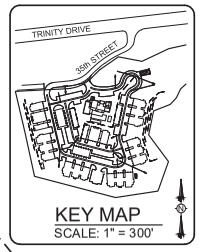

KEY MAP
SCALE: 1" = 300'

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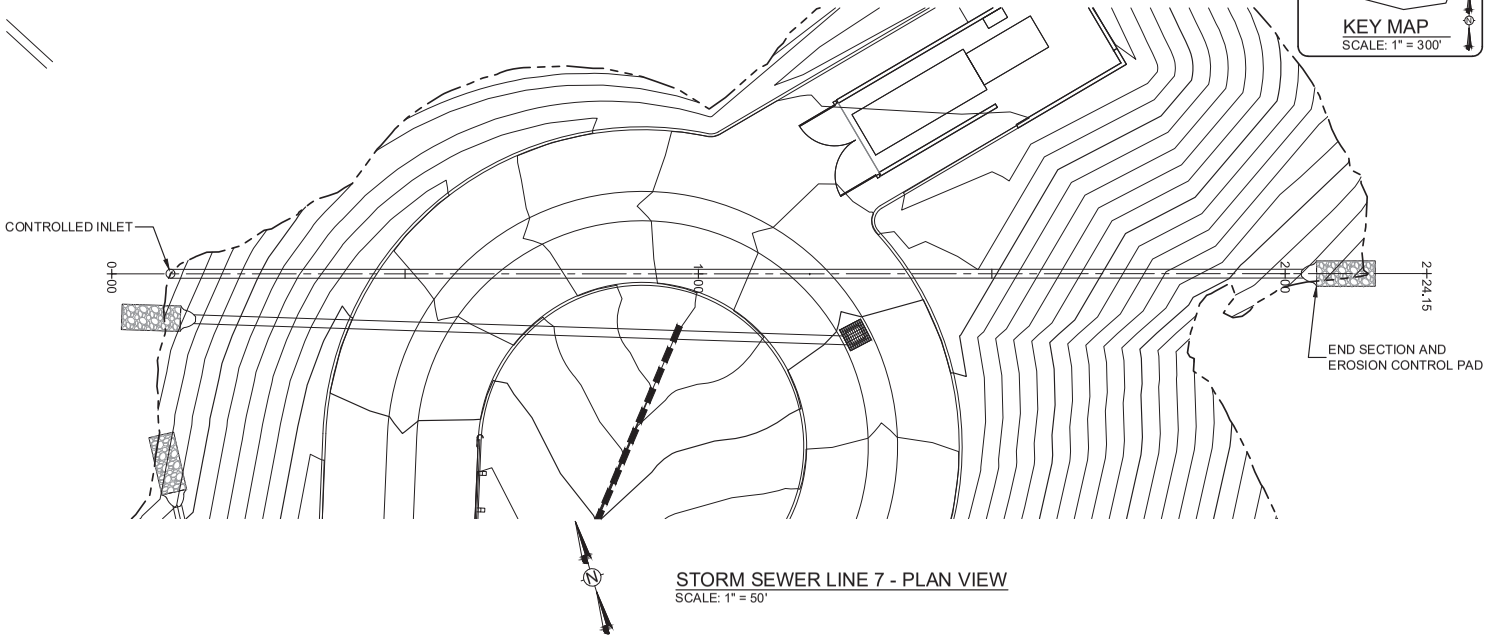
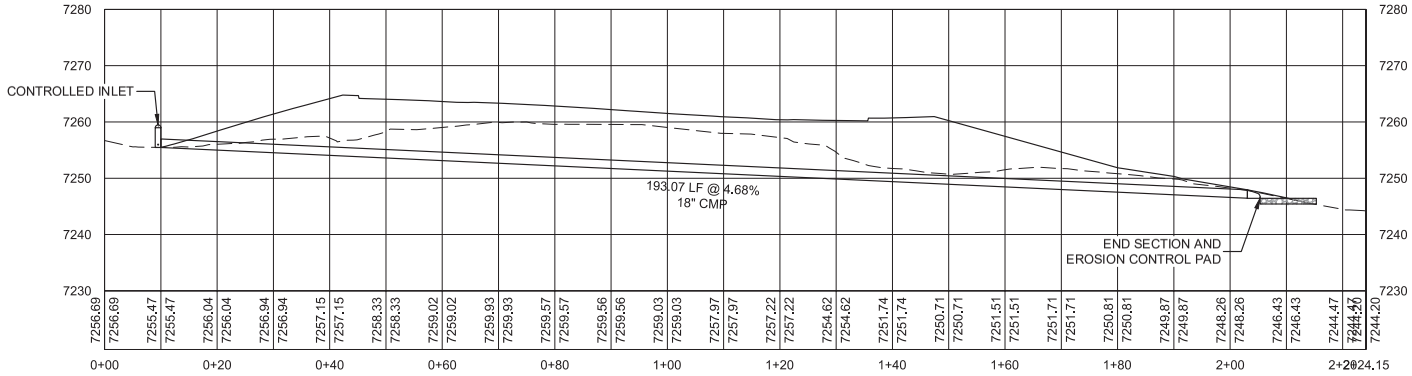


STORM SEWER LINE 7 - PLAN VIEW
SCALE: 1" = 50'



STORM SEWER LINE 7 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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STORM SEWER PLAN
AND PROFILES (CONT'D)

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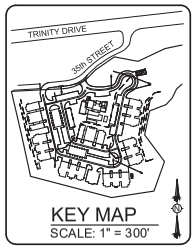

KEY MAP
SCALE: 1" = 300'

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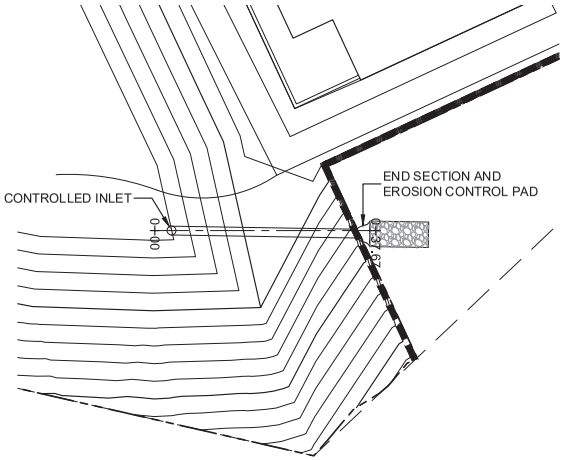
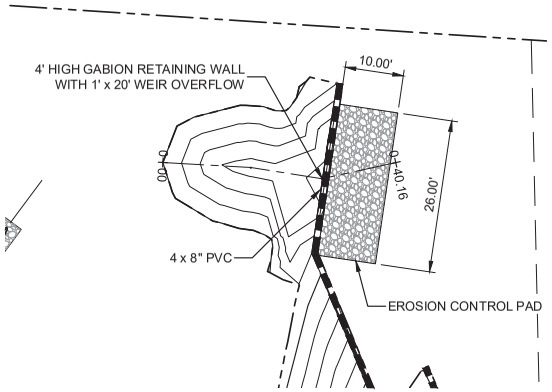
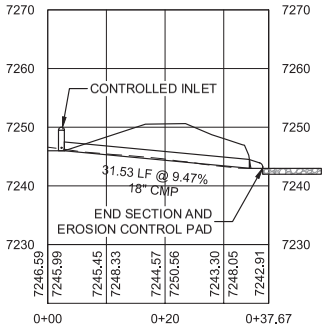


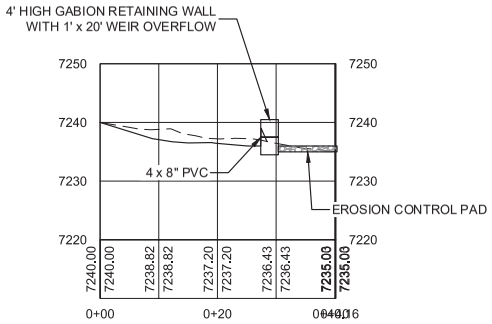
STORM SEWER LINE 8 - PLAN VIEW
SCALE: 1" = 50'



STORM SEWER LINE 9 - PLAN VIEW
SCALE: 1" = 50'



STORM SEWER LINE 8 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'



STORM SEWER LINE 9 - PROFILE VIEW
SCALE HORIZ: 1" = 10'
VERT: 1" = 10'

0 25 50 100
SCALE: 1" = 50'

0 5 10 20
SCALE: 1" = 10'

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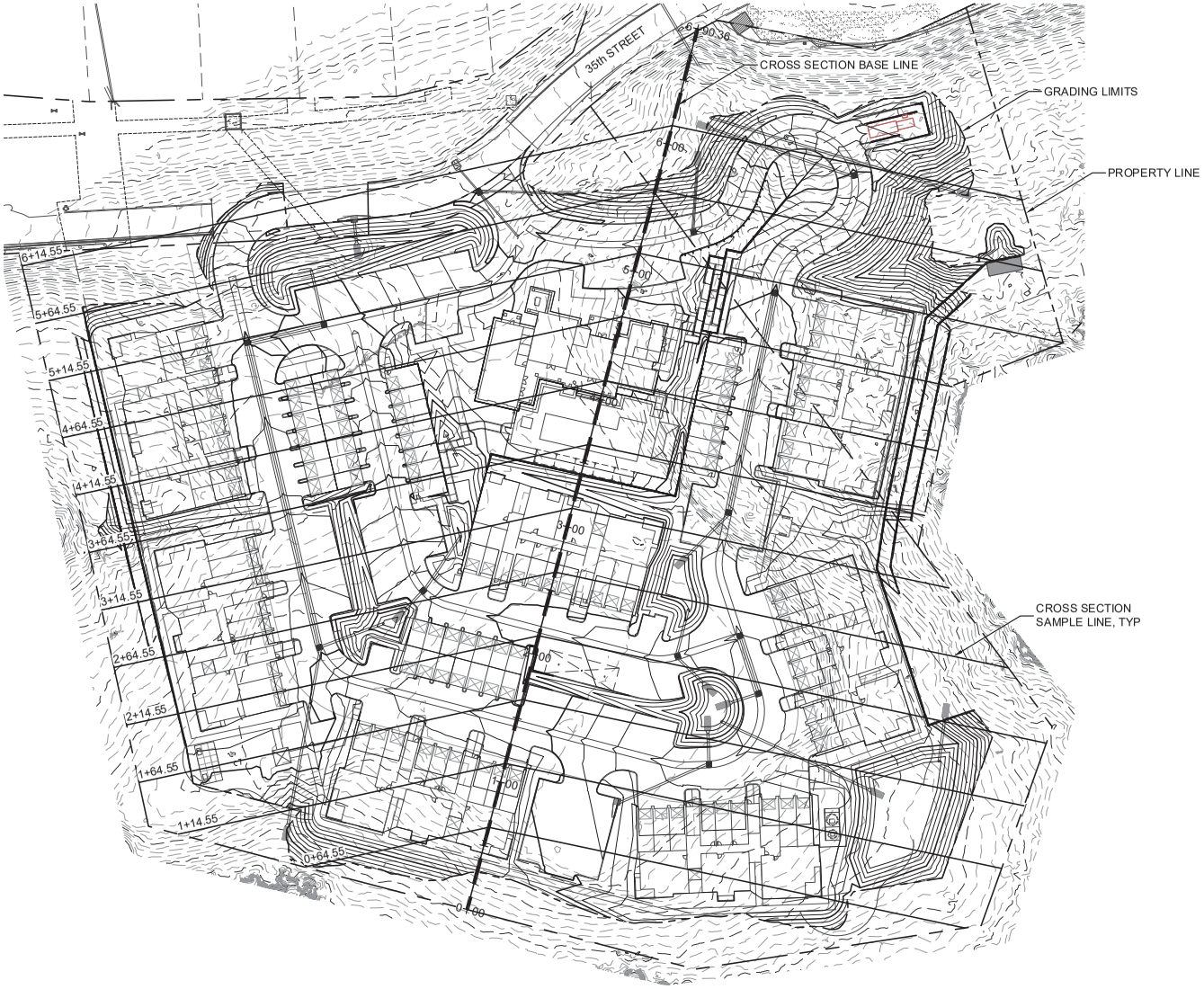
STORM SEWER PLAN AND PROFILES (CONT'D)



EAST-WEST SITE CROSS SECTION LOCATION PLAN

SCALE: 1" = 40'

0 20 40 80

SCALE: 1" = 40'

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EAST-WEST CROSS SECTION LOCATION PLAN

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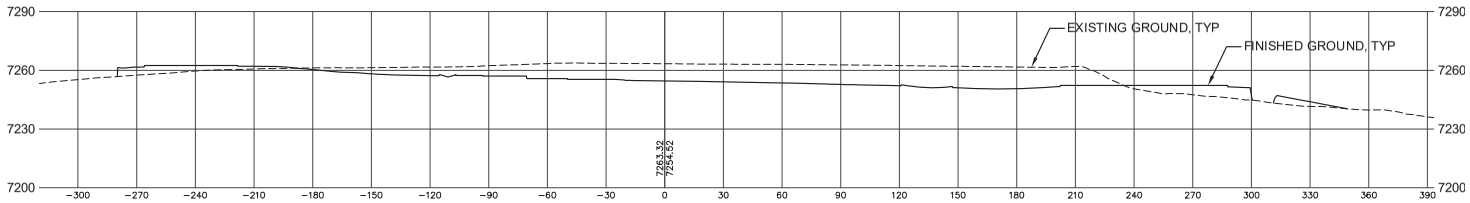

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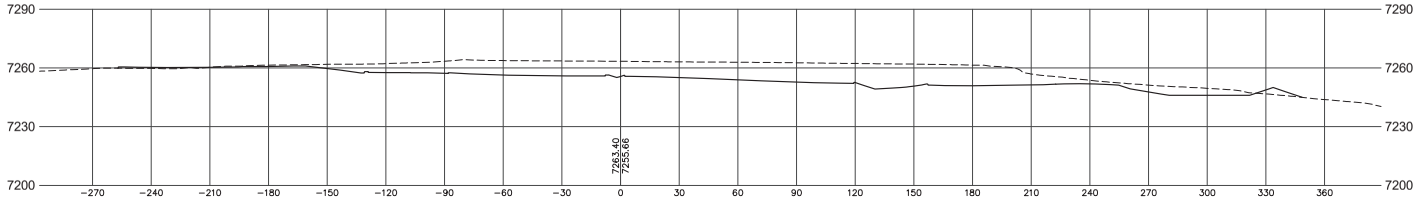

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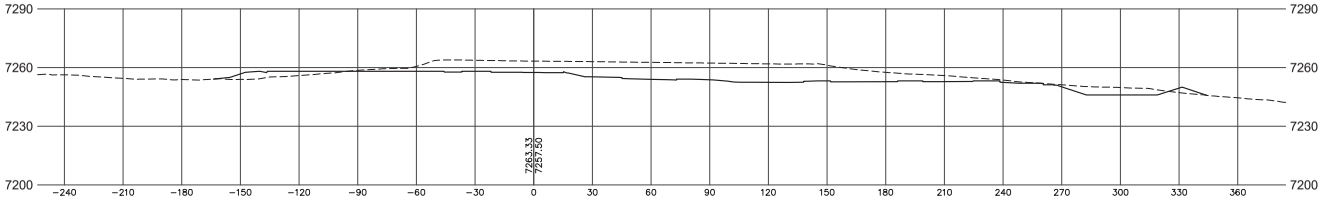

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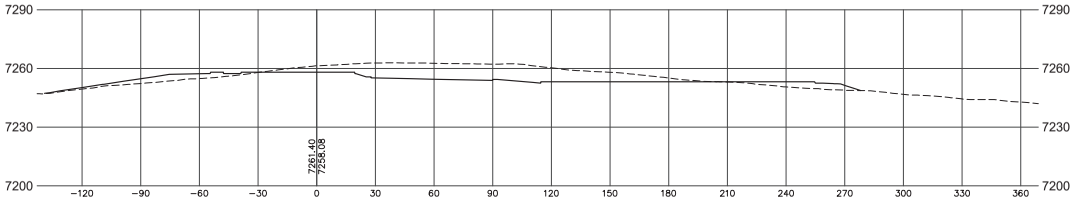

0+64.55

0 15 30 60
SCALE: 1" = 30'

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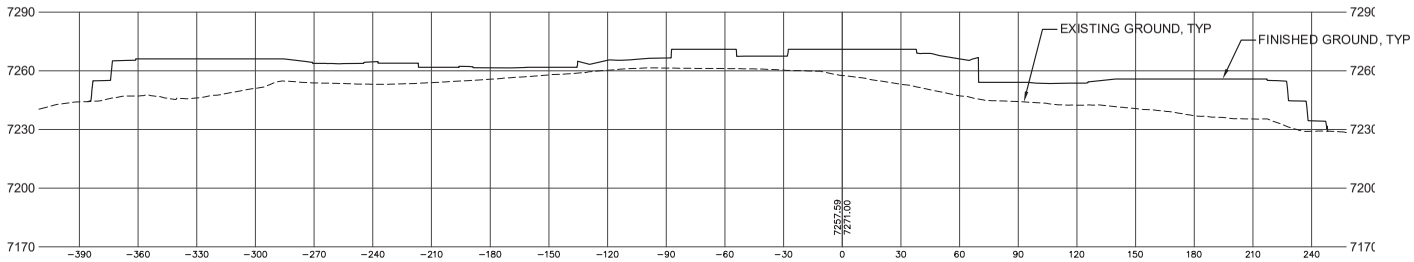
EAST-WEST CROSS SECTIONS



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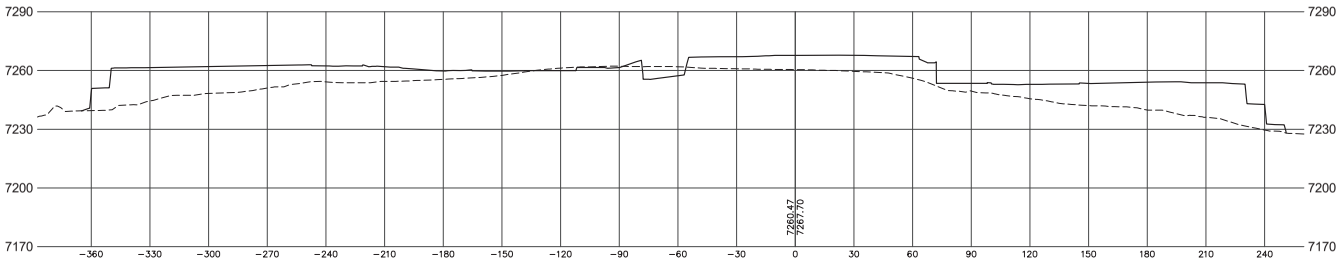

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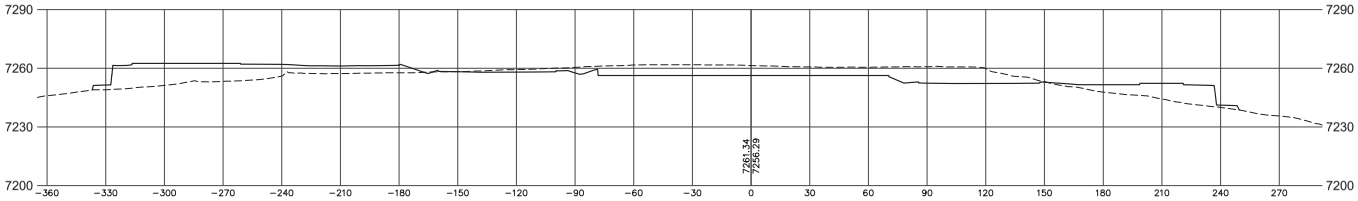

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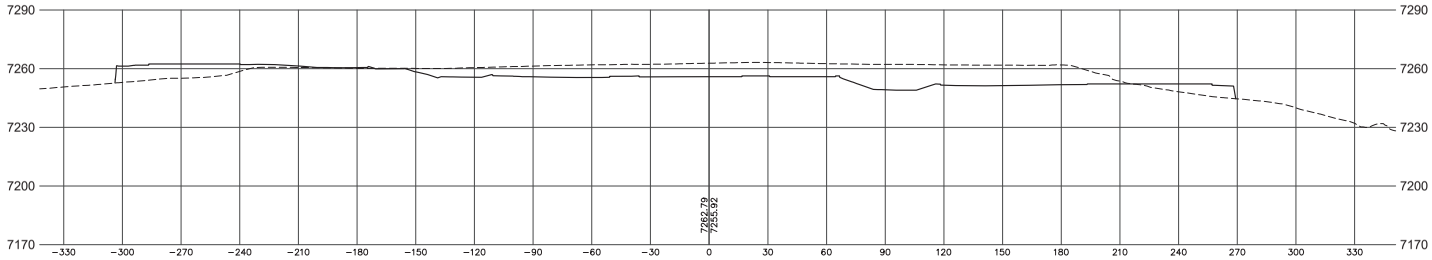

2+64.55

0 15 30 60
SCALE: 1" = 30'

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EAST-WEST CROSS SECTIONS (CONT'D)

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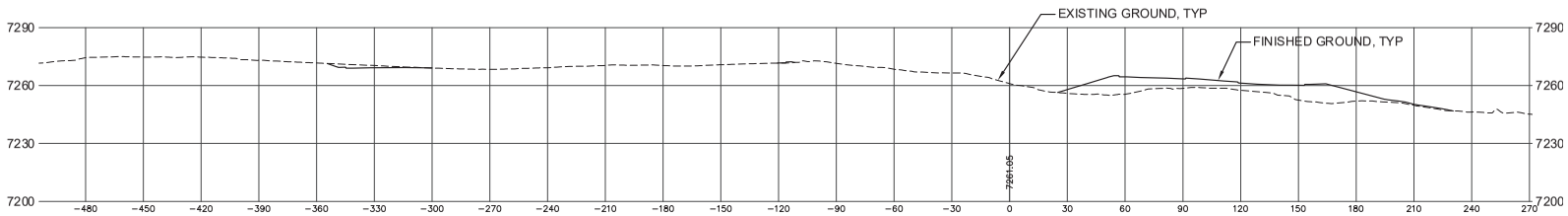

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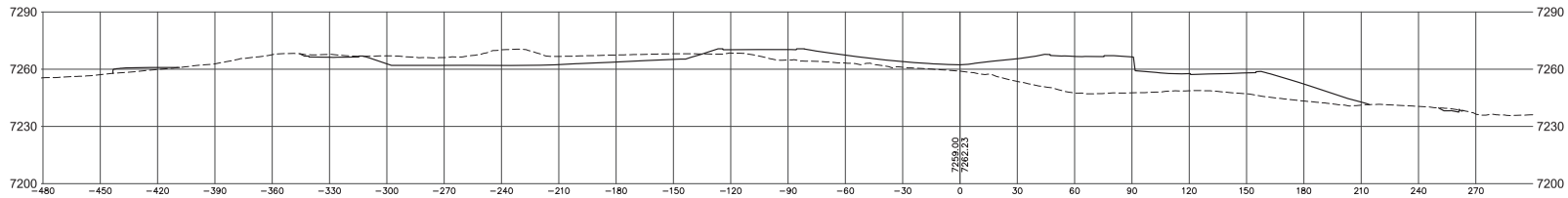

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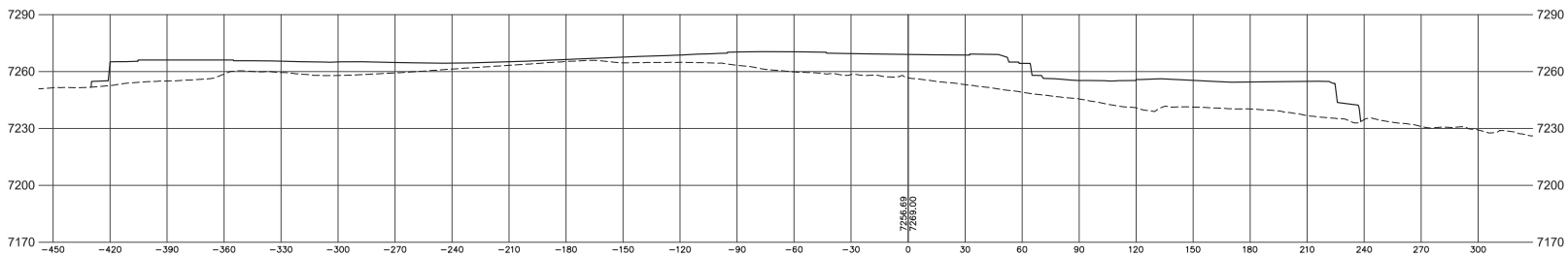

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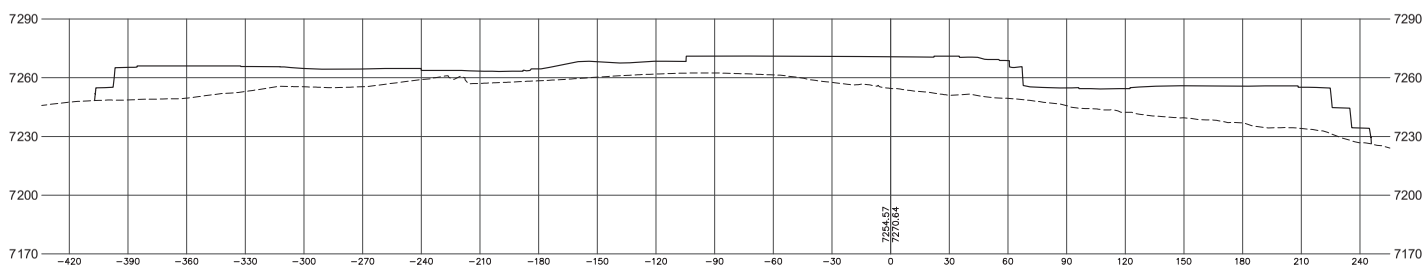

4+64.55

0 15 30 60
SCALE: 1" = 30'

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EAST-WEST CROSS SECTIONS (CONT'D)

N

NORTH-SOUTH SITE CROSS SECTION LOCATION PLAN

SCALE: 1" = 40'

0 20 40 80

SCALE: 1" = 40'

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NORTH-SOUTH CROSS SECTION LOCATION PLAN

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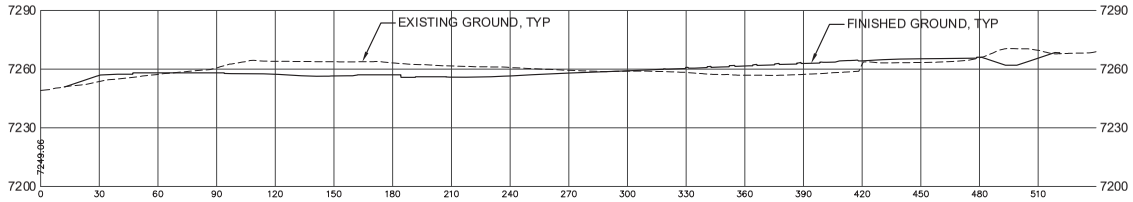

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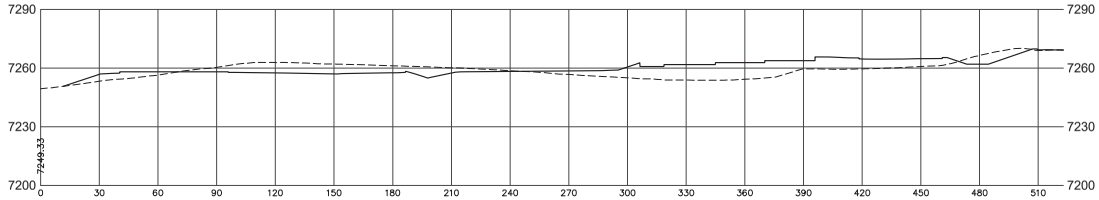

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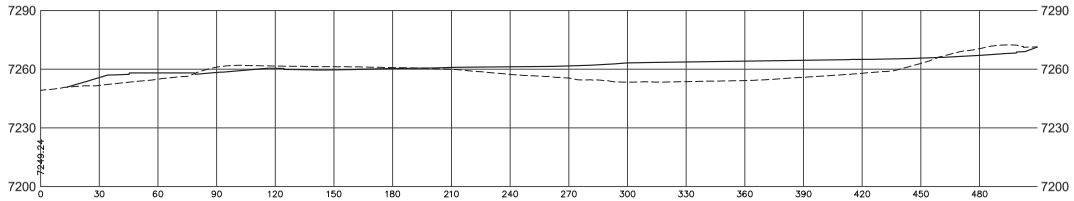

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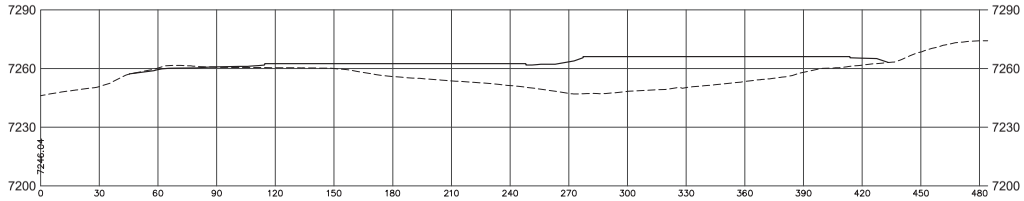

0+00

0 15 30 60
SCALE: 1" = 30'

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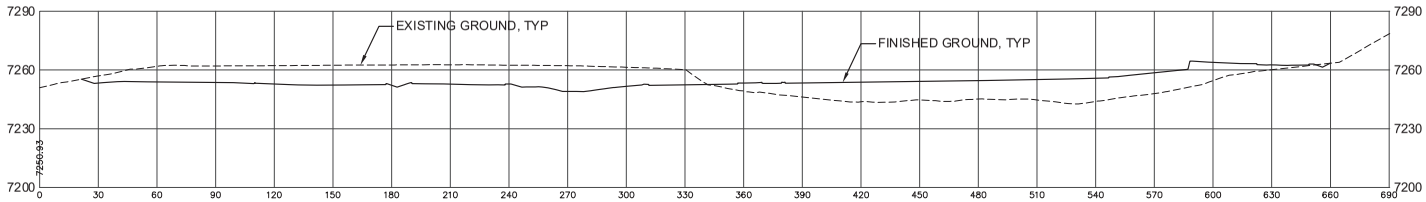
NORTH-SOUTH CROSS SECTIONS



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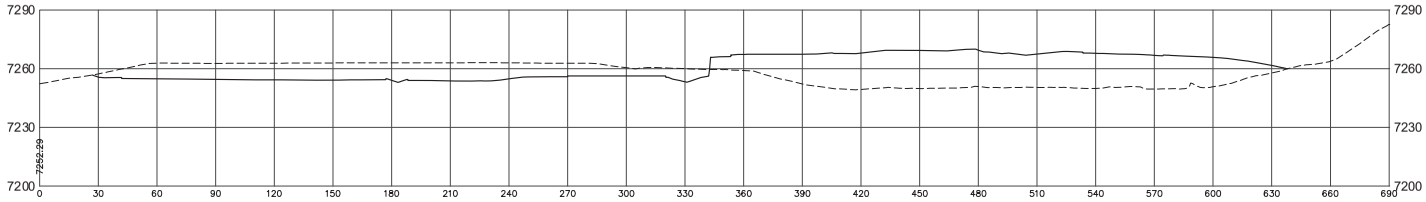

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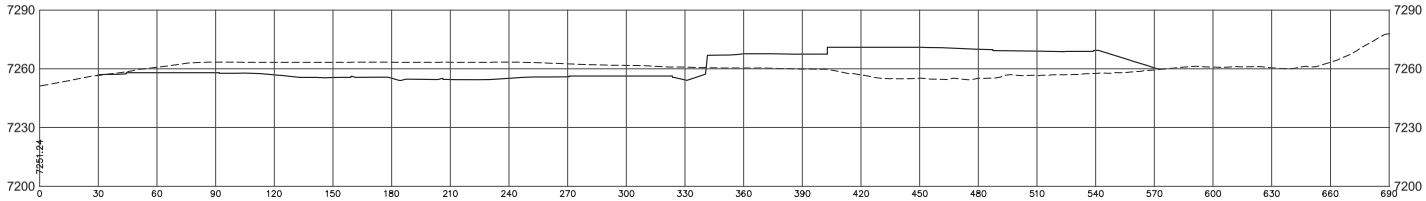

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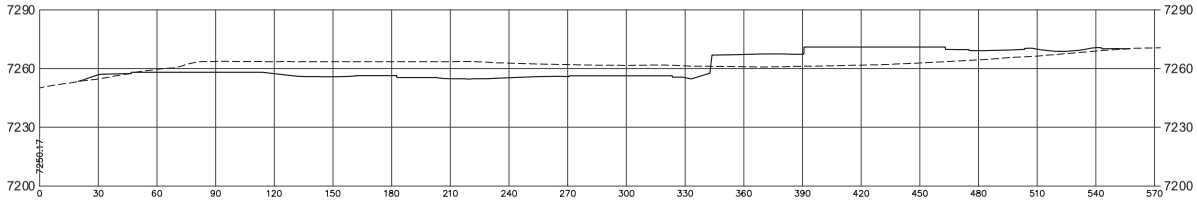

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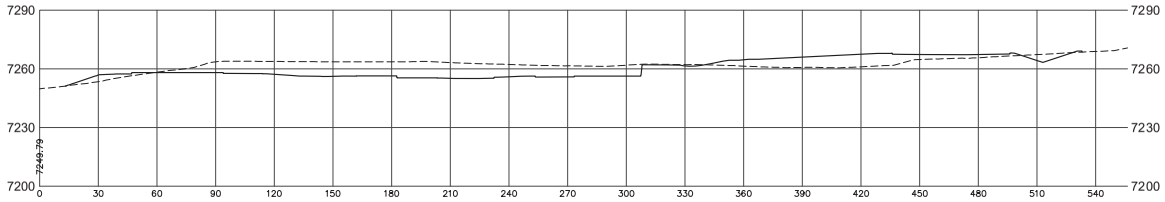

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0 15 30 60
SCALE: 1" = 30'

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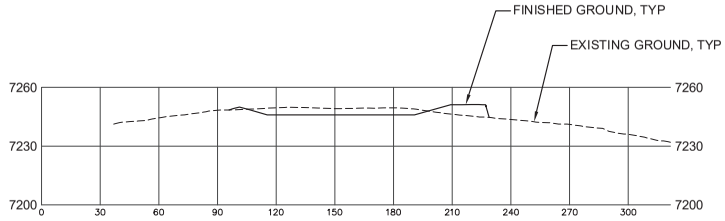

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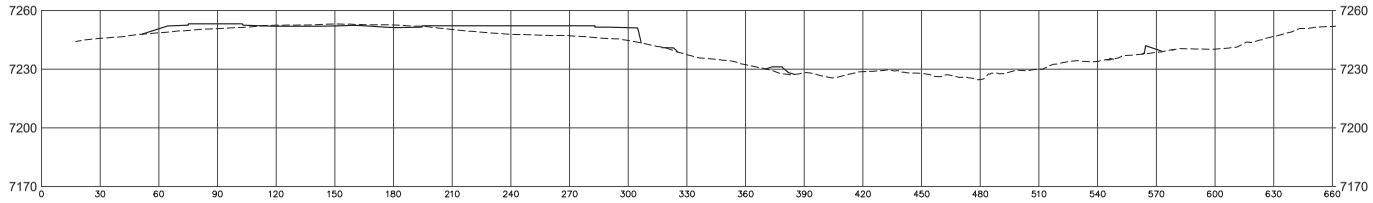

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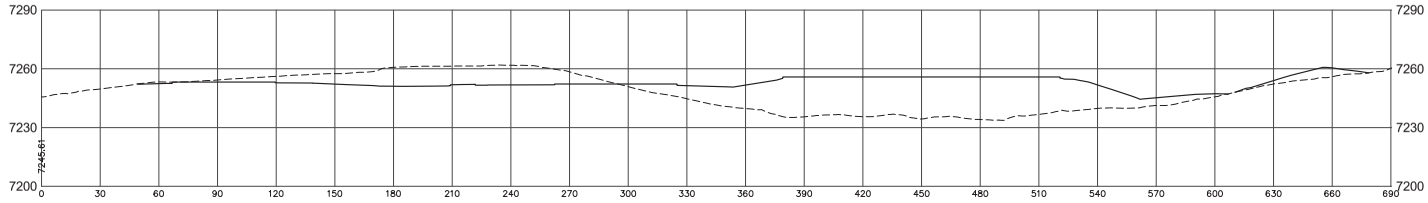

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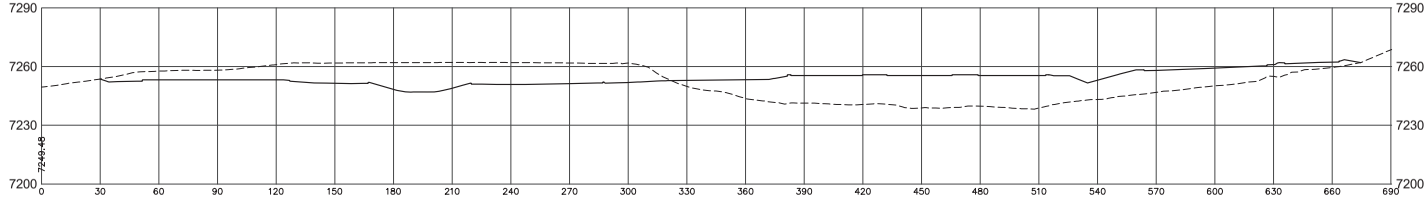

2+91.94

0 15 30 60
SCALE: 1" = 30'

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THE HILL RESIDENTIAL

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

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ARCHITECTURE AND PLANNING

C-707

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DATE: 05-24-19

NORTH-SOUTH CROSS SECTIONS (CONT'D)

STORM WATER POLLUTION PREVENTION PLAN
THE HILL RESIDENTIAL
LOS ALAMOS, NEW MEXICO

1. SITE AND PROJECT DESCRIPTION

The project site is currently developed. The property is bordered by Omega Road to the south, Commercial and Residential development to the north, and vacant land to the east and west.

1.1 Owner Operator:

Name
Address 1
Address 2

Construction Operator (Separate NPDES Permit needed).

_____

_____

_____

_____

Telephone: _____

Fax: _____

1.2 Location of the site:

The site is located in Township ___ North, Range ___ East, Section ___ in Los Alamos, New Mexico.

The latitude and longitude are as follows:

Latitude: 35°52'53" N
Longitude: 106°18'53" W

1.3 The total area of the site:

11.8876 ± acres

1.4 The area of the site that is expected to be disturbed:

11.8876 ± acres

1.5 Endangered Species:

Based on the instruction provided by the EPA Compliance Assurance and Enforcement Division Water Enforcement Branch, Region 6 "Storm Water Region 6 NPDES General Permit for Storm Water Discharge from Construction Activity," there are no endangered or threaten species, or designated critical habitat, which are likely to be adversely affected by the construction activity's storm water discharge or storm water discharge related activities.

1.6 Intended sequence of major construction activities:

1. Install Best Management Practices (BMP's). The contractor shall minimize soil disturbance and insure the proper stockpiling of materials.

2. Site Grading. The contractors shall use site-specific controls as shown on the Temporary Erosion Control Plans and Grading and Drainage Plans. Soil disturbance shall be minimized.

3. Stabilization. The contractors shall use site-specific controls as shown on the Permanent Erosion Control Plans.

1.7 The following maps have been prepared:

1.7.1 Vicinity Map

See Sheet No. _____.

1.7.2 Drainage patterns:

See Grading and Drainage Plan, See C-400 Series.

1.7.3 Approximate slopes after major grading.

See Permanent Erosion Control, Sheet C-801.

1.7.4 Outline area of disturbance:

See Permanent Erosion Control, Sheet C-801.

1.7.5 Outline of areas which won't be disturbed:

See Permanent Erosion Control, Sheet C-801.

1.7.6 Location of major structural and non-structural concepts:

See Temporary Erosion Control Plan, Sheet C-801.

1.7.7 Areas where stabilization practices are expected to occur.

See Permanent Erosion Control Plan, Sheet C-801.

2. DESCRIPTION OF CONTROLS

2.1 Posting Requirements:

The Contractor will post conspicuously near the entrance to the site the following items:

Copies of NOIs
Name and telephone number of contact persons.

2.2 "Good Housekeeping":

The contractors shall practice "Good Housekeeping." This includes the proper disposal of construction and demolition debris on a daily basis, proper wash down methods of construction vehicles, the proper stockpiling of materials. The construction site shall be kept in a neat and orderly manner and exposure of material to storm water will be minimized to the extent practicable.

2.3 Concrete Washout

Concrete washout is a process wastewater and must be controlled in a designated area (e.g. bermed pit) and disposed of properly and noted on the Temporary Erosion Control Plans.

2.4 Minimize Disturbance and Preserve Natural Vegetation:

The Contractor shall minimize disturbance. The limits of construction shall be clearly delineated and enforced. Special attention will be given to protecting established vegetation. The contractor will be responsible for replacing vegetation that is unnecessarily disturbed.

2.5 Inspections:

Disturbed areas, stabilization and structural control measures shall be inspected as required and at least once every two weeks, and within 24 hours or the next working day of the end of a storm event. If a portion of the site has been finally or temporarily stabilized, and runoff is unlikely due to winter conditions, or during seasonal arid periods, inspections shall be conducted on a monthly basis.

Inspections shall be documented on the inspection and maintenance form. Inspections shall be continued by the Owner and final stabilization of an area is achieved and/or the Notice of Termination is submitted.

2.6 Record Keeping:

A copy of the SWPP Plan will be maintained onsite for the use of all Operators and those identified in the SWPP Plan as having on site responsibilities. Items that will be maintained and attached to the SWPP include:

Inspection Reports: The inspection reports shall be signed by a qualified inspector assigned by the Contractor. The SWPP package and reports shall be available to EPA representatives at all times during construction.

Land Disturbance Log containing: dates when major soil disturbing activities occur, dates when construction activities temporarily or permanently cease on a portion of the site, and dates when stabilization measures are initiated.

Spill Tracking

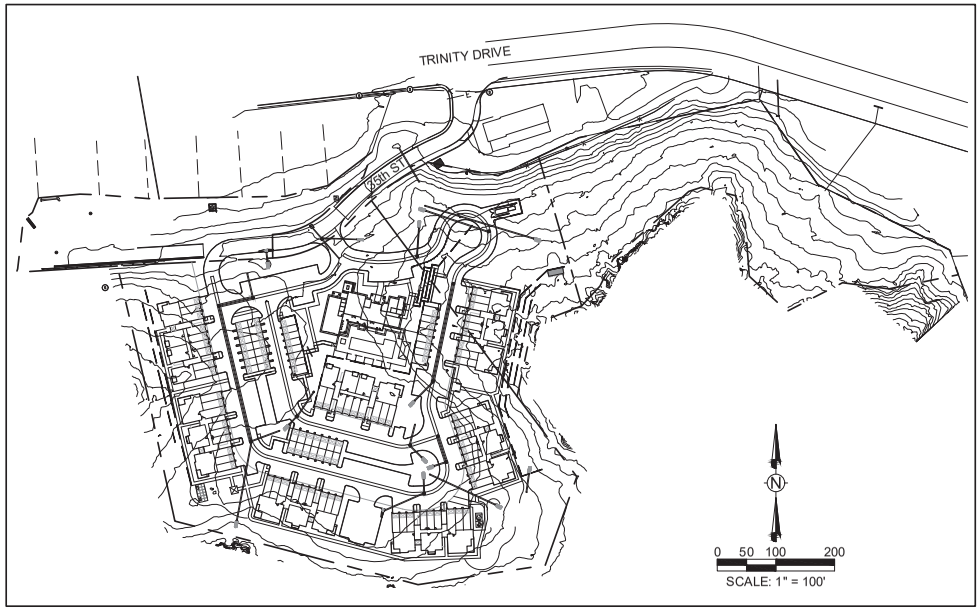
Copies of SWPP Plans, inspection records, spill reports, all reports required by NPDES Permit coverage, and data used to complete the NOI shall be retained by the permitees.

2.7 Plan Amendment:

This SWPP Plan will be amended when:

There is a change in design, construction, operation, or maintenance.

If the inspection report identifies problems or inadequacies with the current BMPs, the SWPP Plan shall be modified as necessary to include additional or modified BMP's designed to correct the problems.



DEVELOPED CONDITIONS DRAINAGE MAP
SCALE: 1" = 100'

SWPP Plan Inspection Report

Project Name: _____

Purpose of Inspection: _____ Date: _____

Inspector: _____

Weather Information: Type, Time, Amount, and Duration of Each Storm Event since Last Inspection. List Dates and Location for Storm Events:

_____

_____

_____

Location of NPDES Notice of Permit Coverage Posting: _____

_____

Has Land Disturbance Log been maintained: [ ] Yes [ ] No [ ] N/A

Does the site map reflect current BMPs and Site Characteristics? [ ] Yes [ ] No

Does the site map reflect current BMPs and Site Characteristics? [ ] Yes [ ] No

Comments: _____

_____

_____

Evidence of Discharges of Sediment or other Pollutants from the Site (Describe Below): [ ] Yes [ ] No

Evidence of Spills or Leaks (Describe Below): [ ] Yes [ ] No

Evidence of Offsite Sediment Tracking (Describe Below) [ ] Yes [ ] No

Comments: _____

_____

Is Facility in Compliance with SWPP Plan and Permit? [ ] Yes [ ] No

Incidents of Non-Compliance with SWPP Plan: _____

_____

_____

Land Disturbance Log, including Location and Date of Soil Disturbance, Activities and Stabilization Initiated:

_____

_____

SWPP Plan Inspection Report (Continued)

Certification Statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____
(Signature)

_____
(Please Print Name, Title)

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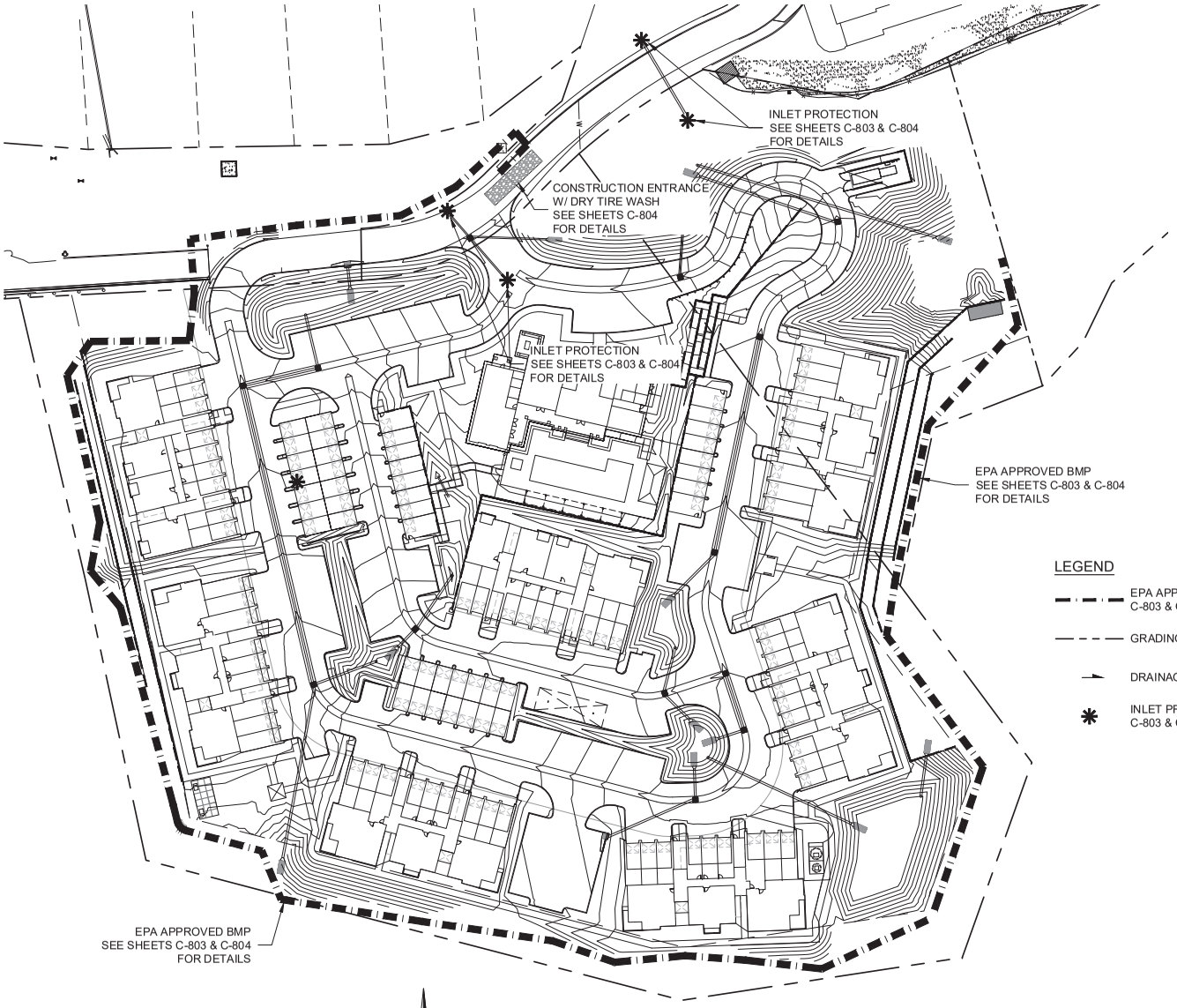
STORM WATER POLLUTION PREVENTION PLAN



LEGEND

- EPA APPROVED BMP. SEE SHEET C-803 & C-804 FOR DETAILS
- GRADING LIMITS
- DRAINAGE FLOW ARROW
- INLET PROTECTION. SEE SHEETS C-803 & C-804 FOR DETAILS

N

0 20 40 80
SCALE: 1" = 40'

TESCM PLAN
SCALE: 1" = 40'

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TESCM PLAN

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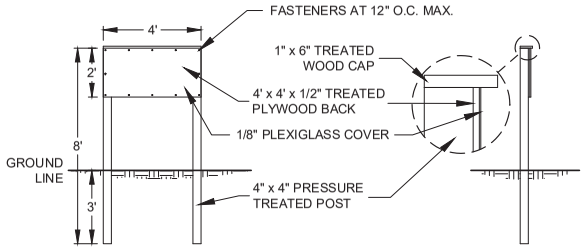
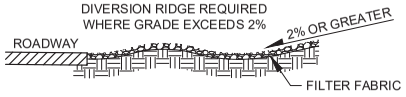


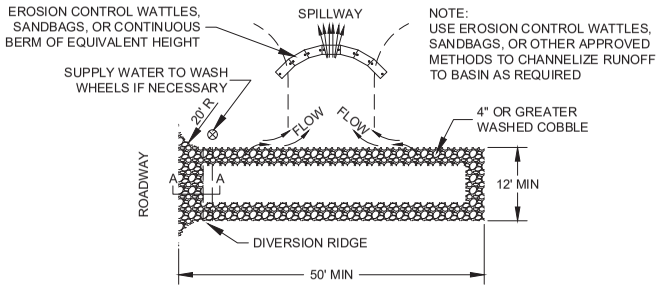
N.P.D.E.S. PERMIT POSTING BOARD
(LOCATED AT MAIN ENTRANCE)

NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL MINIMIZE SEDIMENT TRACKING OR TRANSPORT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE ADDING ADDITIONAL LAYERS OF GRAVEL, REPAIR AND/OR CLEANOUT OF MEASURE USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC ROADWAYS.
3. VEHICLE WASHING SHALL BE CONDUCTED IN A STABILIZED AREA WITH APPROPRIATE STORM WATER CONTROLS IN PLACE.



SECTION A-A



PLAN VIEW

TEMPORARY GRAVEL CONSTRUCTION
ENTRANCE / EXIT

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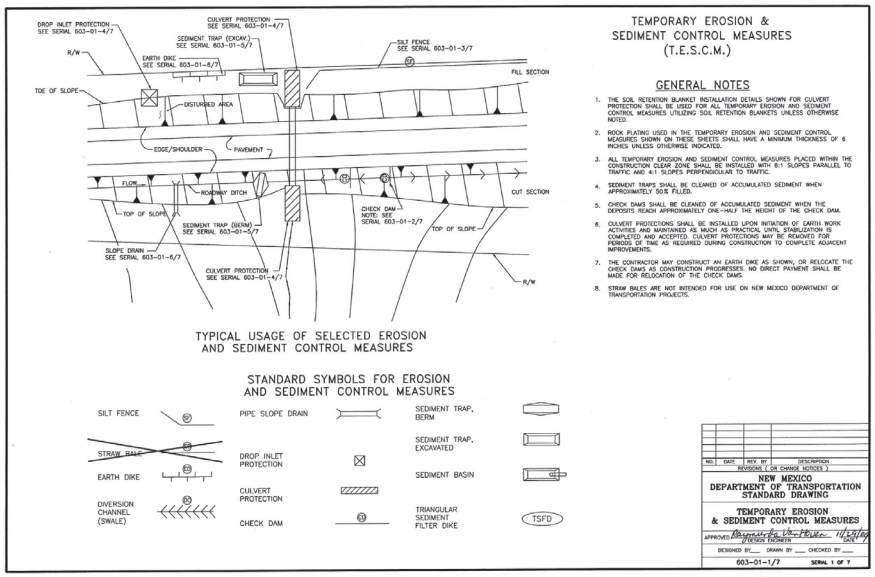
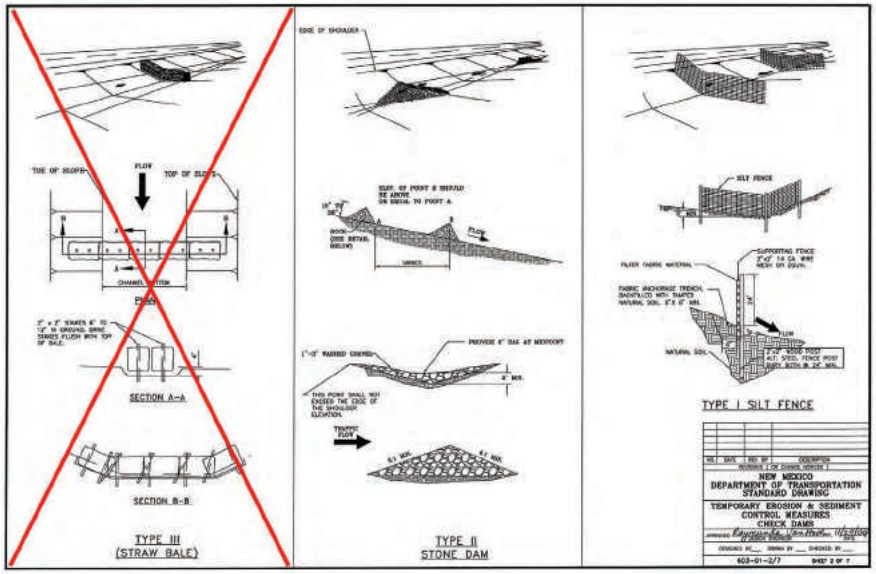
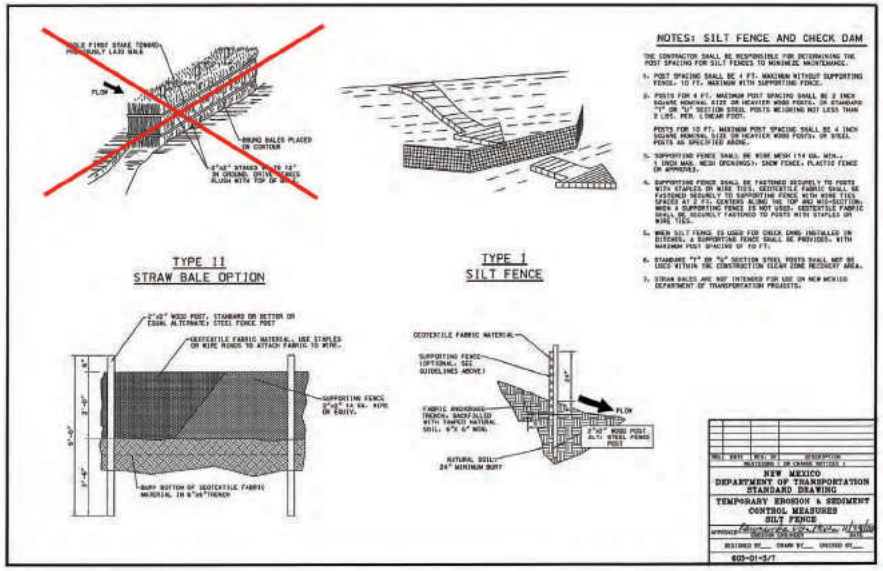
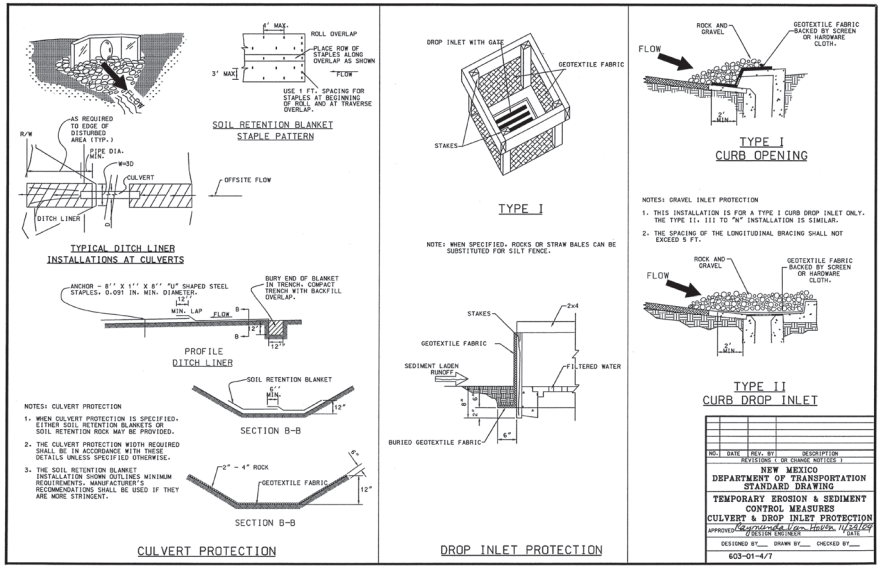
STORM WATER
CONTROL DETAILS









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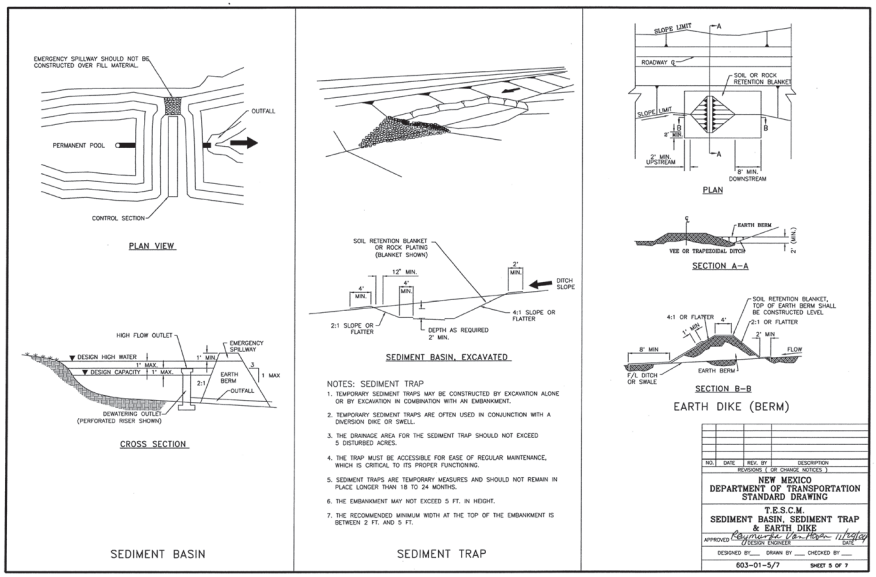
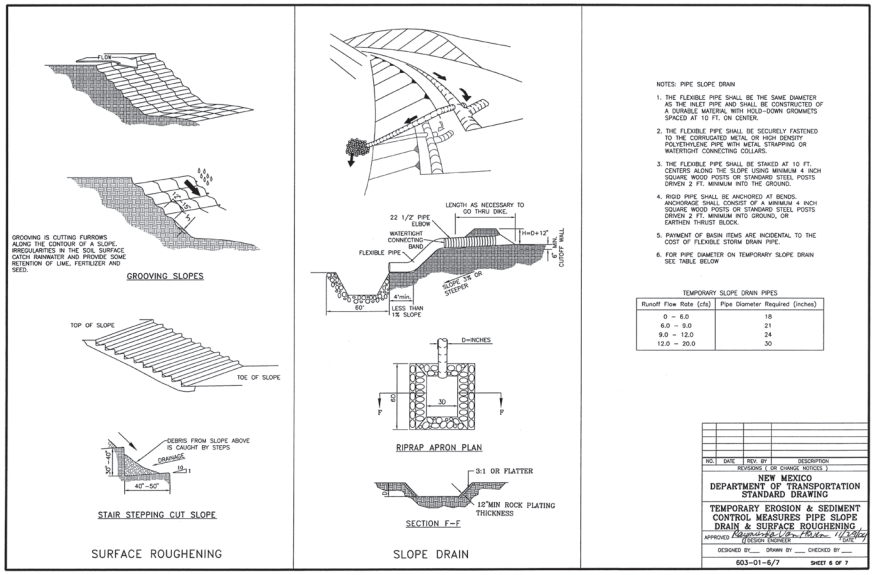
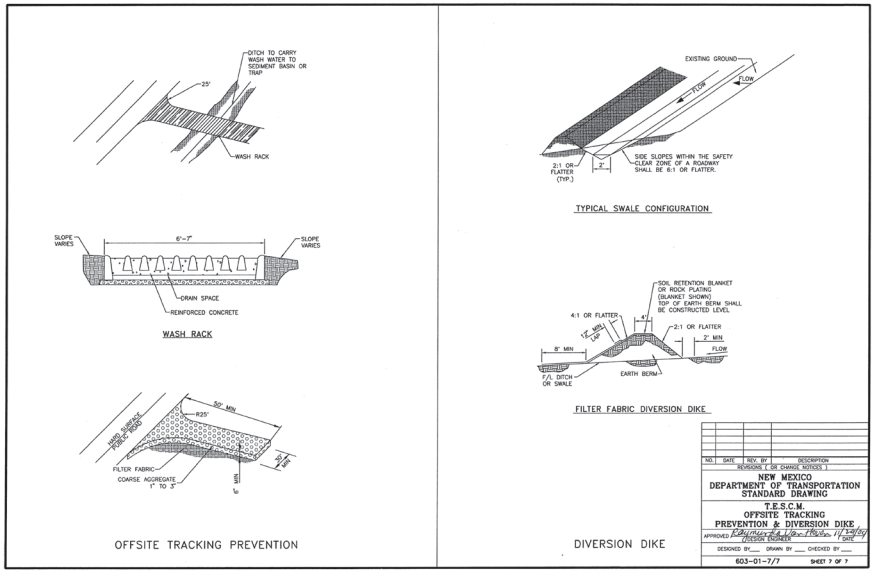




TEMPORARY SLOPE DRAIN PIPES

Runoff Flow Rate (cfs)	Pipe Diameter Required (inches)
0 – 6.0	18
6.0 – 9.0	21
9.0 – 12.0	24
12.0 – 20.0	30



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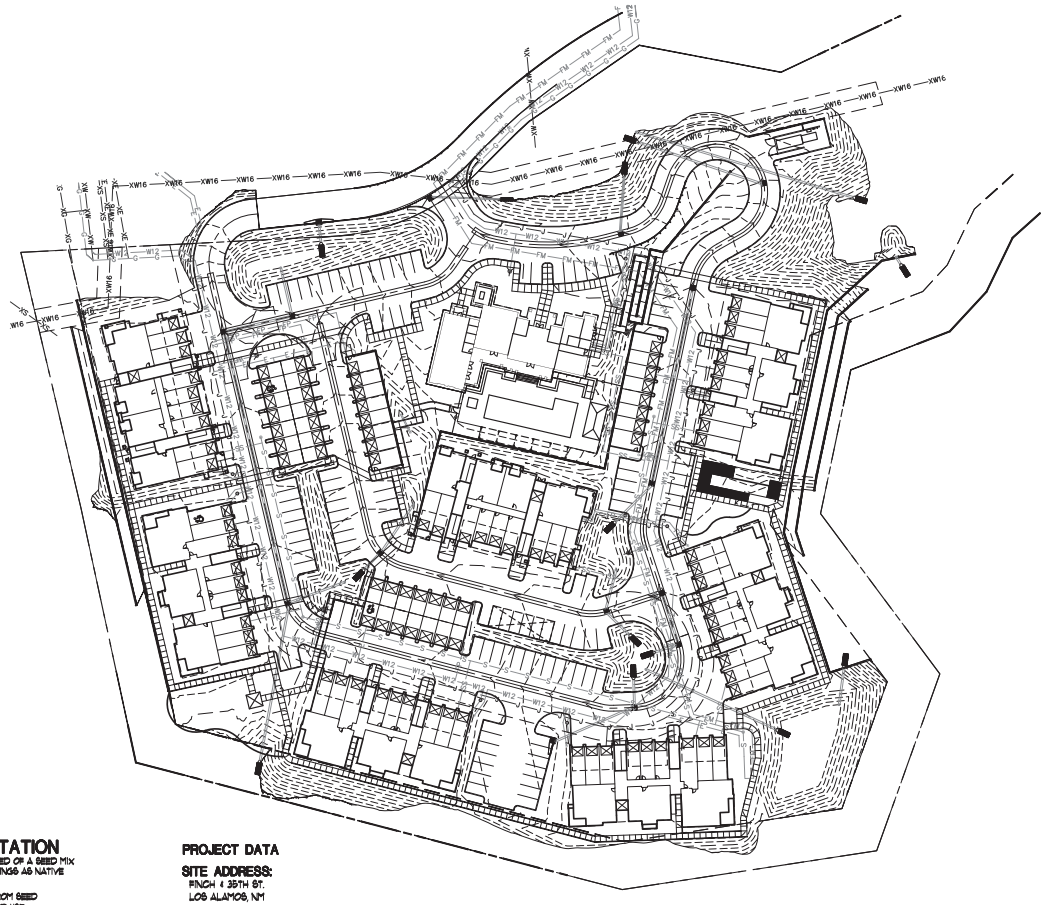
TESCM DETAILS

PLANT PALETTE: (FOR ALL SHEETS)

TREES:			
PINUS NIGRA AUSTRIAN BLACK PINE	24" BOX, MATCHING 8' HT, 5' SP, 2" CAL	61 TOTAL	MEDIUM WATER USE
POPULUS TREMULOIDES ASPEN	15 GALLON MIN. 8' HT, 3' SP, 1" CAL	36 TOTAL	MEDIUM WATER USE
FRAXINUS VELUTINA ARIZONA ASH	24" BOX, MATCHING 10' HT, 5' SP, 2 1 CAL	60 TOTAL	HIGH WATER USE
ULMUS PARVIFOLIA LACEBARK ELM	36" BOX MATCHING 12' HT, 6' SP, 21/2" CAL	5 TOTAL	MEDIUM WATER USE
PINUS THUNBERGI JAPANESE BLACK PINE	24" BOX, MATCHING 8' HT, 41/2' SP, 2" CAL	5 TOTAL	MEDIUM WATER USE
CRATAEGUS PHAENOPYRUM WASHINGTON HAWTHORNE	24" BOX MIN. 8' HT, 5' SP, 2"" CAL	76 TOTAL	MEDIUM WATER USE
PYRUS CALLERYANA 'BRADFORD' BRADFORD PEAR	15 GALLON MIN. 10' HT, 5' SP, 2" CAL	14 TOTAL	HIGH WATER USE
SHRUBS & VINES:			
COTONEASTER DAMMERI BEARBERRY COTONEASTER	1 GALLON FULL, PAST CAN	323 TOTAL	MEDIUM WATER USE
JUNIPERUS HORIZONTALIS 'WILTONI' BLUE CARPET JUNIPER	5 GALLON FULL, PAST CAN	228 TOTAL	MEDIUM WATER USE
PINUS MUGO 'MUGO' MUGO PINE	5 GALLON FULL, PAST CAN	36 TOTAL	MEDIUM WATER USE
JUNIPERUS SABINA BROADMOR BROADMOR JUNIPER	5 GALLON FULL, PAST CAN	60 TOTAL	MEDIUM WATER USE
MUHLENBERIA RIGENS DEER GRASS	1 GALLON FULL, PAST CAN	133 TOTAL	LOW WATER USE
PYRACANTHA COCCINEA 'LOU BOY' FIRESTHORN HYBRID	1 GALLON FULL, PAST CAN	267 TOTAL	MEDIUM WATER USE
MAHONIA AQUIFOLIUM OREGON GRAPE	5 GALLON FULL, PAST CAN	132 TOTAL	MEDIUM WATER USE
RHODODENDRON 'LORD ROBERTS' HYBRID RHODODENDRON	5 GALLON FULL, PAST CAN	52 TOTAL	HIGH WATER USE
FORSYTHIA SUSPENSE FORSYTHIA	5 GALLON FULL, PAST CAN	83 TOTAL	MEDIUM WATER USE
PHOTINIA FRAZERI FRAZERS PHOTINIA	5 GALLON FULL, PAST CAN	91 TOTAL	MEDIUM WATER USE
RHUS TRILOBATA THREE LEAF SUMAC	5 GALLON FULL, PAST CAN	69 TOTAL	LOW WATER USE
RIBES AUREUM GOLDEN CURRANT	5 GALLON FULL, PAST CAN	24 TOTAL	LOW WATER USE
GROUNDCOVERS AND ACCENTS:			
VERBENA RIGIDA SANDPAPER VERBENA	1 GALLON FULL, PAST CAN	20 TOTAL	LOW WATER USE
MAHONIA REPENS CREEPING MAHONIA	1 GALLON FULL, PAST CAN	228 TOTAL	MEDIUM WATER USE
SYNTHETIC TURF		6,400 S.F.	



INDIGENOUS TREES & SHRUBS

(NOTE: THESE PLANTS WILL BE PLANTED IN AREAS SHOWN AS NATIVE PLANT REVEGETATION AREAS ON SHEETS L-1 THRU L-3

QUERCUS GAMBELII GAMBEL'S SCRUB OAK	15 GALLON LOW WATER USE
JUNIPERUS SCOPULORUM ROCKY MOUNTAIN JUNIPER	15 GALLON LOW WATER USE
ARCTOSTAPHYLOS PATULA POINTLEAF MANZANITA	5 GALLON LOW/MEDIUM WATER USE
DASIPHORA FRUTICOSA SHRUBBY CINQUEFOIL	1 GALLON MEDIUM WATER USE

IRRIGATION CONCEPT

THE IRRIGATION SYSTEM WILL CONSIST OF A DRIP EMITTER IRRIGATION TO ALL PLANTINGS, EXCLUDING TURF AND NATIVE SEED REVEGETATION. INDIGENOUS TREES AND SHRUBS WILL HAVE A DRIP SYSTEM PROVIDED TO THOSE PLANTS THAT ARE PLANTED WITHIN THE NATIVE SEED REVEGETATION AREAS. THIS IRRIGATION SYSTEM WILL BE ON A DEDICATED VALVE TO CONTROL THE AMOUNT OF WATER TO THESE SPECIES. LAWN AREAS WILL BE WATERED USING SPRAY IRRIGATION POP POP-UP LAWN HEADS WITH SOILD SENSORS CONTROLLING THE AMOUNTS OF WATER TO THE LAWN AREAS.

NATIVE PLANT REVEGETATION

(THE FOLLOWING PLANT TYPES WILL BE COMPOSED OF A SEED MIX AND BE APPLIED IN AREAS SPECIFIED ON DRAWINGS AS NATIVE SEED REVEGETATION) (12,000 S.F. TOTAL)

MUHLENBERGIA RIGENS DEER GRASS	PLANT FROM SEED LOW WATER USE
BOUTELOUA CURTIPENDUCA SIDEBOUTS GRAMA	PLANT FROM SEED LOW WATER USE
ARISTIDA PURPUREA THREE AWN PURPLE	PLANT FROM SEED LOW WATER USE
LINUM LEWISII BLUE FLAX	PLANT FROM SEED LOW WATER USE
BERLANDIERA LYRATA CHOCOLATE FLOWER	PLANT FROM SEED VERY LOW WATER USE
MELAMPODIUM LEUCANTHUM BLACKFOOT DAISY	PLANT FROM SEED VERY LOW WATER USE
SPHAERALCEA ANGUSTIFOLIA NARROWLEAF GLOBEMALLOW	PLANT FROM SEED LOW WATER USE
SPHAERALCEA COCCINEA SCARLET GLOBE MALLOW	PLANT FROM SEED LOW WATER USE
ZAUSCHNERIA HUMMINGBIRD TRUMPET	PLANT FROM SEED LOW WATER USE
CASTILLEJA INTEGRA INDIAN PAINTBRUSH	PLANT FROM SEED LOW WATER USE
PENSTEMON CARDINALIS CARDINAL PENSTEMON	PLANT FROM SEED LOW WATER USE
PENSTEMON STRICTUS ROCKY MOUNTAIN PENSTEMON	PLANT FROM SEED LOW WATER USE

PROJECT DATA

SITE ADDRESS:
FINCH & 35TH ST.
LOS ALAMOS, NM

SITE AREA:
GROSS: ±12.03 ACRES (±523,908 S.F.)

DENSITY:
163 UNITS/12.03 ACRES = 13.55 DU/ACRE

PARKING:
REQUIRED PARKING
NET USEABLE FLR AREA/150SF = 225 P.S.
PROVIDED PARKING

SURFACE	=	99
COVERED	=	6
ATTACHED GARAGES	=	78
DETACHED GARAGES	=	28
TOTAL	=	211 P.S.

LANDSCAPE REQUIREMENTS:
PARKING AREA: 78,350 S.F.
5% REQUIRED FOR LANDSCAPE: 1,418 S.F. REQUIRED
35% PROVIDED FOR LANDSCAPE: 10,064 S. F.
EXISTING TREES ON-SITE TO BE REMOVED ±136 TREES
PROVIDED 207 TREES WITH 2" CALIPER OR LARGER FOR REPLACEMENT TREES.

Overall Improvement Plan

Scale 1:50

50 25 0 50
GRAPHIC SCALE

NORTH

SHEET INDEX:

SHEET L-C	COVER SHEET
SHEET L-1	LANDSCAPE PLAN
SHEET L-2	LANDSCAPE PLAN
SHEET L-3	LANDSCAPE PLAN
SHEET LSI-1	NATIVE PLANT INVENTORY

phillip r. ryan
landscape architect p.c.
landscape architecture & planning
4916 s. quiet way
gilbert, arizona 85296
(480) 899-5813 fax (480) 963-3674

THE HILL APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

5-23-2019
STATE OF NEW MEXICO
PATRICK C. MORSE
296
REGISTERED LANDSCAPE ARCHITECT
Expires 6/30/2019

PRELIMINARY

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1102 East Missouri Avenue
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ARCHITECTURE AND PLANNING

L-C

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COVER SHEET

PLANT PALETTE: (FOR THIS SHEET ONLY)

TREES:

PINUS NIGRA AUSTRIAN BLACK PINE	24" BOX MATCHING 8' HT, 5' SP., 2" CAL
POPULUS TREMULOIDES ASPEN	15 GALLON 8' HT, 3' SP., 1" CAL
FRAXINUS VELUTNA ARIZONA ASH	24" BOX MATCHING 10' HT, 5' SP., 2 " CAL
ULMUS PARVIFOLIA LACEBARK ELM	36" BOX MATCHING 12' HT, 6' SP., 2 1/2" CAL
PINUS THUNBERGI JAPANESE BLACK PINE	24" BOX MATCHING 8' HT, 4 1/2' SP., 2" CAL
CRATAEGUS PHAENOPYRUM WASHINGTON HAWTHORNE	24" BOX 8' HT, 5' SP., 2" CAL
PYRUS CALLERYANA 'BRADFORD' BRADFORD PEAR	15 GALLON 8' HT, 4' SP., 1" CAL

SHRUBS / VINES:

COTONEASTER DAMMERI BEARBERRY COTONEASTER	1 GALLON FULL PLANT CAN
JUNIPERUS HORIZONTALIS 'WILTONII' BLUE CARPET JUNIPER	5 GALLON FULL PLANT CAN
PINUS MUGO 'MUGO' MUGO PINE	5 GALLON FULL PLANT CAN
JUNIPERUS SABINA BROADMOR BROADMOOR JUNIPER	5 GALLON FULL PLANT CAN
MUHLENBERGIA RIGENS DEER GRASS	1 GALLON FULL PLANT CAN
PYRACANTHA COCCINEA 'LOU BOY' FIRETHORN HYBRID	1 GALLON FULL PLANT CAN
MAHONIA AQUIFOLIUM OREGON GRAPE	5 GALLON FULL PLANT CAN
RHODODENDRON 'LORD ROBERTS' HYBRID RHODODENDRON	5 GALLON FULL PLANT CAN
FORSYTHIA SUSPENSE FORSYTHIA	5 GALLON FULL PLANT CAN
PHOTINIA FRAZERI FRAZERS PHOTINIA	5 GALLON FULL PLANT CAN
RHUS TRILOBATA THREE LEAF SUMAC	5 GALLON FULL PLANT CAN
RIBES AUREUM GOLDEN CURRANT	5 GALLON FULL PLANT CAN

GROUNDCOVERS AND ACCENTS:

VERBENA RIGIDA SANDPAPER VERBENA	1 GALLON FULL PLANT CAN
MAHONIA REPENS CREEPING MAHONIA	1 GALLON FULL PLANT CAN

SODDED TURF

NATIVE PLANT REVEGETATION

NATIVE PLANTS:

QUERCUS GAMBELII GAMBELS SCRUB OAK	15 GALLON LOW WATER USE
JUNIPERUS SCOPULORUM ROCKY MOUNTAIN JUNIPER	15 GALLON LOW WATER USE
ARCTOSTAPHYLOS PATULA POINTLEAF MANZANITA	5 GALLON LOW/MEDIUM WATER USE
DASIPHORA FRUTICOSA SHRUBBY CINQUEFOIL	1 GALLON LOW WATER USE

PROJECT DATA

SITE ADDRESS:
141 & 121 35TH ST.
LOS ALAMOS, NM

PARCEL INFO:
PARCEL 10331121893339 & 10331122083371
LOS ALAMOS COUNTY, NM

ZONING
MIXED USE

SITE AREA:
GROSS AREA: ±9.23 ACRES (±402,206 S.F.)

DENSITY:
149 UNITS / 9.23 ACRES = 16.14 D.U./ACRE

LOT COVERAGE (UNDER ROOF):

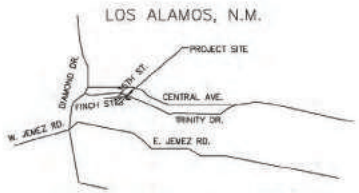
BUILDING	AREA	QTY	SUB-TOTAL
BLDG TYPE 1 =	10,381 S.F.	2	20,762 S.F.
BLDG TYPE 2 =	9,819 S.F.	5	49,095 S.F.
GARAGE =	3,696 S.F.	2	7,392 S.F.
LOFT/GARAGE =	2,605 S.F.	2	5,210 S.F.
CLUBHOUSE =	7,136 S.F.	1	7,136 S.F.
POOL RAMADA =	687 S.F.	1	687 S.F.
BBQ RAMADA =	454 S.F.	1	454 S.F.
TOTAL COVERED FLOOR AREA UNDER ROOF =			90,736 S.F.

LOT COVERAGE = 90,736 / 402,206 = 22.55%

FLOOR AREA RATIO:

BUILDING	AREA	QTY	SUB-TOTAL
BLDG TYPE 1 =	25,755 S.F.	2	51,510 S.F.
BLDG TYPE 2 =	33,680 S.F.	5	168,400 S.F.
GARAGE =	3,696 S.F.	2	7,392 S.F.
LOFT/GARAGE =	2,605 S.F.	2	5,210 S.F.
CLUBHOUSE =	7,136 S.F.	1	7,136 S.F.
POOL RAMADA =	687 S.F.	1	687 S.F.
BBQ RAMADA =	454 S.F.	1	454 S.F.
TOTAL FLOOR AREA OF ALL BUILDINGS			239,225 S.F.

FLOOR AREA RATIO = 239,225 / 402,206 = 0.59



VICINITY MAP
N.T.S.

NORTH

DWELLING UNITS:

1 BEDROOM	30	20%
2 BEDROOM	84	56%
3 BEDROOM	35	24%
TOTAL	149	

UNIT MIX:

UNIT TYPE	AREA	QTY	%
A1	813 S.F.	30	14%
A2	918 S.F.	10	7%
B1	1060 S.F.	35	23%
B2	1191 S.F.	45	30%
C1	1400 S.F.	35	23%
L1	1343 S.F.	4	3%

PARKING:

RESIDENTIAL	
NET USEABLE FLR.AREA/750SF =	228 P.S. REQ'D.
NON-RESIDENTIAL	
NET USEABLE FLR.AREA/500 S.F. =	14 P.S. REQ'D.
TOTAL STANDARD SPACES REQUIRED =	242 P.S. REQ'D.
ACCESSIBLE P.S. REQUIRED =	8 A.D.A. P.S. REQ'D. (INCLUDED)
SURFACE =	66 P.S. PROVD.
COVERED =	44 P.S. PROVD.
ATTACHED GARAGES =	78 P.S. PROVD.
DETACHED GARAGES =	29 P.S. PROVD.
TANDEM SPACES AT GARAGES =	56 P.S. PROVD.
TOTAL PARKING SPACES PROVIDED =	273 P.S. PROVD.
ACCESSIBLE P.S. PROVIDED =	8 A.D.A. P.S. PROVD. (INCLUDED)

LEGEND

16 | 5
BUILDING NUMBER | BUILDING TYPE

DENOTES ACCESSIBLE PARKING

- ONE STORY
- TWO-STORY BUILDING
- THREE-STORY BUILDING
- FOUR-STORY BUILDING

Preliminary Landscape/Site Plan
Scale 1:40
40 20 0 40
GRAPHIC SCALE

NORTH

phillip r. ryan
landscape architect p.c.
landscape architecture & planning
4916 s. quiet way
gilbert, arizona 85298
(480) 899-9812 fax (480) 963-3674

THE HILL APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

STATE OF NEW MEXICO
PATRICK C. MORSE
296
REGISTERED LANDSCAPE ARCHITECT
Expires 6/30/2014

PRELIMINARY

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

ARCHITECTURE AND PLANNING

L-1

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PRELIMINARY LANDSCAPE PLAN

PLANT PALETTE: (FOR THIS SHEET ONLY)

TREES:			
PINUS NIGRA AUSTRIAN BLACK PINE	24" BOX, MATCHING 8' HT., 5' SP., 2" CAL.	23 TOTAL	
POPULNUS TREMULOIDES ASPEN	15 GALLON 8' HT., 3' SP., 1" CAL.	23 TOTAL	
FRAXINUS VELUTINA ARIZONA ASH	24" BOX, MATCHING 10' HT., 5' SP., 2 " CAL.	15 TOTAL	
ULMUS PARVIFOLIA LACEBARK ELM	36" BOX, MATCHING 12' HT., 6' SP., 21/2" CAL.	5 TOTAL	
PINUS THUNBERGI JAPANESE BLACK PINE	24" BOX, MATCHING 8' HT., 41/2' SP., 2" CAL.	0 TOTAL	
CRATAEGUS PHAENOPYRUM WASHINGTON HAWTHORNE	24" BOX, MATCHING 8' HT., 5' SP., 2" CAL.	14 TOTAL	
PYRUS CALLERYANA "BRADFORD" BRADFORD PEAR	15 GALLON 8' HT., 4' SP., 1" CAL.	0 TOTAL	
SHRUBS & VINES:			
COTONEASTER DAMMERI BEARBERRY COTONEASTER	1 GALLON FULL, PAST CAN	166 TOTAL	
JUNIPERUS HORIZONTALIS 'WILTONII' BLUE CARPET JUNIPER	5 GALLON FULL, PAST CAN	7 TOTAL	
PINUS MUGO 'MUGO' MUGO PINE	5 GALLON FULL, PAST CAN	0 TOTAL	
JUNIPERUS SABINA BROADMOR BROADMOR JUNIPER	5 GALLON FULL, PAST CAN	0 TOTAL	
MUHLENBERGIA RIGENS DEER GRASS	1 GALLON FULL, PAST CAN	95 TOTAL	
PYRACANTHA COCCINEA 'LOW BOY' FIRETHORN HYBRID	1 GALLON FULL, PAST CAN	89 TOTAL	
MAHONIA AQUIFOLIUM OREGON GRAPE	5 GALLON FULL, PAST CAN	19 TOTAL	
RHODODENDRON 'LORD ROBERTS' HYBRID RHODODENDRON	5 GALLON FULL, PAST CAN	11 TOTAL	
FORSYTHIA SUSPENSE FORSYTHIA	5 GALLON FULL, PAST CAN	44 TOTAL	
PHOTINIA FRAZIERI FRAZIERS PHOTINIA	5 GALLON FULL, PAST CAN	37 TOTAL	
RHUS TRILOBATA THREE LEAF SUMAC	5 GALLON FULL, PAST CAN	65 TOTAL	
RIBES AUREUM GOLDEN CURRANT	5 GALLON FULL, PAST CAN	24 TOTAL	
GROUNDCOVERS AND ACCENTS:			
VERBENA RIGIDA SANDPAPER VERBENA	1 GALLON FULL, PAST CAN	0 TOTAL	
MAHONIA REPENS CREEPING MAHONIA	1 GALLON FULL, PAST CAN	37 TOTAL	
SODDED TURF		1720 S.F.	

NATIVE PLANT REVEGETATION:

NATIVE PLANTS: (FOR THIS SHEET ONLY)		
QUERCUS GAMBELII GAMBEL'S SCRUB OAK	5 GALLON LOW WATER USE	19 TOTAL
JUNIPERUS SCOPULORUM ROCKY MOUNTAIN JUNIPER	5 GALLON LOW WATER USE	14 TOTAL
ARCTOSTAPHYLOS PATULA PONTILEAF MANZANITA	5 GALLON LOW/MEDIUM WATER USE	30 TOTAL
DASIPHORA FRUTICOSA SHRUBBY CINQUEFOIL	1 GALLON LOW WATER USE	0 TOTAL

phillip r. ryan
landscape architect p.c.
landscape architecture & planning
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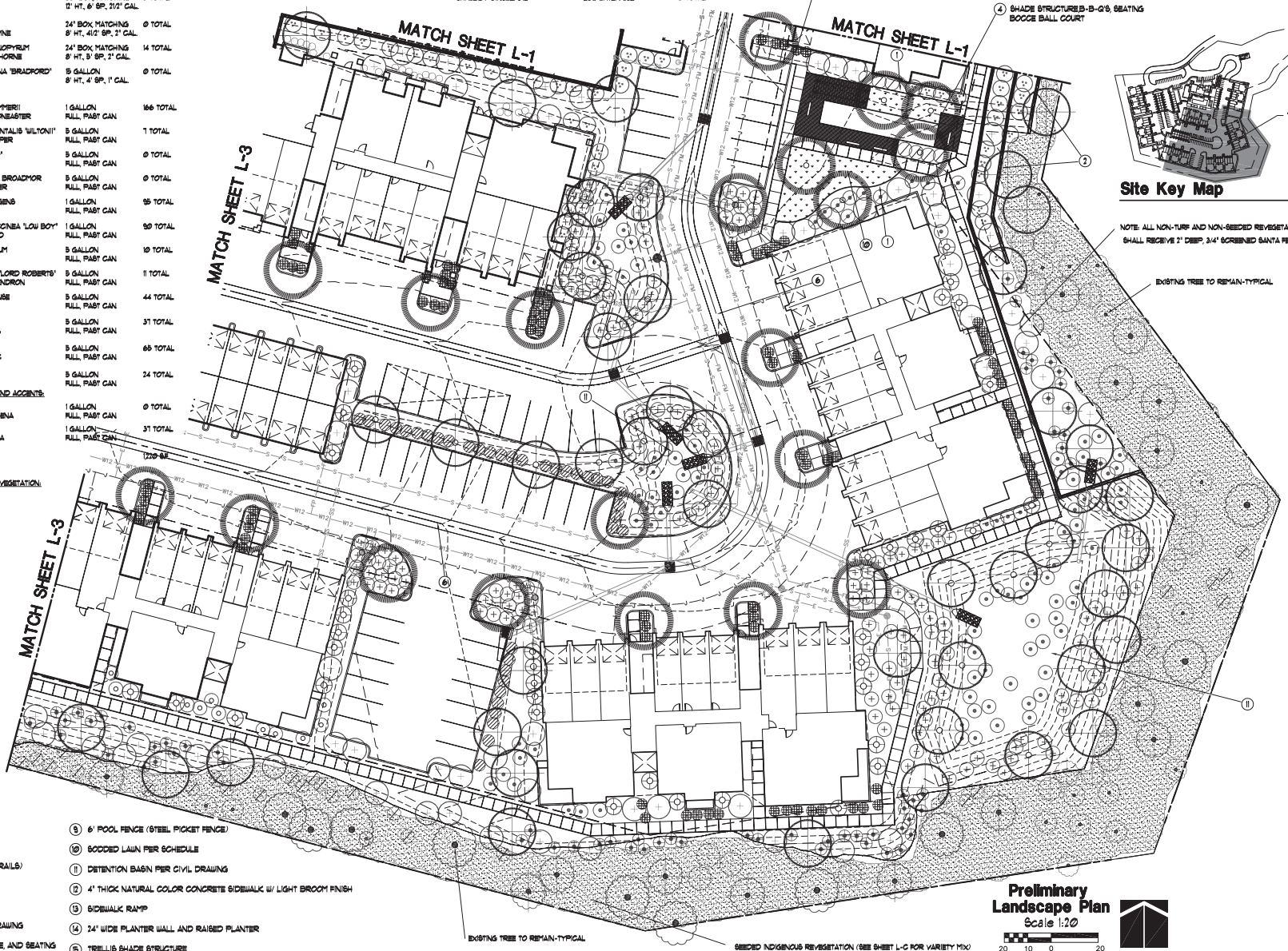
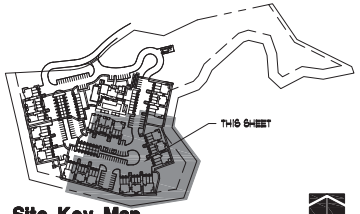
(480) 899-5813 fax (480) 963-3674

NOTE: ALL NON-TURF AND NON-SEEDED REVEGETATION AREAS SHALL RECEIVE 2" DEEP, 3/4" SCREENED SANTA FE BEIGE DECOMPOSED GRANITE





Site Key Map

NORTH

NOTE: ALL NON-TURF AND NON-SEEDED REVEGETATION AREAS SHALL RECEIVE 2" DEEP, 3/4" SCREENED SANTA FE BEIGE DECOMPOSED GRANITE

EXISTING TREE TO REMAIN-TYPICAL

PLAN KEY NOTES:

1. 6"x6" CONCRETE HEADER
2. RETAINING WALL PER CIVIL DRAWING
3. SIDEWALK RAMP (1:12 MAX SLOPE W/HANDRAILS)
4. AMENITY (SEE PLAN)
5. CROSSWALK WITH ENHANCED PAVEMENT
6. CONCRETE VALLEY GUTTER PER CIVIL DRAWING
7. RAMADA WITH B-B-Q, TRASH RECEPTACLE, AND SEATING
8. SHADE STRUCTURE WITH OUTDOOR KITCHEN FACILITIES
9. 6' POOL FENCE (STEEL PICKET FENCE)
10. SODDED LAWN PER SCHEDULE
11. DETENTION BASIN PER CIVIL DRAWING
12. 4" THICK NATURAL COLOR CONCRETE SIDEWALK W/ LIGHT BROOM FINISH
13. SIDEWALK RAMP
14. 24" WIDE PLANTER WALL AND RAISED PLANTER
15. TRELLIS SHADE STRUCTURE
16. DECORATIVE PAVED SURFACE

Preliminary Landscape Plan

Scale 1:20

20 10 0 20
GRAPHIC SCALE

NORTH

THE HILL APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

5-23-2019

STATE OF NEW MEXICO
PATRICK C. MORSE
296
REGISTERED LANDSCAPE ARCHITECT
Expires 6/30/2019

PRELIMINARY

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

ARCHITECTURE AND PLANNING

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PRELIMINARY
LANDSCAPE PLAN

PLANT PALETTE: (FOR THIS SHEET ONLY)

TREES:

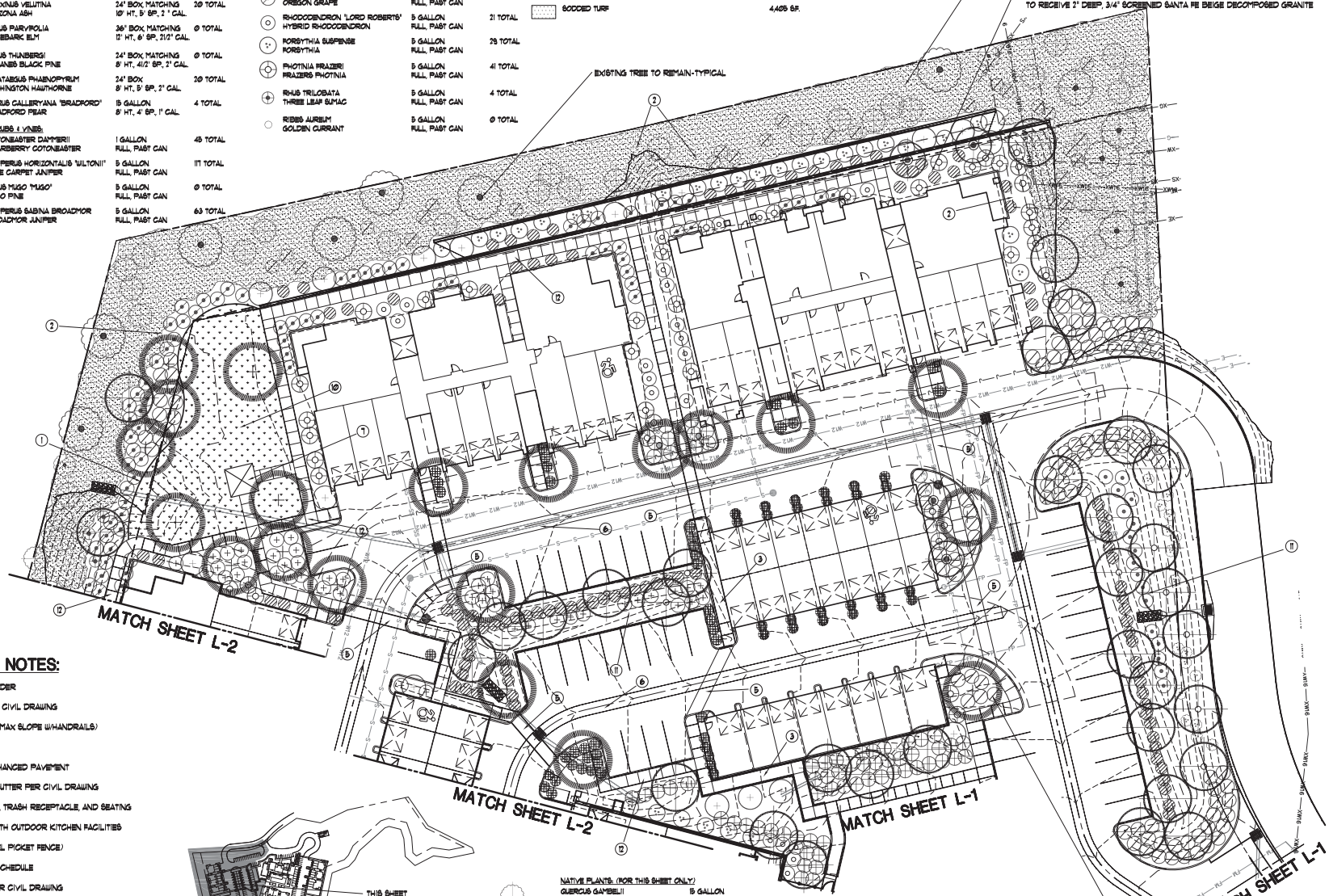
PINUS NIGRA AUSTRIAN BLACK PINE	24' BOX, MATCHING 8' HT, 5' SP, 2" CAL	21 TOTAL
POPULUS TREMULOIDES ASPEN	15 GALLON 8' HT, 3' SP, 1" CAL	13 TOTAL
FRAXINUS VELUTINA ARIZONA ASH	24' BOX, MATCHING 10' HT, 5' SP, 2 " CAL	20 TOTAL
ULMUS PARVIFOLIA LACEBARK ELM	36" BOX, MATCHING 12' HT, 6' SP, 21/2" CAL	0 TOTAL
PINUS THUNBERGI JAPANESE BLACK PINE	24' BOX, MATCHING 8' HT, 41/2' SP, 2" CAL	0 TOTAL
CRATAEGUS PHAENOPYRUM WASHINGTON HAWTHORNE	24' BOX 8' HT, 5' SP, 2" CAL	20 TOTAL
PYRUS CALLERYANA "BRADFORD" BRADFORD PEAR	15 GALLON 8' HT, 4' SP, 1" CAL	4 TOTAL

SHRUBS & VINES:

COTONEASTER DAMMERI BEARBERRY COTONEASTER	1 GALLON FULL, PAST CAN	45 TOTAL
JUNIPERUS HORIZONTALIS "WILTONI" BLUE CARPET JUNIPER	5 GALLON FULL, PAST CAN	171 TOTAL
PINUS MUGO "MUGO" MUGO PINE	5 GALLON FULL, PAST CAN	0 TOTAL
JUNIPERUS SABINA BROADMOR BROADMOR JUNIPER	5 GALLON FULL, PAST CAN	63 TOTAL
MUHLENBERGIA RIGENS DEER GRASS	1 GALLON FULL, PAST CAN	17 TOTAL
PYRACANTHA COCCINEA "LOU BOY" FIRETHORN HYBRID	1 GALLON FULL, PAST CAN	67 TOTAL
MAHONIA AQUIFOLIUM OREGON GRAPE	5 GALLON FULL, PAST CAN	72 TOTAL
RHODODENDRON "LORD ROBERTS" HYBRID RHODODENDRON	5 GALLON FULL, PAST CAN	21 TOTAL
FORSYTHIA SUSPENSE FORSYTHIA	5 GALLON FULL, PAST CAN	29 TOTAL
PHOTINIA FRAZERI FRAZERS PHOTINIA	5 GALLON FULL, PAST CAN	41 TOTAL
RHUS TRILOBATA THREE LEAF SUMAC	5 GALLON FULL, PAST CAN	4 TOTAL
RIBES AUREUM GOLDEN CURRANT	5 GALLON FULL, PAST CAN	0 TOTAL

GROUNDCOVERS AND ACCENTS:

VERBENA RIGIDA SANDPAPER VERBENA	1 GALLON FULL, PAST CAN	0 TOTAL
MAHONIA REPENS CREEPING MAHONIA	1 GALLON FULL, PAST CAN	107 TOTAL
SODDED TURF		4,405 SF.



PLAN KEY NOTES:

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2. RETAINING WALL PER CIVIL DRAWING
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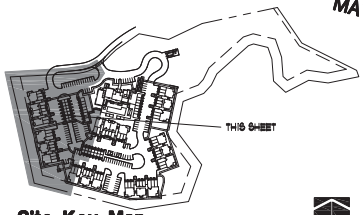

Site Key Map

NORTH

NATIVE PLANTS: (FOR THIS SHEET ONLY)

QUERCUS GAMBELII GAMBEL'S SCRUB OAK	15 GALLON LOW WATER USE	30 TOTAL
JUNIPERUS SCOPULORUM ROCKY MOUNTAIN JUNIPER	15 GALLON LOW WATER USE	5 TOTAL
ARCTOSTAPHYLOS PATULA POINTLEAF MANZANITA	5 GALLON LOW WATER USE	29 TOTAL
DASIPHORA FRUTICOSA SHRUBBY CINQUEFOIL	1 GALLON LOW WATER USE	17 TOTAL

NOTE: ALL NON-TURF AND NON SEEDED REVEGETATED AREAS TO RECEIVE 2" DEEP, 3/4" SCREENED SANTA FE BEIGE DECOMPOSED GRANITE

Preliminary Landscape Plan
Scale 1:20

20 10 0 20
GRAPHIC SCALE

NORTH

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landscape architect p.c.
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THE HILL APARTMENTS

LOS ALAMOS,
NEW MEXICO

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STATE OF NEW MEXICO
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ARCHITECTURE AND PLANNING

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PRELIMINARY LANDSCAPE PLAN

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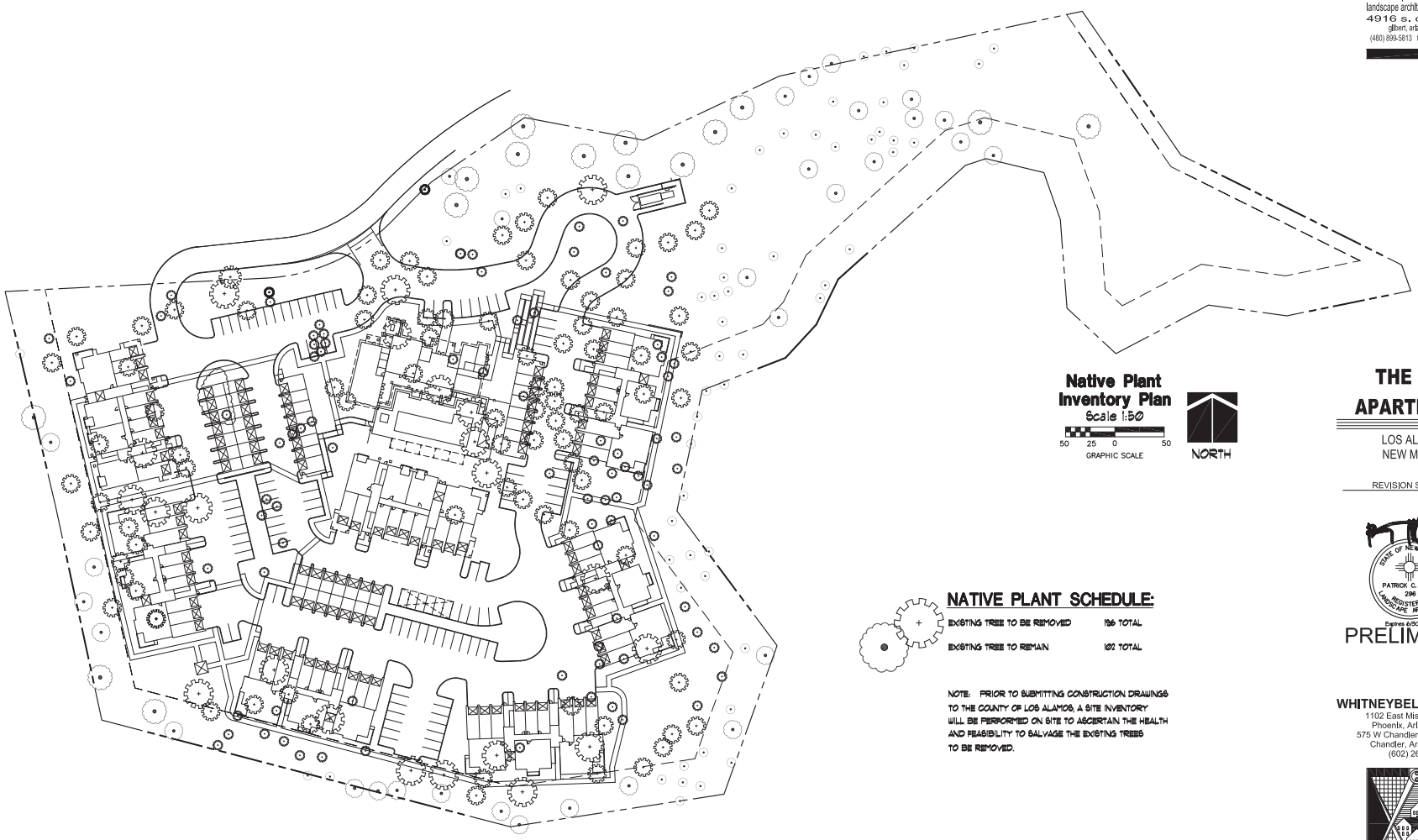

Native Plant Inventory Plan

Scale 1:50

50 25 0 50
GRAPHIC SCALE

NORTH

NATIVE PLANT SCHEDULE:

EXISTING TREE TO BE REMOVED	186 TOTAL
EXISTING TREE TO REMAIN	102 TOTAL

NOTE: PRIOR TO SUBMITTING CONSTRUCTION DRAWINGS TO THE COUNTY OF LOS ALAMOS, A SITE INVENTORY WILL BE PERFORMED ON SITE TO ASCERTAIN THE HEALTH AND FEASIBILITY TO SALVAGE THE EXISTING TREES TO BE REMOVED.

THE HILL APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

5-23-2019

STATE OF NEW MEXICO
PATRICK C. MORSE
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ARCHITECTURE AND PLANNING

LSI-1

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LANDSCAPE
INVENTORY PLAN

LIGHTING FIXTURE SCHEDULE

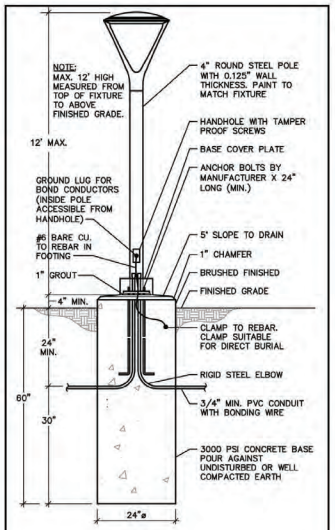
MARK	DESCRIPTION	MANUFACTURER	CATALOG	LAMPS NO	LAMPS TYPE	VOLT	MOUNTING	REMARKS
P1	SINGLE HEAD FULLY CUT-OFF POLE MTD. LIGHTING FIXTURE. TYPE II	EATON-LUMARK	PRV-A40-UNV-T3-SA-BZ-7030	1	143W LED 3000K	UNV	POLE B.O.F. @ 15'-0" AFG	
P2	SINGLE HEAD FULLY CUT-OFF POLE MTD. LIGHTING FIXTURE. TYPE III	EATON-LUMARK	PRV-A40-UNV-T2-SA-BZ-7030	1	143W LED 3000K	UNV	POLE B.O.F. @ 15'-0" AFG	
2P1	DOUBLE HEAD FULLY CUT-OFF POLE MTD. LIGHTING FIXTURE. TYPE III	EATON-LUMARK	(2) PRV-A40-UNV-T3-SA-BZ-7030 (@ 180 DEGREES)	2	143W LED 3000K	UNV	POLE B.O.F. @ 15'-0" AFG	
PT	POST MTD. FULLY CUT-OFF LIGHTING FIXTURE. TYPE V	KIM LIGHTING	UR20-56L-3K8-5W-UNV-FM44-DB-SF-CLR	1	25W LED 3000K	120	POLE T.O.F. @ 12'-0" AFG	
BO	BOLLARD TYPE FULLY CUT-OFF LIGHTING FIXTURE	LITHONIA	DSXB-LED-16C-700-30K-SYM-120-SF-DDBXD	1	39W LED 3000K	120		
WS1	DECORATIVE WALL SCONCE. ADA	INDESSA	501-1LED9-BRZ-VB-BL-TC-120V	1	9W LED 3000K	120	SURFACE	
WS2	FULLY CUT-OFF LIGHTING FIXTURE. WALL MOUNT	HUBBELL OUTDOOR LIGHTING	LNC2-9LU-3K-4-1	1	22W LED 3000K	120	SURFACE	
CA	UNDER CARPORT LIGHTING	COLUMBIA LIGHTING	MPS-4-30-XWHE-C-N-E-U	1	20W LED 3000K	UNV	SURFACE	

NOTE: ALL SELECTED SITE LIGHTING FIXTURES ARE U.L. LISTED FOR WET LOCATIONS.

PRELIMINARY SITE LIGHTING PLAN

SCALE: 1" = 50'-0" (0, 25', 50', 100')

NORTH

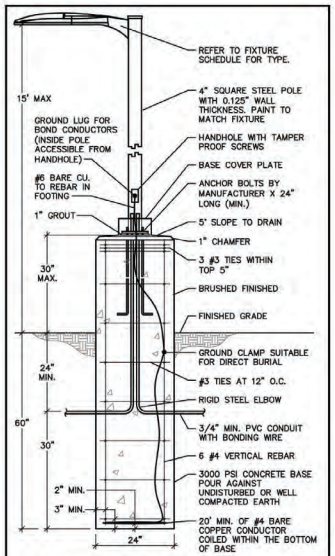


POST TOP MOUNTING DETAIL

(TYPE PT) N.T.S.

NOTES

1. E.P.A. RATINGS AND SOIL CONDITIONS SHALL BE COORDINATED WITH POLE AND FIXTURE ASSEMBLY.
2. GENERAL CONTRACTOR TO PROVIDE POLE BASE DESIGN SEALED BY REGISTERED ARIZONA STRUCTURAL ENGINEER. REFER TO STRUCTURAL DRAWINGS FOR POLE BASE DETAIL.

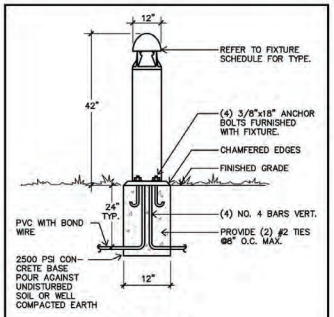


POLE MOUNTING DETAIL

(TYPE P1, P2 & 2P1) N.T.S.

NOTES

1. E.P.A. RATINGS AND SOIL CONDITIONS SHALL BE COORDINATED WITH POLE AND FIXTURE ASSEMBLY.
2. GENERAL CONTRACTOR TO PROVIDE POLE BASE DESIGN SEALED BY REGISTERED ARIZONA STRUCTURAL ENGINEER. REFER TO STRUCTURAL DRAWINGS FOR POLE BASE DETAIL.
3. PROVIDE EXTERNAL HOUSE-SIDE SHIELD FURNISHED WITH FIXTURE MANUFACTURER. MATCH LUMINAIRE FINISH.



BOLLARD DETAIL

(TYPE BO) N.T.S.

*NOTE: REFER TO UTILITY PLAN FOR CONNECTIONS TO JOINT UTILITY TRENCH.

THE HILL APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

ANDREW CALMA PARRY NEW MEXICO 11126 REGISTERED PROFESSIONAL ENGINEER

5/23/19

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

ARCHITECTURE AND PLANNING

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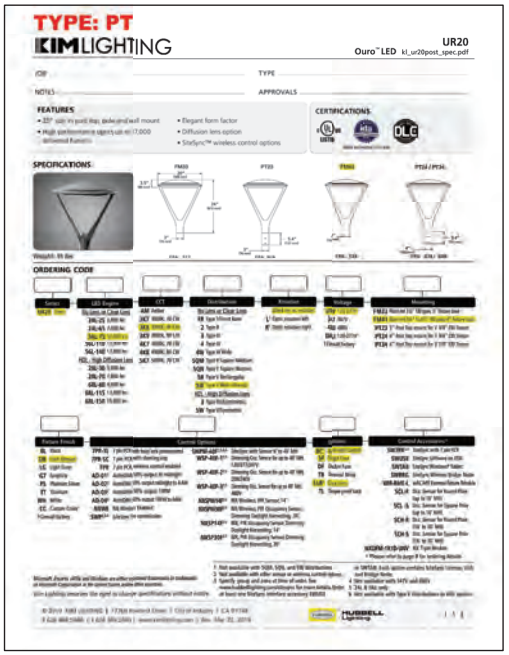
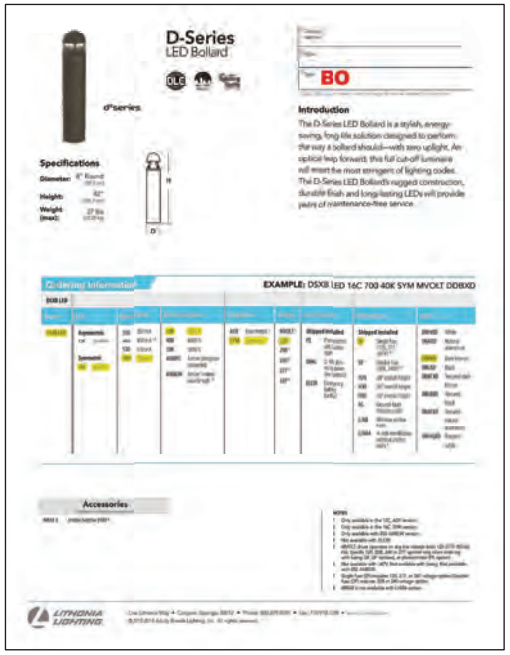
23 May 2019

PRELIMINARY SITE LIGHTING PLAN

NP ENGINEERING INC.
4115 N. 15TH AVE
PHOENIX, AZ 85015
(602) 285-1559
PROJECT NO. 19-041





THE HILL APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

5/23/19

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

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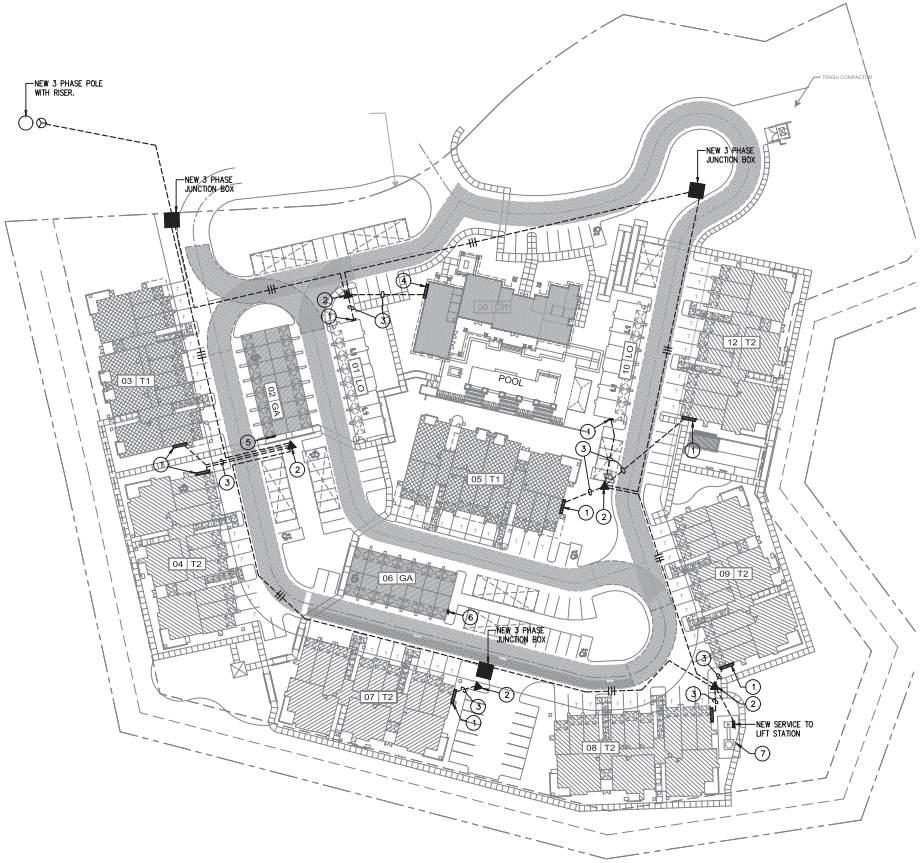
23 May 2019

ELECTRICAL SITE LIGHTING CUTSHEETS

NP ENGINEERING INC.
4115 N. 15TH AVE.
PHOENIX, AZ 85015
(602) 285-1550
PROJECT NO. 19-041



ELECTRICAL SITE POWER DISTRIBUTION PLAN

SCALE: 1" = 50'-0" 0 25' 50' 100'

NORTH

KEYED NOTES:

1. APARTMENT BUILDING WALL MOUNTED ELECTRICAL MULTI-METERING SERVICE. 120/208V, 3ø, 4W. 120/208V, 1ø TO EACH APARTMENT UNIT AND INTEGRAL HOUSE SERVICE WITH MAXIMUM OF 200 AMPS, 120/208V, 3ø, 4W.
2. PROPOSED PAD MOUNTED TRANSFORMER. PROVIDE CONCRETE PAD PER LOS ALAMOS COUNTY DEPT. OF PUBLIC UTILITIES STANDARDS.
3. UNDERGROUND SECONDARY FEEDERS. PROVIDE CONDUITS, CONDUCTORS, TRENCH AND BACKFILL PER LOS ALAMOS COUNTY DEPT. OF PUBLIC UTILITIES STANDARDS.
4. CLUBHOUSE ELECTRICAL SERVICE ENTRANCE SECTION. 800 AMPS, 120/208V, 3ø, 4W, NEMA 3R. PROVIDE WITH CONCRETE HOUSEKEEPING PAD PER LOS ALAMOS COUNTY DEPT. OF PUBLIC UTILITIES STANDARDS.
5. BUILDING 02 SERVICE PANEL, FED FROM BUILDING 03 HOUSEPANEL.
6. BUILDING 06 SERVICE PANEL, FED FROM BUILDING 07 HOUSEPANEL.
7. SANITARY SERVER LIFT STATION WILL BE SERVED ELECTRICALLY BY BUILDING 08 HOUSE SERVICE OR A SEPARATE SERVICE. 120/208V, 3ø, 4W.

SYMBOLS LIST:

- (2) ▲ 3 PHASE PAD MOUNT TRANSFORMER.
- ■ 3 PHASE JUNCTION BOX
- —//—— 3 PHASE PRIMARY LINE IN 4" PVC CONDUIT

NOTE:

ALL ELECTRICAL UTILITIES MUST MEET LOS ALAMOS COUNTY DEPARTMENT OF PUBLIC UTILITIES STANDARDS.

THE HILL APARTMENTS

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

ANDREW CALMA PRADO NEW MEXICO 11126 REGISTERED PROFESSIONAL ENGINEER

7/2/19

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
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Chandler, Arizona 85224
(602) 265-1891

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E3.0

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3 Jul 2019

ELECTRICAL SITE POWER DIST. PLAN

NP ENGINEERING INC.
4115 N. 15TH AVE.
PHOENIX, AZ 85015
(602) 285-1555

PROJECT NO. 19-041

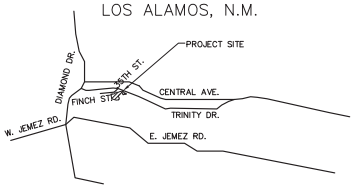
phillip r. ryan
landscape architect p.c.
landscape architecture & planning
4916 s. quiet way
gilbert, arizona 85296
(480) 899-5813 fax (480) 963-3674

LEGEND:

- A.D.A. ACCESSIBLE SIDEWALK PATH
- BIKE LANE
- BIKE RACK LOCATION

PLAN KEY NOTES:

1. BIKE RACK LOCATION (TO ACCOMODATE 5 BIKES)
2. SIDEWALK RAMP (NOT TO EXCEED 0.083% SLOPE- HANDRAILS ON BOTH SIDES OF RAMP PROVIDED)
3. A.D.A. ACCESSIBLE SIDEWALK
4. BIKE LANE
5. POOL AND SPA AMENITY W/ B-B-Q FACILITIES, RESTROOM, AND SHOWERS
6. AMENITY TO INCLUDE BOCCEBALL, 'CORN-HOLE', B-B-Q'S, SHADE STRUCTURE, BENCHES, TABLES, AND TRASH RECEPTACLE
7. SHADE STRUCTURE W/ B-B-Q, TRASH RECEPTACLE, AND TABLE
8. RECYCLE TRASH DUMPSTER



VICINITY MAP

N.T.S.

NORTH

Circulation & Amenity Plan

Scale 1:40

40 20 0 40
GRAPHIC SCALE

NORTH

THE HILL APARTMENTS

LOS ALAMOS,
NEW MEXICO

REVISION SCHEDULE

5-23-2019

STATE OF NEW MEXICO
PATRICK C. MORSE
296
REGISTERED LANDSCAPE ARCHITECT
Expires 6/30/2019

PRELIMINARY

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

ARCHITECTURE AND PLANNING

CA-1

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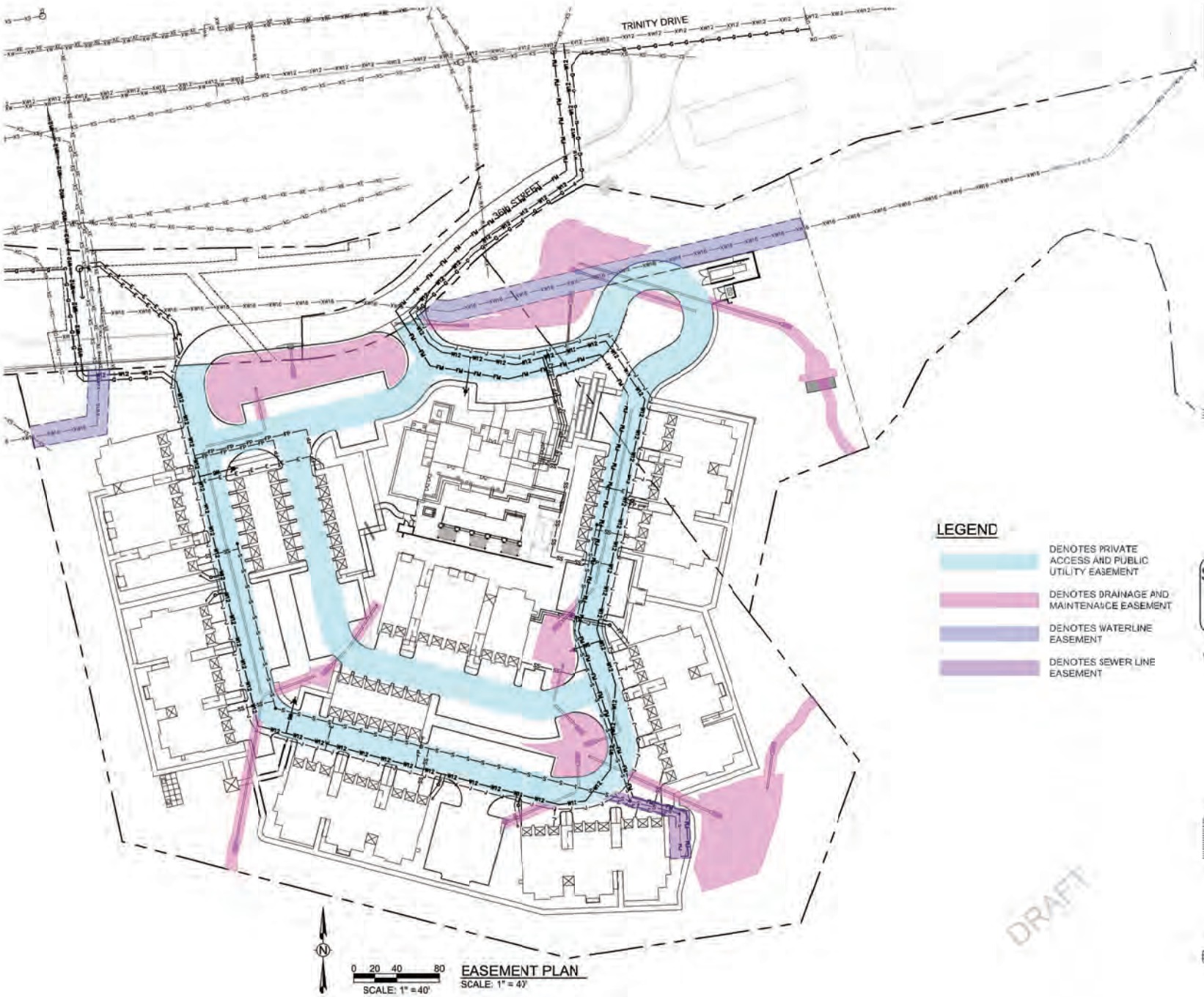
CIRCULATION AND AMENITY PLAN



NOT FOR CONSTRUCTION

THE HILL RESIDENTIAL

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

Santa Fe Engineering Consultants, LLC
1555 St. Francis Drive, Suite B
Santa Fe, N.M. 87505
(505) 982-2943 F:(505) 982-0941
http://www.SFENGR.com

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Chandler, Arizona 85224
(602) 265-1891

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DATE: 06-26-19

EASEMENT PLAN

June 26, 2019

SITE PLAN APPLICATION
THE HILL RESIDENTIAL
LOS ALAMOS, NM

LAH Investors, Inc
Peter Kerwick

Whitneybell Perry Inc
James Michael Perry

Santa Fe Engineering
Bernadette Scargall

WHITNEYBELL PERRY INC
1102 EAST MISSOURI AVENUE
PHOENIX, ARIZONA 85014-2784
ARCHITECTURE & PLANNING
PHOENIX ▪ CHANDLER

CONDITIONS PRIOR TO PLANNING & ZONING COMMISION

1) Provide **Final Drainage Study** at time of building permitting incorporating the following comments:
   a) Provide analysis of pipe sizing;
      i) **Response**: **Will be provided before building permitting for final submittal.**

   b) Volume, pond areas/volumes; and
      i) **Response**: **Will be provided before building permitting for final submittal.**

   c) Erosion control details throughout
      i) **Response**: **Will be provided before building permitting for final submittal.**

   d) Provide data analysis comparing the pre-development (greenfield development) and the redevelopment of the property as proposed.
      i) **Response**: **Will be provided before building permitting for final submittal.**

   Note: Coordinate outfall volumes and erosion control details with DOE.
      i) **Response**: **Will do**.

2) **Site Electrical Plan** submitted on its own sheet (already provided by Los Alamos County Utilities Department).
   i) **Response**: **We have revised electrical site lighting plan to show power connections. See utility plan for connections to joint utility trench.**

3) **Revised C-301** to depict a new 8" waterline loop. The plan to install a 12" water line that connects to the original line needs revision. The new line can be reduced to 8" PVC, but cannot connect to the original 6" cast iron pipe (old pipe integrity is questionable). It will need to be replaced with new 8" waterline as well. The entire water loop may be constructed with 8" PVC or ductile-iron, per the LAC DPU water line system construction standards.
   i) **Response**: **The water alignment and sizing shown was directed by LAC DPU. We have no objections to the change in pipe size, material, or replacement of the portion of 6" cast iron pipe with new 8" PVC or DI as requested.**

4) Statement regarding ownership of the sewer utilities (turning over to the County?) and illustration of easement.
   i) **Response: Utilities will be dedicated to the County. A separate easement map is attached to illustrate easements on the site. A revised Sheet C-301 is attached showing the requested changes.**

5) Provide the methodology and/or illustrations used to determine the building height waiver request. Shall be discussed with staff to determine adequate height without affecting water pressure and other impacts.
   i) **Response**: **We are providing a building height of 51'-2" from finish grade, which a height variance of 6'-2". Please refer to A-9 for Site Sections.**

REQUIREMENTS PRIOR TO BUILDING PERMITTING

1) Provide a re-plat of the site (Tracts A-12/13) providing for vacation of existing LAC easements and/or establishment of new easements. Address any easement encroachments and lot consolidation if applicable – Can be deferred to subdivision/plat submittal. Note: Vacation of existing easements requires County Surveyor, County Engineer, Deputy Utilities manager and Council approval.
   i) **Response**: **A draft of the easements is shown on the attached easement map. A plat will be provided at final subdivision / plat submittal with the requested approvals.**

2) Coordinate review of traffic analysis with NMDOT D5 Traffic Engineer and County Public Works staff, through the ongoing intersection improvements project Access improvements to Trinity Dr. (NM502) required by NMDOT shall be made in conjunction with the site development construction and completed by or before certificate of occupancy unless otherwise approved by NMDOT.
   i) **Response**: **This was presented at County Council on 6/25/2019. We have not received a response yet.**

ADDITIONAL COMMENTS

1) While total flow will be reduced by the development, it is noted that QD6 and QD4+QD4A show additional flow than historic, ensure adequate erosion control is utilized.
   i) Response: Adequate erosion control will be provided at these locations and will be detailed in the final plans and final drainage report.

2) Provide a key to better navigate from Grading and Drainage plans to Storm Drain profile sheets. Stations were utilized on plan and profile, this might be helpful to reference on grading and drainage plan.
   i) Response: Will be provided before building permitting for final submittal.

3) No SD Manholes were observed in the plan.
   i) Response: Drop inlets and median drop inlets are used in lieu of storm drain manholes.

4) Roadway Profile - explanation of short (~50') 8% graded areas? Recommend this grade be lessened, if possible.
   i) **Response: These short "steps" are used between buildings to help the site better conform to the existing steep topography and reduce the height of retaining walls.**

5) Street name access to the site: 35th Street will be realigned with 36th on the north side of Trinity and the street name of 36th Street will carry on both sides. Therefore, Finch and 35th street names will no longer apply. Revise plan references appropriately.
   i) Response: We have revised the street name to say 36th Street.

6) The placement of a self-contained compactor for wet waste (RJ 250 SC).
   i) Response: We will coordinate compactor specs during construction documents.

7) Dumpsters for cardboard and mixed recycle could be located near the compactor. The more residents can recycle, the less often the dumpster needs to be emptied.

i) **Response: We have added a recycling enclosure to the project.**

8) It is highly recommended that a color illustration/elevation be provided identifying the requested waiver for horizontal fiber cement lap siding as it relates to the entire building façade.
   i) **Response: We have provided typical colored elevations of the 3 or 4-story buildings.**

9) Regarding the parking waiver, it is recommended that it is clarified where tandem spaces are located and be clear that they will not interfere with the fire lane.
   i) **Response: We have hatched the fire apparatus access lane and added a 'T' for the tandem space locations.**

10) It is recommended that pedestrian and bicycle circulation is added to the vehicle circulation plan.
   i) **Response: Done, see attached revised Sheet C-206**

11) **Sheet 401**, there is extra pipe going into the road twice, which would cost more for construction and maintenance.
   i) **Response: This is a drafting error. The extra pipe in question is a portion of an existing pipe that will be cut and removed with the redirected flow turning to the east. This will be corrected before building permitting for final submittal.**

Santa Fe Engineering Consultants, LLC

Civil and Traffic Engineering

Construction Management

Land Development

PRELIMINARY DRAINAGE REPORT
SOILS, DRAINAGE, AND GRADING
FOR SITE APPLICATION FOR
"THE HILL" APARTMENTS
LOS ALAMOS, NEW MEXICO

Prepared For:

Storm River, LLC
124 E. Marcy Street
Santa Fe, NM 87501

Prepared By:

Santa Fe Engineering Consultants, LLC
1599 S. St. Francis Drive, Suite B
Santa Fe, New Mexico 87505

May 2019

PRELIMINARY DRAINAGE REPORT
SOILS, DRAINAGE, AND GRADING
FOR SITE APPLICATION FOR
"THE HILL" APARTMENTS
LOS ALAMOS, NEW MEXICO

I. INTRODUCTION I-1

II. EXISTING CONDITIONS II-1

III. SOILS III-1

IV. DRAINAGE IV-1

V. GRADING AND EROSION CONTROL PLAN V-1

TABLE OF APPENDICES

APPENDIX A FIGURES

APPENDIX B EXISTING DRAINAGE CALCULATIONS

APPENDIX C EXISTING FLOW ROUTING

APPENDIX D PROPOSED DRAINAGE CALCULATIONS

APPENDIX E PROPOSED FLOW ROUTING

PRELIMINARY DRAINAGE REPORT
SOILS, DRAINAGE, AND GRADING
FOR SITE APPLICATION FOR
"THE HILL" APARTMENTS
LOS ALAMOS, NEW MEXICO

I. INTRODUCTION

Storm River, LLC is proposing to develop a new apartment complex named "The Hill" Apartments to be located at 35th Street south of Trinity Drive (NM 502) in Los Alamos, NM. The proposed 9.24 ± acre development is located in Los Alamos County Section 15, Township 19 North, Range 6 East, N.M.P.M. It is located at Latitude 35°52'57.69 N and Longitude 106°18'50.38 W. The land previously was used for a Los Alamos National Labs office building. The existing building was demolished in 2010. The existing asphalt parking lot remains. The Vicinity Map is presented in Figure 1, Appendix A.

The proposed "The Hill" Apartments will consist of 149 multi-family dwelling units. The development will be accessed by the intersection of 35th Street / Trinity Drive (NM 502). The development is proposed to be constructed in one phase. It is anticipated that construction will begin in 2020. It is assumed that the project will be fully occupied by 2022. The Civil Site Plan is presented in Figure 2, Appendix A.

The purpose of this report is to evaluate soils and drainage conditions and to provide recommendations for site grading and runoff control to meet Los Alamos County Hydrology and Stormwater Management regulations.

II. EXISTING CONDITIONS

The proposed "The Hill" Apartments will be located on land previously used for a Los Alamos National Labs office building. The existing building was demolished in 2010. The existing asphalt parking lot remains. The existing land uses in the area consist of commercial and residential land. According to Los Alamos County Staff the site is zoned as multi-use.

The proposed development is located south of the intersection of Trinity Drive (NM 502) / 35th Street. The project is bordered by vacant land (Los Alamos Canyon) owned by Department of Energy to the south (F-L – Federal Lands District); County owned land adjacent to Trinity Drive (NM 502), Federal Lands, and a professional office district to the north; Federal Lands and multiple family (high density) district to the east; and Federal Lands district to the west.

Existing ground cover consists of herbaceous land with a fair native grass cover, rock outcroppings, and an asphalt parking lot. The Soils and Existing Conditions Map is presented in Figure 3, Appendix A.

III. SOILS

Soil classifications were obtained from the Natural Resource Conservation Service, "Soil Survey of Santa Fe Area, N.M.," by the U.S.D.A., dated June 4, 2018. The survey in this area is the result of a high intensity soil survey. The Soils and Existing Conditions Map is presented in Figure 3, Appendix A. The following soils are to be found onsite:

124	Rock Outcrop
281	Carjo Loam, 1 to 9 percent slopes

Rock Outcrop is located in the drainage area. The following interpretations of engineering properties have been identified by the Natural Conservation Resource Service (NCRS):

Natural Drainage Class	N/A
Capacity to Transmit Water	Very low to low (0.00 to 0.01 in/hr)
Hydrologic Soil Group	N/A

Carjo Loam, 1 to 9 percent slopes is located in the drainage area. The following interpretations of engineering properties have been identified by the Natural Conservation Resource Service (NCRS).

Natural Drainage Class	Well drained
Capacity to Transmit Water	Very low to low (0.00 to 0.01 in/hr)
Hydrologic Soil Group	D

The NCRS has classified the soils into four hydrologic soils groups. The hydrologic soils groups, according to their infiltration and transmission rates, are defined as follows:

A. (Low runoff potential). Soils having high infiltration rates even thoroughly wetted. These consist chiefly of deep, well to excessively drained, sands or gravel. These soils have a high rate of water transmission in that water readily passes through them.

B. Soils having moderate infiltration rates when thoroughly wetted. These consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures such as loamy sands and course sandy loams. These soils have a moderate rate of water transmission.

C. Soils having slow infiltration rates when thoroughly wetted. These consist chiefly of soils with a layer that impedes downward movement of water or soils with moderately fine-to-fine textures such as loams and fine sandy loams. These soils have slow rate of water transmission.

D. (High Runoff Potential). Soils having very slow infiltration rates when thoroughly wetted. These consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

For conservative analysis, it is assumed that the onsite soils are Type D with herbaceous fair cover.

IV. DRAINAGE

Drainage on the site generally flows from north to south. Storm drainage computations for existing conditions were calculated using the on-site topographic mapping prepared for this project.

A. Existing Conditions

Drainage areas were delineated on the on-site and off-site topographic maps prepared for the project. Drainage area and channel lengths were measured several times and average numbers used for this report. The Existing Conditions Basin Map is presented in Figure 4, Appendix A. This map shows existing basins on the project site. The existing drainage basins which impact the site are presented in Table 1.

TABLE 1
EXISTING DRAINAGE BASIN CHARACTERISTICS

Basin	Description	Acres
Q1	Offsite basin entering from the north	1.91
Q2	Onsite basin exiting to the east	3.87
Q3	Onsite basin exiting to the east	0.64
Q4	Onsite basin exiting to the southeast	0.37
Q5	Onsite basin exiting to the south	1.20
Q6	Onsite basin exiting to the southwest	0.62
Q7	Onsite basin exiting to the west	2.87
Q8	Offsite basin entering from the northwest	0.92

According to maps prepared by the United States Department of Commerce, presented in NOAA Atlas 14 Volume 1, Version 5, dated 2004, revised 2011, the following precipitation data in Table 2 should be used for the project:

TABLE 2
PRECIPITATION DATA

FREQUENCY	DURATION	PRECIPITATION
100 Year	24 Hour	3.67”
50 Year	24 Hour	3.31”
25 Year	24 Hour	2.96”
2 Year	24 Hour	1.73”

Los Alamos County Public Works Design and Construction Standards require that the hydrology be modeled using the City of Albuquerque AHYMO program or the rational method. However, SFEC feels that these methods are not appropriate for this site and instead proposes that SCS and routing methods be used as they provide more conservative analyses.

The WinTR-55 software by the NRCS, version 1.00.10 dated April 2011, was used to calculate weighted runoff number, time of concentration, and peak flow for the existing drainage basins. The graphical discharge method was used. The 2, 25, 50, and 100-year frequency storms were calculated.

Existing Drainage Calculations are presented in Appendix B. The calculated peak flows are presented in Table 3.

TABLE 3
PEAK FLOW QUANTITIES
EXISTING CONDITIONS

Basin	Description	CN	Q25 (CFS)	Q50 (CFS)	Q100 (CFS)
Q1	Offsite basin entering from the north	96	6.19	6.99	7.81
Q2	Onsite basin exiting to the east	91	11.94	13.78	15.66
Q3	Onsite basin exiting to the east	91	1.97	2.28	2.59
Q4	Onsite basin exiting to the southeast	91	1.14	1.32	1.50
Q5	Onsite basin exiting to the south	93	3.98	4.54	5.13
Q6	Onsite basin exiting to the southwest	89	1.76	2.05	2.35
Q7	Onsite basin exiting to the west	91	8.84	10.20	11.60
Q8	Offsite basin entering from the northwest	90	2.31	2.68	3.06

Two of the existing basins (Q1 and Q8) enter the site and flow through the existing onsite basin Q2. In order to accurately calculate a peak flow exiting the site at Q2, the existing basins Q1 and Q8 will have to be routed through Q2. This was accomplished as a channel reach with average longitudinal and side slopes used. The Hydraflow Hydrographs program was used to route these flows. A one-minute time interval was used for routing which generally results in higher and more conservative peak flow values. These routings are presented in Appendix C. The resultant peak flows exiting the site are presented in Table 4.

TABLE 4 EXISTING PEAK FLOW QUANTITIES EXITING THE SITE				
Basin	Description	Q25 (CFS)	Q50 (CFS)	Q100 (CFS)
Q1+Q8+Q2	Routed flows exiting the site to the east	22.15	25.40	28.73
Q3	Onsite basin exiting to the east	1.97	2.28	2.59
Q4	Onsite basin exiting to the southeast	1.14	1.32	1.50
Q5	Onsite basin exiting to the south	3.98	4.54	5.13
Q6	Onsite basin exiting to the southwest	1.76	2.05	2.35
Q7	Onsite basin exiting to the west	8.84	10.20	11.60

The total 24-hour 100-year flow exiting the site is 54.90 CFS.

B. Developed Conditions

The development of "The Hill" Apartments will impact stormwater runoff due to an increase in impervious surfaces (driveways, parking, and roofs). In order to control this excess runoff, a number of methods for controlling drainage are proposed. Excess runoff from impervious surfaces (driveways, parking, and roofs) will be mitigated as follows:

- Passive water harvesting techniques using shallow open ponds and swales.
- Landscape and / or gravel mulched areas with pervious filter fabric.
- Landscaped stormwater detention ponds.

The proposed development and on-site grading will alter the existing local drainage patterns. The Proposed Conditions Basin Map is presented in Figure 5, Appendix A. The proposed drainage basins which impact the site are presented in Table 5.

TABLE 5 PROPOSED DRAINAGE BASIN CHARACTERISTICS		
Basin	Description	Acres
QD2	Onsite basin flowing into Pond 1	1.56
QD2A	Onsite basin flowing into Pond 2 exiting to the east	0.38
QD3	Onsite basin exiting to the east	0.59
QD4	Onsite basin exiting to the east	0.14
QD4A	Onsite basin flowing into Pond 3	3.59
QD5	Onsite basin exiting to the south	0.35
QD5A	Onsite basin exiting to the southwest	0.23
QD6	Onsite basin exiting to the southwest	2.27
QD7	Onsite basin exiting to the southwest	0.70

The WinTR-55 software by the NRCS, version 1.001.10 dated April 2011, was used to calculate weighted runoff number, time of concentration, and peak flow for the developed drainage basins. Proposed drainage calculations are presented in Appendix D. The peak flows are presented in Table 6.

TABLE 6 PEAK FLOW QUANTITIES PROPOSED CONDITIONS					
Basin	Description	CN	Q25 (CFS)	Q50 (CFS)	Q100 (CFS)
QD2	Onsite basin flowing into Pond 1	93	5.16	5.90	6.66
QD2A	Onsite basin flowing into Pond 2 exiting to the east	86	0.95	1.12	1.30
QD3	Onsite basin exiting to the east	88	1.61	1.89	2.18
QD4	Onsite basin exiting to the east	88	0.39	0.45	0.52
QD4A	Onsite basin flowing into Pond 3	95	10.43	11.82	13.24
QD5	Onsite basin exiting to the south	88	0.96	1.13	1.30
QD5A	Onsite basin exiting to the southwest	88	0.63	0.74	0.85
QD6	Onsite basin exiting to the southwest	93	7.51	8.58	9.68
QD7	Onsite basin exiting to the southwest	88	1.91	2.24	2.58

The Hydraflow Hydrographs program was used to generate hydrographs to combine sub basins to design ponds and route flows. The 25, 50, and 100-year frequency storms were calculated. A one-minute time interval was used for routing which generally results in higher and more conservative peak flow values. The results of these routings are presented in Table 7. The proposed routing calculations are presented in Appendix E.

TABLE 7 PROPOSED PEAK FLOW QUANTITIES EXITING THE SITE				
Basin	Description	Q25 (CFS)	Q50 (CFS)	Q100 (CFS)
Q1+Q8+QD2+QD2A	Routed flows exiting the site to the east	11.49	13.40	14.94
QD3	Onsite basin exiting to the east	1.61	1.89	2.18
QD4+QD4A	Routed flows exiting the site to the east	5.77	6.63	7.53
QD5	Onsite basin exiting to the south	0.96	1.13	1.30
QD5A	Onsite basin exiting to the southwest	0.63	0.74	0.85
QD6	Onsite basin exiting to the southwest	7.51	8.58	9.68
QD7	Onsite basin exiting to the southwest	1.91	2.24	2.58

The total 24-hour 100-year peak flow exiting the site is 39.06 CFS. This is less than the pre-developed conditions of 54.90 CFS and is in compliance with the Los Alamos County Public Works Design and Construction Standards.

V. GRADING AND EROSION CONTROL PLAN

Grading plans have been prepared for this development. Included within these plans are existing road profiles, proposed profiles, and typical roadway cross-sections. Roadway construction methods to be utilized for this development will be pursuant to New Mexico Department of Transportation Specifications for Road and Bridge Construction.

The grading activity at the site will require cut and fill operations. Utility installation will be scheduled to coincide with roadway grading and will be located with the roadway section and parkway.

The following plans will be utilized for controlling erosion and drainage through construction:

A. The limits of construction will be clearly delineated to avoid unnecessary disturbance of adjacent areas prior to construction.

B. Cut and fill slopes will be as follows:

Fills - 1 vertical on 3 horizontal.

Cuts - 1 vertical on 2 horizontal.

C. Roadway drainage structures (culverts, rain gardens, ponds, check dams, and repairs to existing structures) will be constructed in conjunction with grading. No changes in the drainage ways or floodplain will be permitted except as shown on the drainage plans.

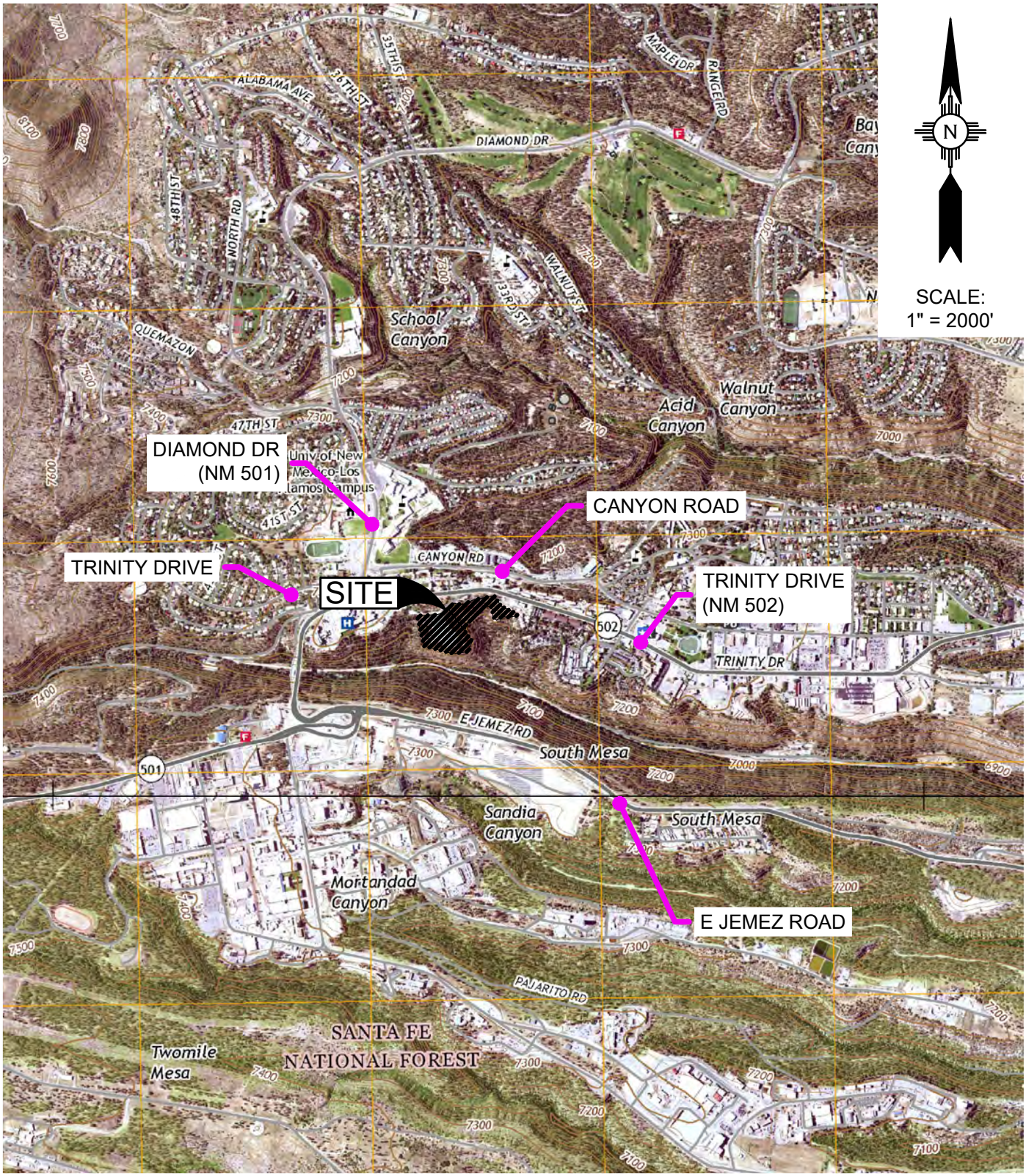
D. Stabilization of cut or fills will begin soon after construction at the optimum time for plant survival, according to an approved landscape plan.

E. The project will be inspected on a regular basis and additional measures such as silt fences, borrow ditches, etc., will be utilized as required to meet field conditions and to control erosion

.

APPENDIX A

FIGURES



2000 1000 0 2000

SCALE: 1" = 2000'

REFERENCE:
U.S.G.S. QUADRANGLE MAPS ENTITLED
"FRIJOLES, NM" AND "GUAJE MOUNTAIN, NM" BOTH DATED 2017

VICINITY MAP
FIGURE 1

Contractor must verify all dimensions at project before proceeding with this work.
Do not reproduce these drawings and specifications without the expressed written permission of the Architect. The drawings and specifications are instruments of service and shall remain the property of the Architect whether the project for which they are made is executed or not. These drawings and specifications shall not be used by anyone on any other projects, for additions to this project, or for completion of this project by others except by the expressed written permission of the Architect.
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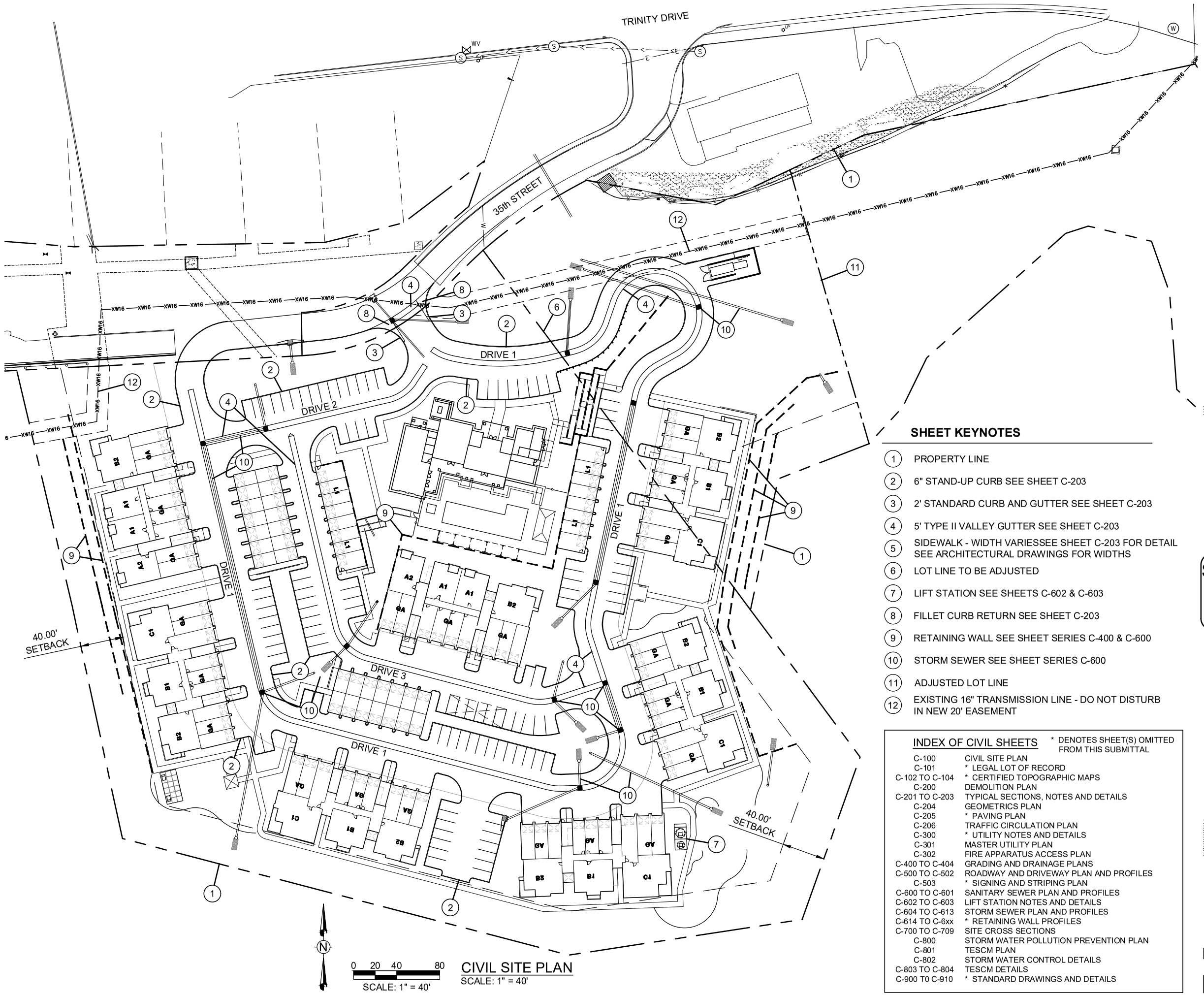

CIVIL SITE PLAN
SCALE: 1" = 40'

NOT FOR CONSTRUCTION

THE HILL RESIDENTIAL

LOS ALAMOS, NEW MEXICO

REVISION SCHEDULE

SHEET KEYNOTES

1. PROPERTY LINE
2. 6" STAND-UP CURB SEE SHEET C-203
3. 2' STANDARD CURB AND GUTTER SEE SHEET C-203
4. 5' TYPE II VALLEY GUTTER SEE SHEET C-203
5. SIDEWALK - WIDTH VARIESSEE SHEET C-203 FOR DETAIL SEE ARCHITECTURAL DRAWINGS FOR WIDTHS
6. LOT LINE TO BE ADJUSTED
7. LIFT STATION SEE SHEETS C-602 & C-603
8. FILLET CURB RETURN SEE SHEET C-203
9. RETAINING WALL SEE SHEET SERIES C-400 & C-600
10. STORM SEWER SEE SHEET SERIES C-600
11. ADJUSTED LOT LINE
12. EXISTING 16" TRANSMISSION LINE - DO NOT DISTURB IN NEW 20' EASEMENT

INDEX OF CIVIL SHEETS

* DENOTES SHEET(S) OMITTED FROM THIS SUBMITTAL

C-100	CIVIL SITE PLAN
C-101	* LEGAL LOT OF RECORD
C-102 TO C-104	* CERTIFIED TOPOGRAPHIC MAPS
C-200	DEMOLITION PLAN
C-201 TO C-203	TYPICAL SECTIONS, NOTES AND DETAILS
C-204	GEOMETRICS PLAN
C-205	* PAVING PLAN
C-206	TRAFFIC CIRCULATION PLAN
C-300	* UTILITY NOTES AND DETAILS
C-301	MASTER UTILITY PLAN
C-302	FIRE APPARATUS ACCESS PLAN
C-400 TO C-404	GRADING AND DRAINAGE PLANS
C-500 TO C-502	ROADWAY AND DRIVEWAY PLAN AND PROFILES
C-503	* SIGNING AND STRIPING PLAN
C-600 TO C-601	SANITARY SEWER PLAN AND PROFILES
C-602 TO C-603	LIFT STATION NOTES AND DETAILS
C-604 TO C-613	STORM SEWER PLAN AND PROFILES
C-614 TO C-6xx	* RETAINING WALL PROFILES
C-700 TO C-709	SITE CROSS SECTIONS
C-800	STORM WATER POLLUTION PREVENTION PLAN
C-801	TESCM PLAN
C-802	STORM WATER CONTROL DETAILS
C-803 TO C-804	TESCM DETAILS
C-900 T0 C-910	* STANDARD DRAWINGS AND DETAILS

Santa Fe Engineering Consultants, LLC
1599 St. Francis Drive, Suite B
Santa Fe, N. M. 87505
(505) 982-2845 F:(505) 982-2641
http://www.SFENGR.com

WHITNEYBELL PERRY INC
1102 East Missouri Avenue
Phoenix, Arizona 85014
575 W Chandler Blvd, Suite 123
Chandler, Arizona 85224
(602) 265-1891

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C-100

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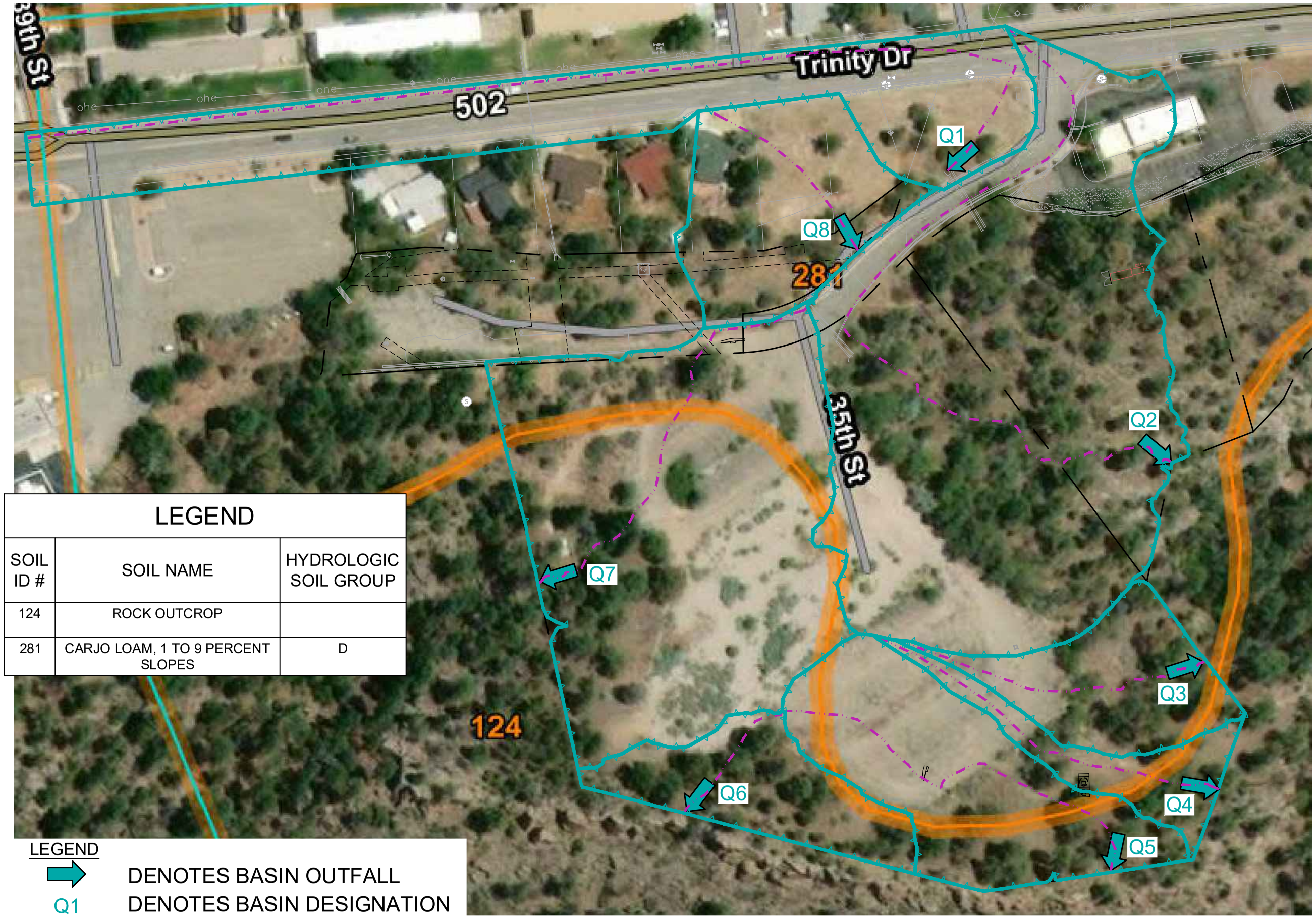
DATE: 05-24-19

CIVIL SITE PLAN
FIGURE 2



LEGEND		
SOIL ID #	SOIL NAME	HYDROLOGIC SOIL GROUP
124	ROCK OUTCROP	
281	CARJO LOAM, 1 TO 9 PERCENT SLOPES	D

LEGEND

DENOTES BASIN OUTFALL

Q1 DENOTES BASIN DESIGNATION

DENOTES BASIN

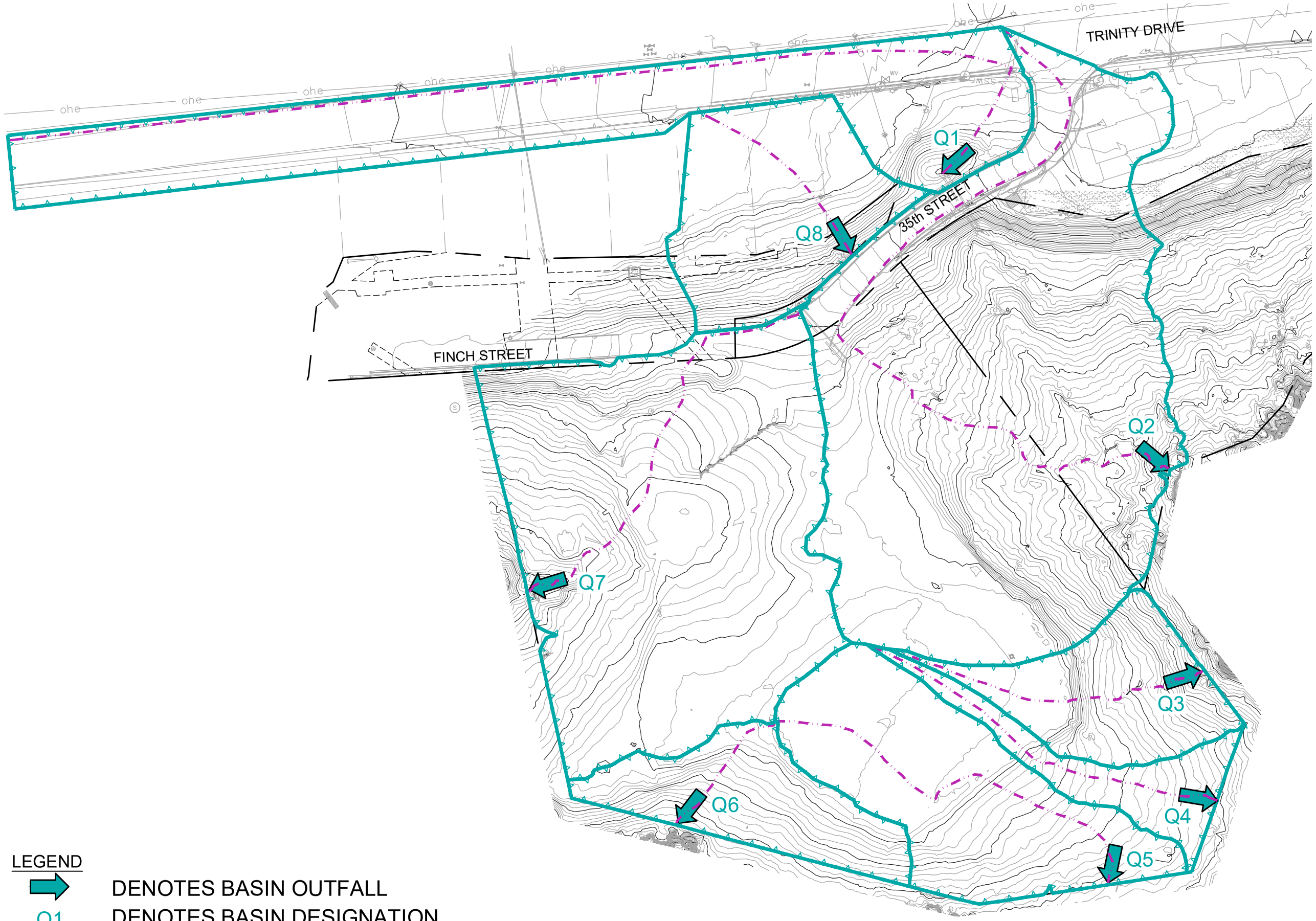
DENOTES BASIN FLOWLINE

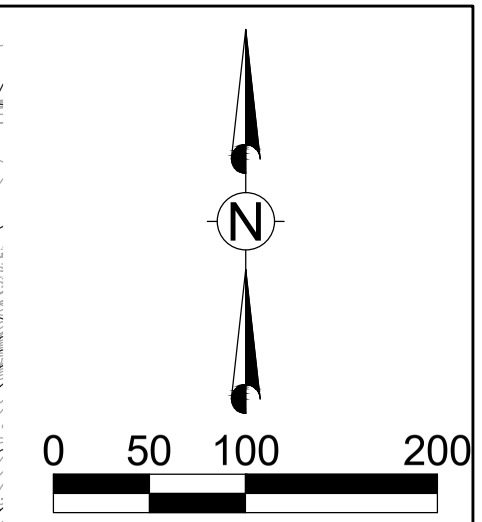
N

0 50 100 200

SCALE: 1" = 100'

SOILS MAP
FIGURE 3





BASIN AREAS	
BASIN #	AREA (ACRES)
Q1	1.91
Q2	3.87
Q3	0.65
Q4	0.37
Q5	1.20
Q6	0.62
Q7	2.87
Q8	0.93

LEGEND

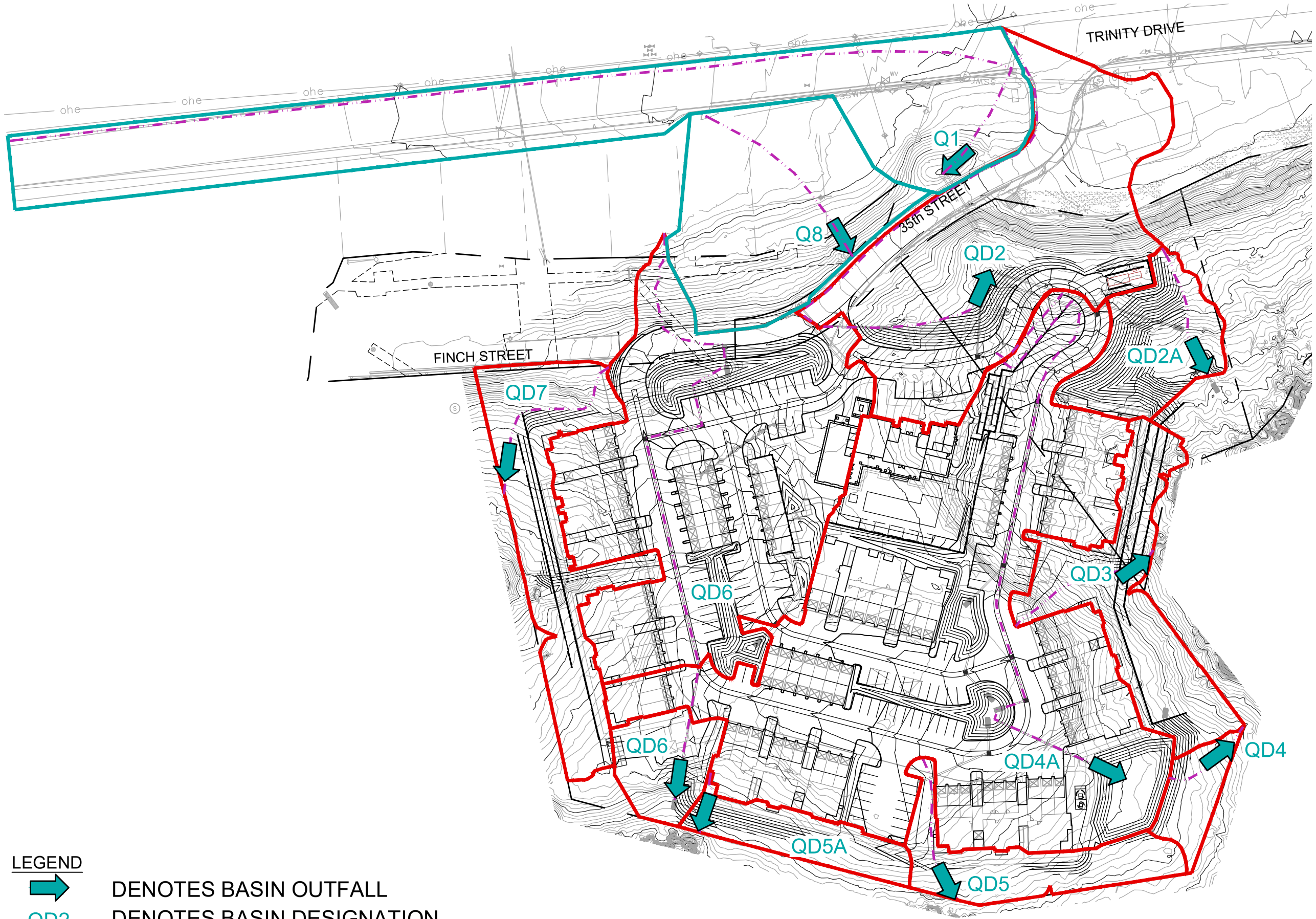
DENOTES BASIN OUTFALL

Q1 DENOTES BASIN DESIGNATION

DENOTES BASIN

DENOTES BASIN FLOWLINE

EXISTING CONDITIONS BASIN MAP
FIGURE 4



N

0 50 100 200

SCALE: 1" = 100'

BASIN AREAS	
BASIN #	AREA (ACRES)
QD2	1.56
QD2A	0.38
QD3	0.59
QD4	0.14
QD4A	3.65
QD5	0.34
QD5A	0.23
QD6	2.27
QD7	0.70

LEGEND

DENOTES BASIN OUTFALL

QD2 DENOTES BASIN DESIGNATION

DENOTES BASIN

DENOTES BASIN FLOWLINE

PROPOSED CONDITIONS BASIN MAP
FIGURE 5

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 13. 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 multiple sources in 2008 and 2009 including the U.S. Geological Survey, the National Geodetic Survey, the Federal Emergency Management Agency, the U.S. Bureau of Land Management, the Los Alamos National Laboratory, and Los Alamos County.

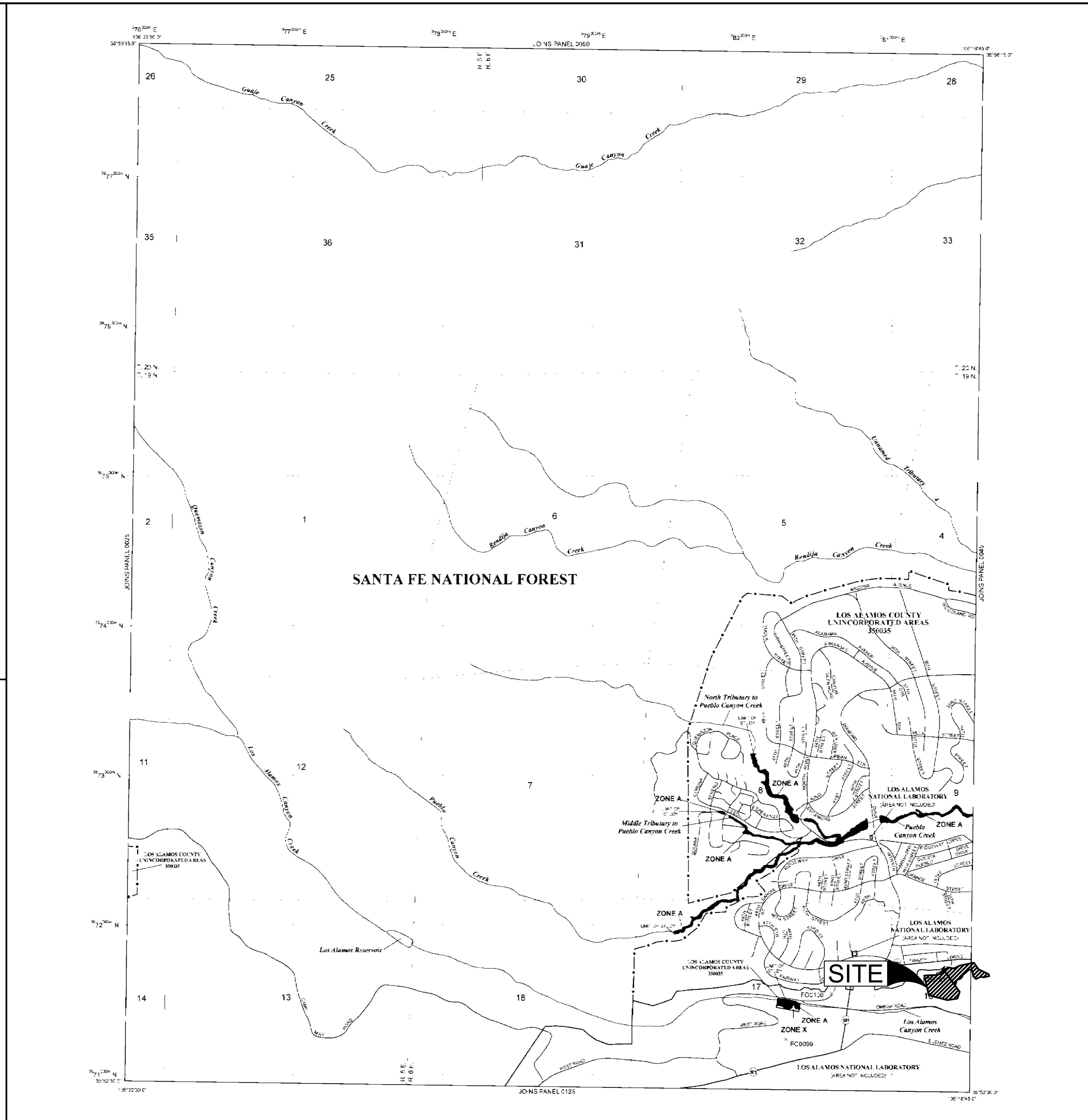
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, 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.

	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)
4275000m N	1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 M	5000-foot grid ticks: New Mexico State Plane coordinate system, central zone (FIPSZONE 3002), Transverse Mercator
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
July 18, 2011
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" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

PANEL 0040C

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

LOS ALAMOS COUNTY,

NEW MEXICO

PANEL 40 OF 150

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ALAMOS COUNTY	350035	0040	C

EFFECTIVE FIRM MAP
FIGURE 6

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
35028C0040C

EFFECTIVE DATE
JULY 18, 2011

Federal Emergency Management Agency

APPENDIX B

EXISTING DRAINAGE CALCULATIONS

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q1 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q1 revised.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q1		Outlet	1.91	96	.165

Total area: 1.91 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q1	6.19	6.99	7.81
REACHES			
OUTLET	6.19	6.99	7.81

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
Q1	6.19 11.97	6.99 11.97	7.81 11.97
REACHES			
OUTLET	6.19	6.99	7.81

CPC

THE HILLS
Q1 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q1	1.91	0.165	96	Outlet	

Total Area: 1.91 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q1							
SHEET	100	0.0100	0.011				0.036
SHALLOW	926	0.0107	0.025				0.122
SHALLOW	130	0.1091	0.050				0.007
						Time of Concentration	.165

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q1	Paved; curbs and storm sewers	D	1.51	98
	Paved; open ditches (w/right-of-way)	D	.01	93
	Herbaceous (fair)	D	.39	89
	Total Area / Weighted Curve Number		1.91	96

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q2 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q2.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q2		Outlet	3.87	91	0.1

Total area: 3.87 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q2	11.94	13.78	15.66
REACHES			
OUTLET	11.94	13.78	15.66

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
	(hr)	(hr)	(hr)
SUBAREAS			
Q2	11.94	13.78	15.66
	11.93	11.93	11.93
REACHES			
OUTLET	11.94	13.78	15.66

CPC

THE HILLS
Q2 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q2	3.87	0.100	91	Outlet	

Total Area: 3.87 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q2							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q2	Paved parking lots, roofs, driveways	D	.35	98
	Paved; open ditches (w/right-of-way)	D	.79	93
	Herbaceous (fair)	D	2.73	89
	Total Area / Weighted Curve Number		3.87	91

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q3 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q3 revised.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q3		Outlet	0.64	91	0.1

Total area: .64 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q3	1.97	2.28	2.59
REACHES			
OUTLET	1.97	2.28	2.59

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
Q3	1.97 11.93	2.28 11.93	2.59 11.93
REACHES			
OUTLET	1.97	2.28	2.59

CPC

THE HILLS
Q3 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q3	.64	0.100	91	Outlet	

Total Area: .64 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q3							
SHEET	100	0.0075	0.011				0.041
SHALLOW	83	0.0108	0.025				0.011
SHALLOW	162	0.2092	0.050				0.006
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q3	Paved parking lots, roofs, driveways	D	.13	98
	Herbaceous (fair)	D	.51	89
	Total Area / Weighted Curve Number		.64	91

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q4 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q4 revised.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q4		Outlet	0.37	91	0.1

Total area: .37 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q4	1.14	1.32	1.50
REACHES			
OUTLET	1.14	1.32	1.50

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
Q4	1.14 11.93	1.32 11.93	1.50 11.93
REACHES			
OUTLET	1.14	1.32	1.50

CPC

THE HILLS
Q4 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q4	.37	0.100	91	Outlet	

Total Area: .37 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q4							
SHEET	100	0.0065	0.011				0.043
SHALLOW	89	0.0144	0.025				0.010
SHALLOW	213	0.0993	0.050				0.012
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q4	Paved parking lots, roofs, driveways	D	.08	98
	Herbaceous (fair)	D	.29	89
	Total Area / Weighted Curve Number		.37	91

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q5 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q5 revised.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q5		Outlet	1.2	93	0.1

Total area: 1.20 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q5	3.98	4.54	5.13
REACHES			
OUTLET	3.98	4.54	5.13

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
Q5	3.98 11.93	4.54 11.93	5.13 11.93
REACHES			
OUTLET	3.98	4.54	5.13

CPC

THE HILLS
Q5 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q5	1.20	0.100	93	Outlet	

Total Area: 1.20 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q5							
SHEET	100	0.0100	0.011				0.036
SHALLOW	145	0.0082	0.025				0.022
SHALLOW	193	0.0973	0.050				0.011
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q5	Paved parking lots, roofs, driveways	D	.59	98
	Herbaceous (fair)	D	.61	89
	Total Area / Weighted Curve Number		1.2	93

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q6 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q6 revised.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q6		Outlet	0.62	89	.105

Total area: .62 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q6	1.76	2.05	2.35
REACHES			
OUTLET	1.76	2.05	2.35

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
Q6	1.76 11.94	2.05 11.93	2.35 11.93
REACHES			
OUTLET	1.76	2.05	2.35

CPC

THE HILLS
Q6 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q6	.62	0.105	89	Outlet	

Total Area: .62 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q6							
SHEET	100	0.1021	0.130				0.103
SHALLOW	53	0.1460	0.050				0.002
						Time of Concentration	.105

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q6	Herbaceous	(fair)	D	.62	89
	Total Area / Weighted Curve Number			.62	89

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q7 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q7 revised.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q7		Outlet	2.87	91	0.1

Total area: 2.87 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q7	8.84	10.20	11.60
REACHES			
OUTLET	8.84	10.20	11.60

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS						
Q7	8.84	11.93	10.20	11.93	11.60	11.93
REACHES						
OUTLET	8.84		10.20		11.60	

CPC

THE HILLS
Q7 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q7	2.87	0.100	91	Outlet	

Total Area: 2.87 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q7							
SHEET	100	0.0191	0.011				0.028
SHALLOW	202	0.0665	0.025				0.011
SHALLOW	146	0.1251	0.050				0.007
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q7	Paved parking lots, roofs, driveways	D	.69	98
	Herbaceous (fair)	D	2.18	89
	Total Area / Weighted Curve Number		2.87	91

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: Q8 EXISTING CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\Q8 revised.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Q8		Outlet	0.92	90	.215

Total area: .92 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
Q8	2.31	2.68	3.06
REACHES			
OUTLET	2.31	2.68	3.06

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
Q8	2.31 12.02	2.68 12.02	3.06 12.01
REACHES			
OUTLET	2.31	2.68	3.06

CPC

THE HILLS
Q8 EXISTING CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Q8	.92	0.215	90	Outlet	

Total Area: .92 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Q8							
SHEET	100	0.0172	0.130				0.210
SHALLOW	112	0.1622	0.050				0.005
						Time of Concentration	.215

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Q8	Paved parking lots, roofs, driveways	D	.07	98
	Herbaceous (fair)	D	.85	89
	Total Area / Weighted Curve Number		.92	90

APPENDIX C

EXISTING FLOW ROUTING

Hydraflow Table of Contents

K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\hill-ex-REACH.gpw

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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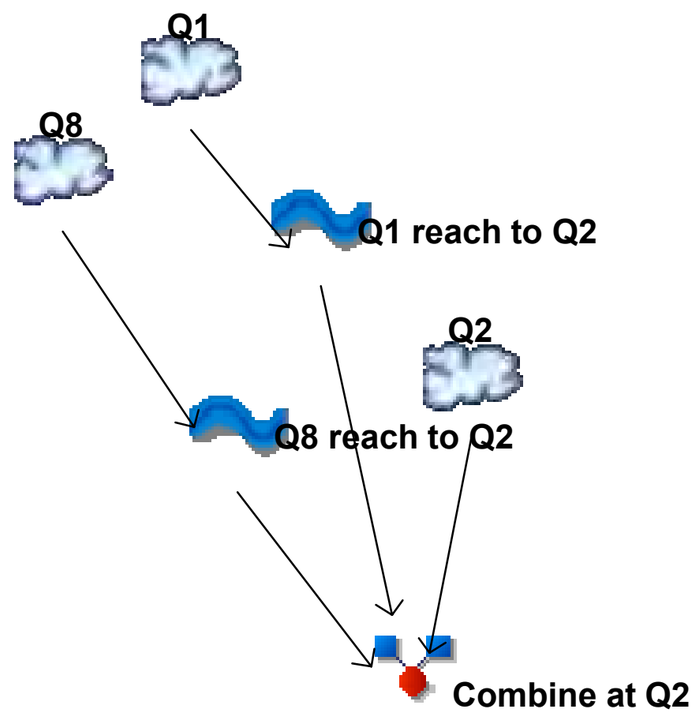
Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020



Legend

Hyd.	Origin	Description
1	SCS Runoff	Q1
2	SCS Runoff	Q2
3	Reach	Q1 reach to Q2
4	SCS Runoff	Q8
5	Reach	Q8 reach to Q2
6	Combine	Combine at Q2

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	3.827	-------	-------	-------	7.026	7.926	8.849	Q1
2	SCS Runoff	------	-------	6.639	-------	-------	-------	14.03	16.15	18.34	Q2
3	Reach	1	-------	3.753	-------	-------	-------	6.914	7.811	8.731	Q1 reach to Q2
4	SCS Runoff	------	-------	1.130	-------	-------	-------	2.495	2.890	3.298	Q8
5	Reach	4	-------	1.057	-------	-------	-------	2.357	2.735	3.128	Q8 reach to Q2
6	Combine	2, 3, 5	-------	10.80	-------	-------	-------	22.15	25.40	28.73	Combine at Q2

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	7.026	1	719	17,421	------	------	------	Q1
2	SCS Runoff	14.03	1	717	29,466	------	------	------	Q2
3	Reach	6.914	1	720	17,421	1	------	------	Q1 reach to Q2
4	SCS Runoff	2.495	1	721	6,402	------	------	------	Q8
5	Reach	2.357	1	724	6,400	4	------	------	Q8 reach to Q2
6	Combine	22.15	1	718	53,286	2, 3, 5	------	------	Combine at Q2

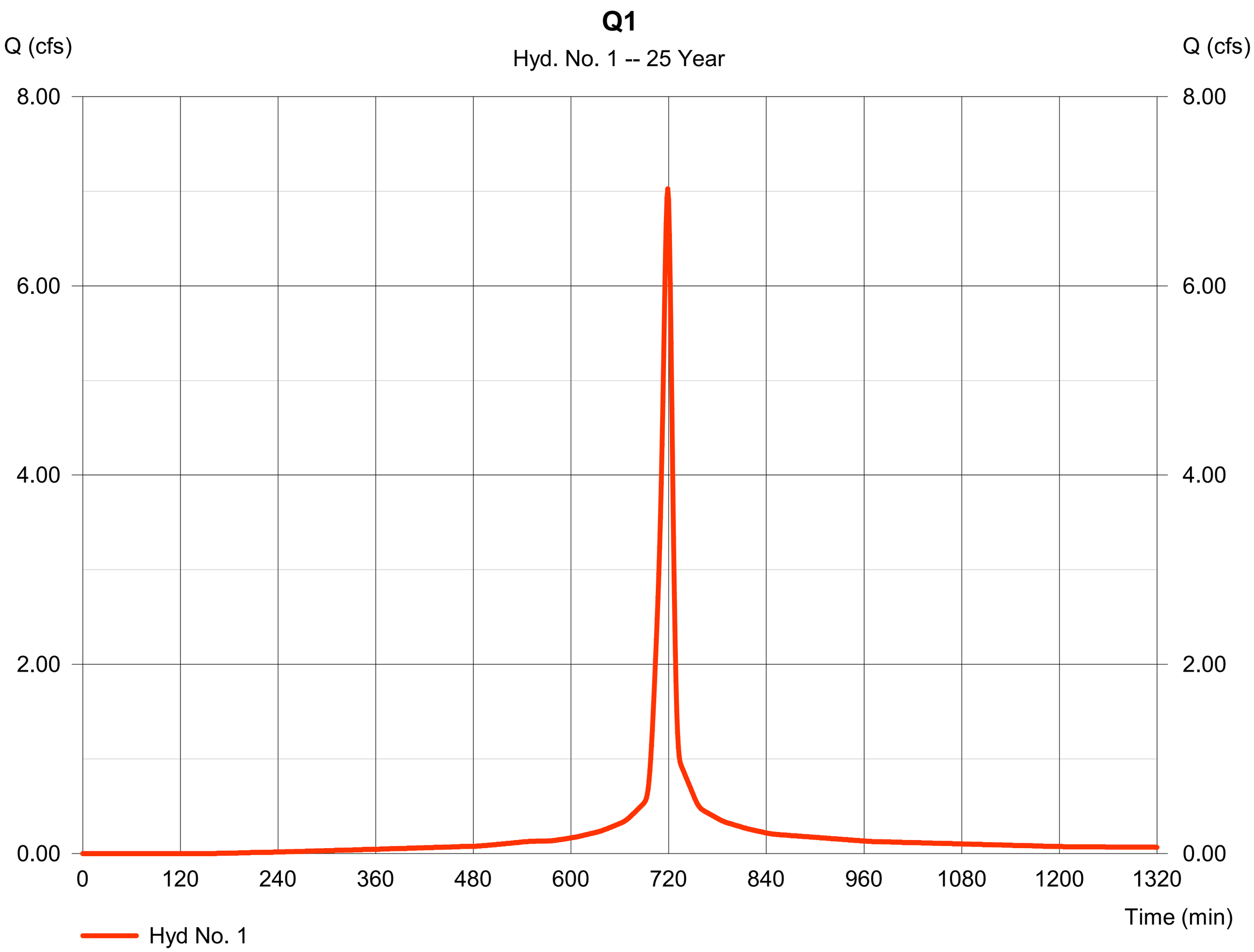
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 1

Q1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.026 cfs
Storm frequency	= 25 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 17,421 cuft
Drainage area	= 1.910 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



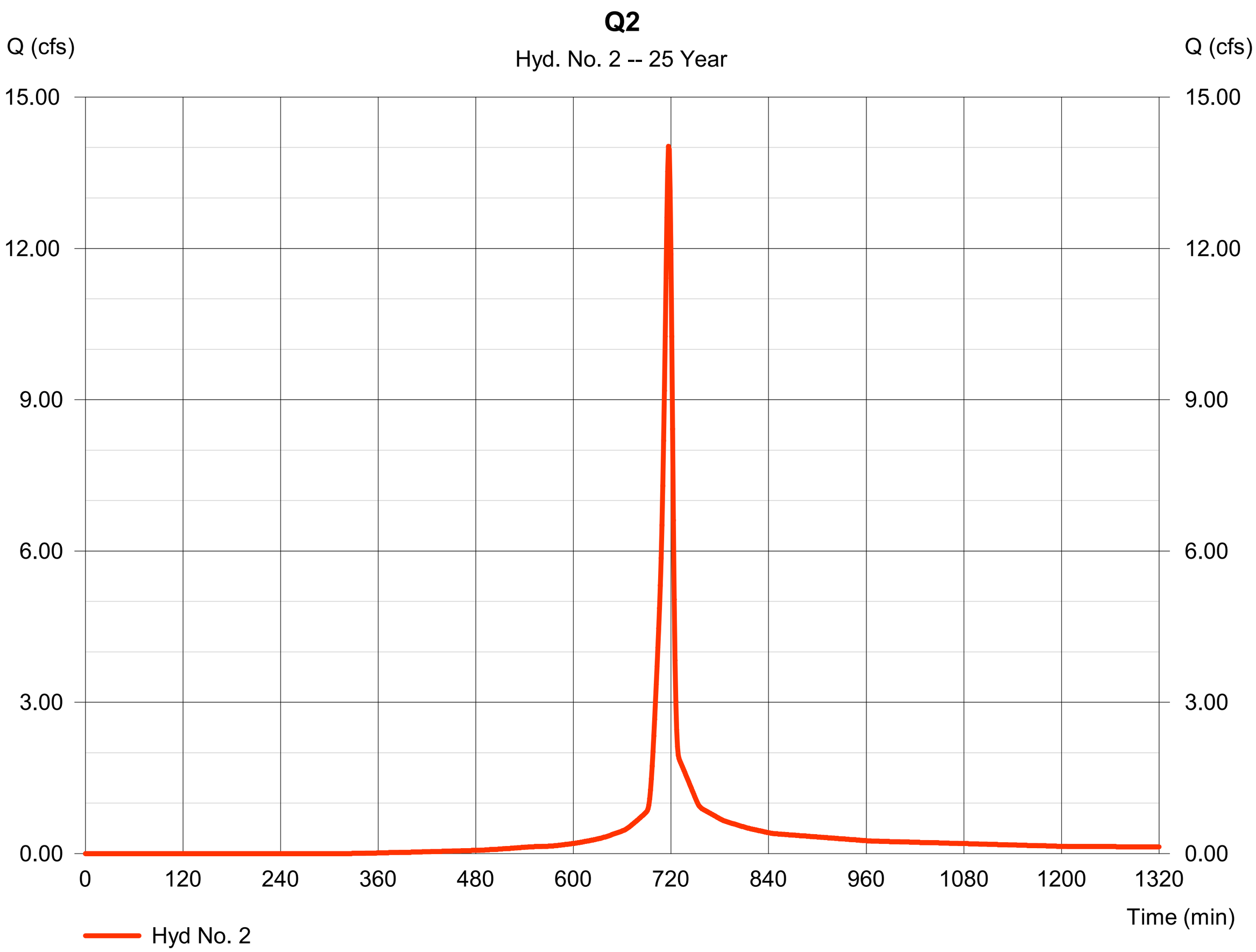
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 2

Q2

Hydrograph type	= SCS Runoff	Peak discharge	= 14.03 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 29,466 cuft
Drainage area	= 3.870 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

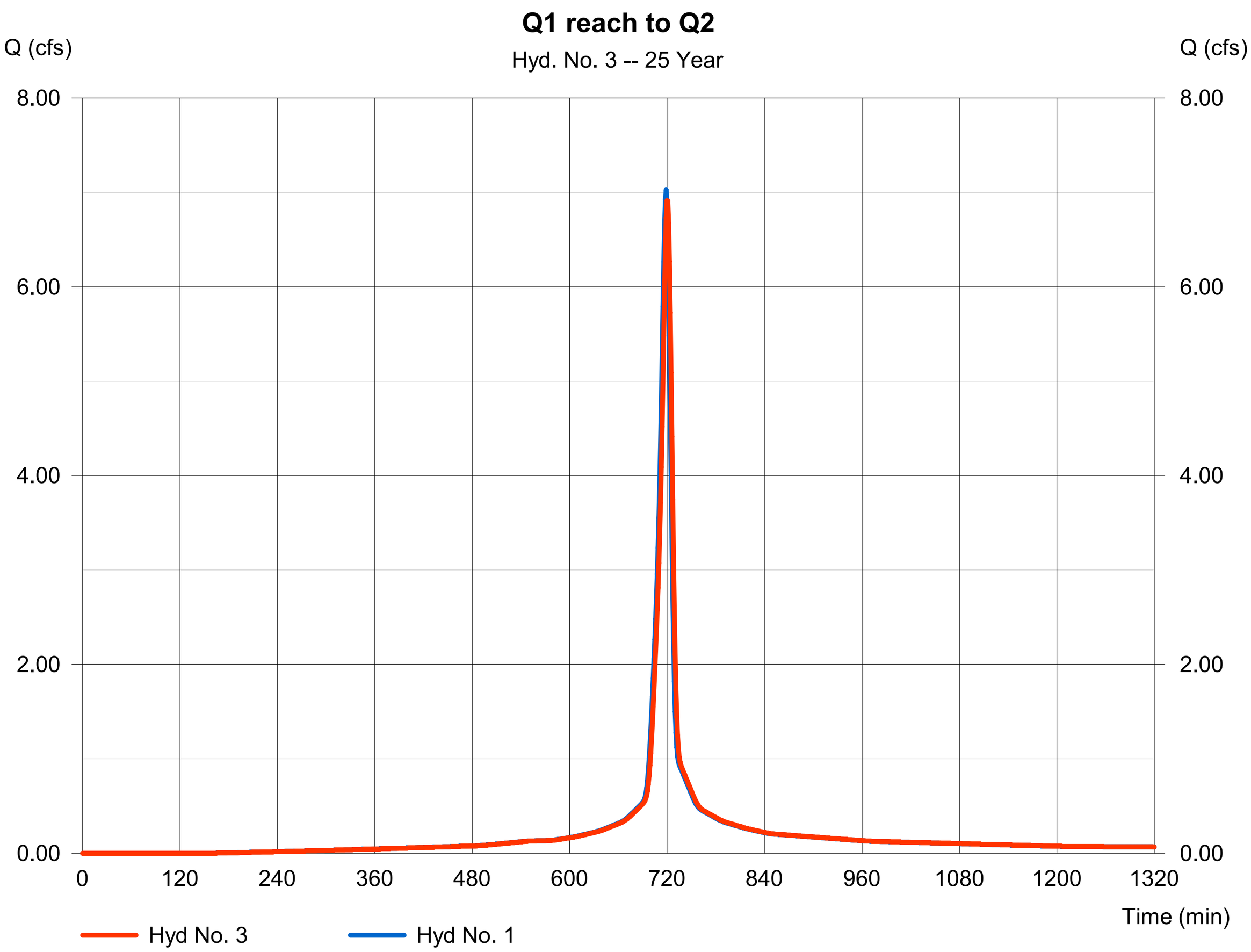
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 3

Q1 reach to Q2

Hydrograph type	= Reach	Peak discharge	= 6.914 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 17,421 cuft
Inflow hyd. No.	= 1 - Q1	Section type	= Triangular
Reach length	= 335.0 ft	Channel slope	= 10.8 %
Manning's n	= 0.055	Bottom width	= 0.0 ft
Side slope	= 6.0:1	Max. depth	= 0.0 ft
Rating curve x	= 3.086	Rating curve m	= 1.333
Ave. velocity	= 3.79 ft/s	Routing coeff.	= 0.6231

Modified Att-Kin routing method used.



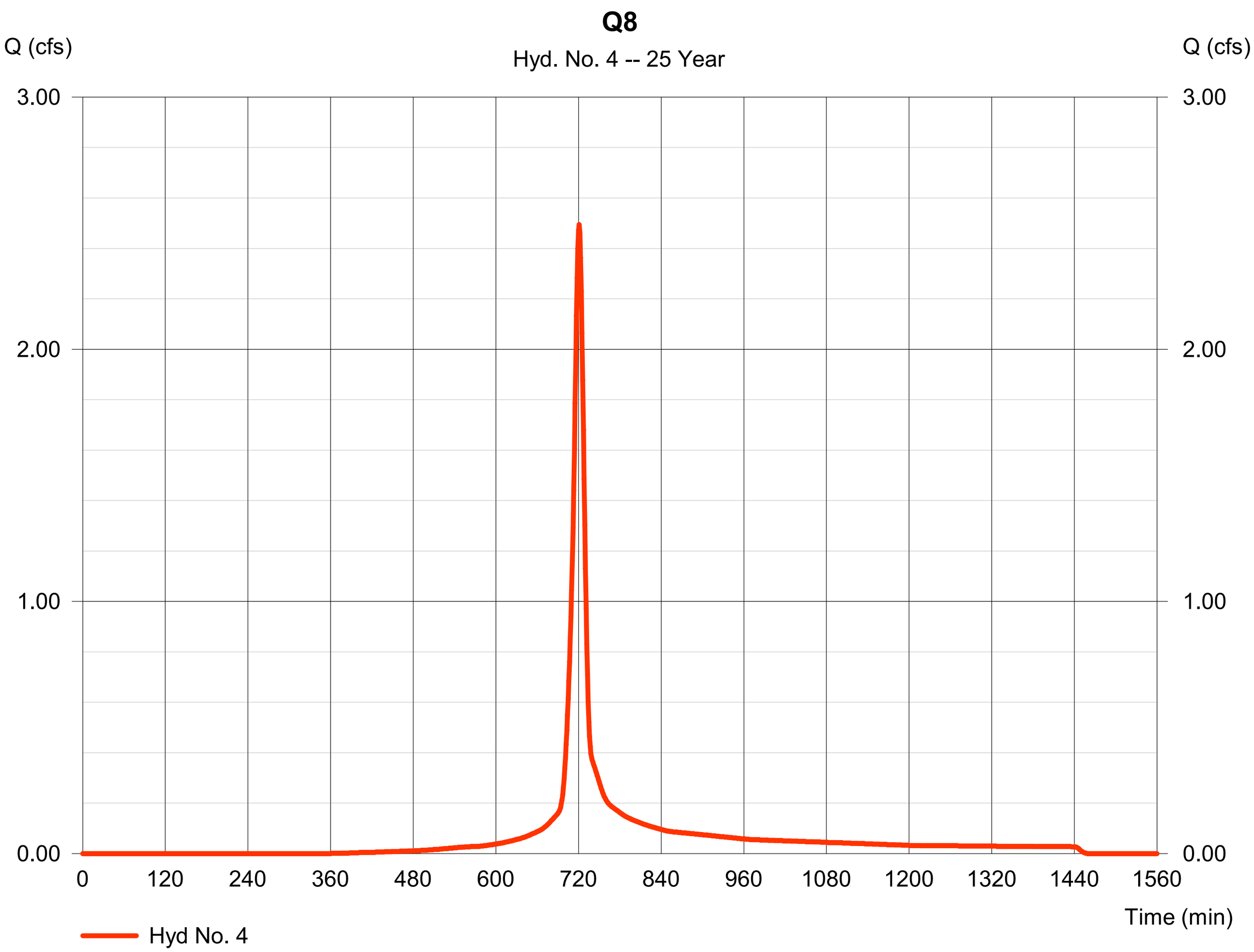
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 4

Q8

Hydrograph type	= SCS Runoff	Peak discharge	= 2.495 cfs
Storm frequency	= 25 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 6,402 cuft
Drainage area	= 0.920 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

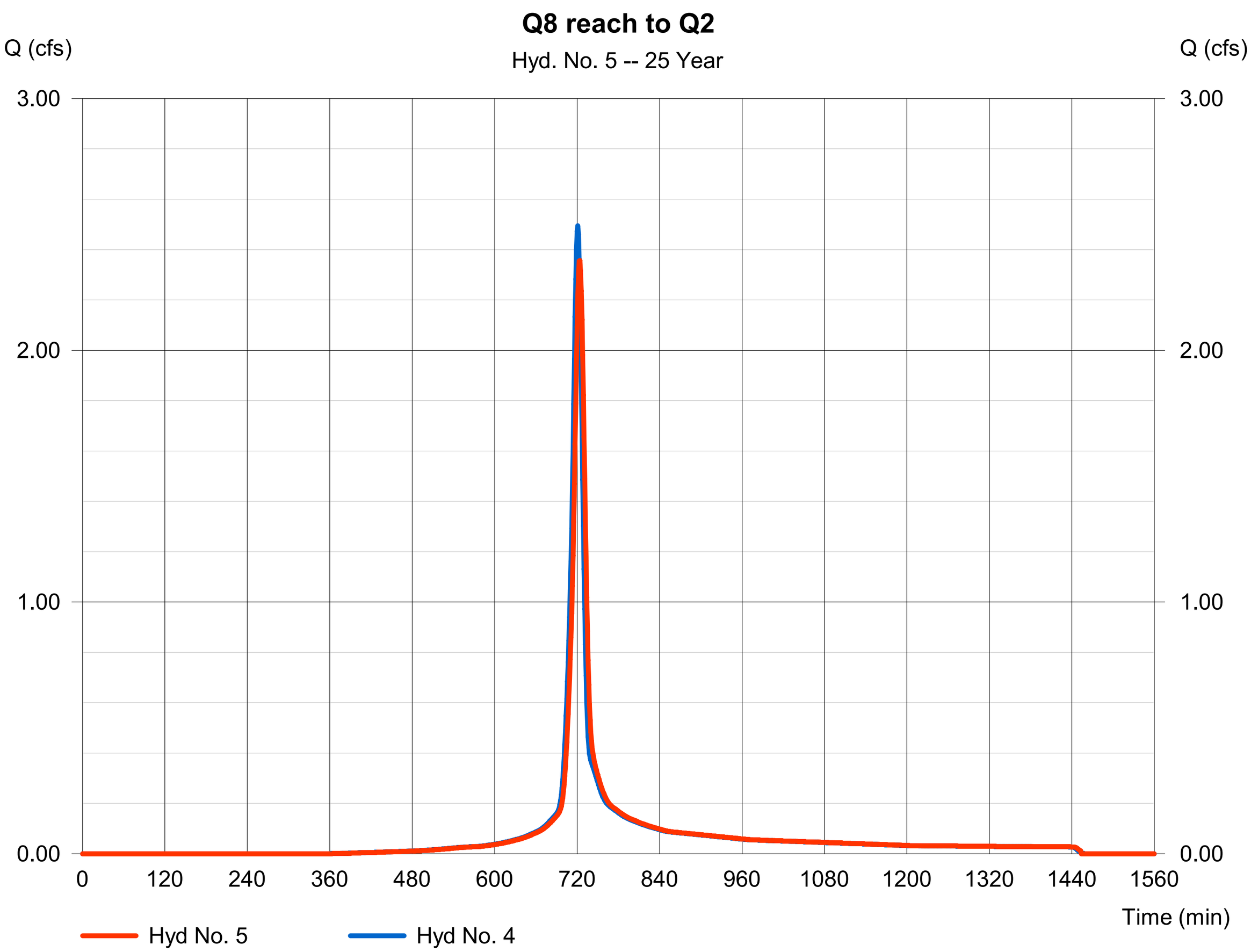
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 5

Q8 reach to Q2

Hydrograph type	= Reach	Peak discharge	= 2.357 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 6,400 cuft
Inflow hyd. No.	= 4 - Q8	Section type	= Trapezoidal
Reach length	= 377.0 ft	Channel slope	= 10.9 %
Manning's n	= 0.050	Bottom width	= 10.0 ft
Side slope	= 10.0:1	Max. depth	= 1.0 ft
Rating curve x	= 2.118	Rating curve m	= 1.113
Ave. velocity	= 2.15 ft/s	Routing coeff.	= 0.3203

Modified Att-Kin routing method used.



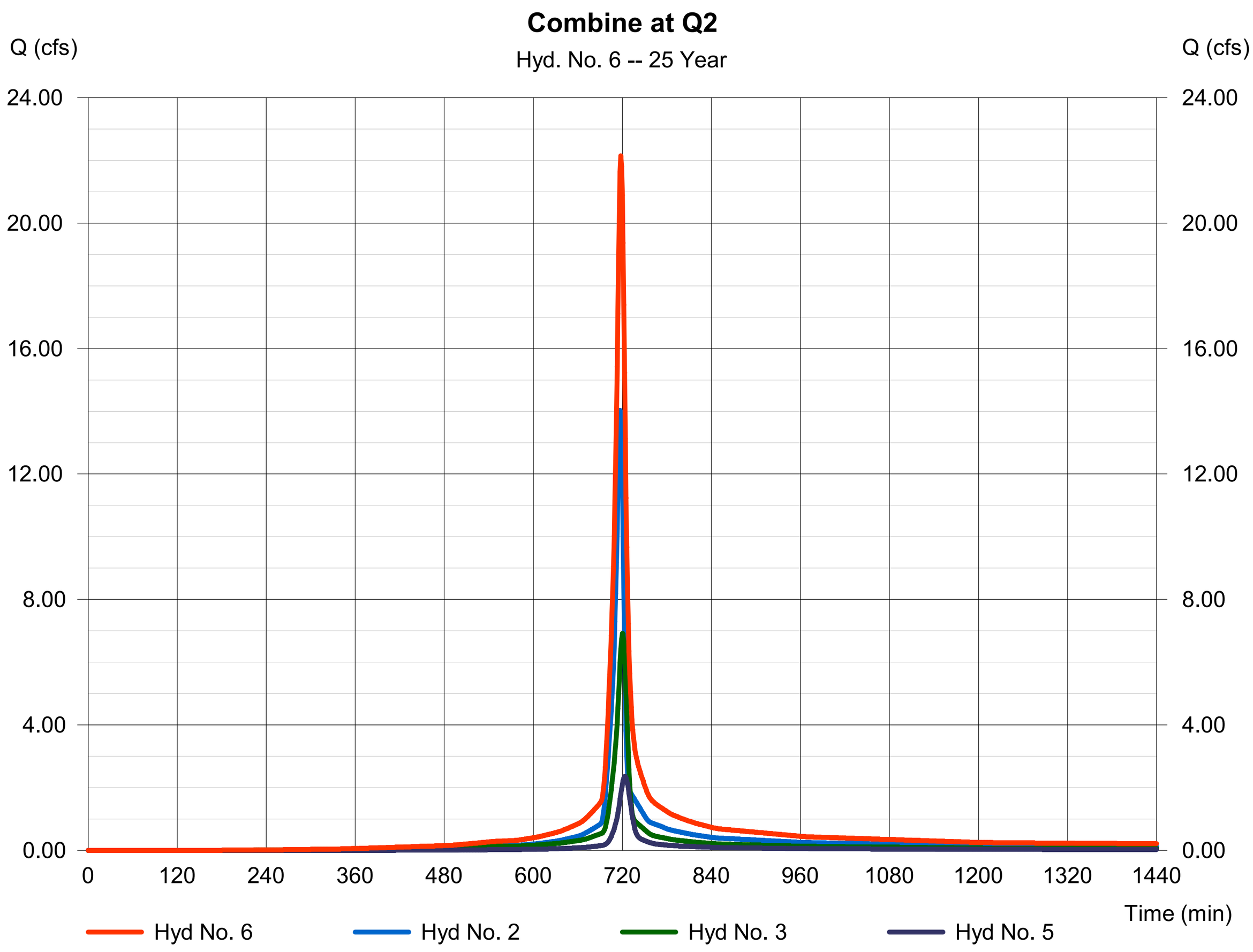
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 6

Combine at Q2

Hydrograph type	= Combine	Peak discharge	= 22.15 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 53,286 cuft
Inflow hyds.	= 2, 3, 5	Contrib. drain. area	= 3.870 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	7.926	1	719	19,813	------	------	------	Q1
2	SCS Runoff	16.15	1	717	34,214	------	------	------	Q2
3	Reach	7.811	1	720	19,812	1	------	------	Q1 reach to Q2
4	SCS Runoff	2.890	1	721	7,465	------	------	------	Q8
5	Reach	2.735	1	723	7,463	4	------	------	Q8 reach to Q2
6	Combine	25.40	1	718	61,489	2, 3, 5	------	------	Combine at Q2

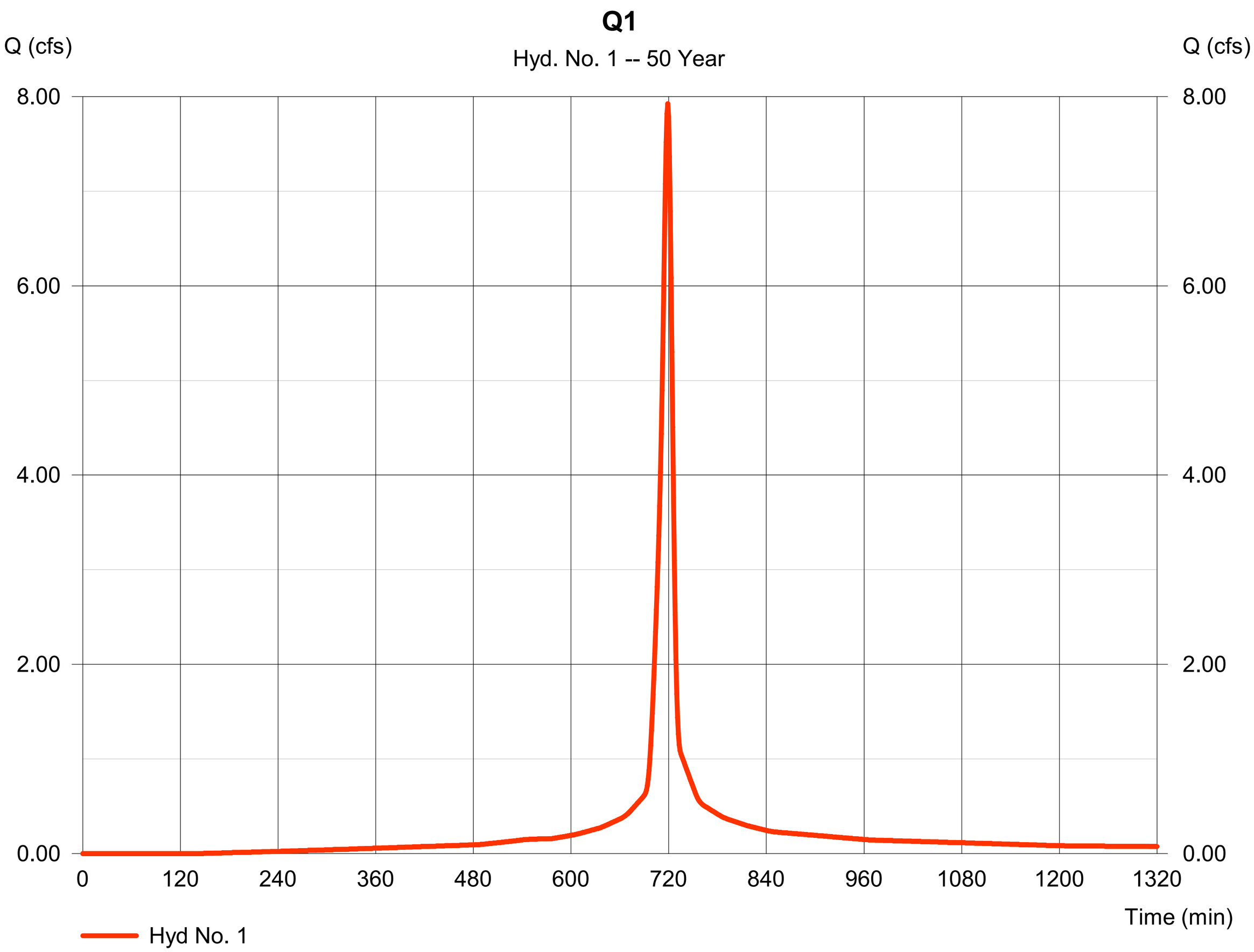
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 1

Q1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.926 cfs
Storm frequency	= 50 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 19,813 cuft
Drainage area	= 1.910 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



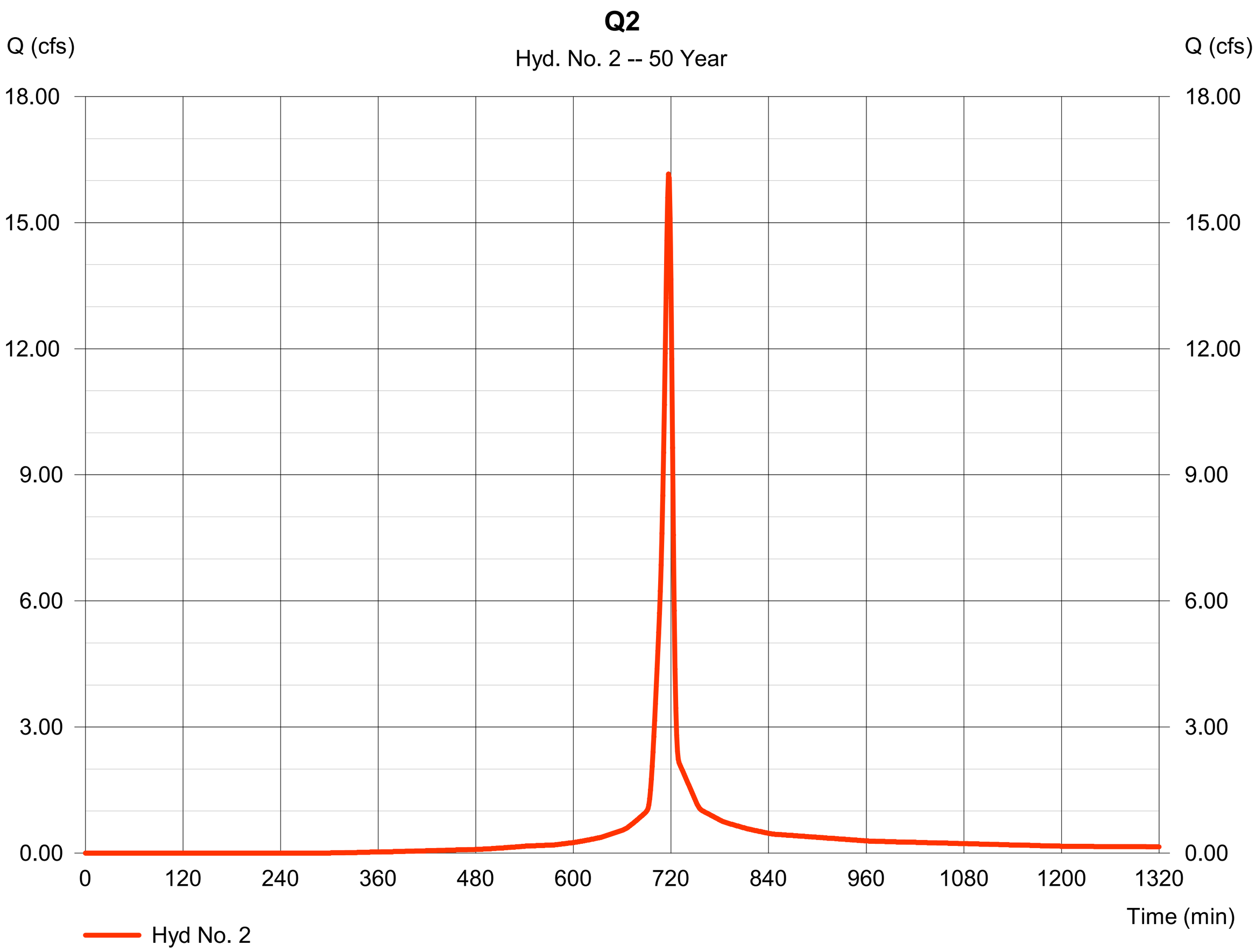
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 2

Q2

Hydrograph type	= SCS Runoff	Peak discharge	= 16.15 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 34,214 cuft
Drainage area	= 3.870 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

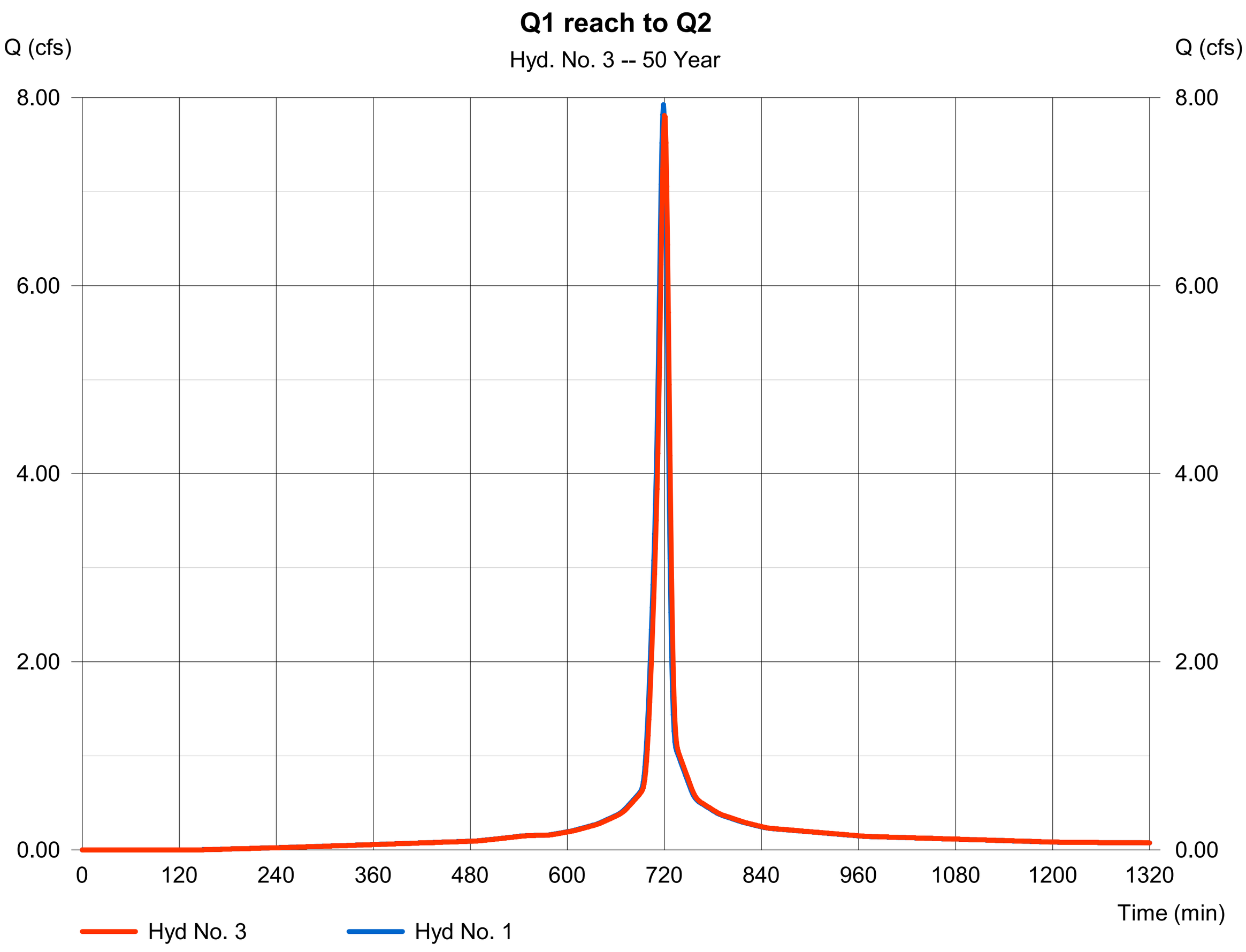
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 3

Q1 reach to Q2

Hydrograph type	= Reach	Peak discharge	= 7.811 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 19,812 cuft
Inflow hyd. No.	= 1 - Q1	Section type	= Triangular
Reach length	= 335.0 ft	Channel slope	= 10.8 %
Manning's n	= 0.055	Bottom width	= 0.0 ft
Side slope	= 6.0:1	Max. depth	= 0.0 ft
Rating curve x	= 3.086	Rating curve m	= 1.333
Ave. velocity	= 3.91 ft/s	Routing coeff.	= 0.6361

Modified Att-Kin routing method used.



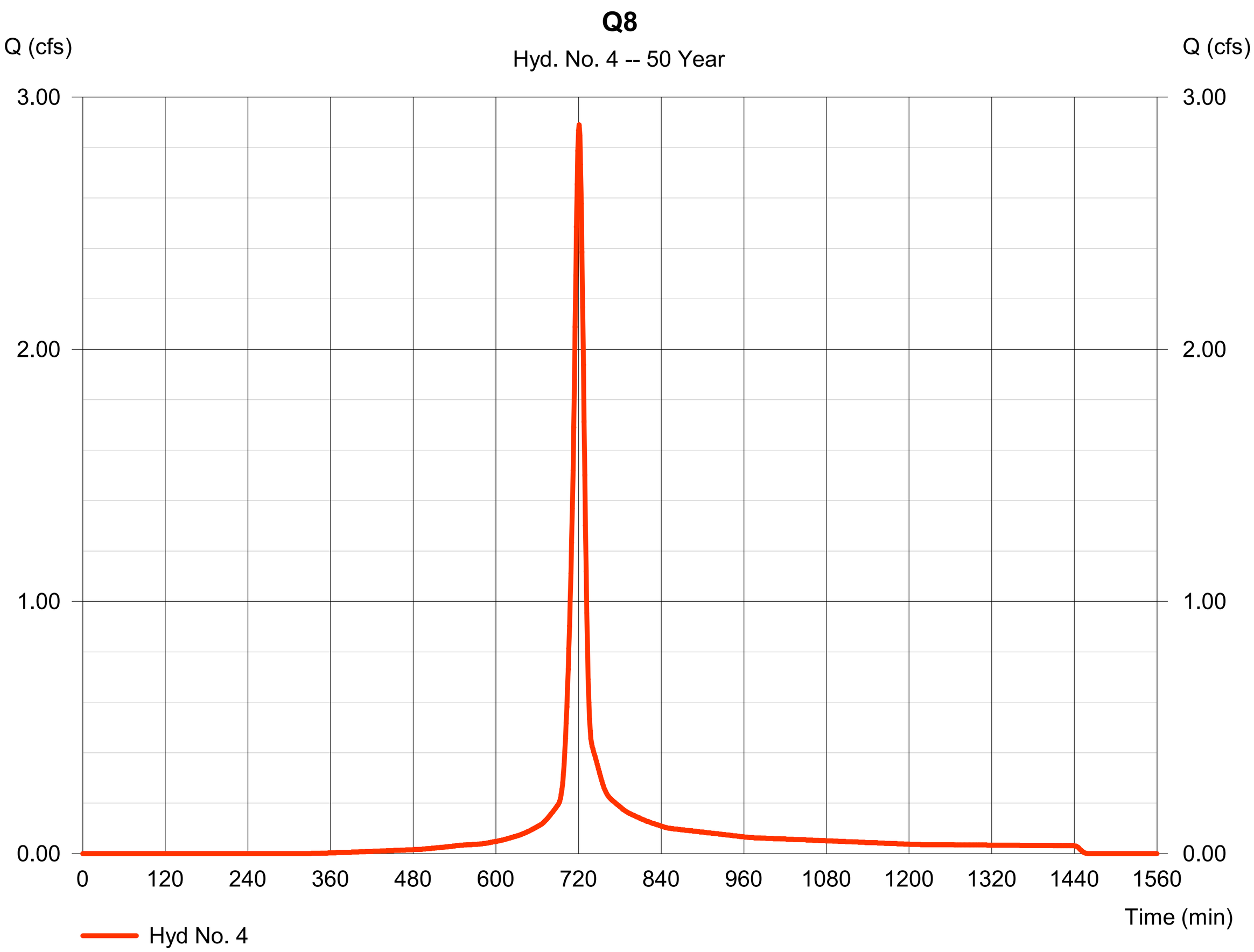
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 4

Q8

Hydrograph type	= SCS Runoff	Peak discharge	= 2.890 cfs
Storm frequency	= 50 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 7,465 cuft
Drainage area	= 0.920 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

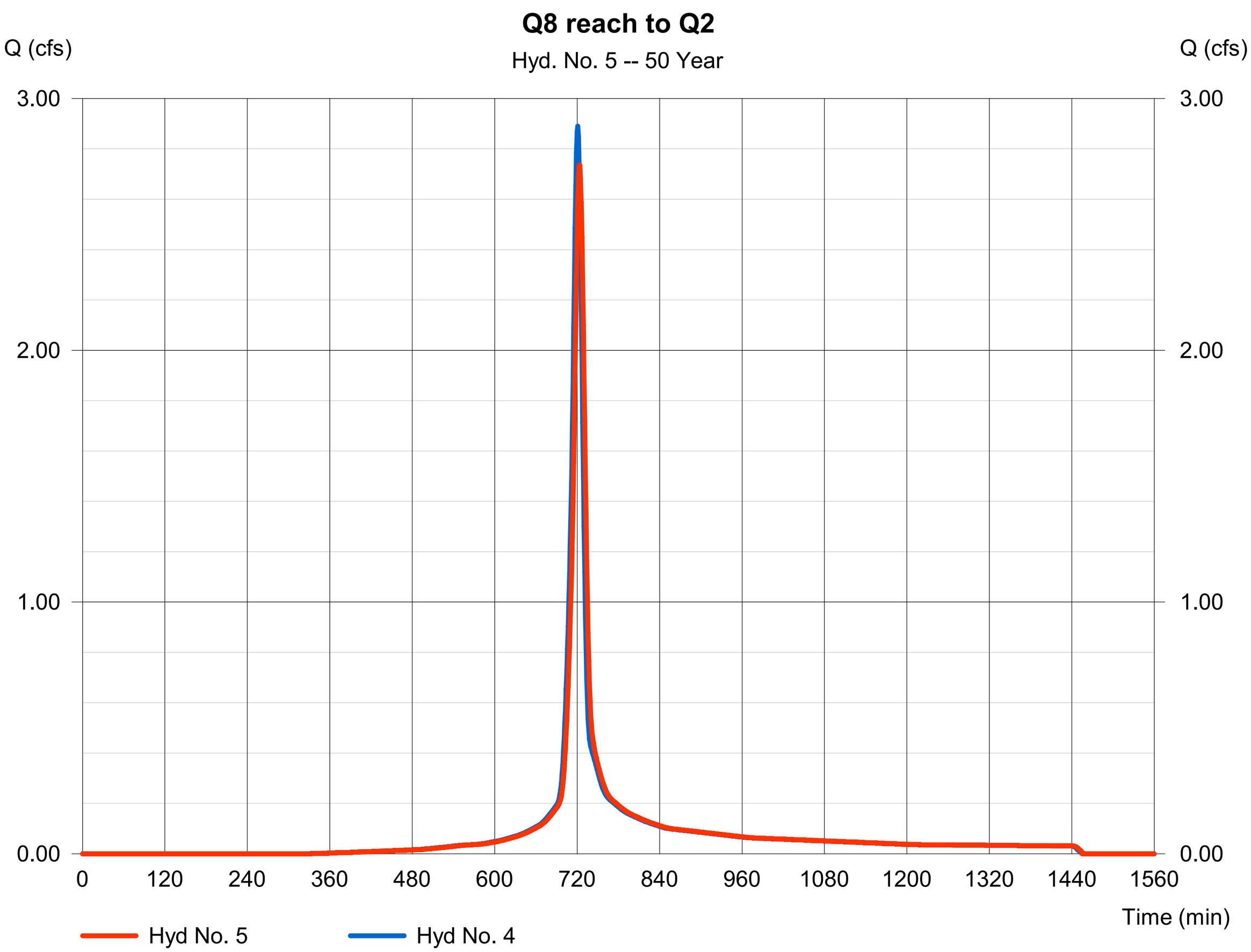
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 5

Q8 reach to Q2

Hydrograph type	= Reach	Peak discharge	= 2.735 cfs
Storm frequency	= 50 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 7,463 cuft
Inflow hyd. No.	= 4 - Q8	Section type	= Trapezoidal
Reach length	= 377.0 ft	Channel slope	= 10.9 %
Manning's n	= 0.050	Bottom width	= 10.0 ft
Side slope	= 10.0:1	Max. depth	= 1.0 ft
Rating curve x	= 2.118	Rating curve m	= 1.113
Ave. velocity	= 2.19 ft/s	Routing coeff.	= 0.3243

Modified Att-Kin routing method used.



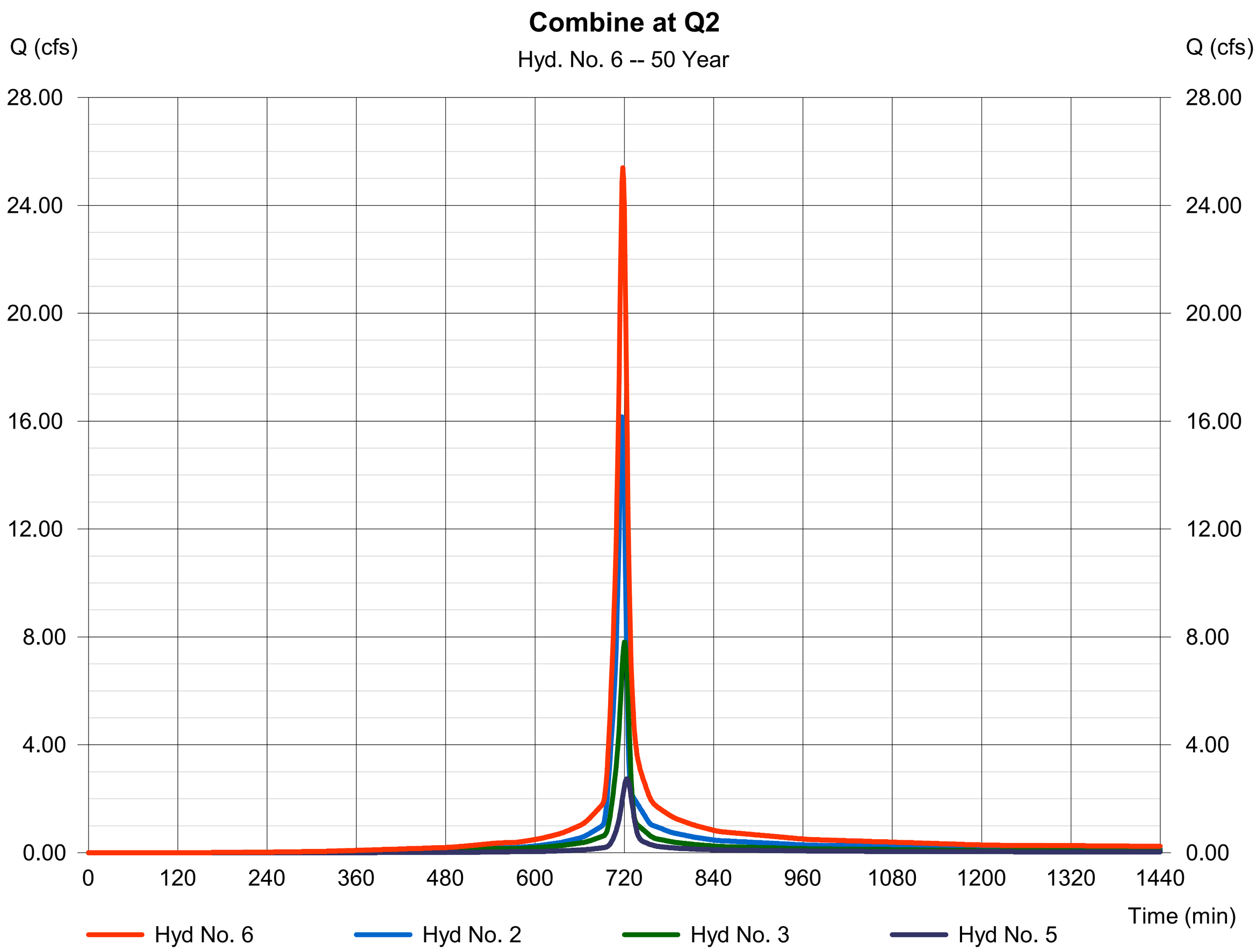
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 6

Combine at Q2

Hydrograph type	= Combine	Peak discharge	= 25.40 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 61,489 cuft
Inflow hyds.	= 2, 3, 5	Contrib. drain. area	= 3.870 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.849	1	719	22,279	------	------	------	Q1
2	SCS Runoff	18.34	1	717	39,151	------	------	------	Q2
3	Reach	8.731	1	720	22,278	1	------	------	Q1 reach to Q2
4	SCS Runoff	3.298	1	721	8,572	------	------	------	Q8
5	Reach	3.128	1	723	8,570	4	------	------	Q8 reach to Q2
6	Combine	28.73	1	718	69,998	2, 3, 5	------	------	Combine at Q2

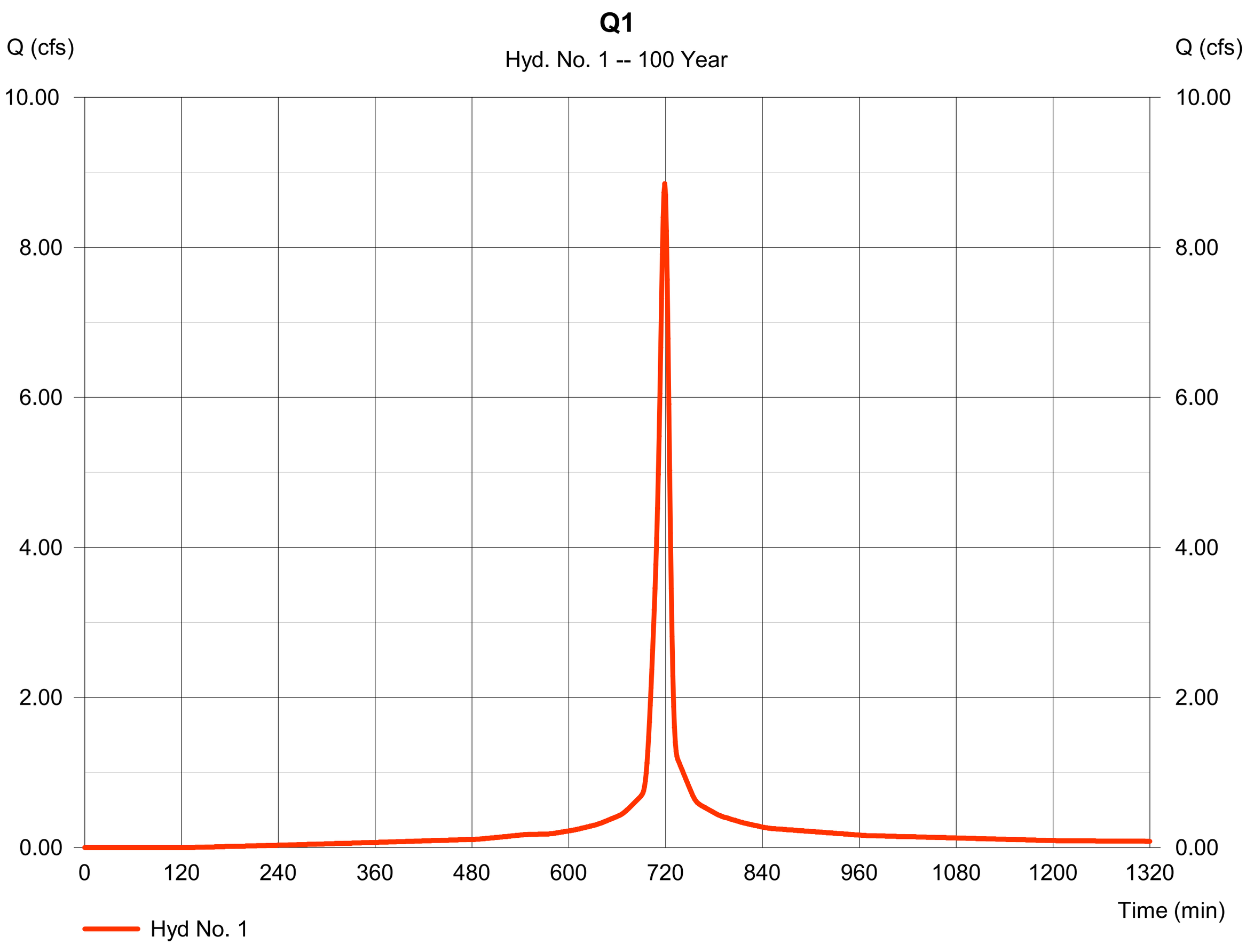
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 1

Q1

Hydrograph type	= SCS Runoff	Peak discharge	= 8.849 cfs
Storm frequency	= 100 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 22,279 cuft
Drainage area	= 1.910 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



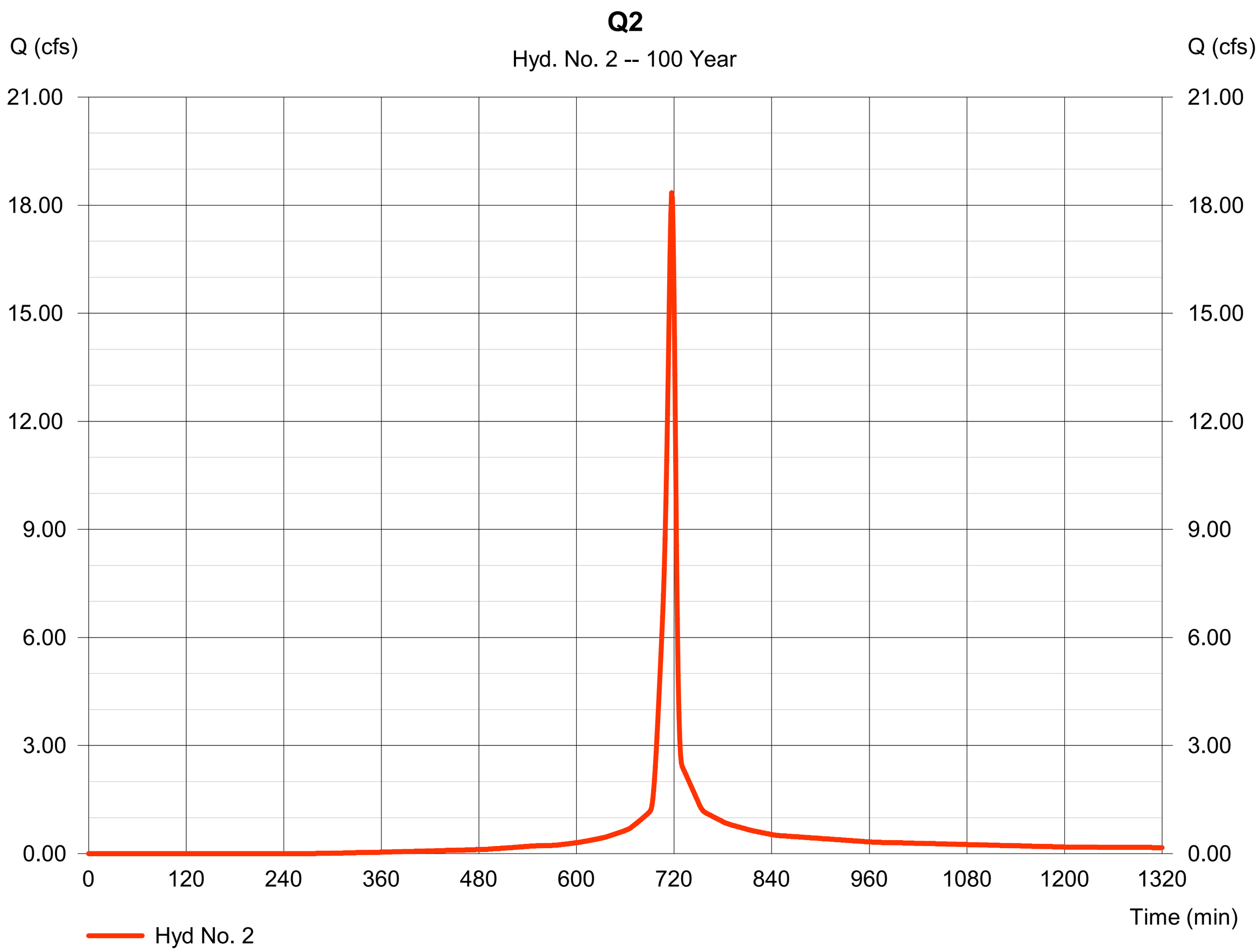
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 2

Q2

Hydrograph type	= SCS Runoff	Peak discharge	= 18.34 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 39,151 cuft
Drainage area	= 3.870 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

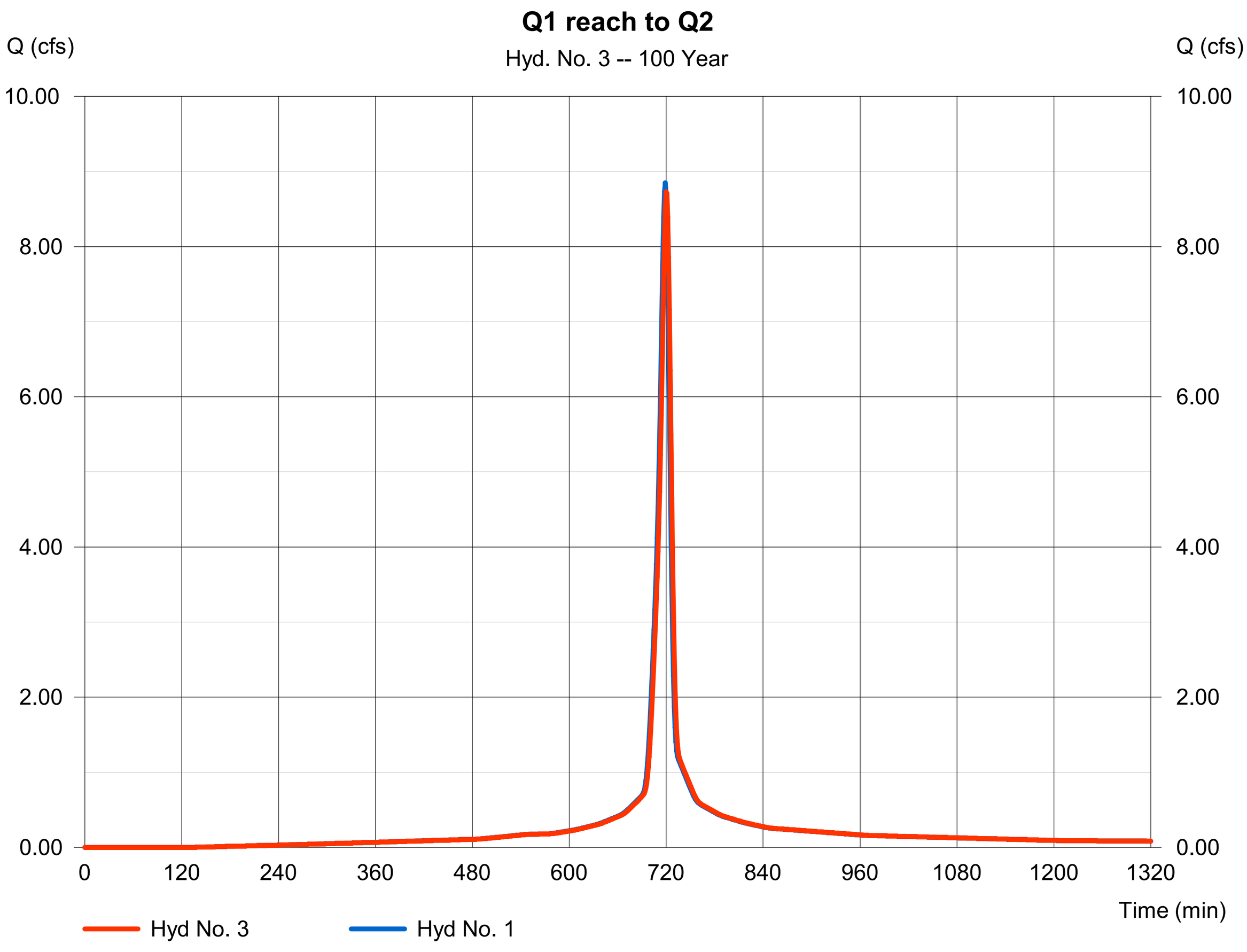
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 3

Q1 reach to Q2

Hydrograph type	= Reach	Peak discharge	= 8.731 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 22,278 cuft
Inflow hyd. No.	= 1 - Q1	Section type	= Triangular
Reach length	= 335.0 ft	Channel slope	= 10.8 %
Manning's n	= 0.055	Bottom width	= 0.0 ft
Side slope	= 6.0:1	Max. depth	= 0.0 ft
Rating curve x	= 3.086	Rating curve m	= 1.333
Ave. velocity	= 4.02 ft/s	Routing coeff.	= 0.6481

Modified Att-Kin routing method used.



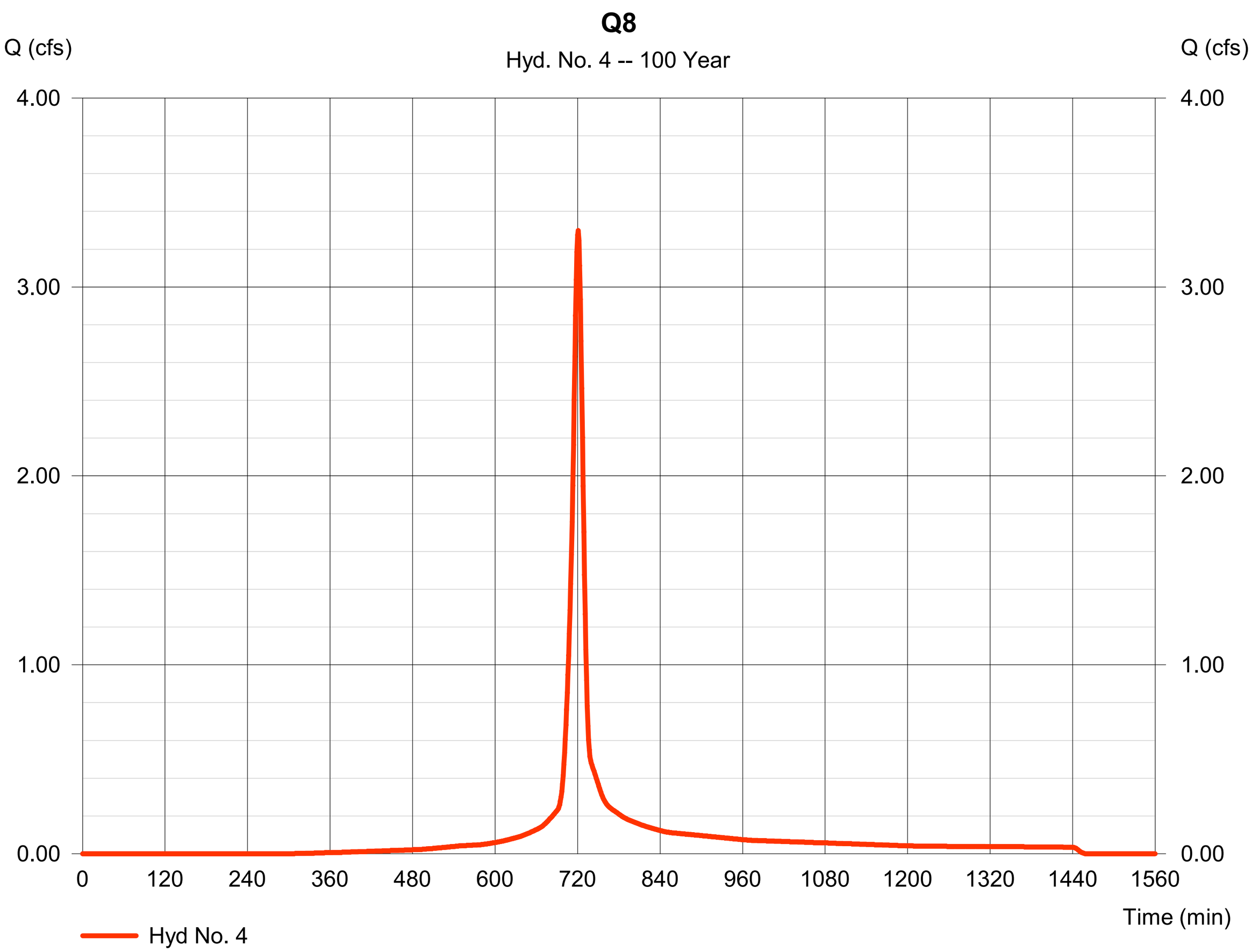
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 4

Q8

Hydrograph type	= SCS Runoff	Peak discharge	= 3.298 cfs
Storm frequency	= 100 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 8,572 cuft
Drainage area	= 0.920 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

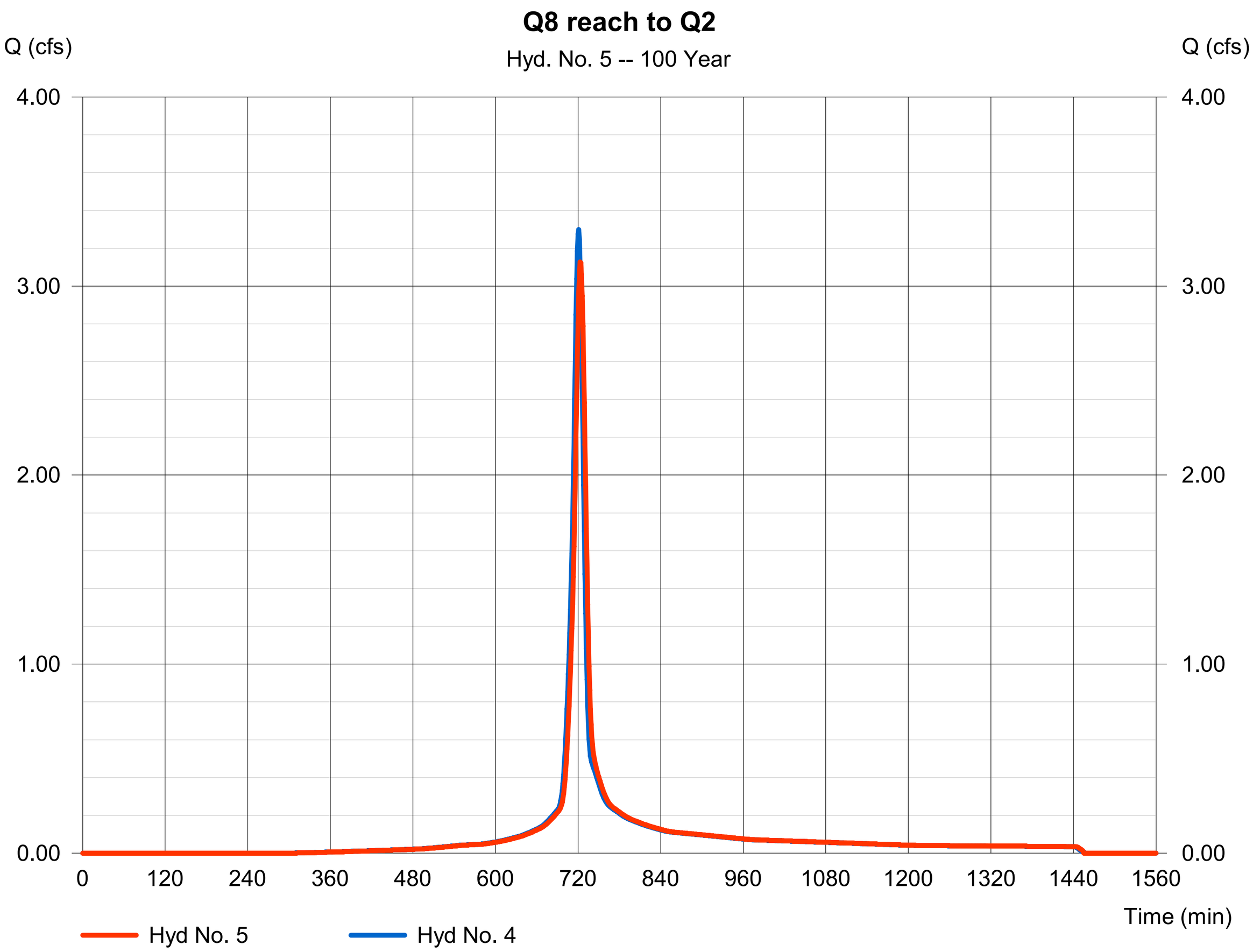
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 5

Q8 reach to Q2

Hydrograph type	= Reach	Peak discharge	= 3.128 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 8,570 cuft
Inflow hyd. No.	= 4 - Q8	Section type	= Trapezoidal
Reach length	= 377.0 ft	Channel slope	= 10.9 %
Manning's n	= 0.050	Bottom width	= 10.0 ft
Side slope	= 10.0:1	Max. depth	= 1.0 ft
Rating curve x	= 2.118	Rating curve m	= 1.113
Ave. velocity	= 2.22 ft/s	Routing coeff.	= 0.3279

Modified Att-Kin routing method used.



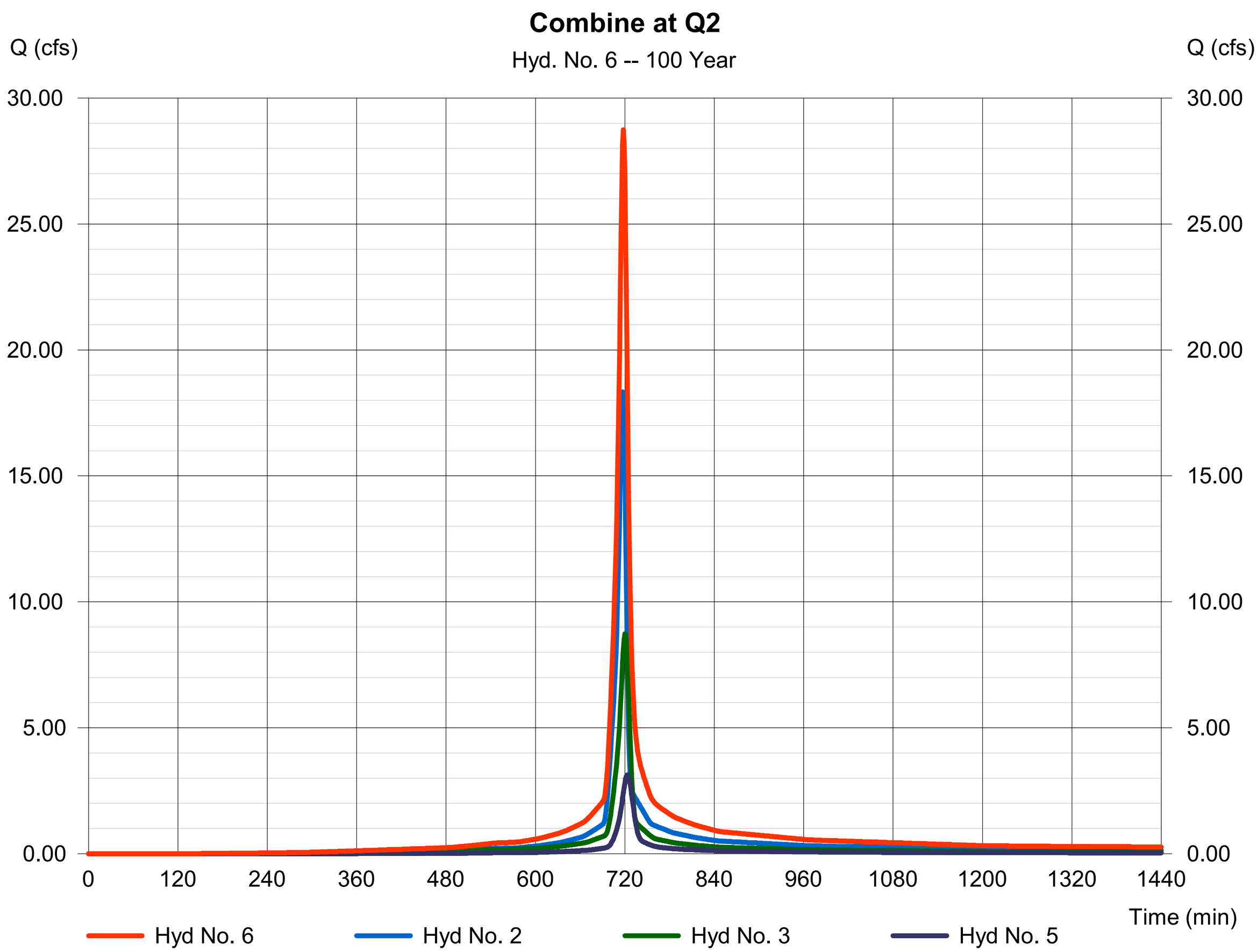
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 6

Combine at Q2

Hydrograph type	= Combine	Peak discharge	= 28.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 69,998 cuft
Inflow hyds.	= 2, 3, 5	Contrib. drain. area	= 3.870 ac



Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\hill-precip.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.73	0.00	0.00	0.00	2.96	3.31	3.67
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX D

PROPOSED DRAINAGE CALCULATIONS

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD2 DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD2 REVISED.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD2		Outlet	1.56	93	0.1

Total area: 1.56 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD2	5.16	5.90	6.66
REACHES			
OUTLET	5.16	5.90	6.66

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
QD2	5.16	5.90	6.66
	11.93	11.93	11.93
REACHES			
OUTLET	5.16	5.90	6.66

CPC

THE HILLS
QD2 DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD2	1.56	0.100	93	Outlet	

Total Area: 1.56 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD2							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	1.73				0.022
SHALLOW	422	0.1071	1.73				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD2	Open space; grass cover 50% to 75% (fair)	D	.28	84
	Paved parking lots, roofs, driveways	D	.28	98
	Paved; curbs and storm sewers	D	.53	98
	Herbaceous (fair)	D	.47	89
	Total Area / Weighted Curve Number		1.56	93

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD2A DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD2A.w55

Date: 5/22/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD2A		Outlet	0.38	86	0.1

Total area: .38 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD2A	0.95	1.12	1.30
REACHES			
OUTLET	0.95	1.12	1.30

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS						
QD2A	0.95	11.93	1.12	11.93	1.30	11.93
REACHES						
OUTLET	0.95		1.12		1.30	

CPC

THE HILLS
QD2A DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD2A	.38	0.100	86	Outlet	

Total Area: .38 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD2A							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD2A	Open space; grass cover 50% to 75% (fair)	D	.25	84
	Paved parking lots, roofs, driveways	D	.01	98
	Herbaceous (fair)	D	.12	89
	Total Area / Weighted Curve Number		.38	86

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD3 DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD3.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD3		Outlet	0.59	88	0.1

Total area: .59 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD3	1.61	1.89	2.18
REACHES			
OUTLET	1.61	1.89	2.18

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS						
QD3	1.61	11.93	1.89	11.93	2.18	11.93
REACHES						
OUTLET	1.61		1.89		2.18	

CPC

THE HILLS
QD3 DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD3	.59	0.100	88	Outlet	

Total Area: .59 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD3							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD3	Open space; grass cover 50% to 75% (fair)	D	.28	84
	Paved parking lots, roofs, driveways	D	.07	98
	Herbaceous (fair)	D	.24	89
	Total Area / Weighted Curve Number		.59	88

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD4 DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD4.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD4		Outlet	0.14	88	0.1

Total area: .14 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD4	0.39	0.45	0.52
REACHES			
OUTLET	0.39	0.45	0.52

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
	(hr)	(hr)	(hr)
SUBAREAS			
QD4	0.39	0.45	0.52
	11.93	11.93	11.93
REACHES			
OUTLET	0.39	0.45	0.52

CPC

THE HILLS
QD4 DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD4	.14	0.100	88	Outlet	

Total Area: .14 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD4							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD4	Open space; grass cover 50% to 75%	(fair)	D	.03	84
	Herbaceous	(fair)	D	.11	89
	Total Area / Weighted Curve Number			.14	88

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD4A DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: C:\Users\veronica\AppData\Roaming\WinTR-55\QD4A REVISED.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD4A		Outlet	3.65	95	.242

Total area: 3.65 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD4A	10.43	11.82	13.24
REACHES			
OUTLET	10.43	11.82	13.24

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
QD4A	10.43 12.02	11.82 12.02	13.24 12.02
REACHES			
OUTLET	10.43	11.82	13.24

CPC

THE HILLS
QD4A DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD4A	3.65	0.242	95	Outlet	

Total Area: 3.65 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD4A							
SHEET	100	0.0298	0.150				0.189
SHALLOW	621	0.0259	0.025				0.053
						Time of Concentration	.242

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD4A	Open space; grass cover 50% to 75% (fair)	D	.71	84
	Paved parking lots, roofs, driveways	D	1.59	98
	Paved; curbs and storm sewers	D	1.35	98
	Total Area / Weighted Curve Number		3.65	95

`

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD5 DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD5.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD5		Outlet	0.35	88	0.1

Total area: .35 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD5	0.96	1.13	1.30
REACHES			
OUTLET	0.96	1.13	1.30

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
QD5	0.96 11.93	1.13 11.93	1.30 11.93
REACHES			
OUTLET	0.96	1.13	1.30

CPC

THE HILLS
QD5 DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD5	.35	0.100	88	Outlet	

Total Area: .35 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD5							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD5	Open space; grass cover 50% to 75% (fair)	D	.12	84
	Paved parking lots, roofs, driveways	D	.03	98
	Herbaceous (fair)	D	.2	89
	Total Area / Weighted Curve Number		.35	88

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD5A DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD5A.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD5A		Outlet	0.23	88	0.1

Total area: .23 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD5A	0.63	0.74	0.85
REACHES			
OUTLET	0.63	0.74	0.85

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS						
QD5A	0.63	11.93	0.74	11.93	0.85	11.93
REACHES						
OUTLET	0.63		0.74		0.85	

CPC

THE HILLS
QD5A DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD5A	.23	0.100	88	Outlet	

Total Area: .23 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD5A							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD5A	Open space; grass cover 50% to 75%	(fair)	D	.1	84
	Paved parking lots, roofs, driveways		D	.03	98
	Herbaceous	(fair)	D	.1	89
	Total Area / Weighted Curve Number			.23	88

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD6 DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD6.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD6		Outlet	2.27	93	0.1

Total area: 2.27 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD6	7.51	8.58	9.68
REACHES			
OUTLET	7.51	8.58	9.68

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
QD6	7.51 11.93	8.58 11.93	9.68 11.93
REACHES			
OUTLET	7.51	8.58	9.68

CPC

THE HILLS
QD6 DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD6	2.27	0.100	93	Outlet	

Total Area: 2.27 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD6							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD6	Open space; grass cover 50% to 75% (fair)	D	.68	84
	Paved parking lots, roofs, driveways	D	.65	98
	Paved; curbs and storm sewers	D	.86	98
	Herbaceous (fair)	D	.08	89
	Total Area / Weighted Curve Number		2.27	93

WinTR-55 Current Data Description

--- Identification Data ---

User: CPC
Project: THE HILLS
SubTitle: QD7 DEVELOPED CONDITION
State: New Mexico
County: Los Alamos
Filename: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\TR55\QD7.w55

Date: 5/23/2019
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
QD7		Outlet	0.7	88	0.1

Total area: .70 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	-Yr (in)	-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
1.73	.0	.0	2.96	3.31	3.67	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
QD7	1.91	2.24	2.58
REACHES			
OUTLET	1.91	2.24	2.58

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS			
QD7	1.91 11.93	2.24 11.93	2.58 11.93
REACHES			
OUTLET	1.91	2.24	2.58

CPC

THE HILLS
QD7 DEVELOPED CONDITION
Los Alamos County, New Mexico

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
QD7	.70	0.100	88	Outlet	

Total Area: .70 (ac)

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
QD7							
SHEET	100	0.0298	0.011				0.023
SHALLOW	346	0.0481	0.025				0.022
SHALLOW	422	0.1071	0.050				0.022
						Time of Concentration	0.1

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
QD7	Open space; grass cover 50% to 75% (fair)	D	.22	84
	Paved parking lots, roofs, driveways	D	.07	98
	Herbaceous (fair)	D	.41	89
	Total Area / Weighted Curve Number		.7	88

APPENDIX E

PROPOSED FLOW ROUTING

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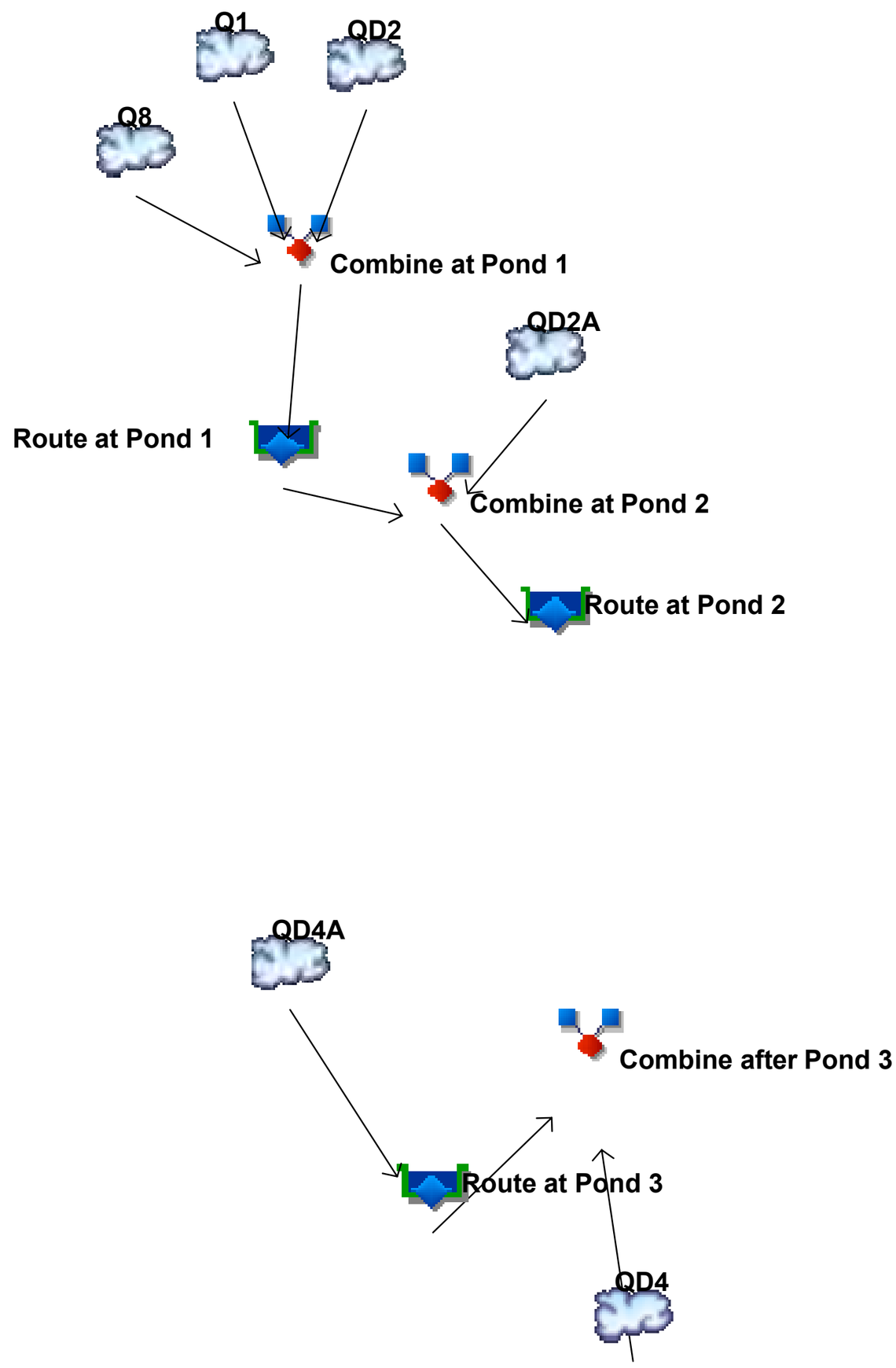
Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020



Legend

Hyd.	Origin	Description
1	SCS Runoff	Q1
2	SCS Runoff	QD2
3	SCS Runoff	Q8
4	Combine	Combine at Pond 1
5	Reservoir	Route at Pond 1
6	SCS Runoff	QD2A
7	Combine	Combine at Pond 2
8	Reservoir	Route at Pond 2
9	SCS Runoff	QD4A
10	SCS Runoff	QD4
11	Reservoir	Route at Pond 3
12	Combine	Combine after Pond 3

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	3.827	-------	-------	-------	7.026	7.926	8.849	Q1
2	SCS Runoff	------	-------	3.025	-------	-------	-------	6.034	6.887	7.762	QD2
3	SCS Runoff	------	-------	1.130	-------	-------	-------	2.495	2.890	3.298	Q8
4	Combine	1, 2, 3	-------	7.790	-------	-------	-------	15.20	17.30	19.46	Combine at Pond 1
5	Reservoir	4	-------	6.383	-------	-------	-------	11.39	12.66	14.04	Route at Pond 1
6	SCS Runoff	------	-------	0.460	-------	-------	-------	1.138	1.340	1.551	QD2A
7	Combine	5, 6	-------	6.694	-------	-------	-------	12.12	13.46	14.94	Combine at Pond 2
8	Reservoir	7	-------	6.648	-------	-------	-------	11.49	13.40	14.94	Route at Pond 2
9	SCS Runoff	------	-------	5.903	-------	-------	-------	11.18	12.67	14.19	QD4A
10	SCS Runoff	------	-------	0.196	-------	-------	-------	0.454	0.530	0.609	QD4
11	Reservoir	9	-------	2.753	-------	-------	-------	5.708	6.557	7.449	Route at Pond 3
12	Combine	10, 11	-------	2.781	-------	-------	-------	5.770	6.628	7.530	Combine after Pond 3

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	7.026	1	719	17,421	------	------	------	Q1
2	SCS Runoff	6.034	1	717	12,940	------	------	------	QD2
3	SCS Runoff	2.495	1	721	6,402	------	------	------	Q8
4	Combine	15.20	1	718	36,763	1, 2, 3	------	------	Combine at Pond 1
5	Reservoir	11.39	1	722	36,743	4	7260.15	4,188	Route at Pond 1
6	SCS Runoff	1.138	1	718	2,316	------	------	------	QD2A
7	Combine	12.12	1	721	39,060	5, 6	------	------	Combine at Pond 2
8	Reservoir	11.49	1	725	39,060	7	7239.27	742	Route at Pond 2
9	SCS Runoff	11.18	1	722	31,936	------	------	------	QD4A
10	SCS Runoff	0.454	1	717	934	------	------	------	QD4
11	Reservoir	5.708	1	731	31,596	9	7248.46	9,682	Route at Pond 3
12	Combine	5.770	1	731	32,530	10, 11	------	------	Combine after Pond 3

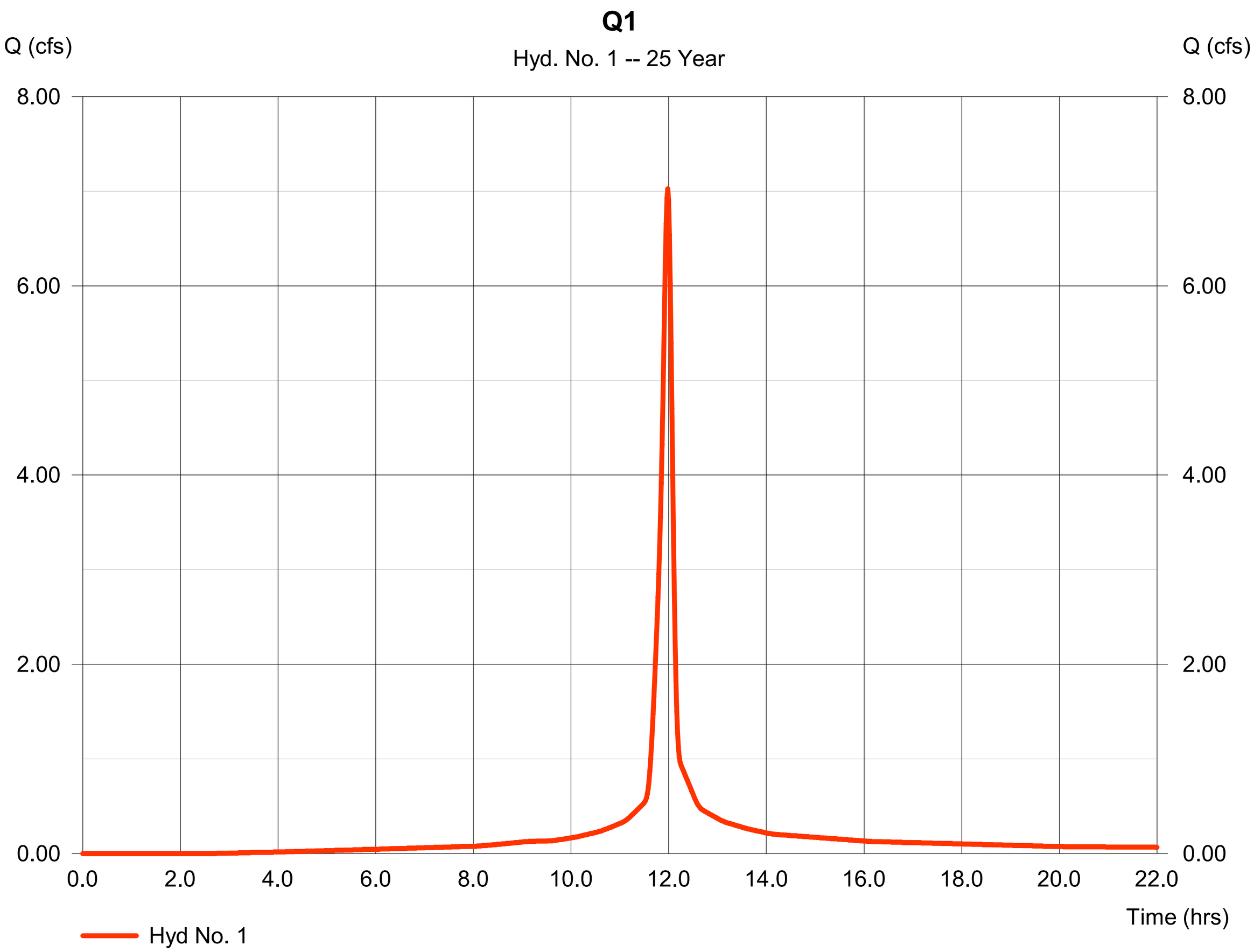
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 1

Q1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.026 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 17,421 cuft
Drainage area	= 1.910 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



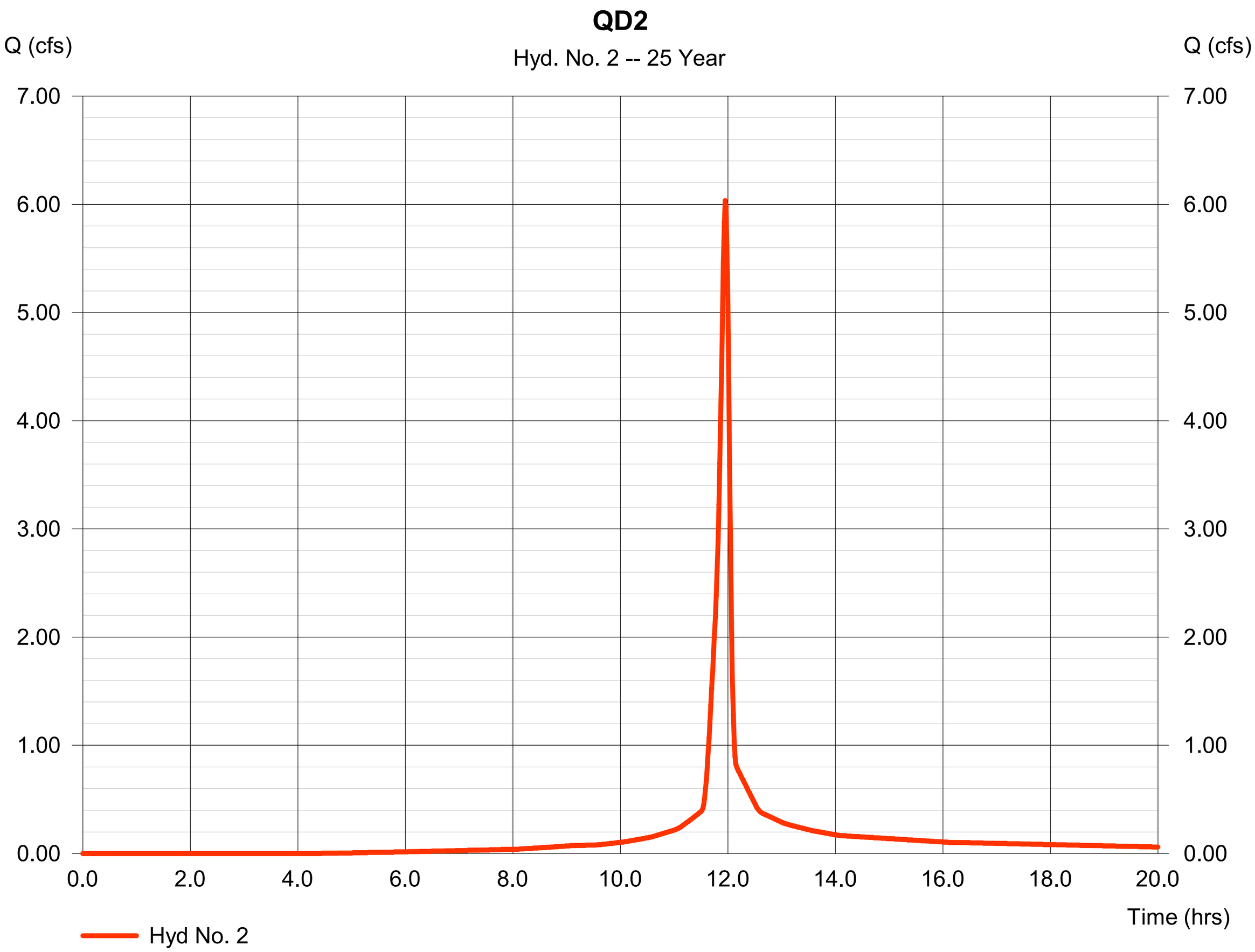
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 2

QD2

Hydrograph type	= SCS Runoff	Peak discharge	= 6.034 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 12,940 cuft
Drainage area	= 1.560 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



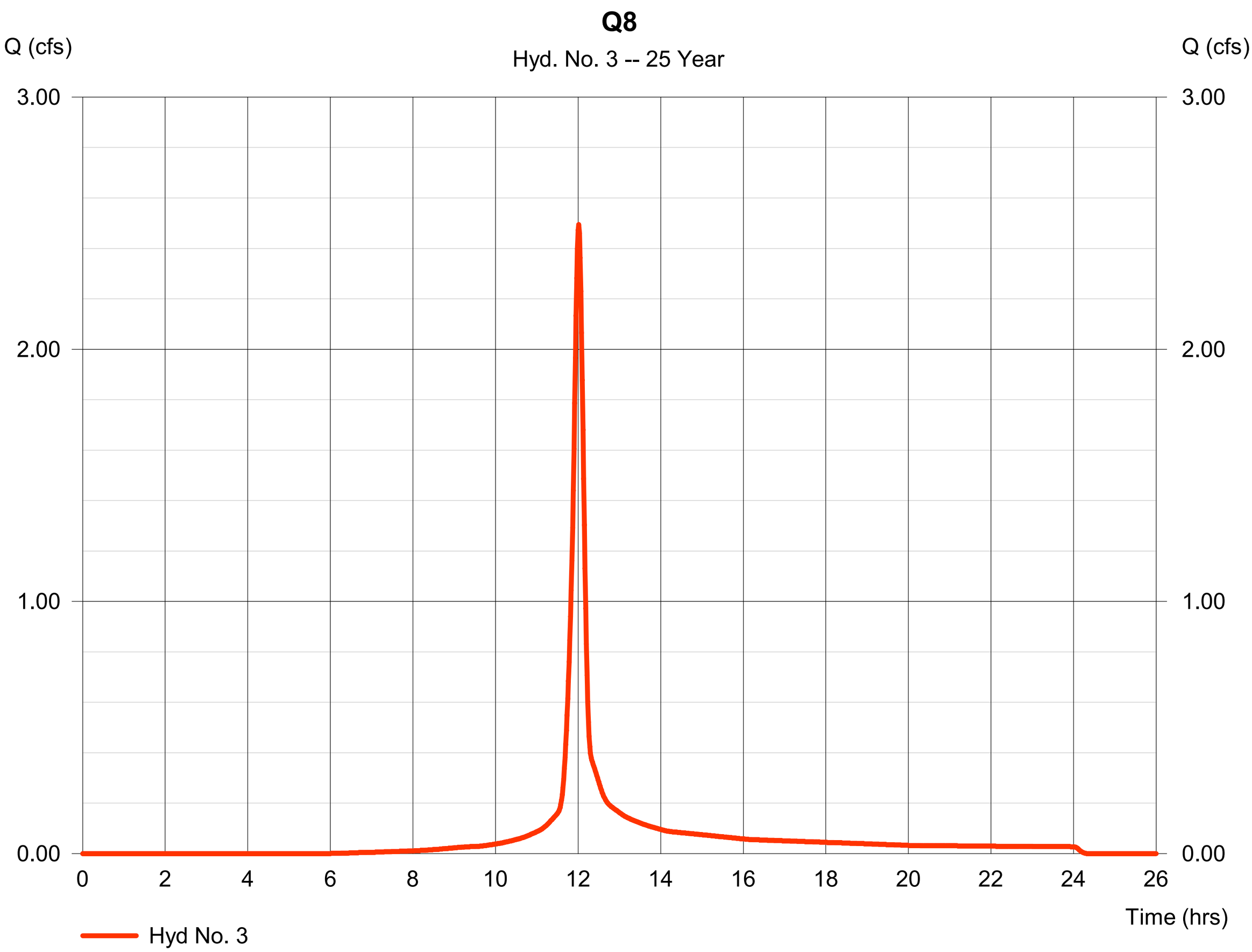
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 3

Q8

Hydrograph type	= SCS Runoff	Peak discharge	= 2.495 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.02 hrs
Time interval	= 1 min	Hyd. volume	= 6,402 cuft
Drainage area	= 0.920 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



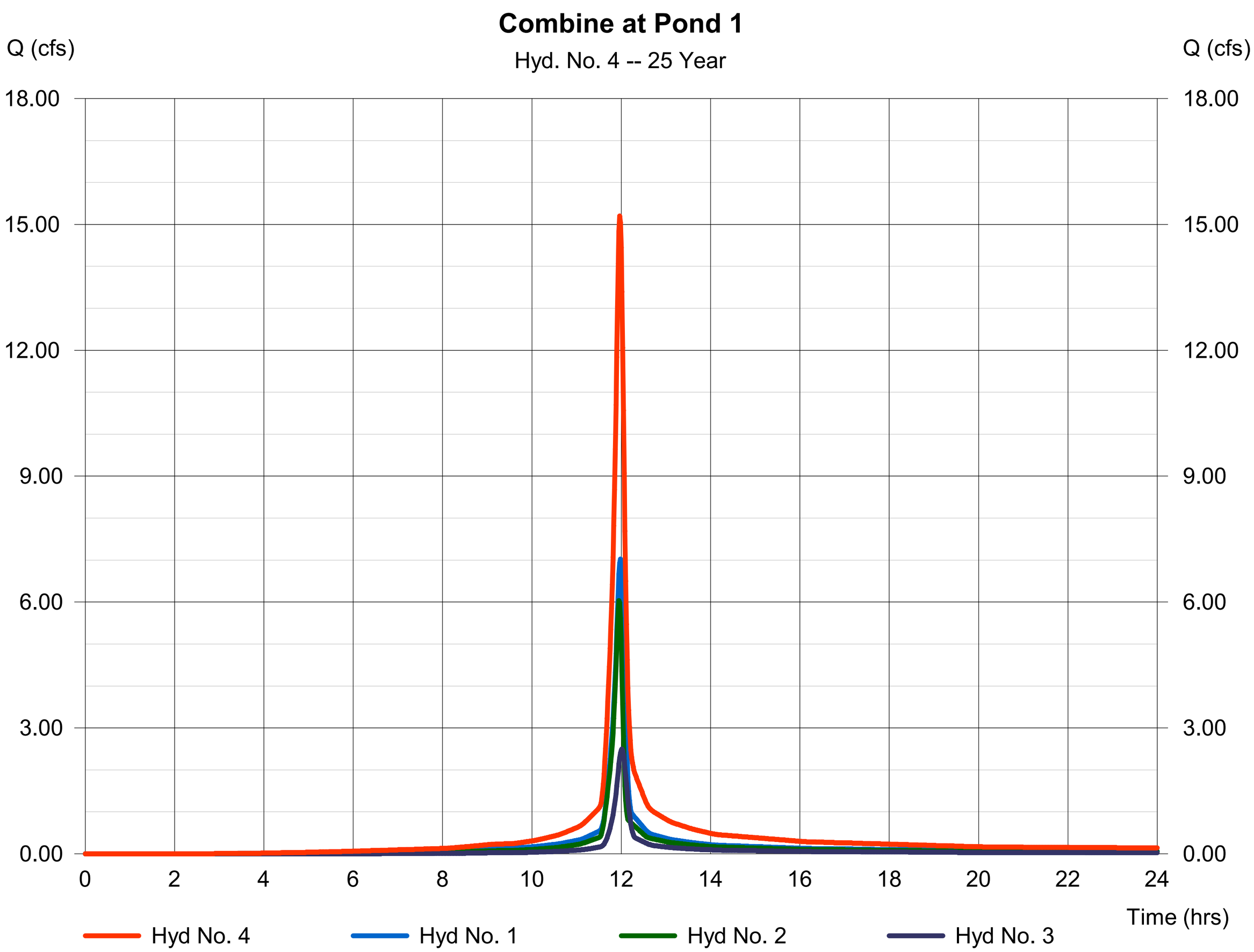
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 4

Combine at Pond 1

Hydrograph type	= Combine	Peak discharge	= 15.20 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 36,763 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.390 ac



Hydrograph Report

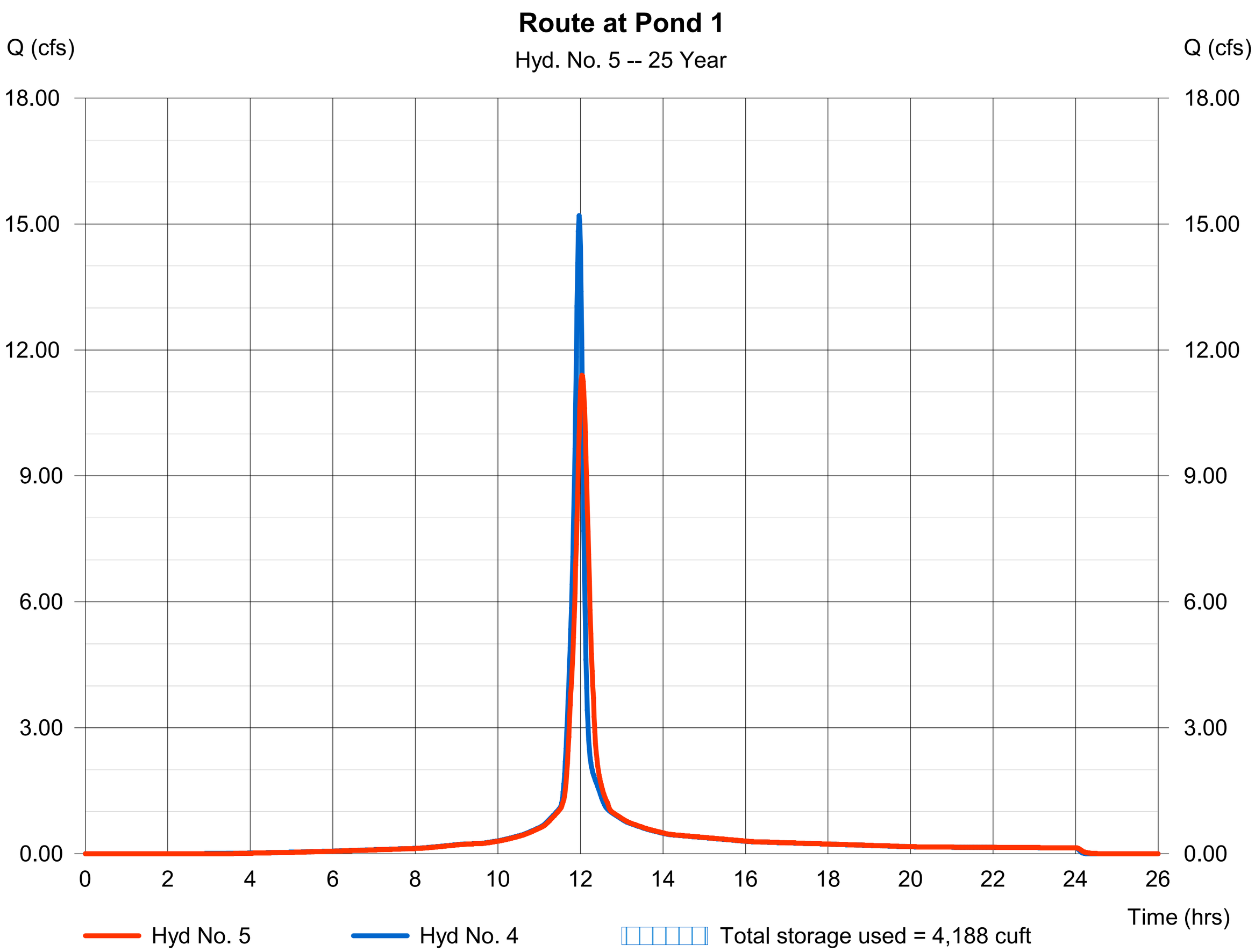
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 5

Route at Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 11.39 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 36,743 cuft
Inflow hyd. No.	= 4 - Combine at Pond 1	Max. Elevation	= 7260.15 ft
Reservoir name	= Pond 1	Max. Storage	= 4,188 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Pond No. 1 - Pond 1

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 7256.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	7256.00	75	0	0
1.00	7257.00	315	195	195
2.00	7258.00	824	570	765
3.00	7259.00	1,482	1,153	1,918
4.00	7260.00	2,251	1,867	3,784
5.00	7261.00	3,313	2,782	6,566
6.00	7262.00	4,724	4,019	10,585

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	0.00	0.00	2.00
Span (in)	= 18.00	0.00	0.00	2.00
No. Barrels	= 1	0	0	2
Invert El. (ft)	= 7255.00	0.00	0.00	7256.10
Length (ft)	= 193.00	0.00	0.00	0.10
Slope (%)	= 4.50	0.00	0.00	n/a
N-Value	= .022	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

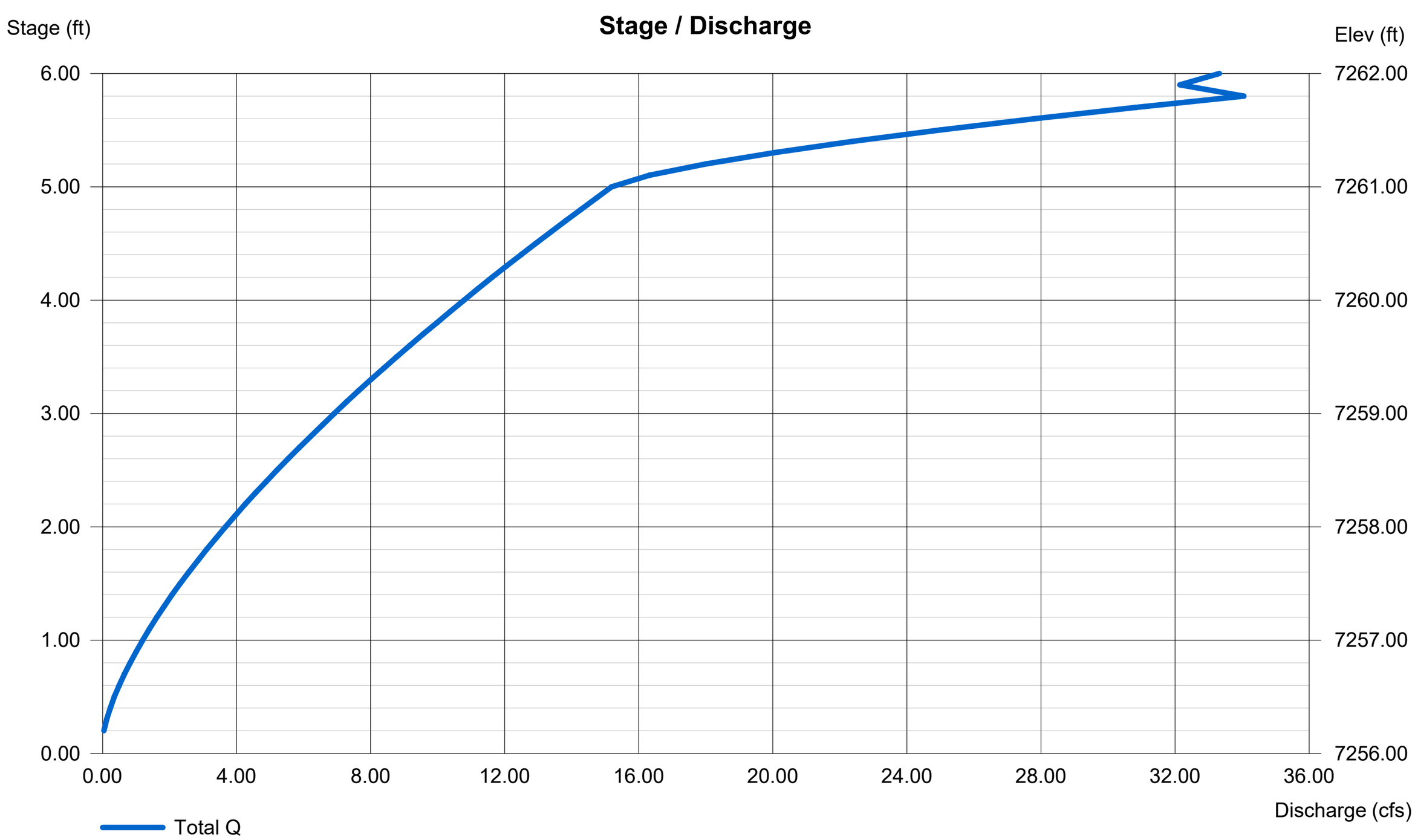
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.28	0.00	0.00	0.00
Crest El. (ft)	= 7261.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



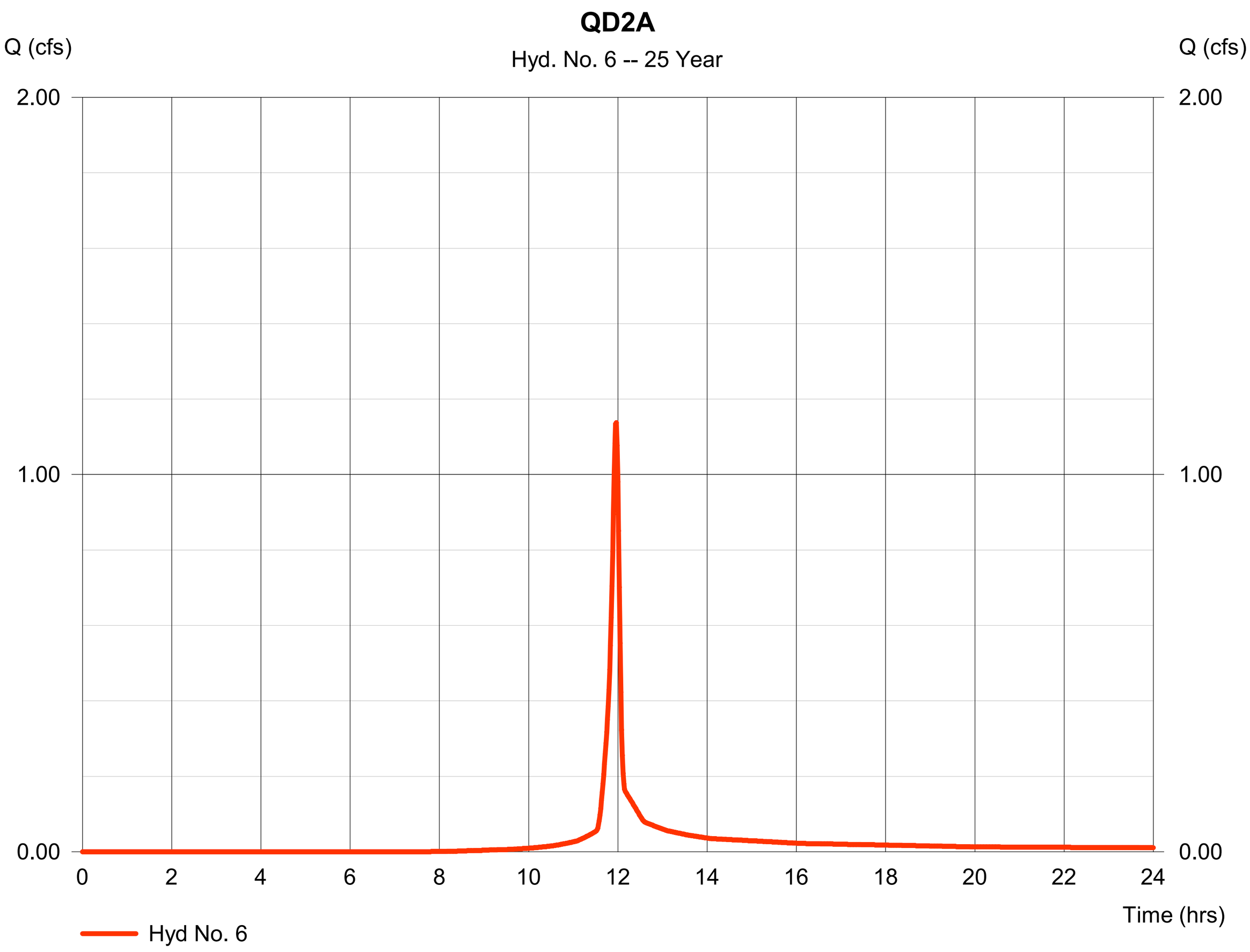
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 6

QD2A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.138 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 2,316 cuft
Drainage area	= 0.380 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



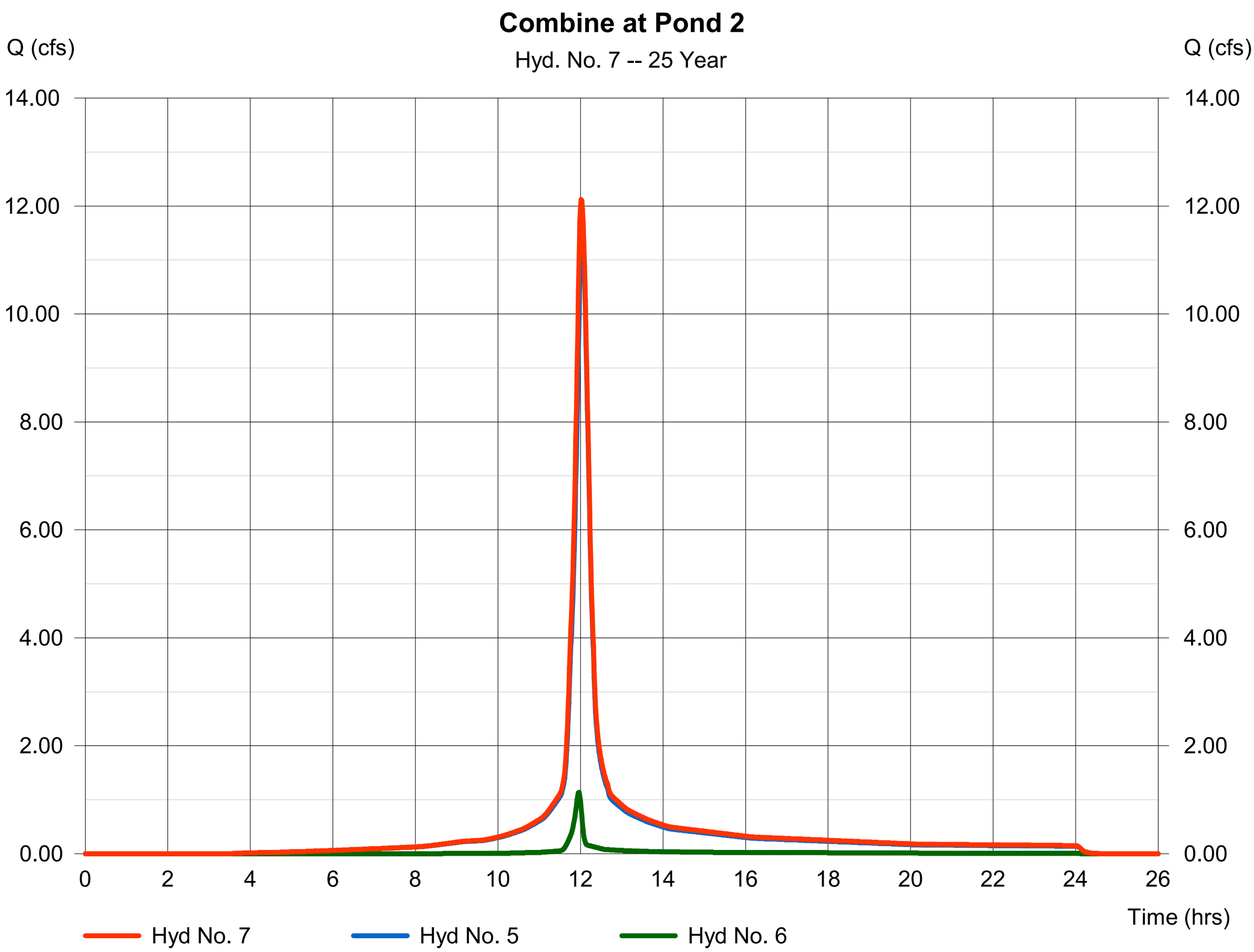
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 7

Combine at Pond 2

Hydrograph type	=	Combine	Peak discharge	=	12.12 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.02 hrs
Time interval	=	1 min	Hyd. volume	=	39,060 cuft
Inflow hyds.	=	5, 6	Contrib. drain. area	=	0.380 ac



Hydrograph Report

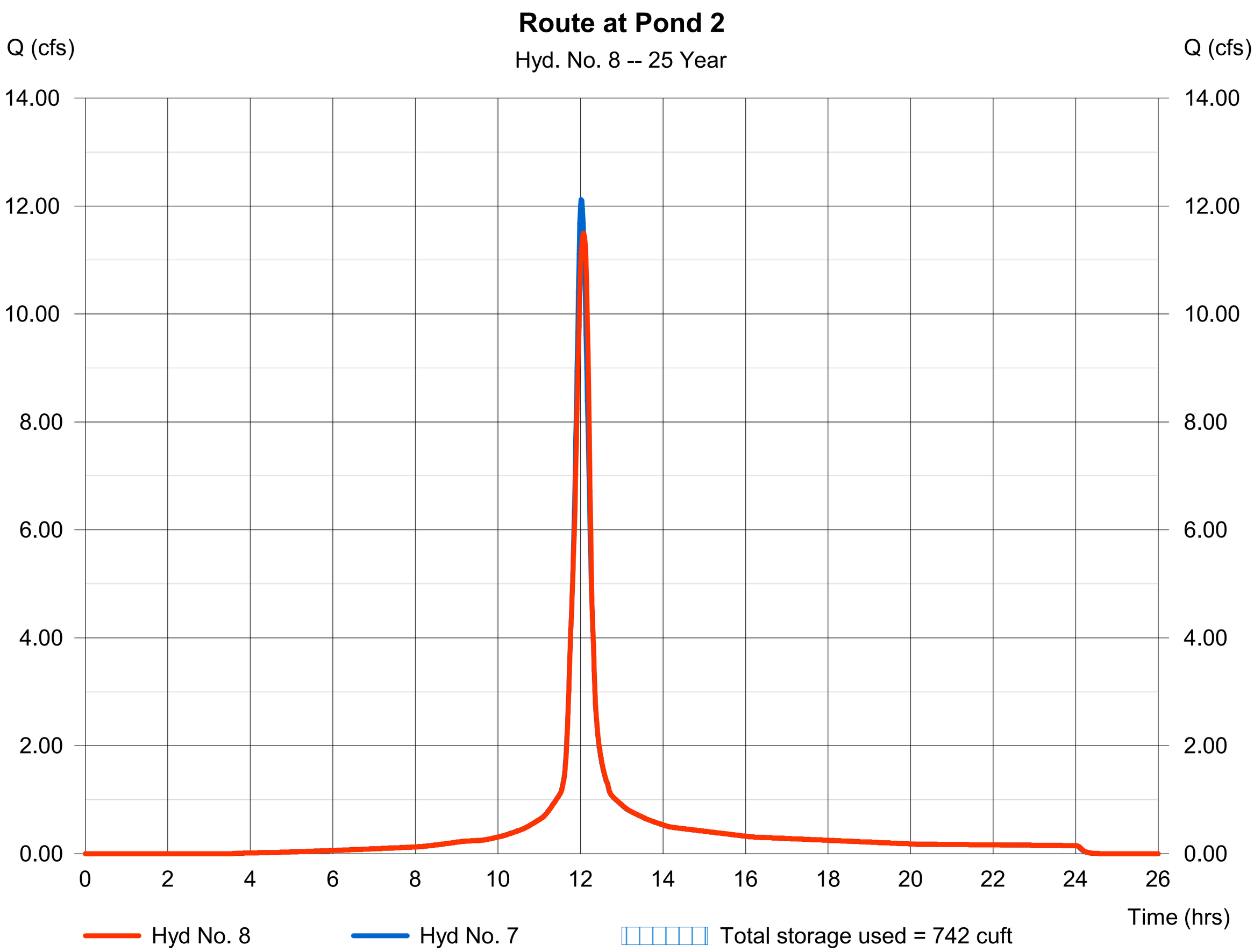
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 8

Route at Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	11.49 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.08 hrs
Time interval	=	1 min	Hyd. volume	=	39,060 cuft
Inflow hyd. No.	=	7 - Combine at Pond 2	Max. Elevation	=	7239.27 ft
Reservoir name	=	Pond 2	Max. Storage	=	742 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Pond No. 2 - Pond 2

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 7236.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	7236.00	10	0	0
1.00	7237.00	122	66	66
2.00	7238.00	252	187	253
3.00	7239.00	416	334	587
4.00	7240.00	788	602	1,189

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 4	0	0	0
Invert El. (ft)	= 7236.00	0.00	0.00	0.00
Length (ft)	= 3.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

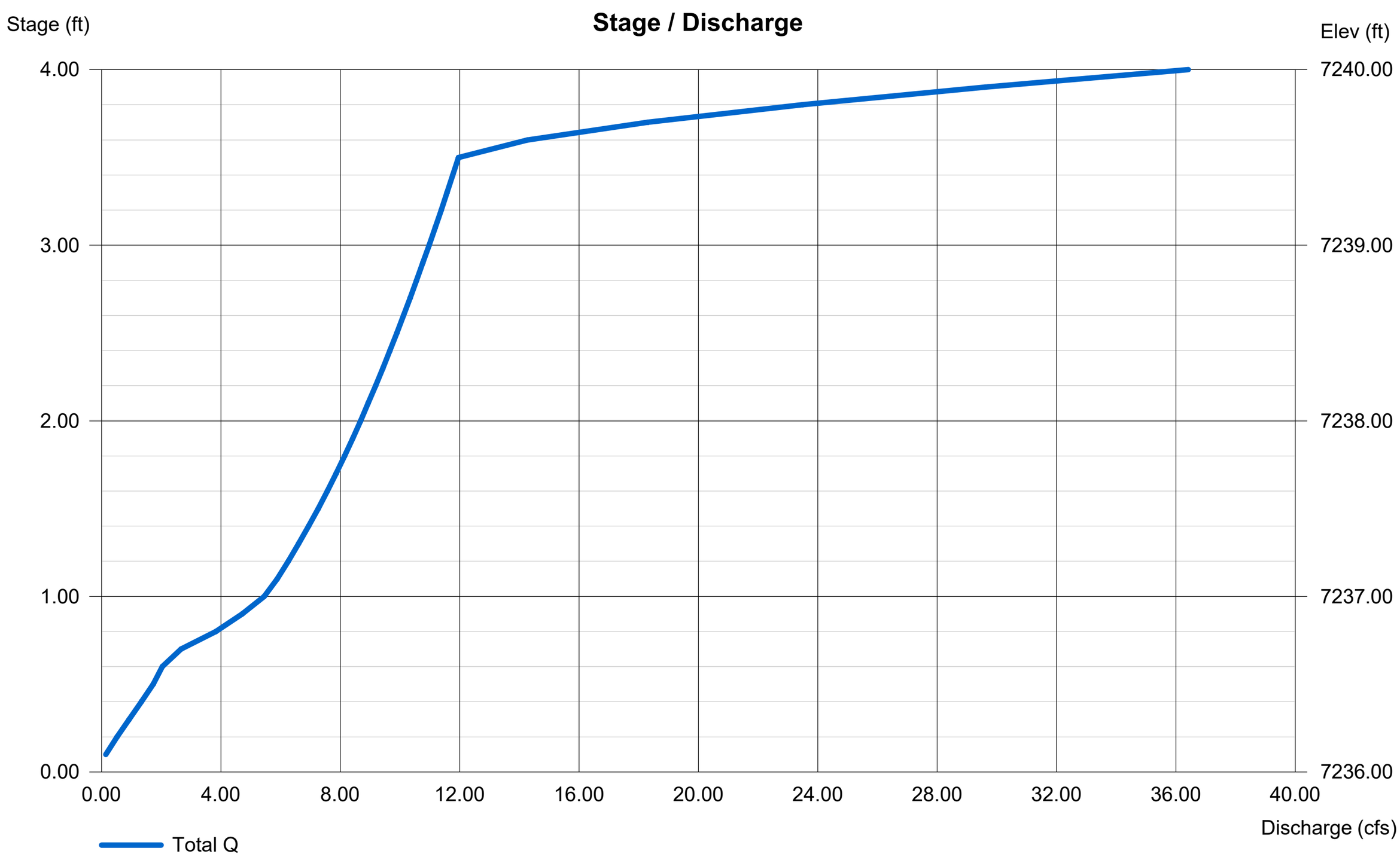
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 20.00	0.00	0.00	0.00
Crest El. (ft)	= 7239.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



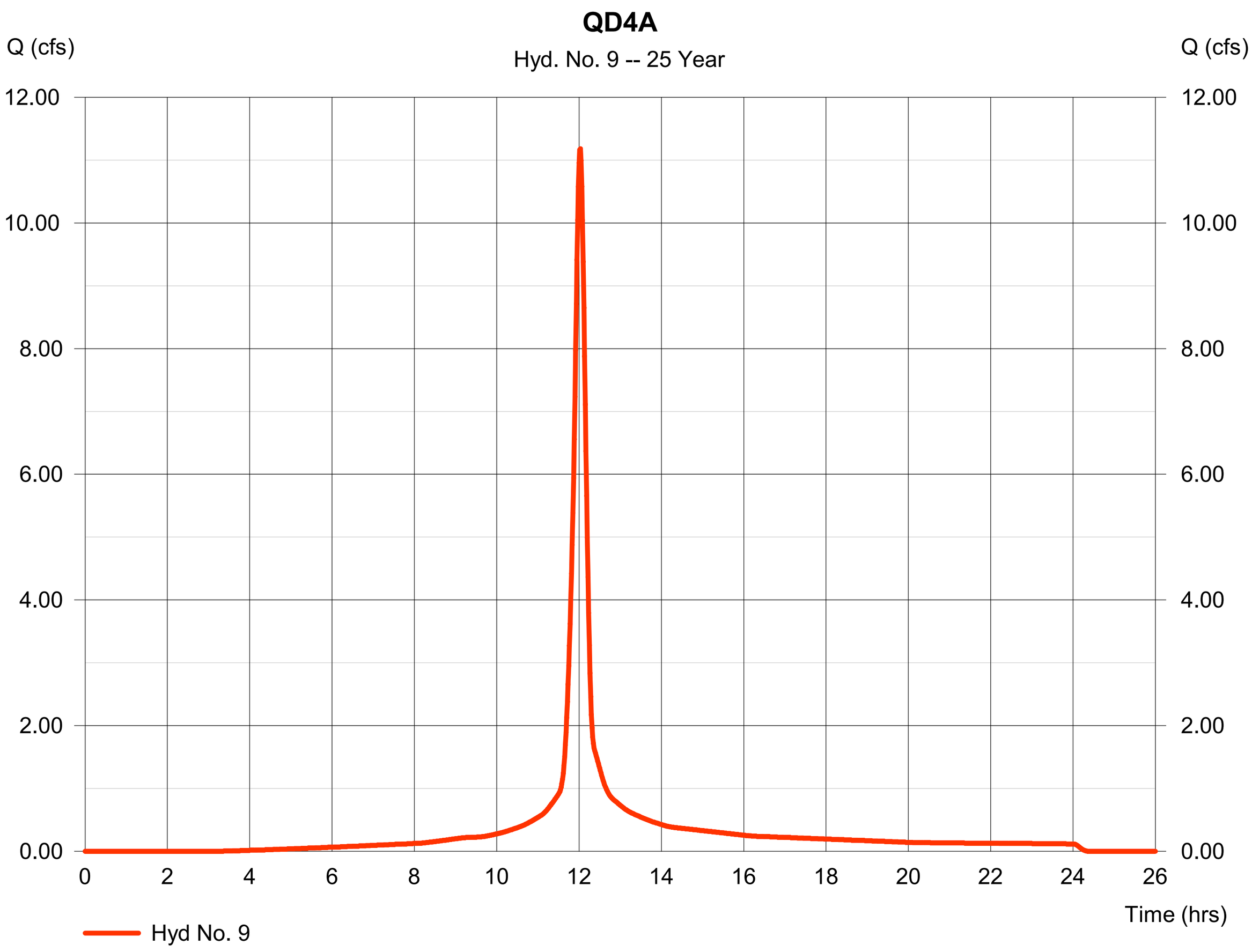
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 9

QD4A

Hydrograph type	= SCS Runoff	Peak discharge	= 11.18 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 31,936 cuft
Drainage area	= 3.650 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.50 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



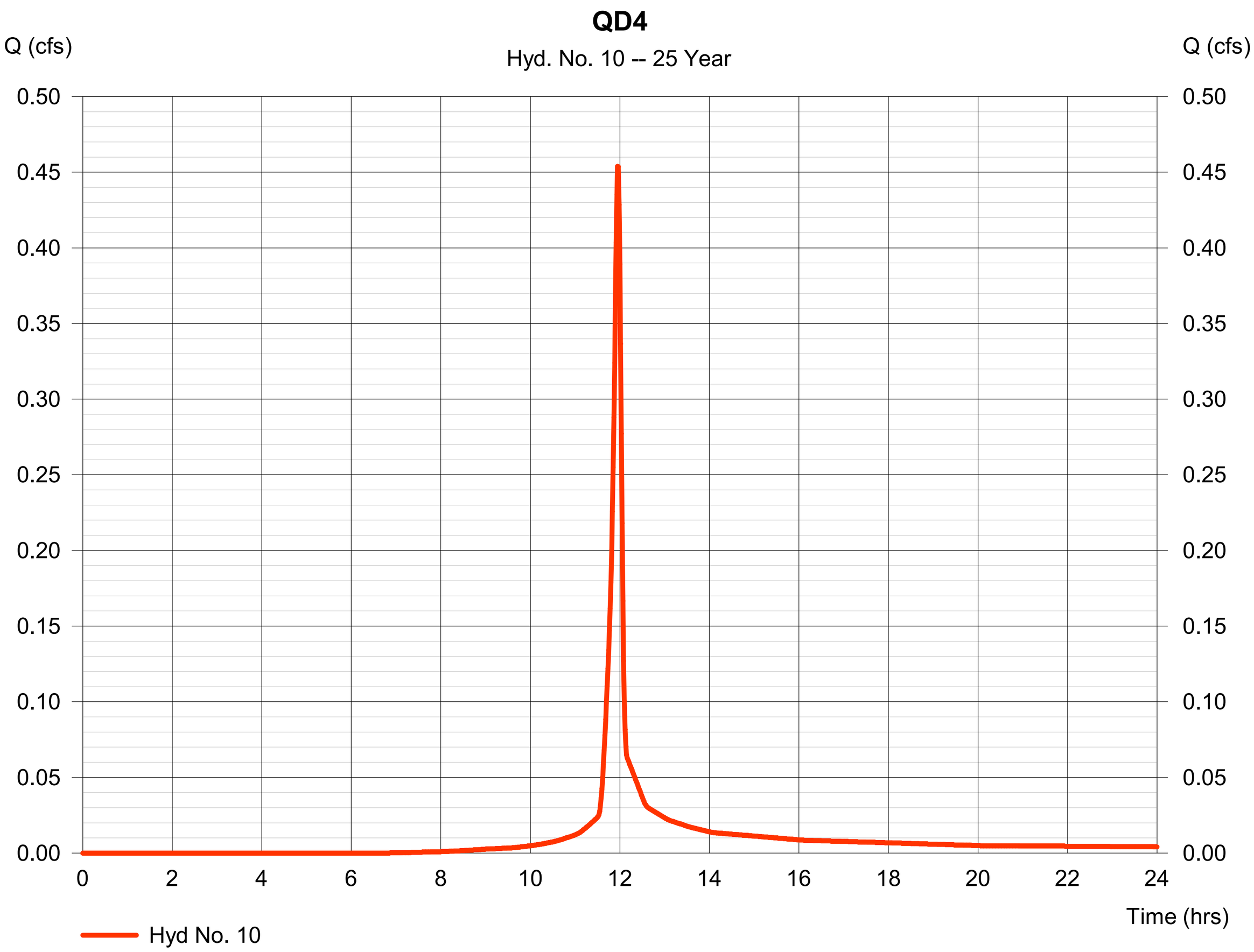
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 10

QD4

Hydrograph type	= SCS Runoff	Peak discharge	= 0.454 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 934 cuft
Drainage area	= 0.140 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

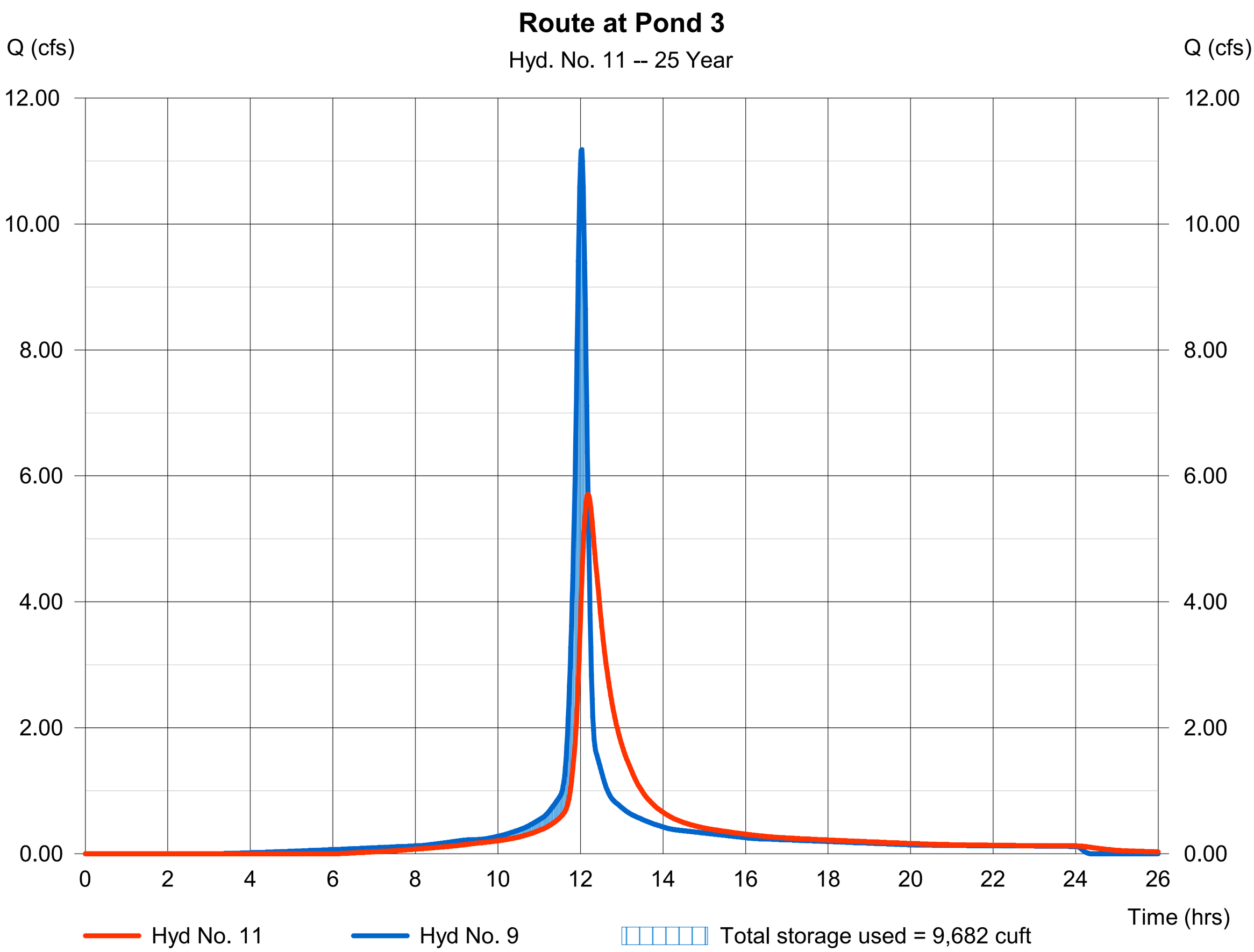
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 11

Route at Pond 3

Hydrograph type	= Reservoir	Peak discharge	= 5.708 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 31,596 cuft
Inflow hyd. No.	= 9 - QD4A	Max. Elevation	= 7248.46 ft
Reservoir name	= Pond 3	Max. Storage	= 9,682 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Pond No. 3 - Pond 3

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 7246.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	7246.00	2,967	0	0
1.00	7247.00	3,695	3,331	3,331
2.00	7248.00	4,492	4,094	7,425
3.00	7249.00	5,358	4,925	12,350
4.00	7250.00	6,294	5,826	18,176

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	0.00	0.00	1.00
Span (in)	= 18.00	0.00	0.00	1.00
No. Barrels	= 1	0	0	9
Invert El. (ft)	= 7244.00	0.00	0.00	7246.10
Length (ft)	= 32.00	0.00	0.00	0.10
Slope (%)	= 5.00	0.00	0.00	n/a
N-Value	= .022	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

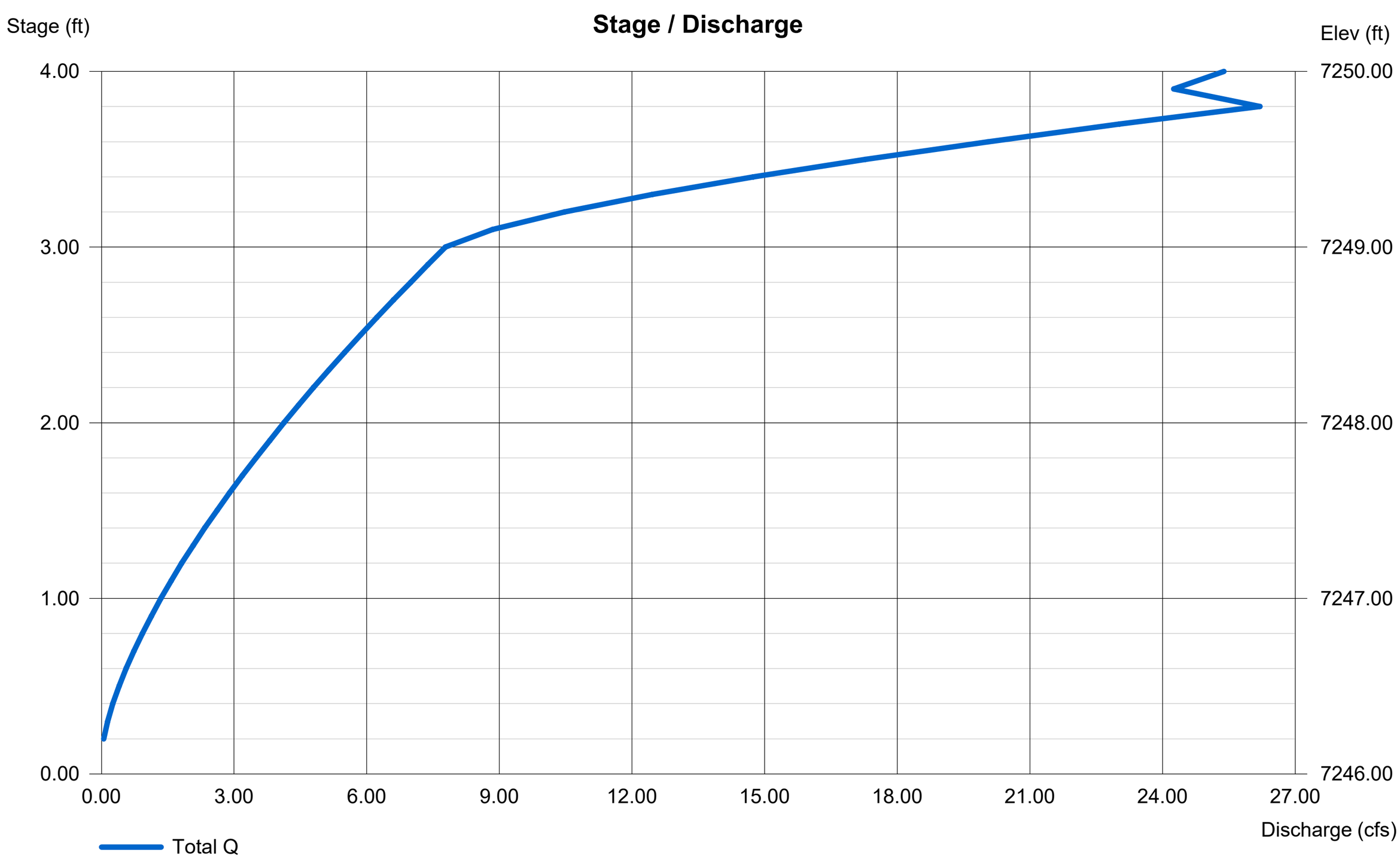
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.28	0.00	0.00	0.00
Crest El. (ft)	= 7249.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



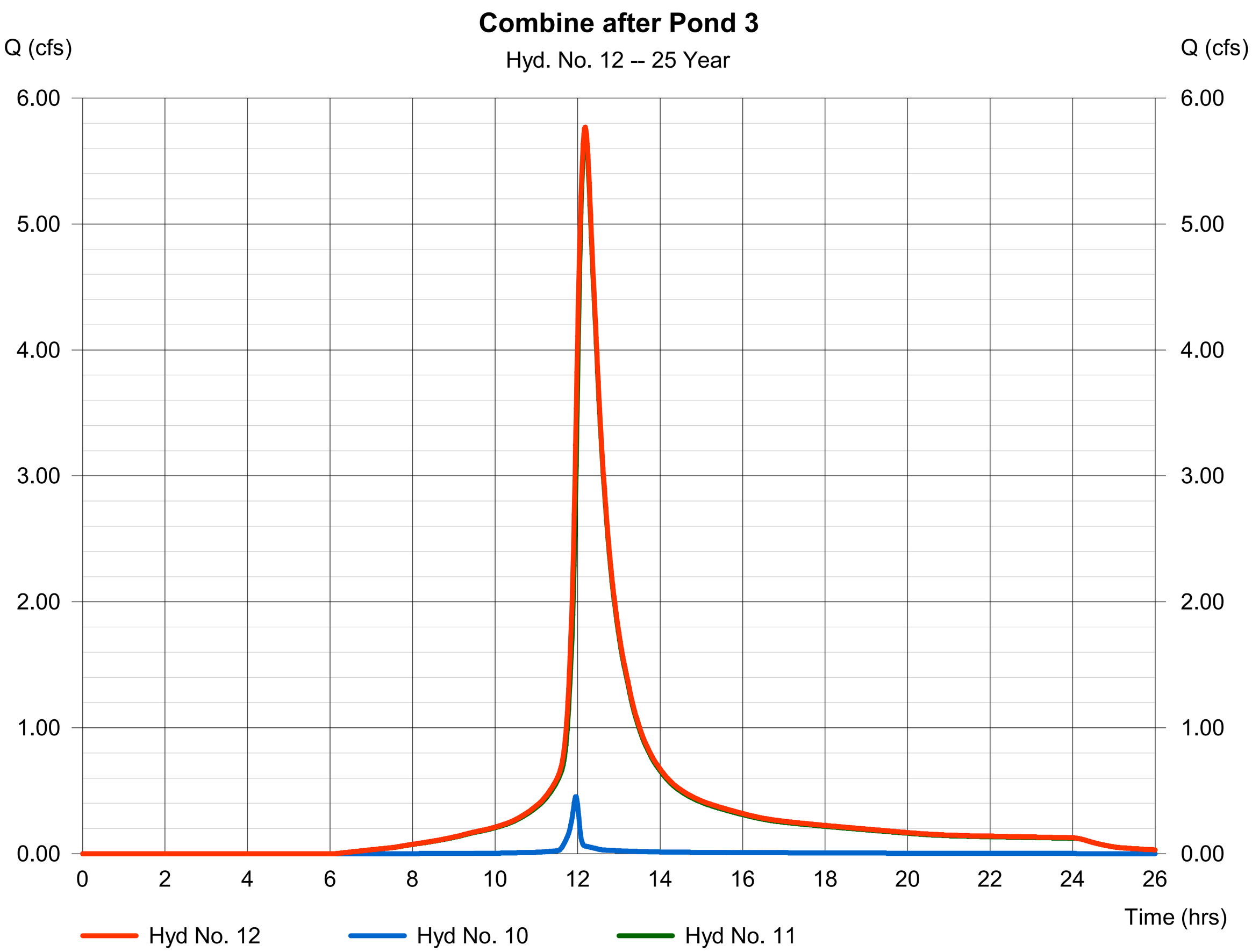
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 12

Combine after Pond 3

Hydrograph type	= Combine	Peak discharge	= 5.770 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 32,530 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.140 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	7.926	1	719	19,813	------	------	------	Q1
2	SCS Runoff	6.887	1	717	14,901	------	------	------	QD2
3	SCS Runoff	2.890	1	721	7,465	------	------	------	Q8
4	Combine	17.30	1	718	42,178	1, 2, 3	------	------	Combine at Pond 1
5	Reservoir	12.66	1	723	42,159	4	7260.45	5,005	Route at Pond 1
6	SCS Runoff	1.340	1	718	2,747	------	------	------	QD2A
7	Combine	13.46	1	722	44,905	5, 6	------	------	Combine at Pond 2
8	Reservoir	13.40	1	723	44,905	7	7239.57	925	Route at Pond 2
9	SCS Runoff	12.67	1	722	36,471	------	------	------	QD4A
10	SCS Runoff	0.530	1	717	1,099	------	------	------	QD4
11	Reservoir	6.557	1	731	36,132	9	7248.69	10,806	Route at Pond 3
12	Combine	6.628	1	731	37,230	10, 11	------	------	Combine after Pond 3

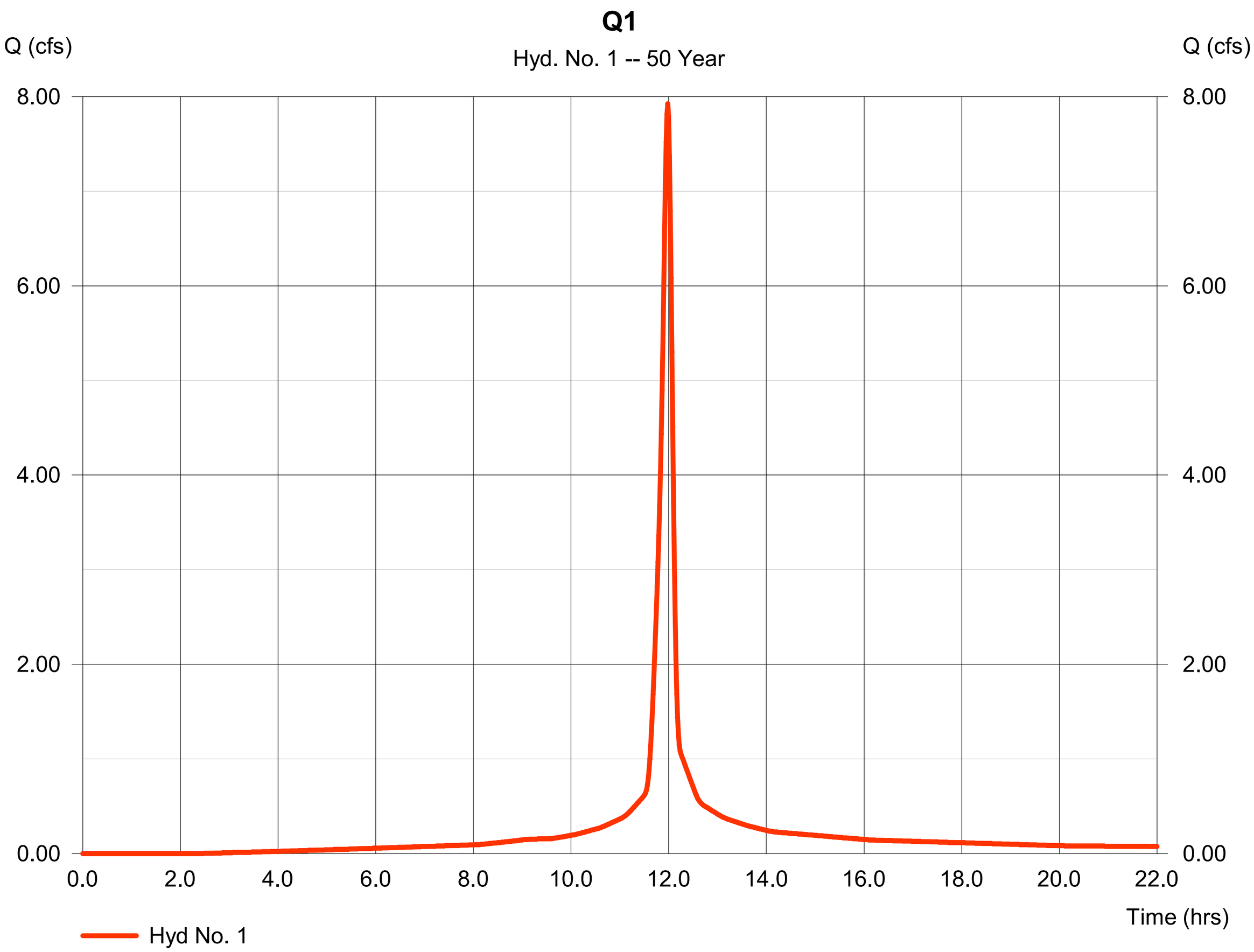
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 1

Q1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.926 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 19,813 cuft
Drainage area	= 1.910 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



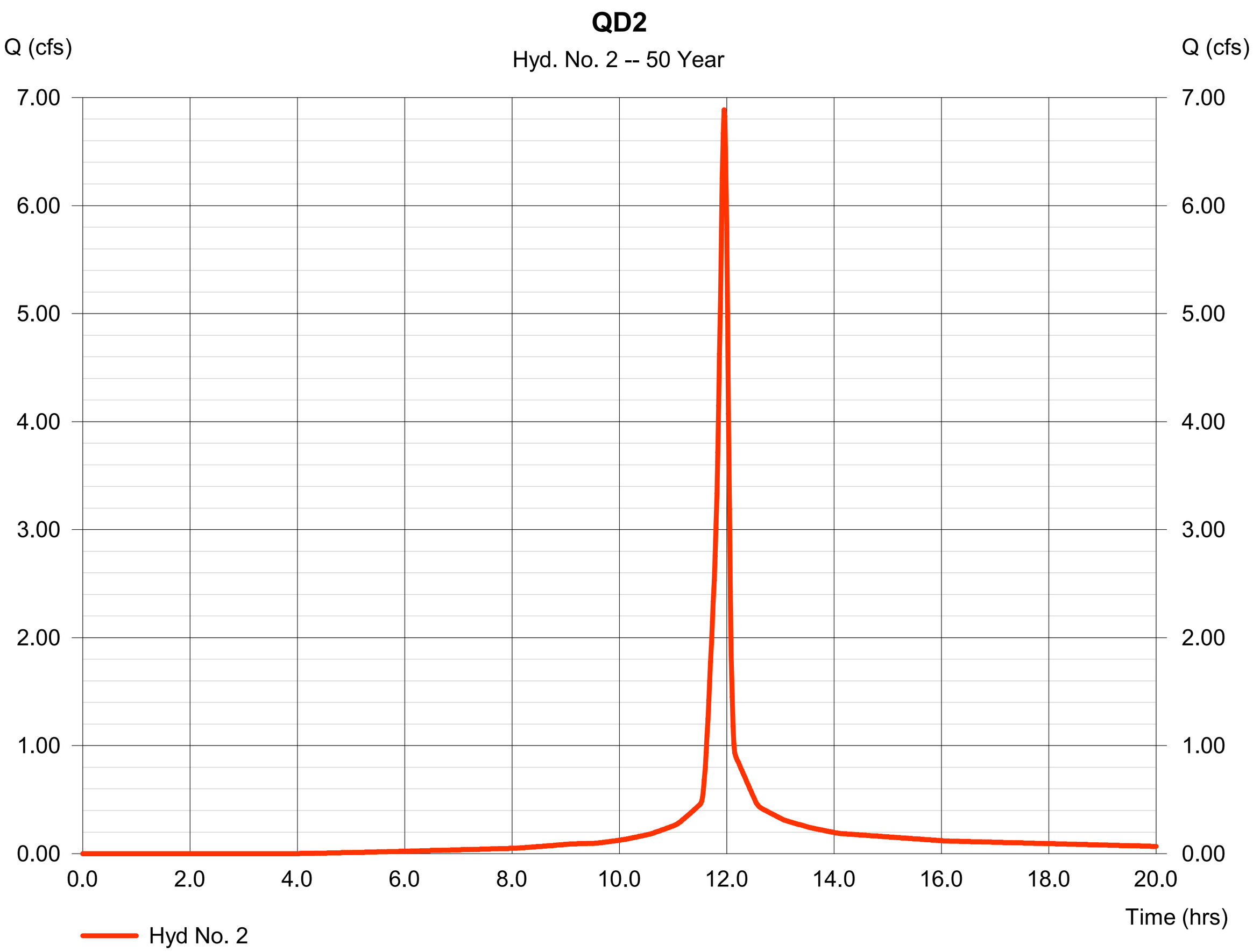
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 2

QD2

Hydrograph type	= SCS Runoff	Peak discharge	= 6.887 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 14,901 cuft
Drainage area	= 1.560 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



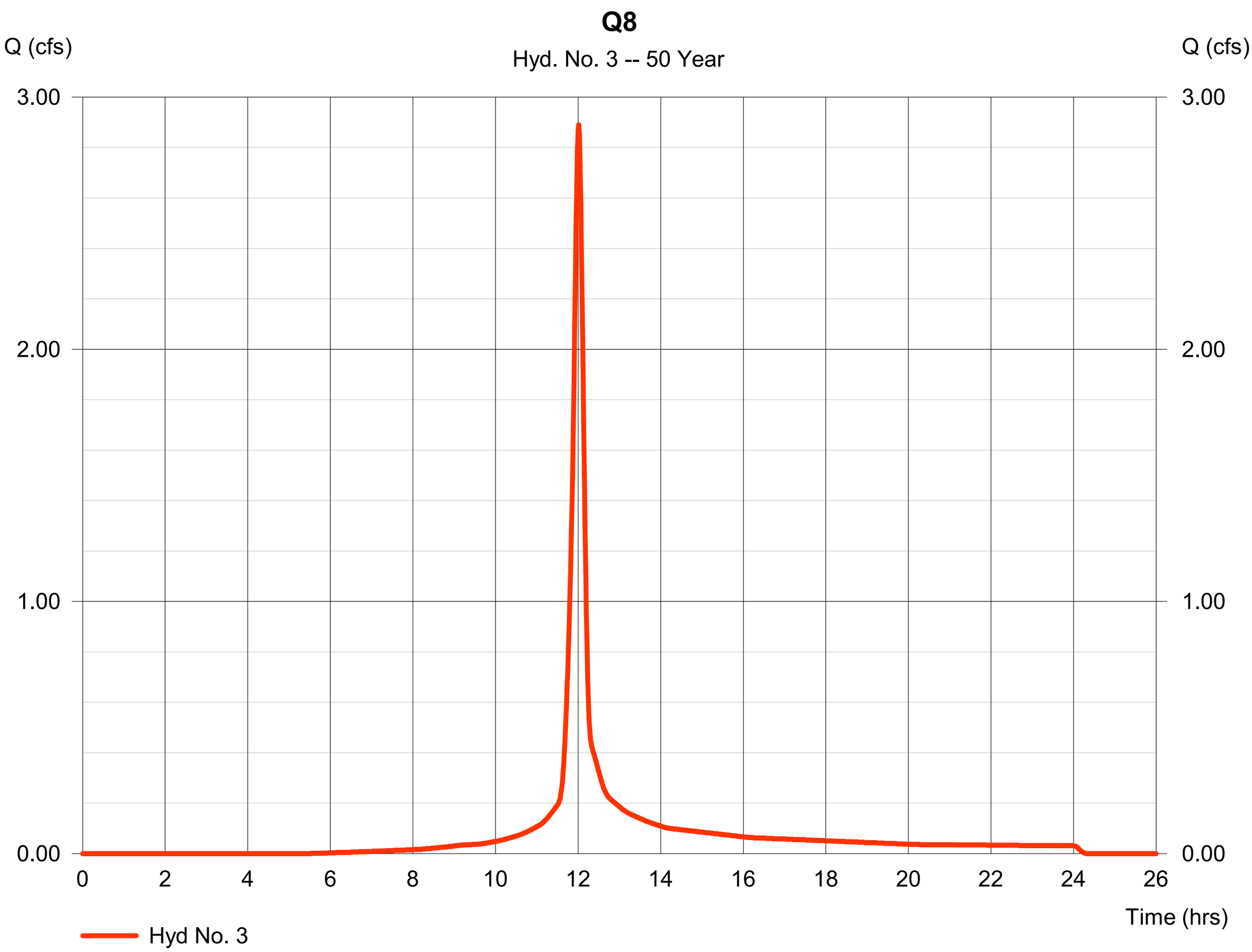
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 3

Q8

Hydrograph type	= SCS Runoff	Peak discharge	= 2.890 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.02 hrs
Time interval	= 1 min	Hyd. volume	= 7,465 cuft
Drainage area	= 0.920 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



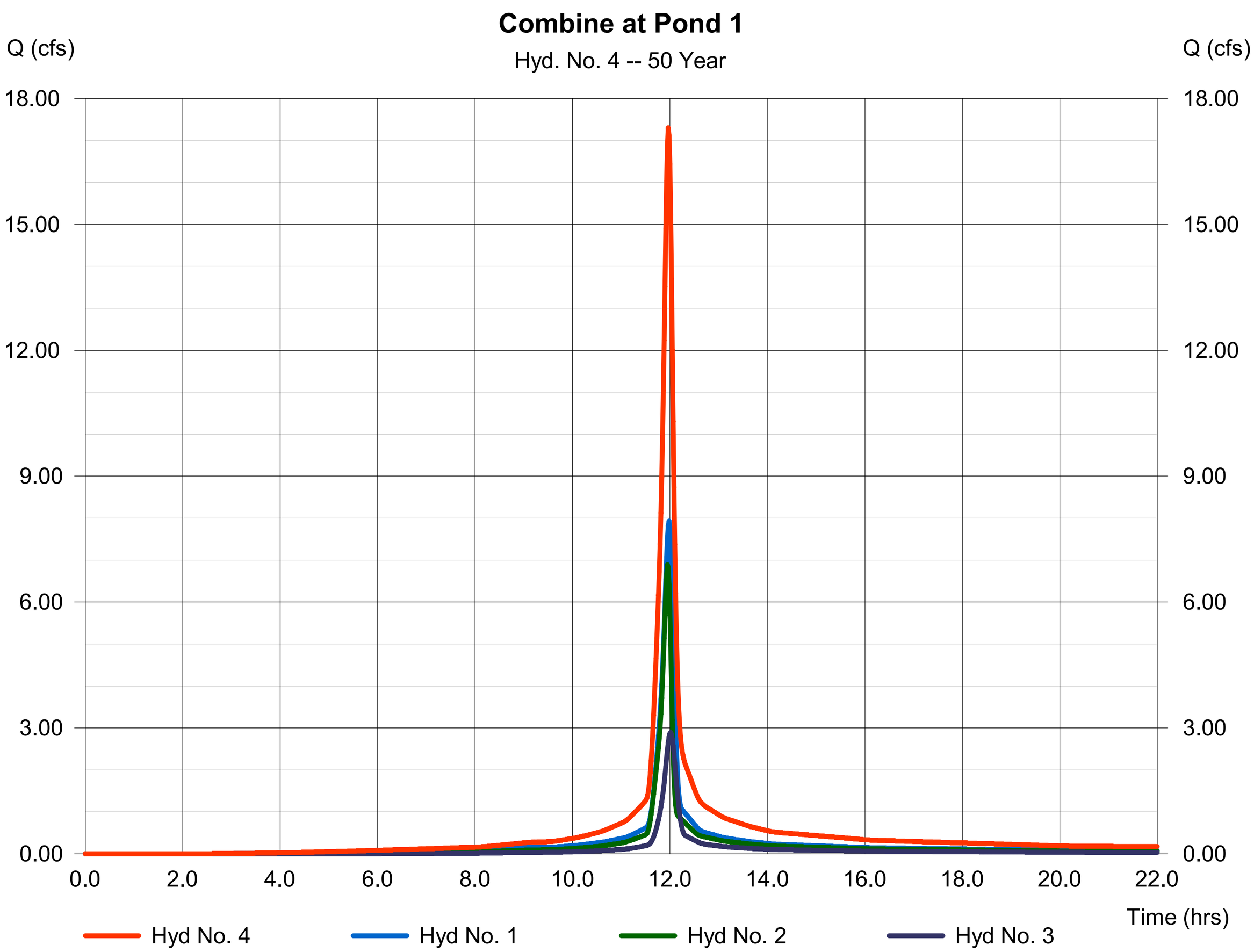
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 4

Combine at Pond 1

Hydrograph type	= Combine	Peak discharge	= 17.30 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 42,178 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.390 ac



Hydrograph Report

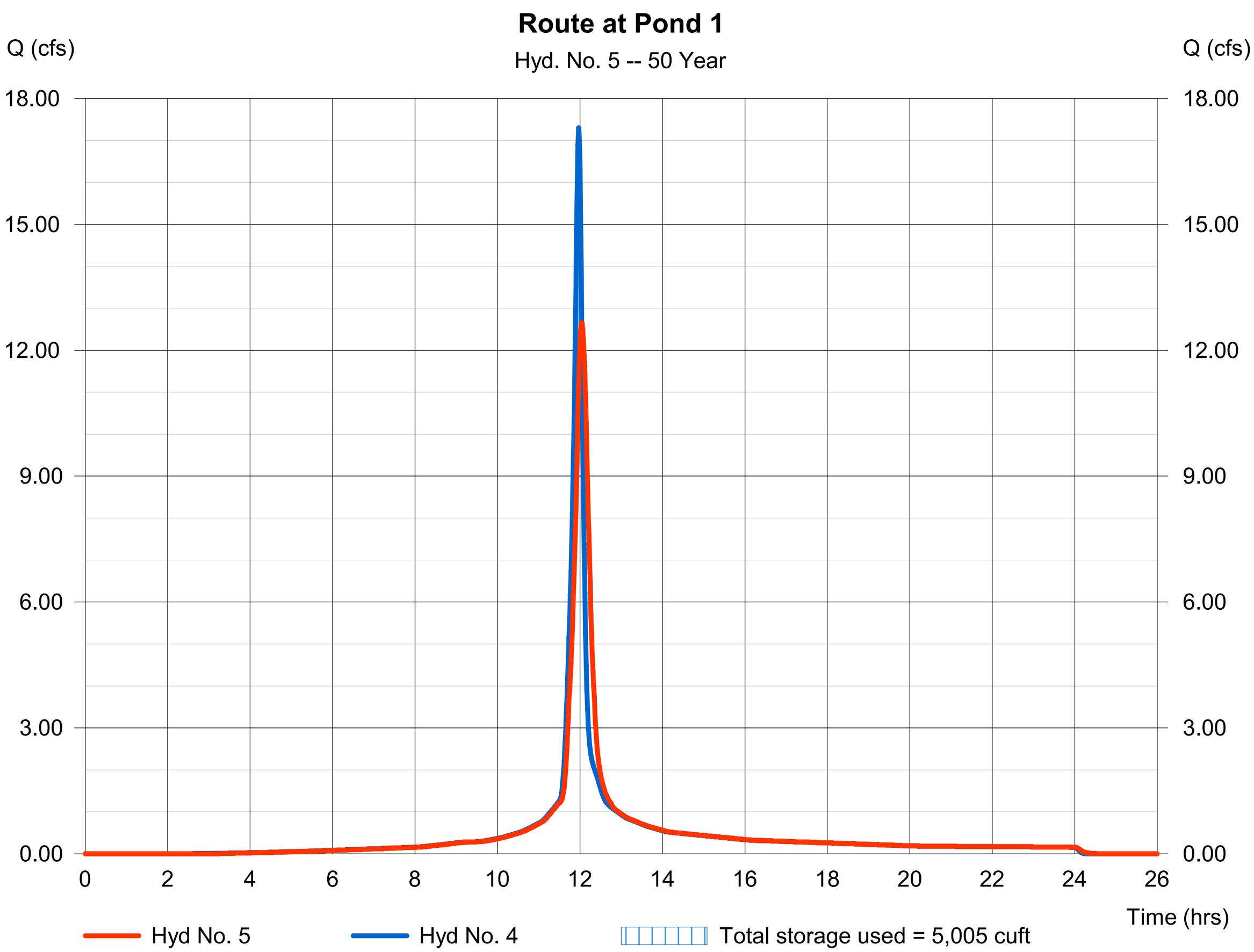
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 5

Route at Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 12.66 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.05 hrs
Time interval	= 1 min	Hyd. volume	= 42,159 cuft
Inflow hyd. No.	= 4 - Combine at Pond 1	Max. Elevation	= 7260.45 ft
Reservoir name	= Pond 1	Max. Storage	= 5,005 cuft

Storage Indication method used.



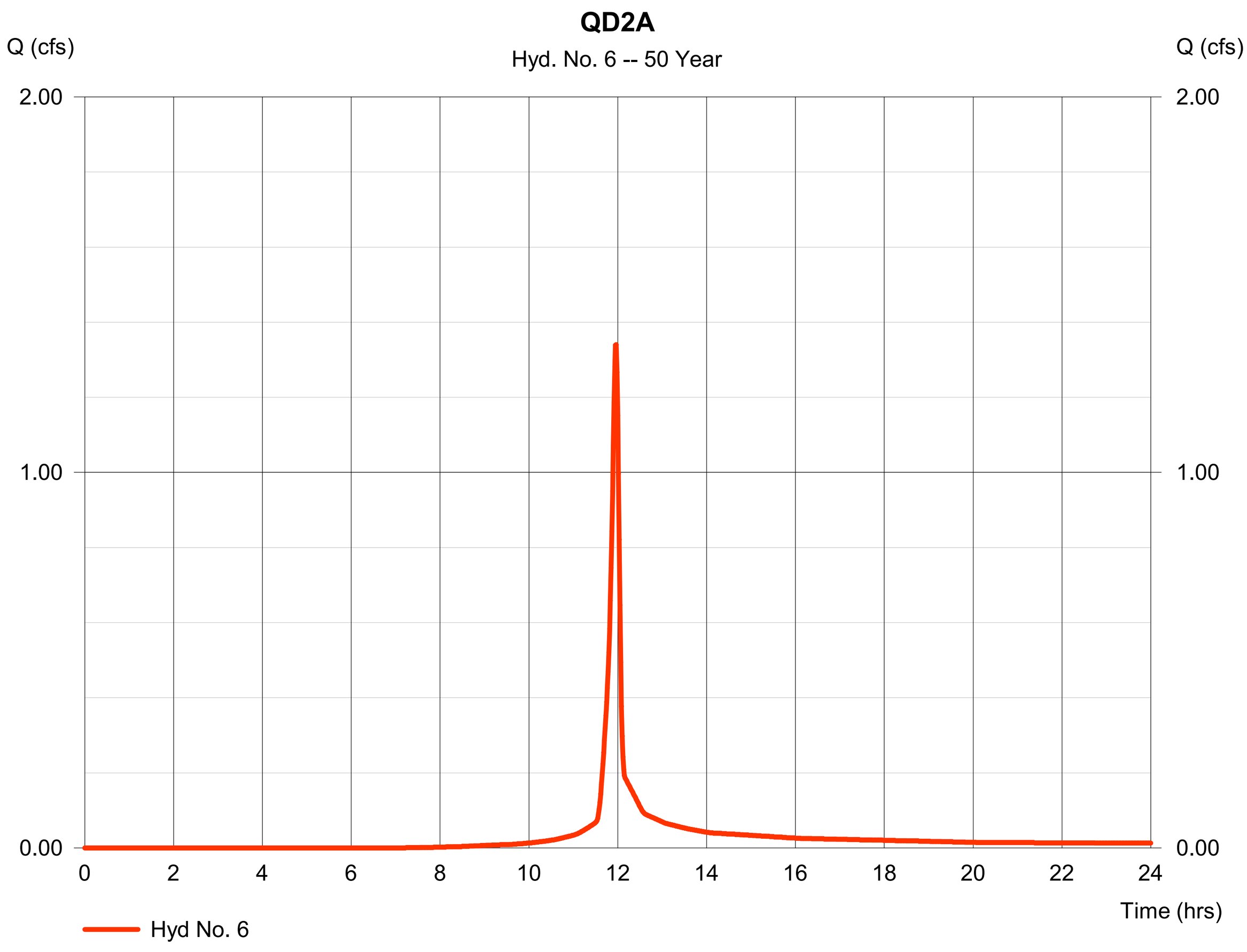
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 6

QD2A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.340 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 2,747 cuft
Drainage area	= 0.380 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



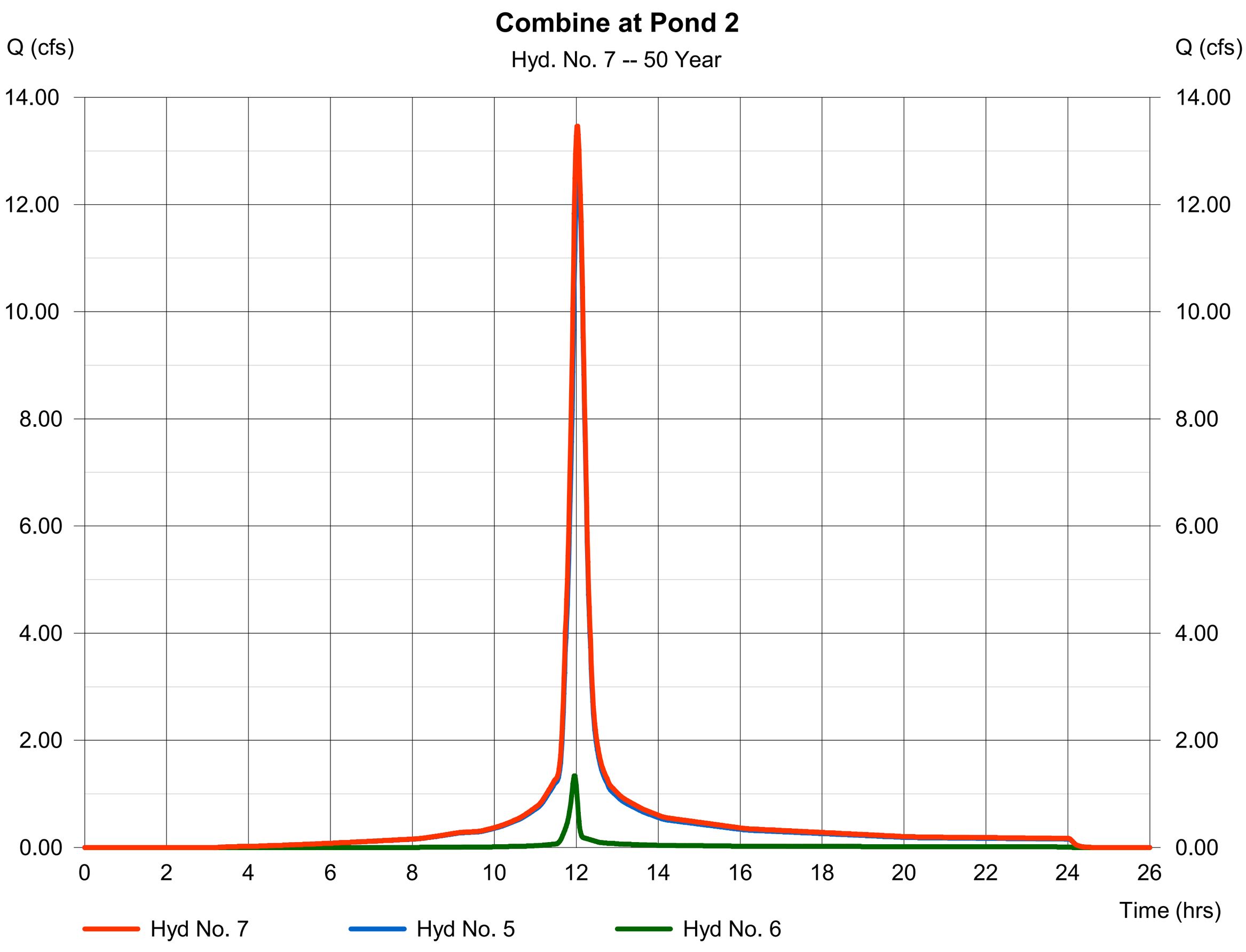
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 7

Combine at Pond 2

Hydrograph type	= Combine	Peak discharge	= 13.46 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 44,905 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.380 ac



Hydrograph Report

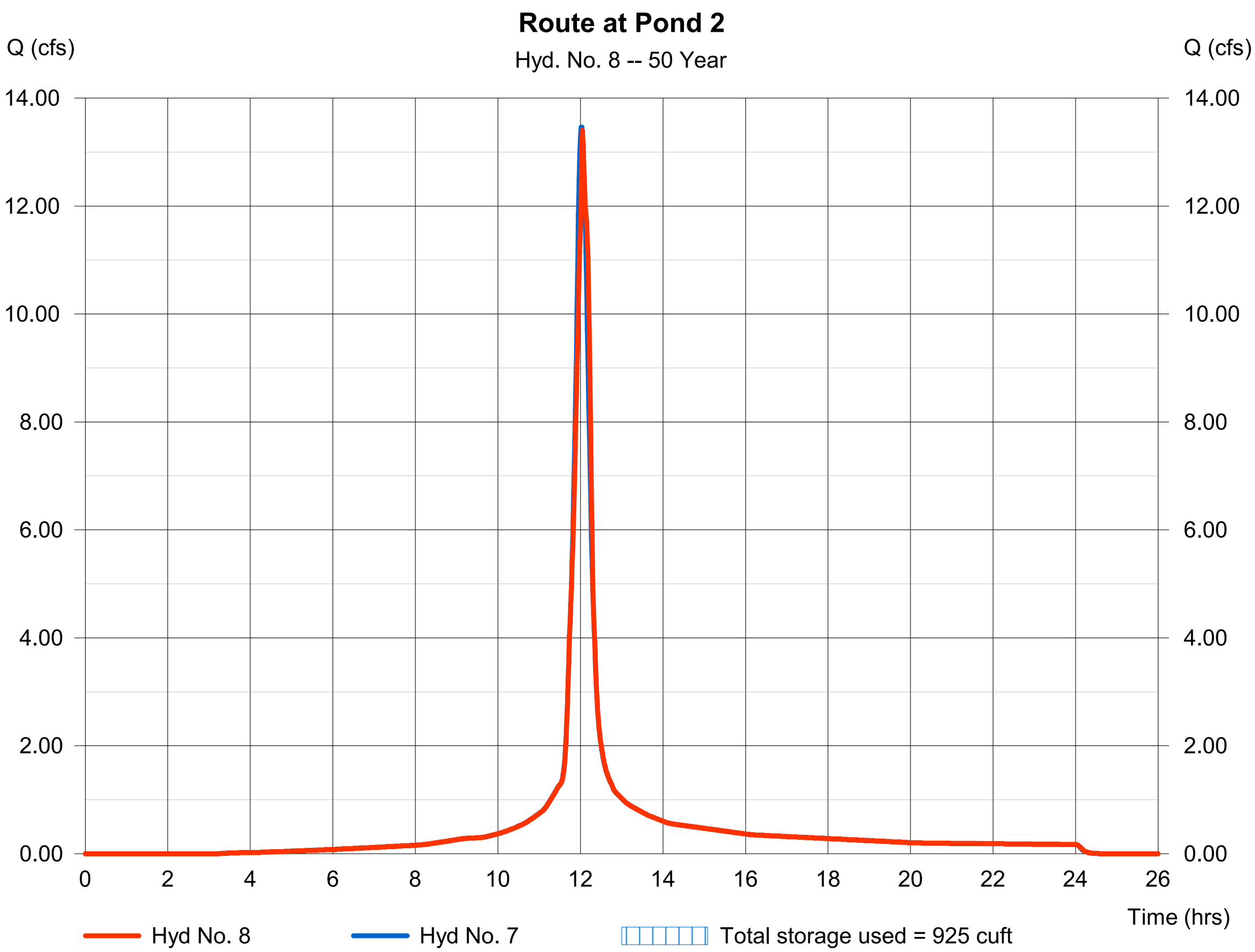
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 8

Route at Pond 2

Hydrograph type	= Reservoir	Peak discharge	= 13.40 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.05 hrs
Time interval	= 1 min	Hyd. volume	= 44,905 cuft
Inflow hyd. No.	= 7 - Combine at Pond 2	Max. Elevation	= 7239.57 ft
Reservoir name	= Pond 2	Max. Storage	= 925 cuft

Storage Indication method used.



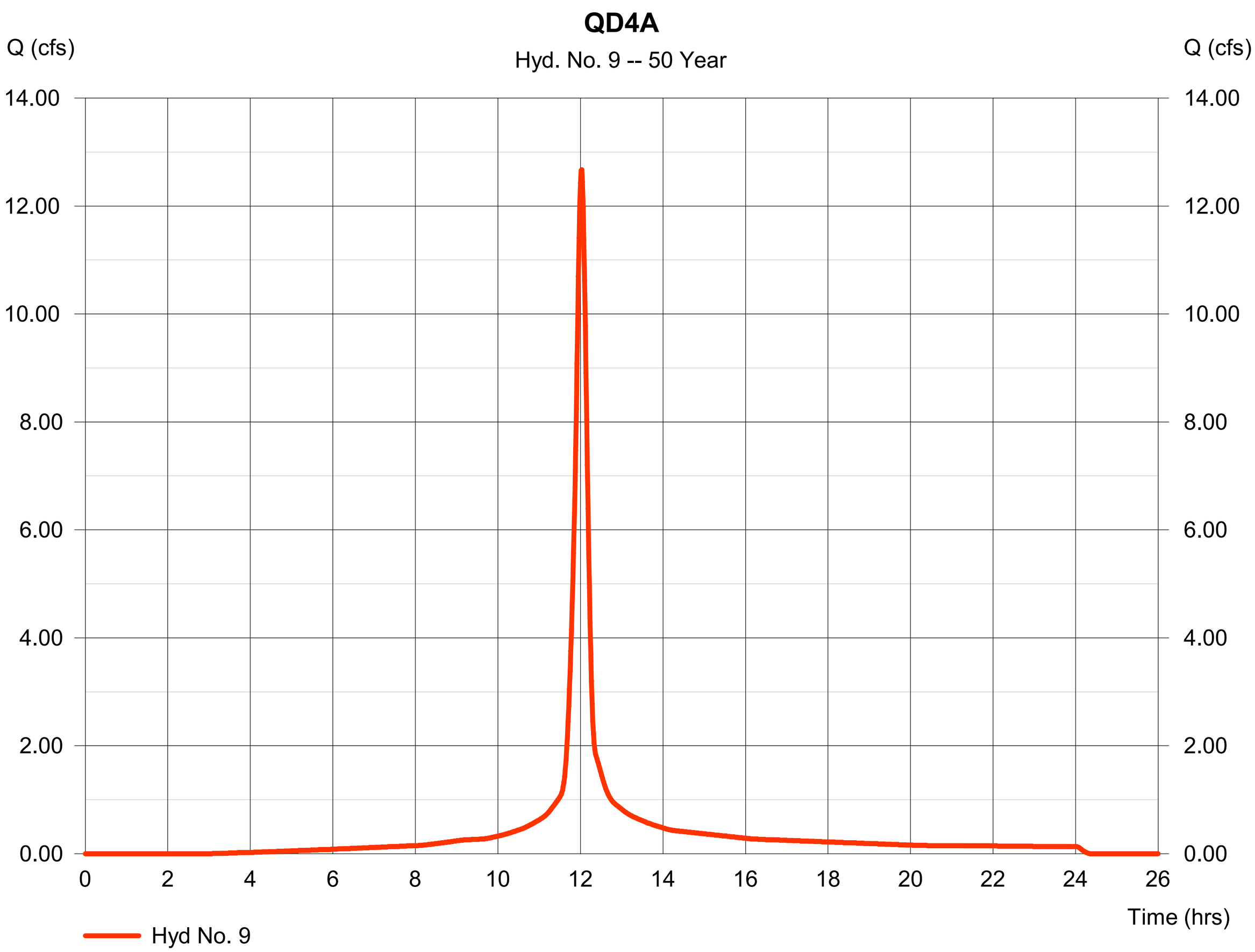
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 9

QD4A

Hydrograph type	= SCS Runoff	Peak discharge	= 12.67 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 36,471 cuft
Drainage area	= 3.650 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.50 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



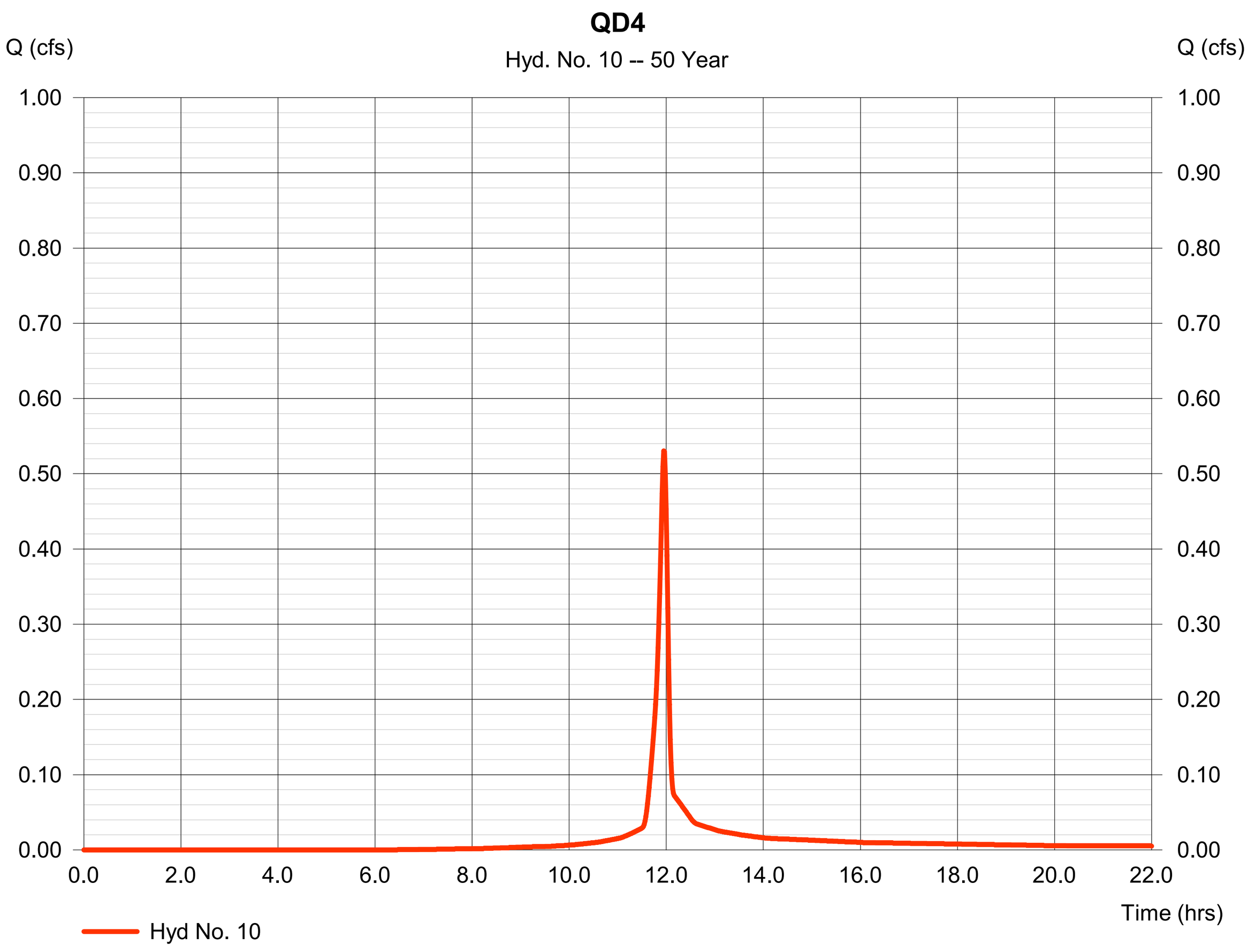
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 10

QD4

Hydrograph type	= SCS Runoff	Peak discharge	= 0.530 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 1,099 cuft
Drainage area	= 0.140 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

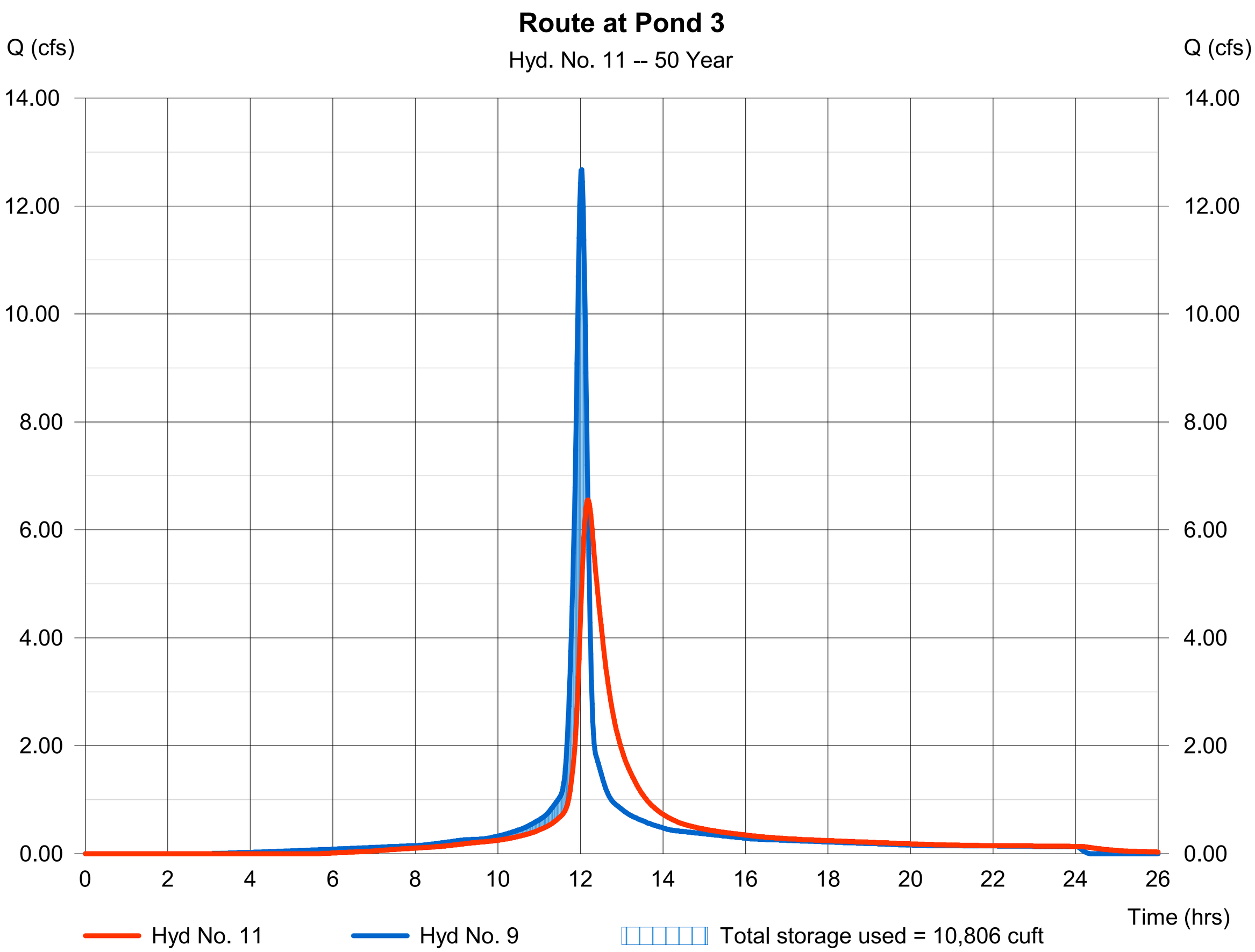
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 11

Route at Pond 3

Hydrograph type	= Reservoir	Peak discharge	= 6.557 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 36,132 cuft
Inflow hyd. No.	= 9 - QD4A	Max. Elevation	= 7248.69 ft
Reservoir name	= Pond 3	Max. Storage	= 10,806 cuft

Storage Indication method used.



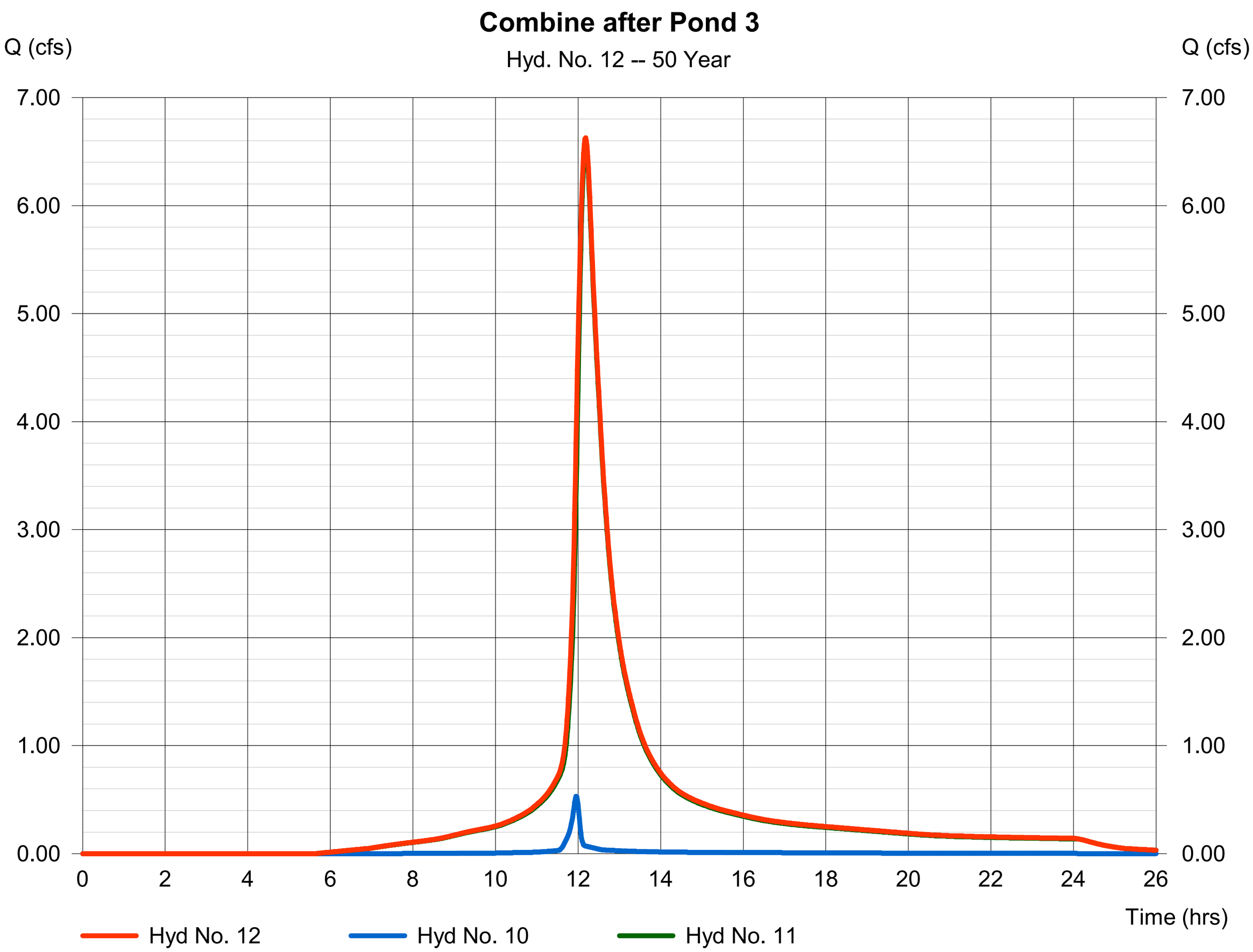
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 12

Combine after Pond 3

Hydrograph type	= Combine	Peak discharge	= 6.628 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 37,230 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.140 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.849	1	719	22,279	------	------	------	Q1
2	SCS Runoff	7.762	1	717	16,932	------	------	------	QD2
3	SCS Runoff	3.298	1	721	8,572	------	------	------	Q8
4	Combine	19.46	1	718	47,783	1, 2, 3	------	------	Combine at Pond 1
5	Reservoir	14.04	1	723	47,763	4	7260.75	5,866	Route at Pond 1
6	SCS Runoff	1.551	1	717	3,200	------	------	------	QD2A
7	Combine	14.94	1	722	50,963	5, 6	------	------	Combine at Pond 2
8	Reservoir	14.94	1	722	50,963	7	7239.62	958	Route at Pond 2
9	SCS Runoff	14.19	1	722	41,155	------	------	------	QD4A
10	SCS Runoff	0.609	1	717	1,270	------	------	------	QD4
11	Reservoir	7.449	1	731	40,815	9	7248.92	11,937	Route at Pond 3
12	Combine	7.530	1	731	42,085	10, 11	------	------	Combine after Pond 3

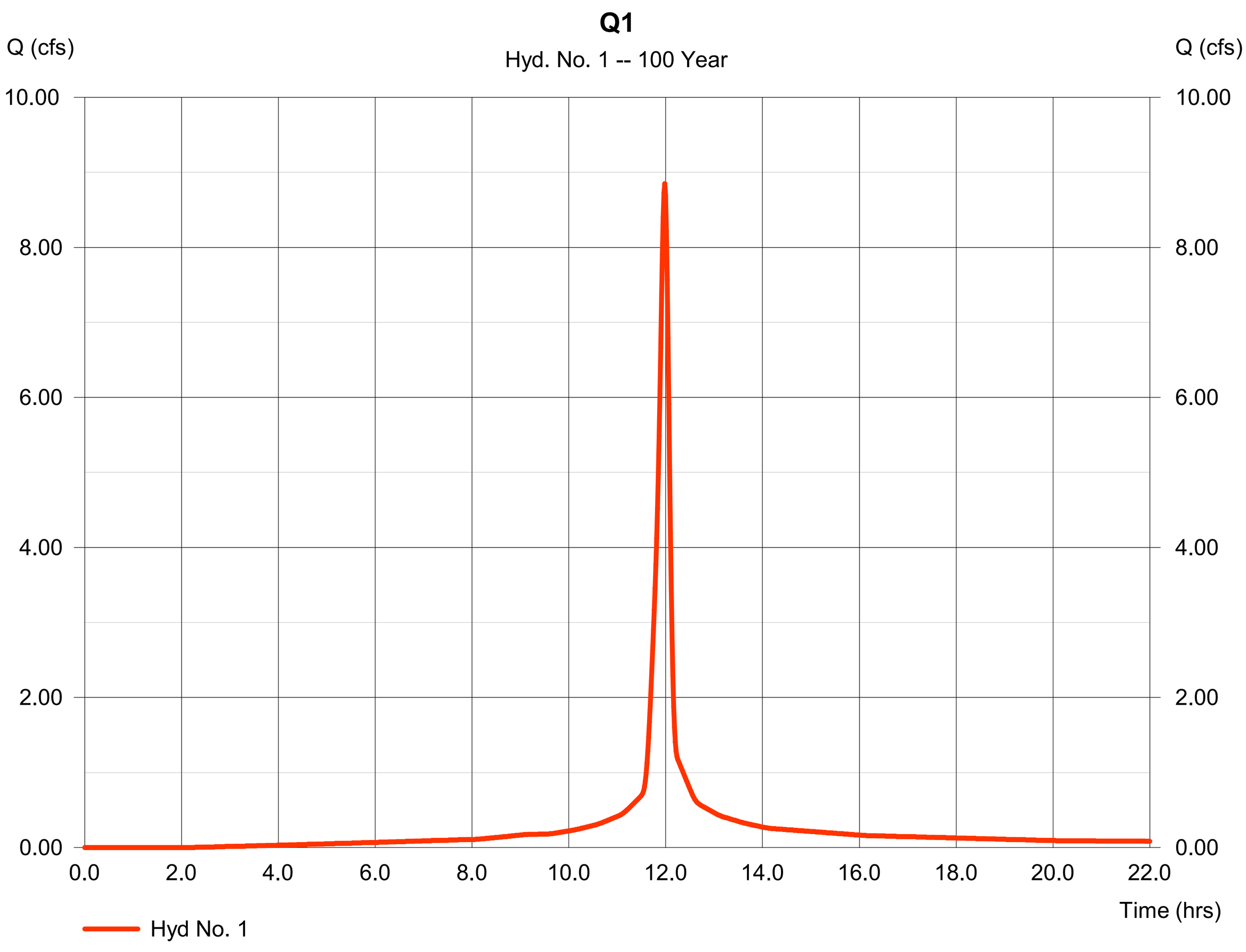
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 1

Q1

Hydrograph type	= SCS Runoff	Peak discharge	= 8.849 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 22,279 cuft
Drainage area	= 1.910 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



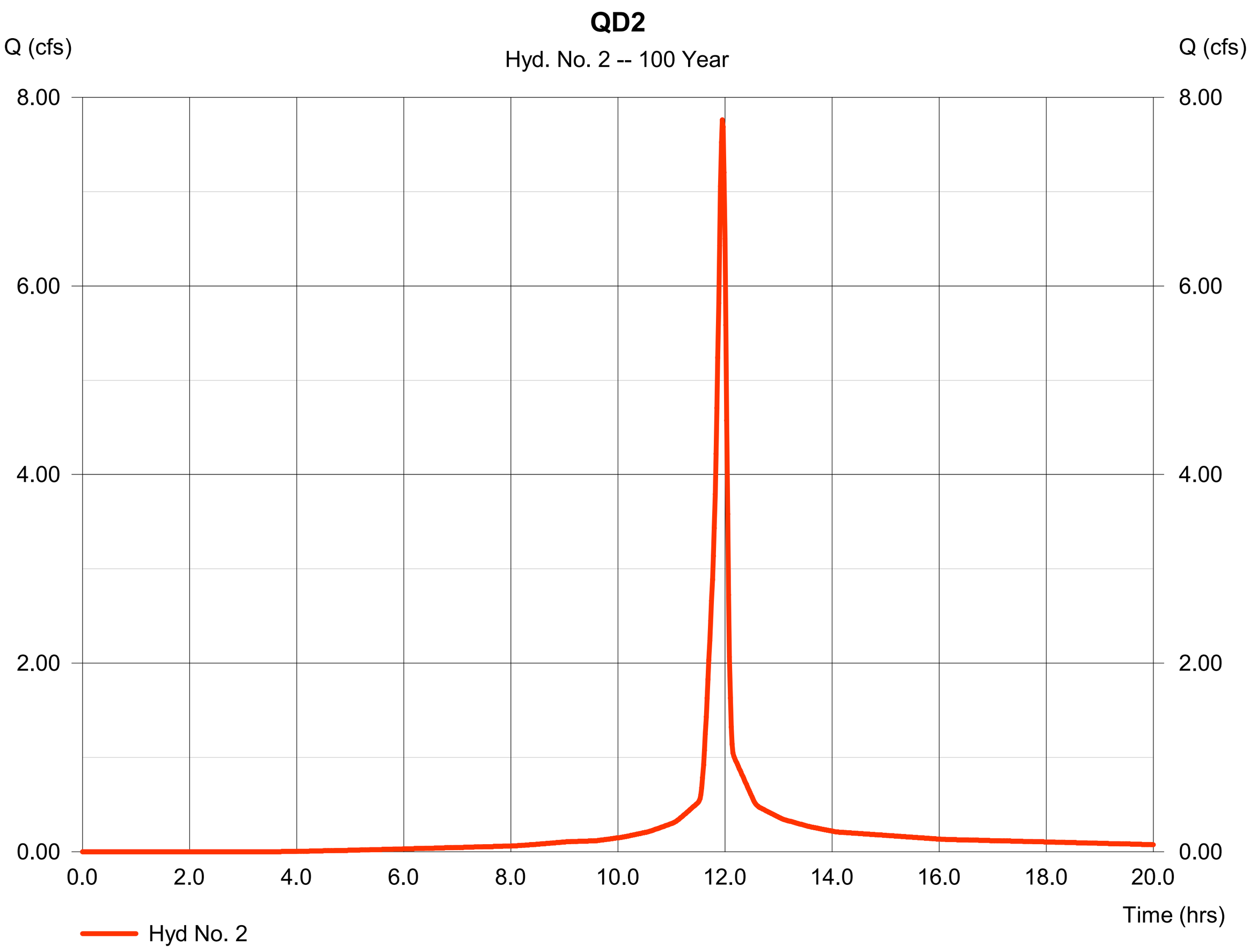
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 2

QD2

Hydrograph type	= SCS Runoff	Peak discharge	= 7.762 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 16,932 cuft
Drainage area	= 1.560 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



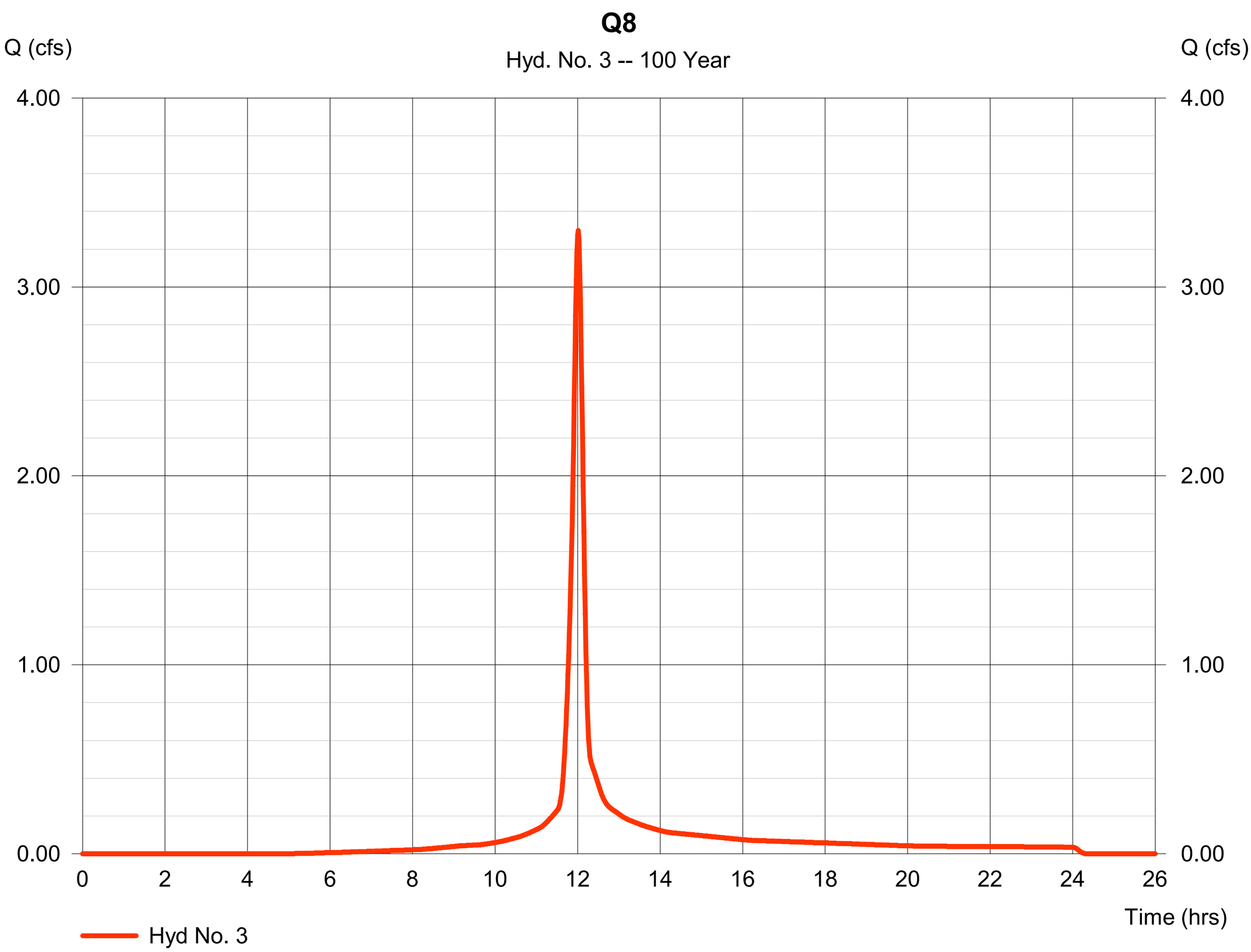
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 3

Q8

Hydrograph type	= SCS Runoff	Peak discharge	= 3.298 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.02 hrs
Time interval	= 1 min	Hyd. volume	= 8,572 cuft
Drainage area	= 0.920 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



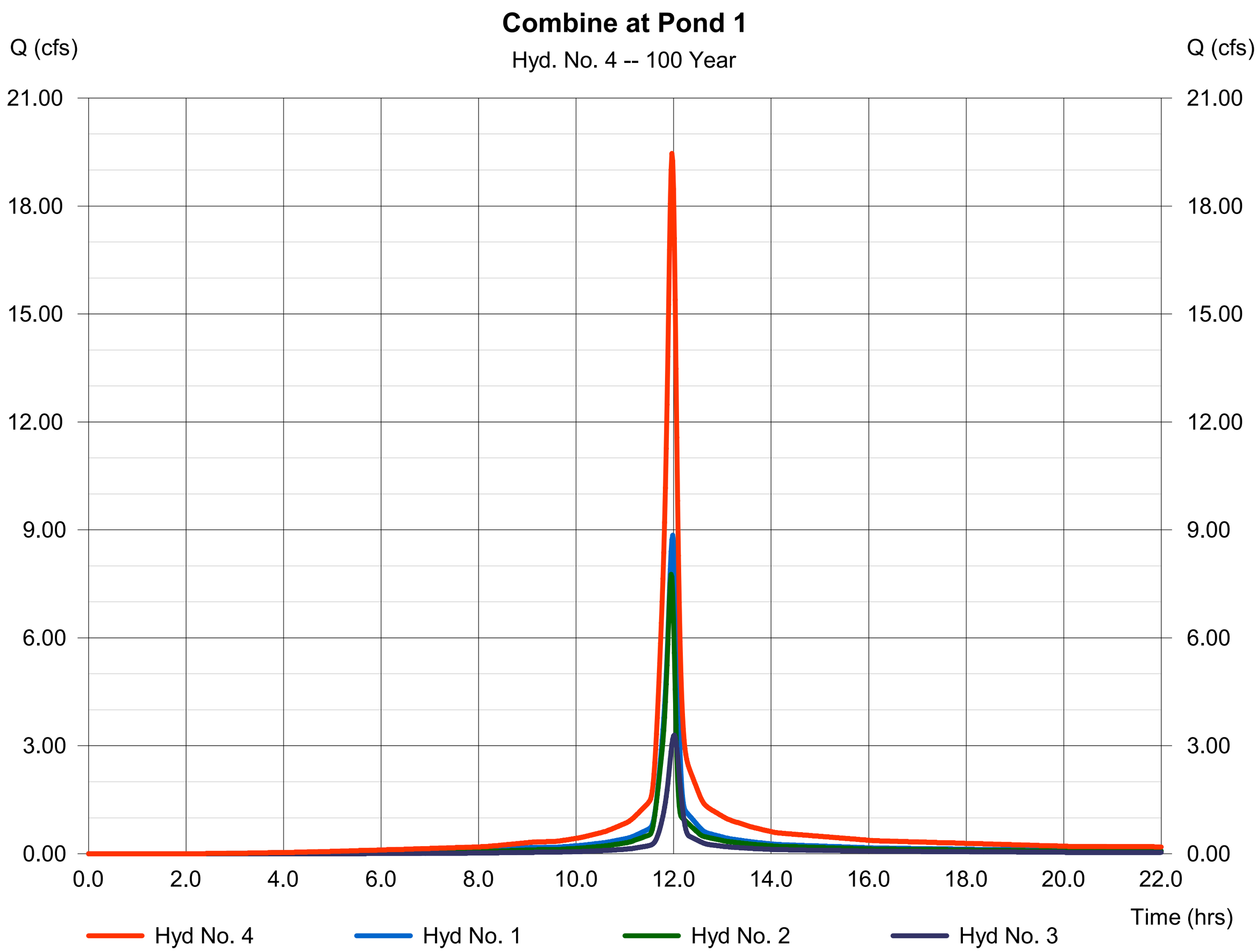
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 4

Combine at Pond 1

Hydrograph type	= Combine	Peak discharge	= 19.46 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 47,783 cuft
Inflow hyds.	= 1, 2, 3	Contrib. drain. area	= 4.390 ac



Hydrograph Report

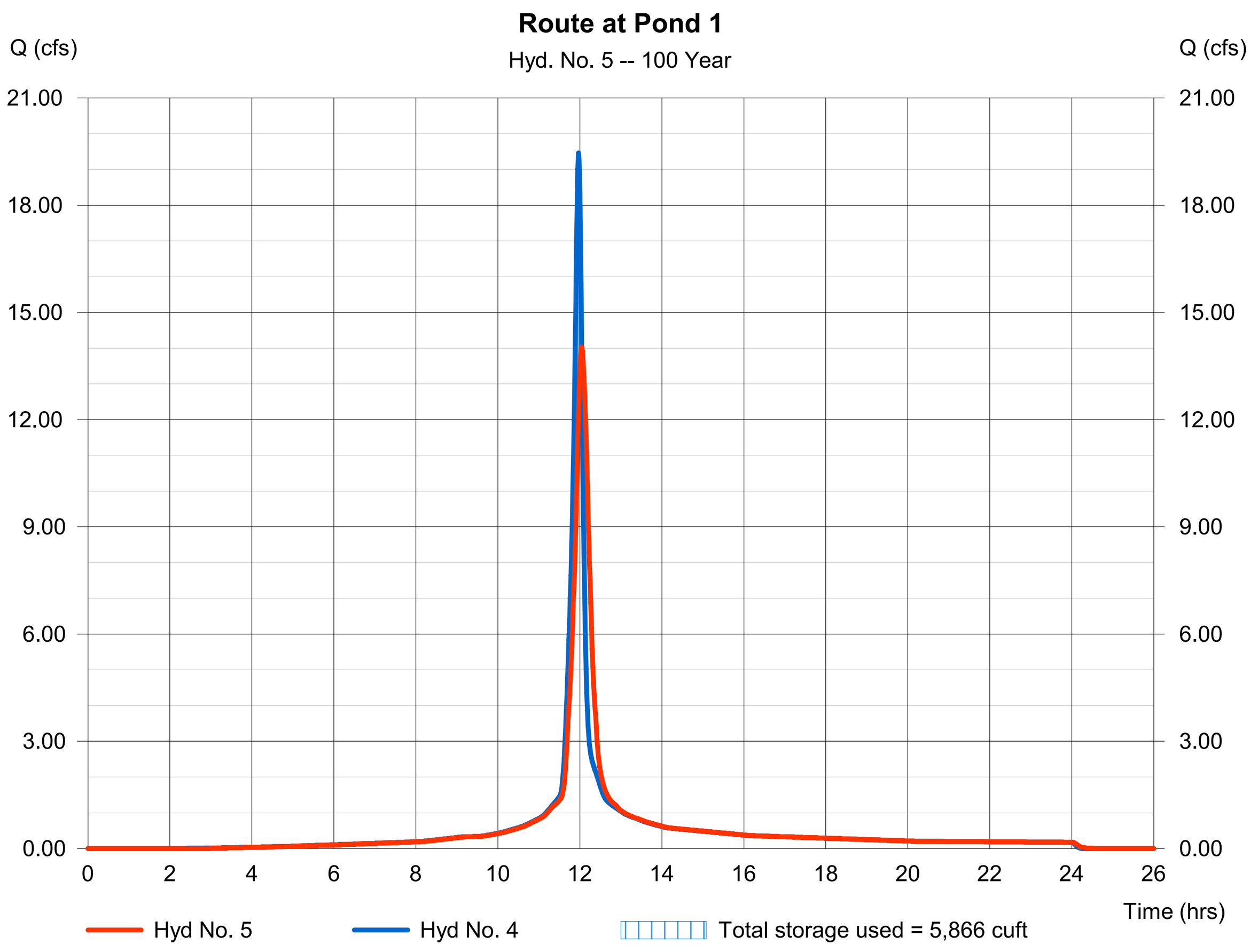
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 5

Route at Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 14.04 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.05 hrs
Time interval	= 1 min	Hyd. volume	= 47,763 cuft
Inflow hyd. No.	= 4 - Combine at Pond 1	Max. Elevation	= 7260.75 ft
Reservoir name	= Pond 1	Max. Storage	= 5,866 cuft

Storage Indication method used.



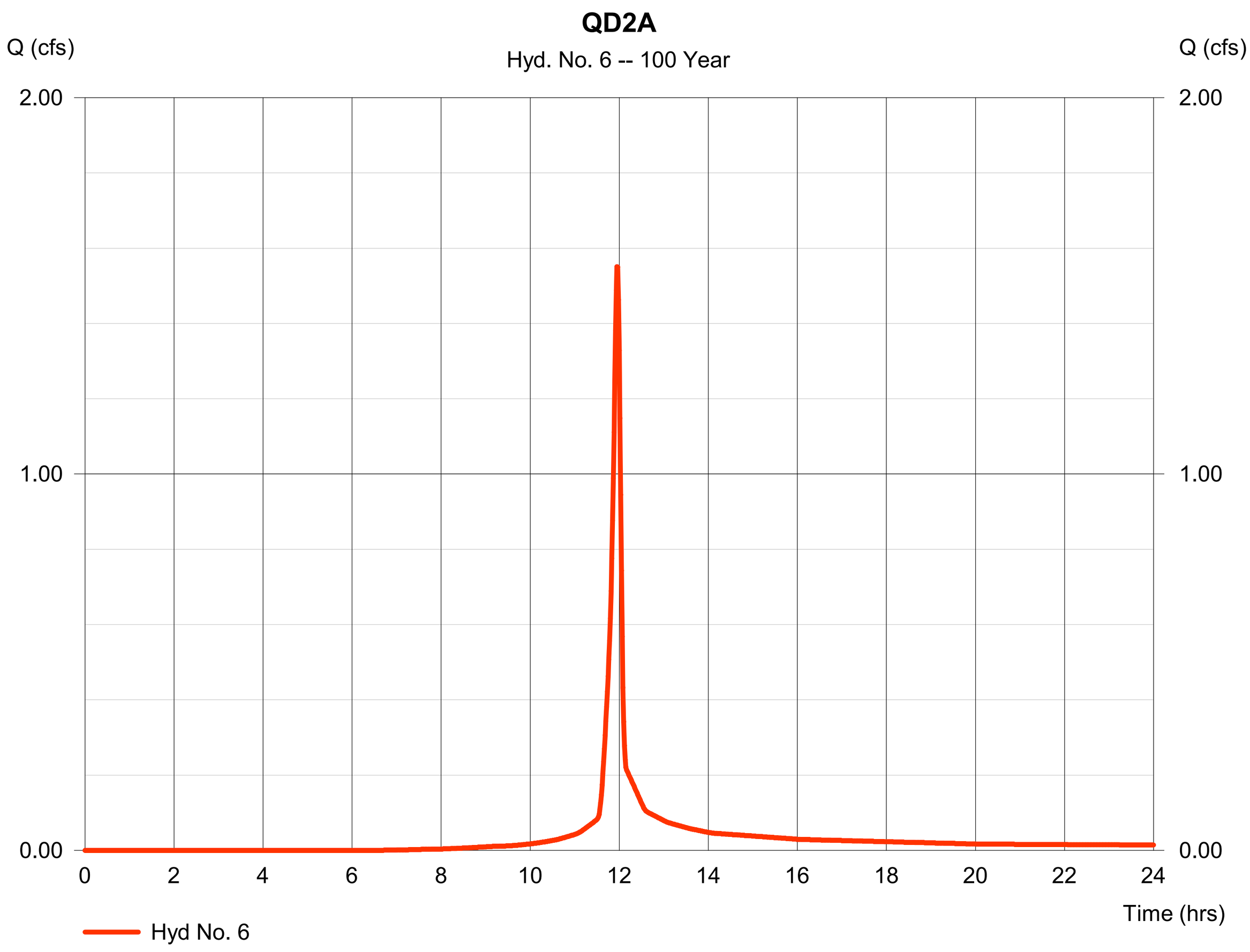
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 6

QD2A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.551 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 3,200 cuft
Drainage area	= 0.380 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



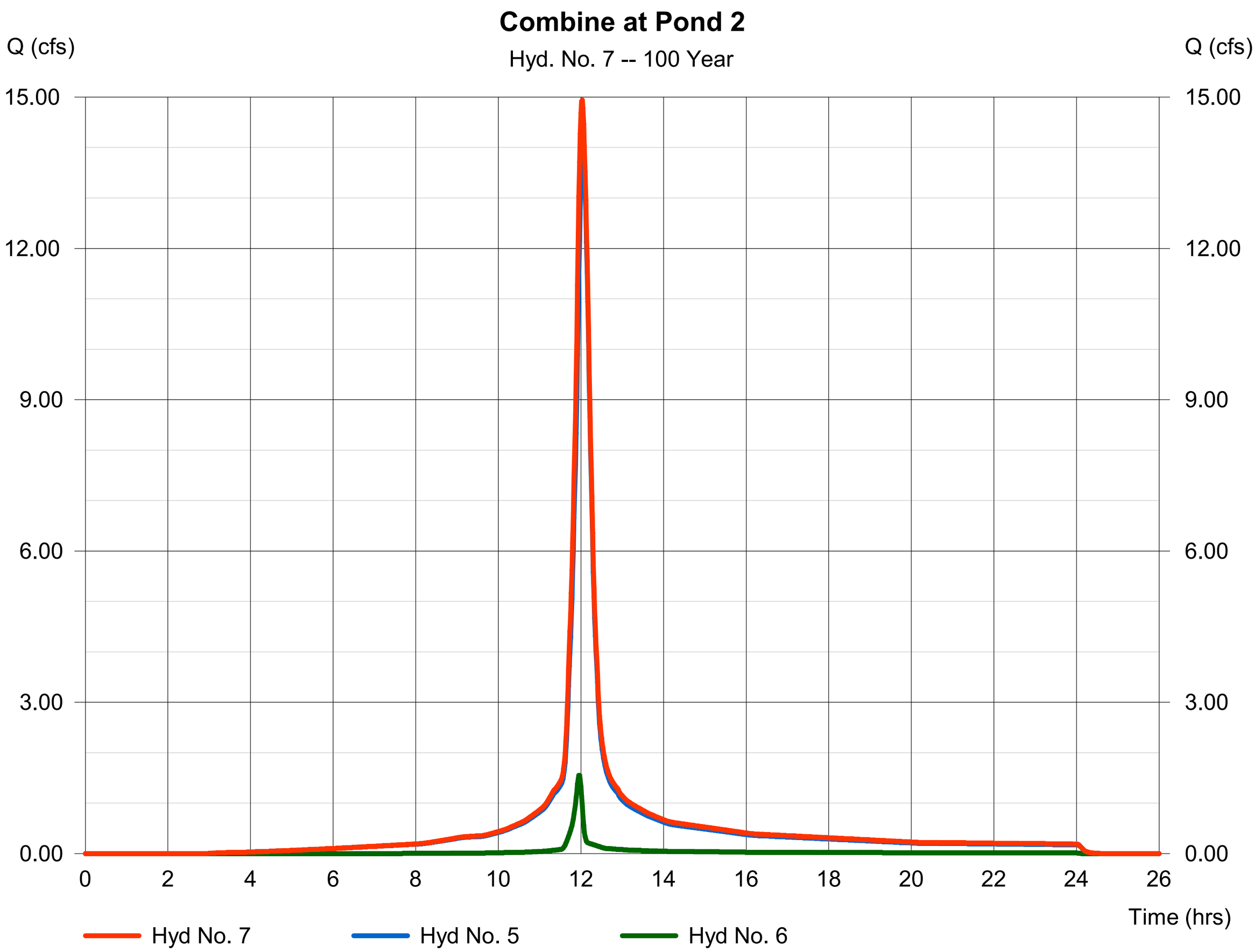
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 7

Combine at Pond 2

Hydrograph type	= Combine	Peak discharge	= 14.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 50,963 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.380 ac



Hydrograph Report

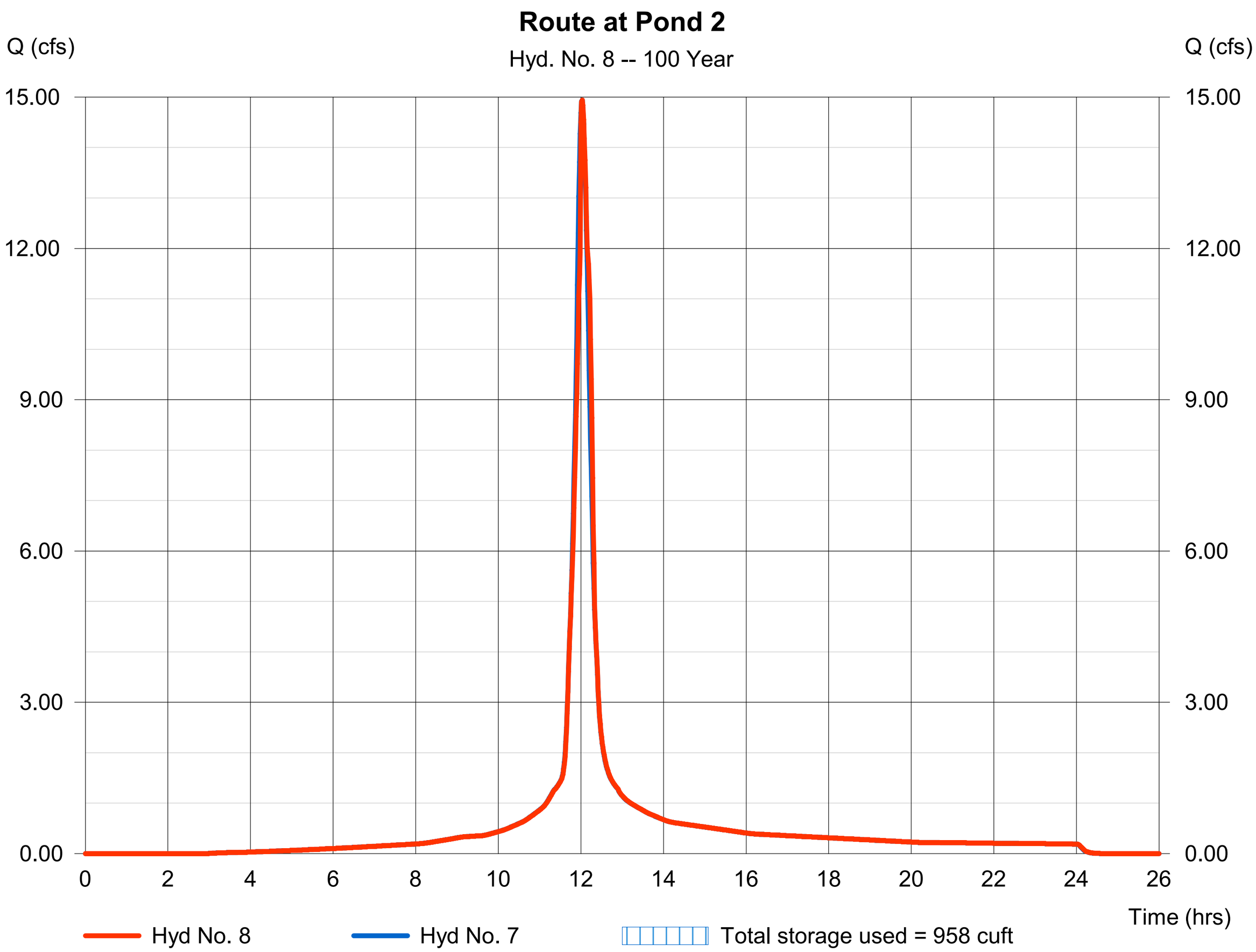
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 8

Route at Pond 2

Hydrograph type	= Reservoir	Peak discharge	= 14.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 50,963 cuft
Inflow hyd. No.	= 7 - Combine at Pond 2	Max. Elevation	= 7239.62 ft
Reservoir name	= Pond 2	Max. Storage	= 958 cuft

Storage Indication method used.



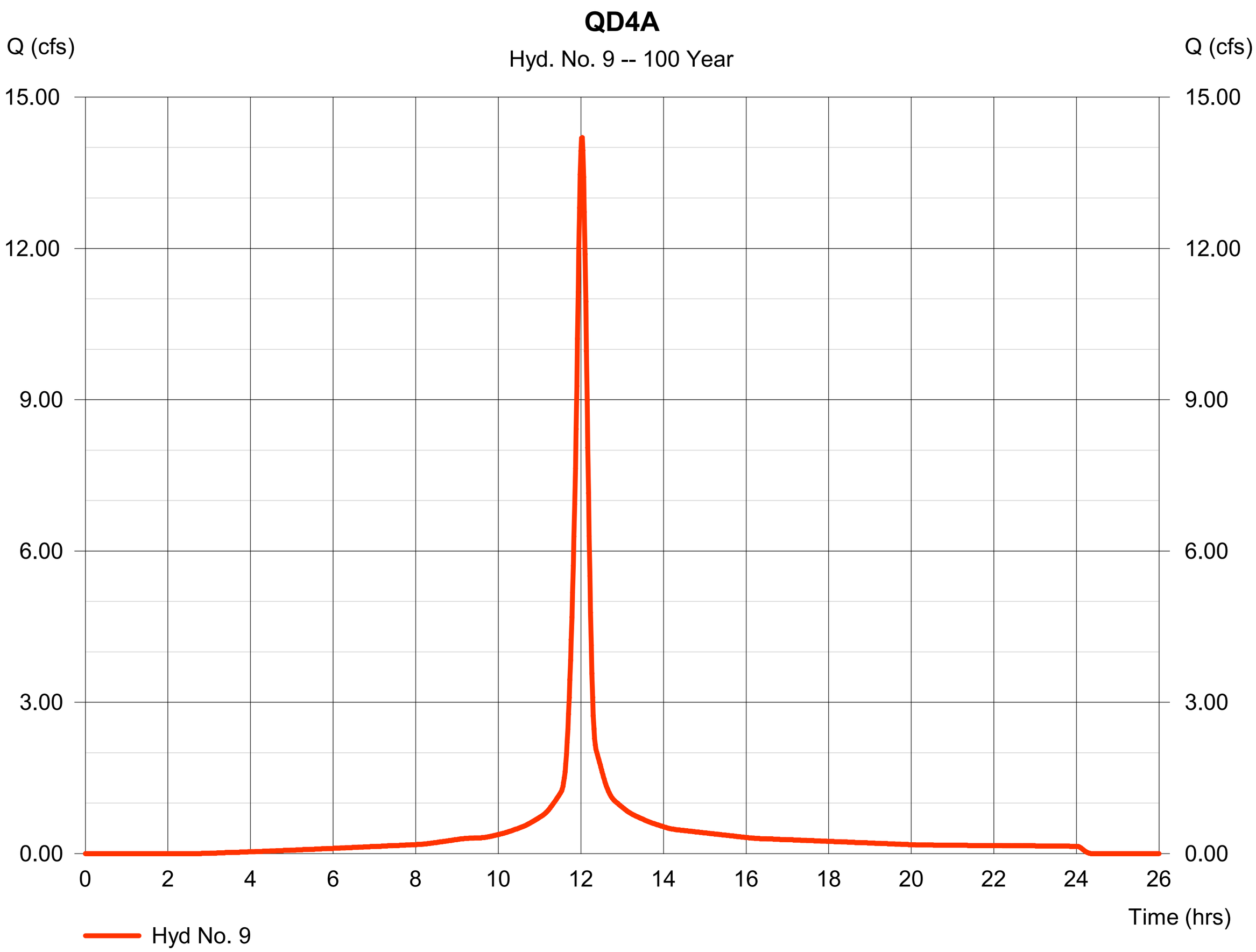
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 9

QD4A

Hydrograph type	= SCS Runoff	Peak discharge	= 14.19 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 41,155 cuft
Drainage area	= 3.650 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.50 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



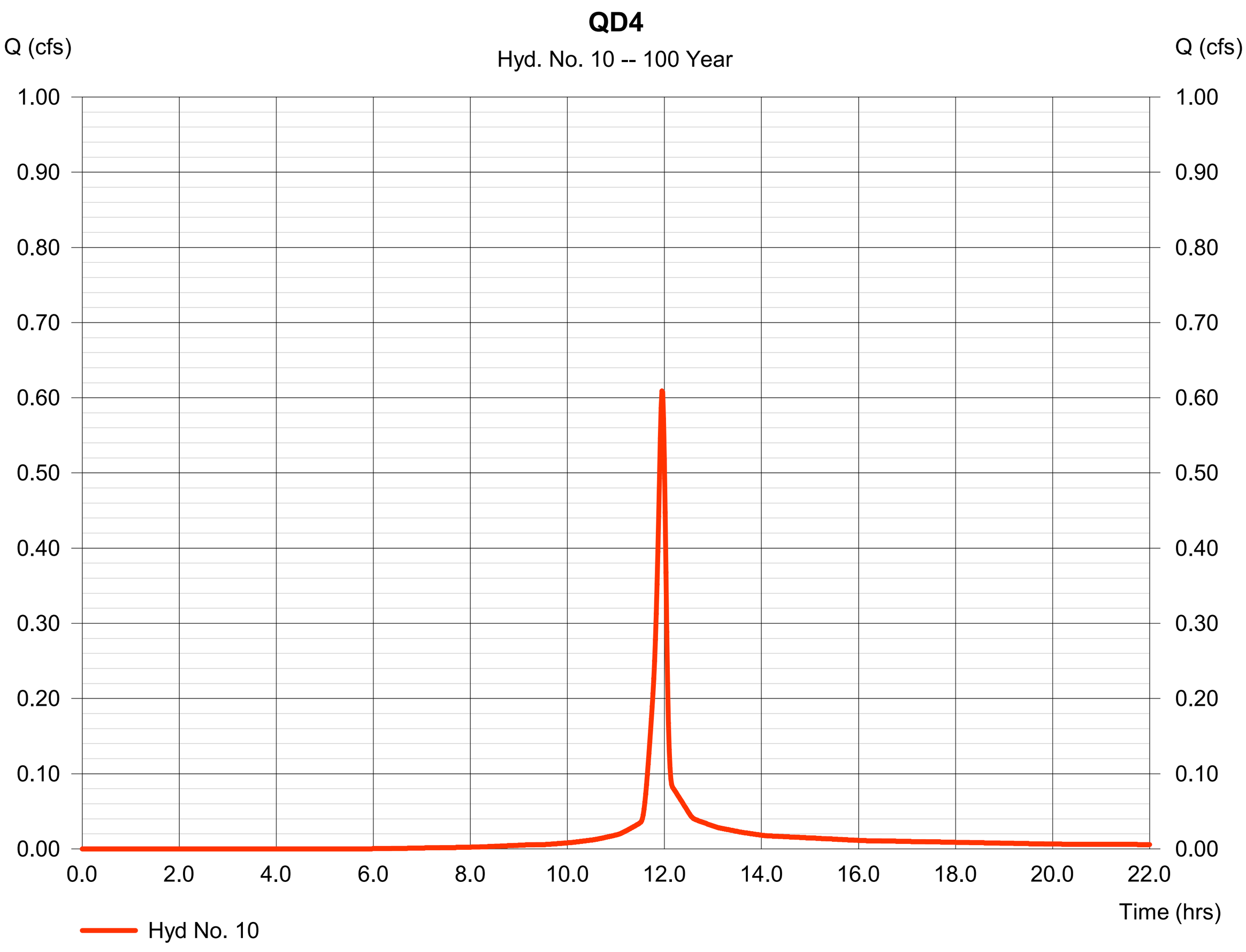
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 10

QD4

Hydrograph type	= SCS Runoff	Peak discharge	= 0.609 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 1,270 cuft
Drainage area	= 0.140 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

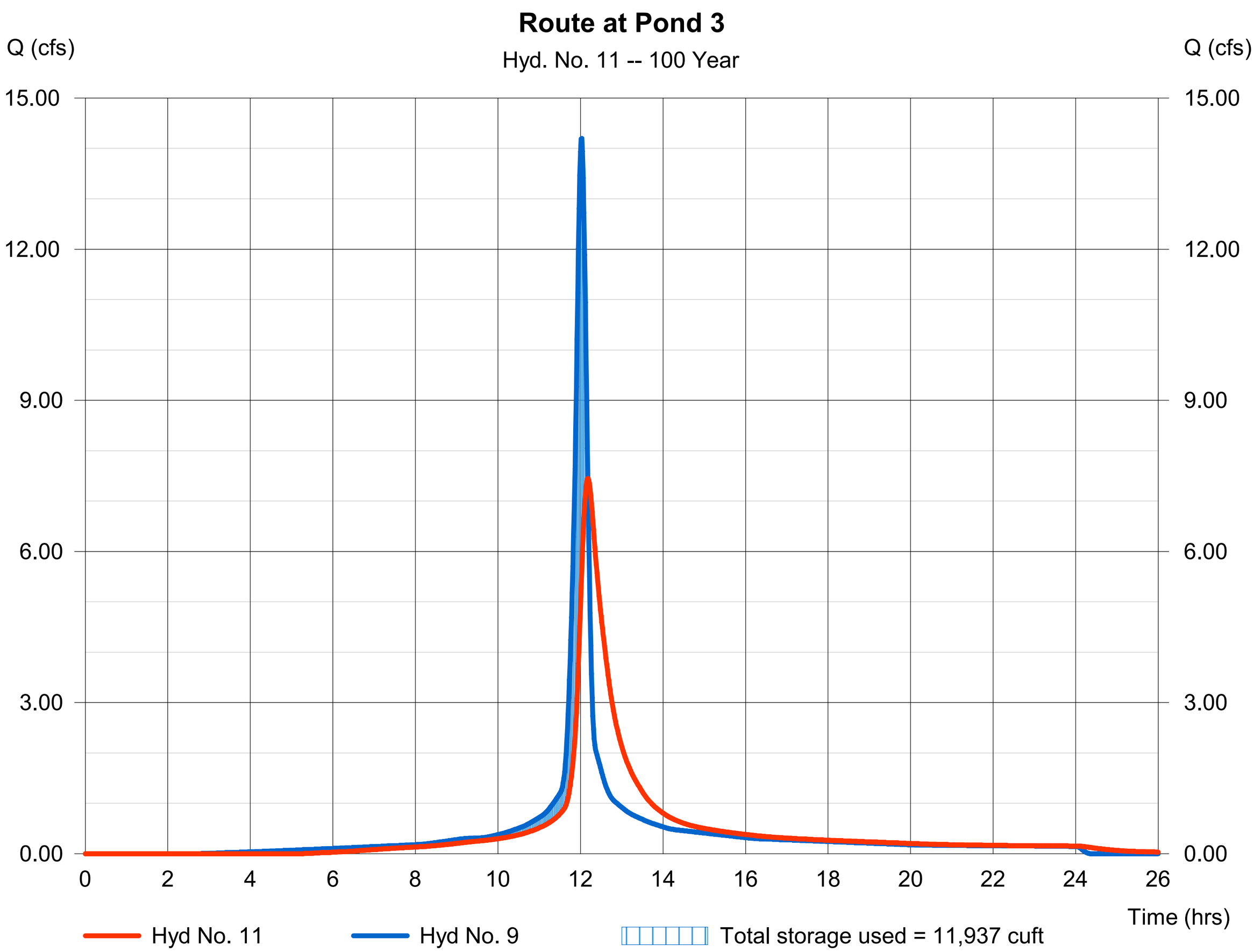
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 11

Route at Pond 3

Hydrograph type	= Reservoir	Peak discharge	= 7.449 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 40,815 cuft
Inflow hyd. No.	= 9 - QD4A	Max. Elevation	= 7248.92 ft
Reservoir name	= Pond 3	Max. Storage	= 11,937 cuft

Storage Indication method used.



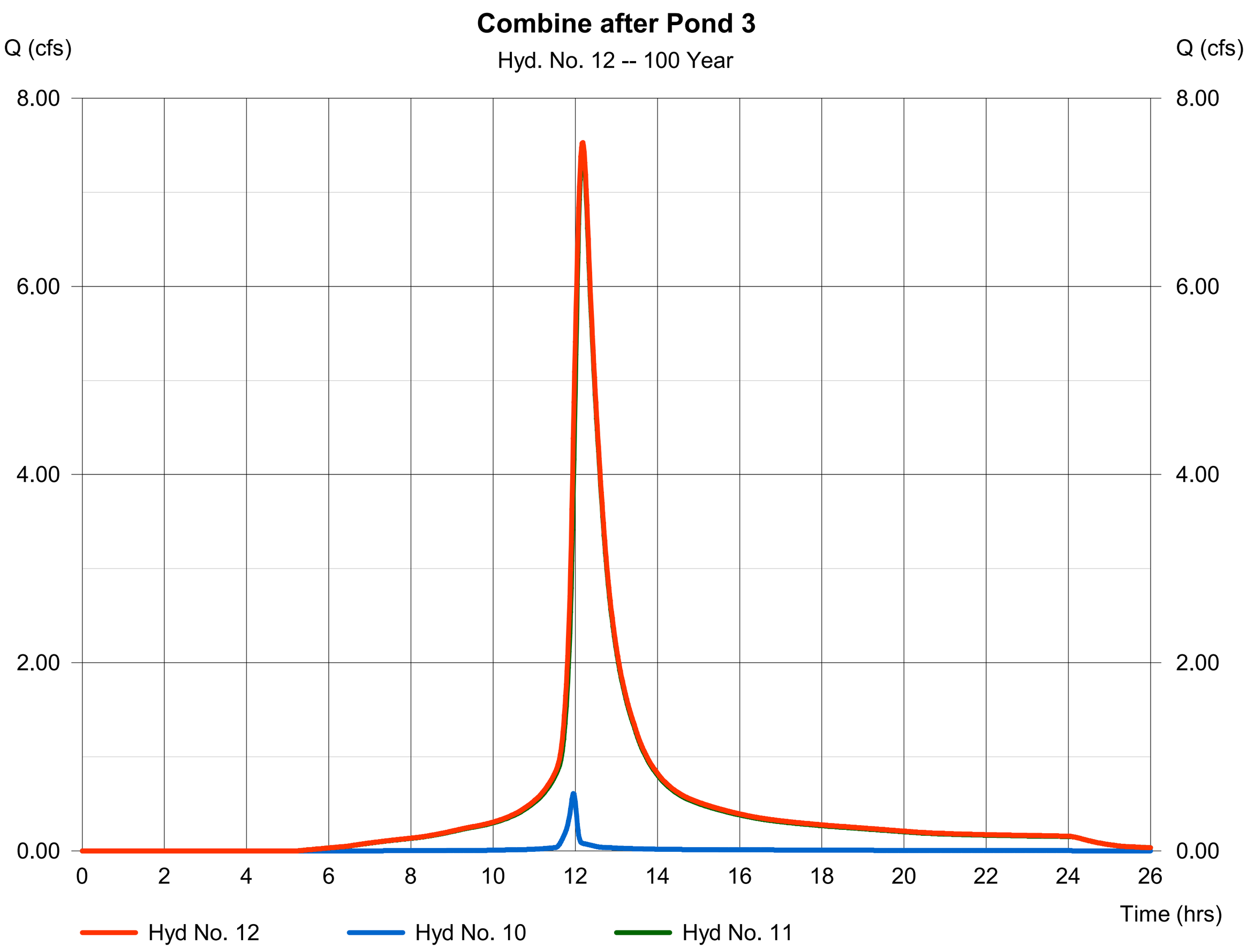
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Hyd. No. 12

Combine after Pond 3

Hydrograph type	= Combine	Peak discharge	= 7.530 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 42,085 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.140 ac



Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 05 / 23 / 2019

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: K:\LOS ALAMOS APARTMENTS JERRY PETERS\Drainage\hill-precip.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.73	0.00	0.00	0.00	2.96	3.31	3.67
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Geotechnical Engineering Report

The Hill Apartments

Trinity Drive and 35th Street

Los Alamos, New Mexico

April 12, 2019

Terracon Project No. 66185216

Prepared for:

LAH Investors, LLC
Santa Fe, New Mexico

Prepared by:

Terracon Consultants, Inc.
Albuquerque, New Mexico

Offices Nationwide
Employee-Owned
Established in 1965
terracon.com
Terracon
Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

April 12, 2019

LAH Investors, LLC
124 E. Macy Street
Santa Fe, New Mexico 87501

Attn: Mr. Peter Kerwick
Vice President
P: (505) 412-0296
E: pkerwick@peterscorp.com

Re: Geotechnical Engineering Report
The Hill Apartments
Trinity Drive and 35th Street
Santa Fe, New Mexico
Terracon Project No. 66185216

Dear Mr. Kerwick:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our Proposal for Geotechnical Services Reference No. P66185216 Revised January 10, 2019. This geotechnical engineering report presents the results of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Sam G. Zsiga
Staff Engineer

Michael E. Anderson, P.E.
Principal

Copies to: Addressee (1 via email, 3 via mail)

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EXECUTIVE SUMMARY

This geotechnical executive summary should be used in conjunction with the entire report for design and/or construction purposes. It should be recognized that specific details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled General Comments should be read for an understanding of the report limitations.

A geotechnical exploration has been performed for the proposed The Hill Apartments to be located near Trinity Drive and 35th Street in Los Alamos, New Mexico. Terracon's geotechnical scope of work included the advancement of 14 test borings to approximate depths of 6 to 26 feet below existing site grades. In addition, to assess boring locations not accessible to truck-mounted drilling equipment and to determine the seismic site characterization (Soil Site Class) per the 2015 International Building Code (IBC), a micro-tremor, soil profile shear wave analyses was performed at the site to investigate the subsurface soil profile in the upper 100 feet of the soil profile.

Based on the information obtained from our subsurface exploration, the site is suitable for development of the proposed project. The following geotechnical considerations were identified:

Previous Site Development: Previous site development consisted of a building, concrete slabs, asphalt concrete pavement, walls, concrete curb and gutter, and miscellaneous structures. Therefore, these elements will need to be removed prior to new construction. Any loose soils associated with backfilling of previous structures, utility and mining pit excavations will require recompaction.

Site Soils: The site soils generally consisted of sand with varying amounts of silt, clay and gravel and clay with varying amounts of sand and gravel. Groundwater was not encountered at the time of drilling. The on-site soils should be suitable for re-use as engineered fill.

Foundations: The proposed buildings, retaining walls, trash dumpster enclosure walls and miscellaneous structures at the site can be supported by shallow spread/continuous footings, monolithic slabs with turned down edges or post-tensioned slabs. The footings and monolithic slab should bear on a zone of engineered fill/recompacted native soils. The post-tensioned slab can bear on undisturbed native soils or engineered fill. Any fill used to raise the site to final construction grade can be used to meet the engineered fill zone requirement.

Floor Slabs: The on-site surface and near surface soils are expected to exhibit non- to low collapse and non- to low expansion potentials when compacted and subjected to light loading conditions such as those imposed by the floor slab. Construction of the floor slabs directly on a zone of engineered fill composed on-site or approved imported soils or prepared subgrade are considered acceptable for the project, provided some movement can be tolerated. Any fill used to raise the site to final construction grade can be used to meet the engineered fill zone requirement.

Pavement Sections: Light Duty parking areas – 2½" AC over 6" ABC or 5" PCC; Heavy Duty interior/main drives – 4" AC over 6" ABC or 5-½" PCC.

Excavation: Shallow excavations into the on-site loose to dense surficial soils are expected to be accomplished with conventional earthwork equipment. However, very dense soils and/or hard to very hard volcanic tuff bedrock was encountered at relatively shallow depths beneath the site. Excavations into these materials will require extra effort, heavy duty or specialized excavation equipment to advance excavations.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during construction.

GEOTECHNICAL ENGINEERING REPORT
THE HILL APARTMENTS
TRINITY DRIVE AND 35TH STREET
LOS ALAMOS, NEW MEXICO

Terracon Project No. 66185216
April 12, 2019

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the proposed The Hill Apartments to be located near Trinity Drive and 35th Street in Los Alamos, New Mexico. The report addresses the following:

- subsurface soil/bedrock conditions
- earthwork
- seismic considerations
- lateral earth pressures
- groundwater conditions
- foundation design and construction
- floor slab design and construction
- pavement design and construction

Our geotechnical engineering scope of work for this project included the advancement of 14 test borings to approximate depths of 6 to 26 feet below existing site grades. In addition, to assess boring locations not accessible to truck-mounted drilling equipment and to determine the seismic site characterization (Soil Site Class) per the 2015 International Building Code (IBC), a micro-tremor, soil profile shear wave analyses was performed at the site to investigate the subsurface soil profile in the upper 100 feet of the soil profile.

Logs of the borings along with a Site Location Map and Boring Location Plan are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Refer to the Site Location Map and Exploration Location Plan (Exhibits A1 and A2 in Appendix A).

ITEM	DESCRIPTION		
Structures	At this time, the project will include the construction of the following: ▪ Eight (8) up to 4-story apartment buildings (158 units) ▪ One (1) one (1) story office and community building ▪ One (1) swimming pool ▪ Five (5) garages/carports		
Building construction	Load bearing wood-framed with stucco finish (assumed)		
Finished floor elevation (FFE)	Within 3 to 6 feet existing site grade		
Maximum loads (assumed)	Columns: 15 to 50 Kips	Walls: 1 to 3 Kips/lf	Slab: 150 to 250 psf
Site development	Site development will consist of the construction of retaining/screen walls, asphalt and/or Portland cement concrete paved parking areas and interior drives, trash dumpster enclosures, amenity areas, ramadas, walking paths, and the installation of utilities.		
Grading	Maximum cut and fill depths of up to about 8 to 12 feet (estimated)		
Cut and fill slopes (assumed)	Maximum of 2:1 to 3:1 (horizontal:vertical)		
Height of retaining/screen walls	Up to 8 to 12 feet (assumed)		
Pavements	Standard Duty – Automobile parking Heavy Duty – Interior drives and main access drives		
Below grade areas	Not Applicable		

2.2 Site Location and Description

ITEM	DESCRIPTION
Location	Near the intersection of Trinity Drive and 35th Street in Los Alamos, New Mexico.
Existing improvements	The site is undeveloped. However, Previous site development consisted of a building, concrete slabs, asphalt concrete pavement, walls, concrete curb and gutter, and miscellaneous structures.
Surrounding developments	North: Finch Street, commercial/retail buildings and Trinity Drive East: Vacant parcel West: Vacant parcel South: Vacant parcel
Current ground cover	Structures/remnants, slabs, walls, concrete curb and gutter, and landscaping
Existing topography	Gently to moderately sloping down to the south, west and southeast.

3.0 SUBSURFACE CONDITIONS

3.1 Typical Subsurface Profile

Specific conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for each of the borings can be found on the boring logs included in Appendix A of this report. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	0.2 to 0.4	Asphalt Concrete – 2 to 3 inches Aggregate Base Course – 2 to 3 inches	N/A
Stratum 2	4	Clay. The sand and gravel content varied	Very Stiff
Stratum 3	2 to 8	Sand. The silt, clay and gravel content varied	Loose to Very Dense
Stratum 4	Greater than 26	Volcanic Tuff Bedrock	Firm to Very Hard

The clay soils were low to medium in plasticity. The sand soils were non-plastic to low in plasticity.

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B. Laboratory test results indicate that the surface and near surface soils exhibit low compressibility potential at in-situ moisture contents. The surface and near soils exhibit low to high compressibility potential with increases in moisture content and load. Due to the granular nature, moderate field penetration resistance and low moisture content of some of the subsurface soils, some disturbance is likely reflected in some of the test results. It is our opinion that the shallow subsurface soils will likely exhibit low to moderate compression potential. When water is added to samples of laboratory compacted near-surface soils, we anticipate that the compacted soils will exhibit non- to low compressive and non-to-low expansive potential when subjected to light loading conditions such as those imposed by floor slabs.

Laboratory test results indicate that on-site soils have a soluble sulfate concentration of non-detect to 120 mg/kg.

3.2 Shear Wave Velocity Profile

Results of the shear wave velocity profile performed at the site indicated an average calculated shear wave velocity of 1,250 per second (fps) for a 100 foot depth. Shear wave analysis was

performed at the approximate location shown on Plate No. 1 of the Shear Wave Velocity Profile Report in Appendix C.

3.3 Groundwater

Groundwater was not observed in the test borings at the time of field exploration, nor when checked upon completion of drilling. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations. Groundwater conditions can change with varying seasonal and weather conditions, and other factors.

Fluctuations in groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings. Soils which show a low to moderate tendency for compression when elevated in moisture content will require particular attention in the design and construction.

Previous site development consisted of a building, concrete slabs, asphalt concrete pavement, walls, concrete curb and gutter, and miscellaneous structures. Therefore, these elements will need to be removed prior to new construction. Any loose soils associated with backfilling of previous structures, utility and mining pit excavations will require recompaction.

Based on the geotechnical subsurface exploration, the laboratory test results, and our engineering analyses, the proposed buildings, retaining walls, trash dumpster enclosure walls and miscellaneous structures can be supported on a shallow spread/continuous footing foundation system, monolithic slab with turned down edges, or a post-tensioned slab. The footings and monolithic slab should bear on a zone of engineered fill/recompacted native soils. The post-tensioned slab can bear on undisturbed native soils or engineered fill. A slab-on-grade floor system (excluding the post-tensioned slab) supported on a zone of engineered fill can be used, provided some movement can be tolerated. Any fill used to raise the site to final construction grade can be used to meet the engineered fill zone requirement.

On-site soils are suitable for use as engineered fill. For the clay soils, extra processing may be required to provide a uniform moisture conditioned fill.

Shallow excavations into the on-site medium dense to dense soils are expected to be accomplished with conventional earthwork equipment. However, very dense soils and/or hard to very hard volcanic tuff bedrock was encountered at relatively shallow depths beneath the site. Excavations into these materials will require extra effort, heavy duty or specialized excavation equipment to advance excavations. A qualified contractor with experience in the area and similar soil and bedrock conditions should review the data contained in this report and determine the means and methods to accomplish the required excavation depths at the site.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations, slabs, and pavements are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Strip and remove existing structures, remnants, slabs, pavements, landscaping, vegetation and other deleterious materials from the proposed structure and pavement areas. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

The site should be initially graded to create a relatively level surface to receive fill, and to provide for a relatively uniform thickness of fill beneath the proposed building structure.

Evidence of underground facilities and utilities was observed during the site reconnaissance. Therefore, such features could be encountered during construction. If loose or soft fills or underground facilities are encountered, such features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

4.2.2 Excavation

Shallow excavations into the on-site medium dense to dense soils are expected to be accomplished with conventional earthwork equipment. However, very dense soils and/or hard to

very hard volcanic tuff bedrock was encountered at relatively shallow depths beneath the site. Excavations into these materials will require extra effort, heavy duty or specialized excavation equipment to advance excavations. A qualified contractor with experience in the area and similar soil and bedrock conditions should review the data contained in this report and determine the means and methods to accomplish the required excavation depths at the site.

Based on the results from the soil borings, we do not anticipate groundwater control measures will be necessary in excavations up to about 26 feet below existing site grades. However, depending upon depth of excavation and seasonal conditions, groundwater may be encountered in excavations on the site. Pumping from sumps may be utilized to control water within excavations.

On-site soils may pump or become unstable or unworkable at high water contents. Workability may be improved by scarifying and drying, this condition is likely as excavations approach groundwater conditions. Overexcavation of wet zones and replacement with granular materials may be necessary. Lightweight excavation equipment may be required to reduce subgrade pumping.

Use of lime, fly ash, kiln dust, cement or geotextiles could also be considered as a stabilization technique. Laboratory evaluation is recommended to determine the effect of chemical stabilization on subgrade soils prior to construction.

4.2.3 Subgrade Preparation

Engineered fill placement below foundations and slabs should be performed in accordance with Sections 4.3 and 4.5.

Any newly placed fill used to raise the site to final construction grade can be used to meet the engineered fill zone requirement. If engineered fill is placed beneath the entire building footprints, consideration should be given to horizontally extending the fill a minimum distance of 5 feet beyond the outside edge of perimeter foundations. Consideration should be given to performing over-excavation operations prior to or in conjunction with final grading operations to avoid handling soil materials twice. For the clay and silt soils, extra processing may be required to provide a uniform moisture conditioned fill.

Exposed areas which will receive fill, once properly cleared, should be scarified to a minimum depth of 10 inches, conditioned to near optimum moisture content, and compacted.

Areas of loose/soft or unstable fill or native soils may be encountered at foundation bearing depth after excavation is completed for foundations. When such conditions exist beneath planned foundation areas, the subgrade soils should be surficially compacted prior to placement of the foundation system. If sufficient compaction cannot be achieved in-place, the soft soils should be removed and replaced as engineered fill. For placement of engineered fill below foundations, the

excavation should be widened laterally, at least eight (8) inches for each foot of fill placed below foundation base elevations. On-site clayey soils will likely require extra processing effort to provide a uniform, moisture-conditioned engineered fill material.

Subgrade soils beneath exterior slabs and pavements should be scarified; moisture conditioned and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until slab construction.

4.2.4 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than six inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer.

On-site or approved imported materials meeting the specification contained herein may be used as fill material for the following:

- general site grading
- foundation areas
- interior floor slab areas
- exterior slab areas
- foundation backfill
- pavement areas

Imported soils for use as fill material within the proposed building and structure areas should conform to low volume change materials as indicated in the following specifications:

Gradation	Percent Finer by Weight (ASTM C 136)
6"	100
3”	70-100
No. 4 Sieve	50-100
No. 200 Sieve	50 (max)

- Liquid Limit ..... 35 (max)
- Plasticity Index ..... 20 (max)
- Maximum expansive potential (%)* 1.0

*Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 100 psf surcharge and submerged/inundated.

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed 10 inches loose thickness.

4.2.5 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
On-site or approved imported fill soils:			
Beneath foundations	95	-3%	+3%
Beneath slabs	95	-3%	+3%
Beneath pavements	95	-3%	+3%
Aggregate base (if used)	95	-3%	+3%
Miscellaneous backfill	90	-3%	+3%

4.2.6 Shrinkage

For balancing grading plans, estimated shrink or swell of soils and bedrock when used as compacted fill following recommendations in this report are as follows:

Estimated Shrink/Swell	
Soil Type	**Based on ASTM D698**
Clays	-10% to 20%
Sands	-15% to 25%
Volcanic Tuff Bedrock	-15% to 25%

4.2.7 Slopes

For permanent slopes in compacted fill and cut areas with maximum estimated heights of about 8 to 12 feet, recommended maximum configurations for on-site materials are as follows:

Maximum Slope Configuration	
Soil Type	**Horizontal: Vertical (H: V)**
Clays	3H:1V
Sands	2H:1V
Volcanic Tuff Bedrock	1.5H:1V

If steeper slopes are required for site development, we recommend the use of retaining walls/systems comprised of mechanically stabilized earth (MSE) retaining walls, soil nails, or cast-

in-place (CIP) retaining walls. Recommendations and design criteria for MSE and CIP retaining walls are outlined in subsequent sections of this report.

The face of all slopes should be compacted to the minimum specification for fill embankments. Alternately, fill slopes can be over-built and trimmed to compacted material.

4.2.8 Grading and Drainage

All grades must provide effective drainage away from the structures during and after construction. Water permitted to pond next to the structures can result in greater soil movements than those discussed in this report. These greater movements can result in unacceptable differential floor slab movements, cracked slabs and walls, and roof leaks. Estimated movements described in this report are based on effective drainage for the life of the structure and cannot be relied upon if effective drainage is not maintained.

Exposed ground should be sloped at a minimum three (3) percent away from the structures for at least five (5) feet beyond the perimeter of the buildings. After building or structure construction and landscaping, we recommend verifying final grades to document that effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary, as part of the structure's maintenance program.

Flatwork will be subject to post construction movement. Maximum grades practical should be used for flatwork to prevent water from ponding. Allowances in final grades should also consider post-construction movement of flatwork, particularly if such movement would be critical. Where paving or flatwork abuts the structures, effectively seal and maintain joints to prevent surface water infiltration.

4.2.9 Corrosion Potential

Laboratory test results indicate that on-site soils have a soluble sulfate concentration of non-detect to 120 mg/kg.

Results of soluble sulfate testing indicate that ASTM Type I or I/II Portland cement is suitable for all concrete on and below grade. Foundation concrete should be designed for low sulfate exposure in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 4.

4.3 Foundation Recommendations

The proposed buildings, retaining walls, trash dumpster enclosure walls and miscellaneous structures can be supported on a shallow spread/continuous footing foundation system, monolithic slab with turned down edges, or a post-tensioned slab. The footings and monolithic slab should bear on a zone of engineered fill/recompacted native soils. The post-tensioned slab can bear on undisturbed native soils or engineered fill. Design recommendations for foundations

for the proposed structure and related structural elements are presented in the following paragraphs.

4.3.1 Conventional Shallow Foundation Design Recommendations

DESCRIPTION	VALUE		
Foundation Type	Conventional Shallow Spread/Continuous Footings Monolithic Slab with Turned Down Edges		
Structures	Buildings	Retaining Walls	Trash Enclosure Walls/Misc. Small Structures
Bearing Material*	Minimum two (2) feet of engineered fill below footings	Minimum two (2) feet of engineered fill below footings	Minimum of one (1) foot of engineered fill below footings
Allowable Bearing Pressure	2,500 psf	2,500 psf	1,500 psf
Minimum Dimensions	Columns: 24 inches Walls: 16 inches		
Minimum Embedment Depth Below Finished Grade	Exterior - 36 inches Interior - 12 inches		
Total Estimated Movement	1 inch		
Estimated Differential Settlement	½ inch in 40 feet under walls and columns		

*Existing loose soils will require removal and recompaction. Engineered fill not required if volcanic tuff bedrock encountered at foundation bearing elevation.

Any newly placed fill used to raise the site to final construction grade can be used to meet the engineered fill zone requirement.

Finished grade is defined as the lowest adjacent grade within five (5) feet of the foundation for perimeter (or exterior) footings and finished floor level for interior footings. The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

Footings should be proportioned to reduce differential foundation movement. Proportioning on the basis of equal total settlement is recommended; however, proportioning to relative constant dead-load pressure will also reduce differential settlement between adjacent footings. Additional foundation movements could occur if water from any source infiltrates the foundation soils; therefore, proper drainage should be provided in the final design and during construction.

Footings, foundations, and/or masonry walls should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of joints at openings or other discontinuities in masonry walls is recommended.

Foundation excavations for each structure and engineered fill placement should be observed by the geotechnical engineer. If the soil or bedrock conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

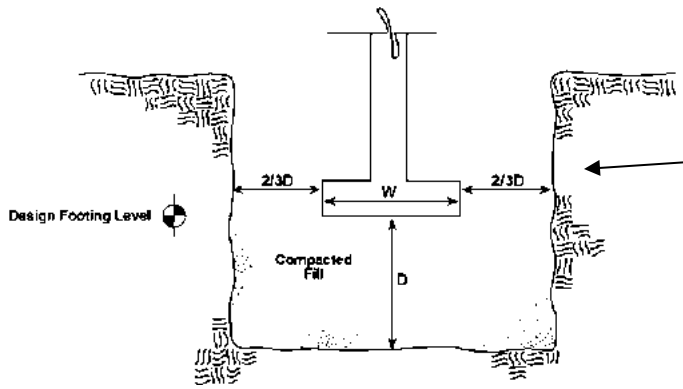
4.3.1.1 Conventional Shallow Foundation Construction Considerations

Engineered fill placement below and adjacent to foundations should be performed as outlined below:

DESCRIPTION	VALUE		
Location	Buildings	Retaining Walls	Trash Enclosure Walls/Misc. Small Structures
Engineered fill zone depth below foundations	Two (2) feet	Two (2) feet	One (1) foot
Engineered fill zone lateral distance beyond foundations	One (1) foot	One (1) foot	Not Applicable

If engineered fill is placed beneath the entire buildings and structures, consideration should be given to extending the engineered fill zone a minimum horizontal distance of five (5) feet beyond the outside edge of perimeter footings. Any fill used to raise the site to construction grade can be used to meet the engineered fill zone requirement. In addition, to reduce potential movement, we recommend the engineered fill be extended outside of the building to the new sidewalks/flatwork.

Areas of loose/soft or unstable soils may be encountered at foundation bearing depth after excavation is completed for footings. When such conditions exist beneath planned footing areas, the subgrade soils should be surficially compacted prior to placement of the foundation system. If sufficient compaction cannot be achieved in-place, the soft soils should be removed and replaced as engineered fill. The overexcavation and backfill procedure is described in the figure below.



Side walls should be sloped or braced for stability as required by OSHA.

4.3.2 Post-Tensioned Slab Foundation Design Recommendations

As an alternative to a conventional shallow foundation system, use of a post-tensioned slab is feasible for support of the proposed structures. The post-tensioned slab can bear on undisturbed native soils or engineered fill. Post-tensioned slabs should be designed using criteria outlined by the Post-Tensioning Institute[4] based on the following:

Post-tensioned Slab Design Parameter		PTI, Third Edition
Edge moisture variation distance, e_m (feet)	Center Lift Condition	9
	Edge Lift Condition	4.7
Differential soil movement, y_m (inches)	Center Lift Condition	1.0
	Edge Lift Condition	0.7

Description		Value
Bearing material		Undisturbed native soils
Maximum allowable bearing pressure (psf)		2,500
Slab-subgrade friction coefficient, μ	**on polyethylene sheeting**	0.75
	on cohesionless soils	1.00
	on cohesive soils	2.00

Post-tensioned slabs, thickened or turndown edges and/or interior beams should be designed and constructed in accordance with the requirements of the Post-Tensioning Institute (PTI) and the American Concrete Institute (ACI).

It should be noted that y_m is the estimated vertical movement at the edges of a uniformly loaded slab. These are theoretical values that are used in the design of post-tensioned slabs-on-grade

[4] Post-Tensioning Institute, **Design (and Construction) of Post-Tensioned Slabs-on-Ground**, (2004, Third Edition).

and do not represent the movements that would be expected from the actual loading conditions. The use of post-tensioned slabs assumes that some potential movement and cosmetic distress is considered acceptable.

The use of post-tensioned slabs for the project are contingent on the following:

- The post-tensioned slab foundation is properly designed and constructed.
- Approved materials supporting the foundation are properly placed and compacted.
- Proper surface drainage is maintained throughout the life of the structures.
- Managed landscaping measures are used.

Proper drainage should be provided on the design and during construction to reduce potential movement. Water intensive landscaping should be avoided within about 5 feet from foundation walls.

If incorporated into the design, the presence of 1 to 2-foot steps within long spans of post-tensioned slabs could create a situation where the slabs at different elevations perform independently of one another unless the steps are properly reinforced and designed to tie the slabs together to act as one rigid structure. Therefore, if a stepped foundation is used, we strongly recommend that joints be designed within the full height of the building over each step in order to reduce the impacts of differential movements on the order of 1 inch.

The structural engineer should reinforce and design the foundation to accommodate differential loading conditions and possible “punching” and “shearing” across lightly loaded to moderately loaded foundation areas and at transition areas of concentrated loads.

Masonry walls (if applicable) should be detailed and reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of joints at openings or other discontinuities in masonry walls is recommended.

Foundation excavations for each structure and engineered fill placement should be observed by the geotechnical engineer. If the soil or bedrock conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

4.3.2.1 Post-Tensioned Slab Construction Considerations

Caving soils are present on this site. If “neat line” (earth forms) excavation operations are performed for exterior or interior beams, and/or thickened slab sections, care should be exercised to avoid caving of the excavation sidewalls. If caving occurs, installation of foundation forms will be required to ensure proper foundation dimensions for construction.

The above outlined movement estimates should also be considered as the potential amount of tilting of the structures that could be caused by non-uniform, significant wetting of the subsurface materials below the post-tensioned slab. Failure to maintain soil water content below the slab and to maintain proper drainage around the structures will nullify the movement estimates provided above.

4.4 Seismic Considerations

DESCRIPTION	VALUE
2015 International Building Code Site Classification (IBC) [1]	C[2]
Site Latitude	N 35.8816°
Site Longitude	W 106.3144°
S_{Ms} Spectral Acceleration for a Short Period	0.648g
S_{M1} Spectral Acceleration for a 1-Second Period	0.271g
S_{Ds} Spectral Acceleration for a Short Period	0.432g
S_{D1} Spectral Acceleration for a 1-Second Period	0.181g
F_a Site Coefficient for a Short Period	1.181
F_v Site Coefficient for a 1-Second Period	1.634

[1] Note: In general accordance with the *2015 International Building Code,* Table 1613.5.2 and Chapter 20.3 of ASCE 7. IBC Site Class is based on the average characteristics of the upper 100 feet of the subsurface profile.

[2]A shear wave velocity of 1,250 fps was calculated for the site based upon the shear wave velocity profile.

4.5 Floor Slab

4.5.1 Design Recommendations

The following design criteria and recommendations are applicable to floor slabs associated with the conventional shallow foundation system (excludes post-tensioned slabs)

DESCRIPTION	VALUE
Interior floor system	Slab-on-grade concrete (excludes post-tensioned slabs)
Floor slab support	Minimum two (2) feet of engineered fill
Subbase	Compacted subgrade/engineered fill
Modulus of subgrade reaction	200 pounds per square inch per inch (psi/in) (The modulus was obtained based on our experience with similar subgrade conditions, and estimates obtained from ACI design charts.)

Any newly placed fill used to raise the site to final construction grade can be used to meet the engineered fill zone requirement.

Construction of floor slabs directly on compacted fills composed of on-site soils or approved imported soils or prepared subgrade is considered acceptable for the project. Some movement of a slab-on-grade floor system is possible should the subgrade materials become elevated in moisture content due to the compression and expansion potential of the near surface soils. Additional slab movements could occur if water infiltrates the subgrade; therefore, proper drainage must be provided in the final design. To reduce potential slab movements, the subgrade soils should be prepared as outlined in the earthwork section of this report. If engineered fill is placed beneath the entire buildings, consideration should be given to extending the engineered fill zone a minimum horizontal distance of five (5) feet beyond the outside edge of perimeter footings.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

Positive separations and/or isolation joints should be provided between slabs, columns or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

The use of a vapor retarder or barrier should be considered beneath concrete slabs-on-grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.5.2 Construction Considerations

Some differential movement of a slab-on-grade floor system is possible should the subgrade soils become elevated in moisture content. Such movements are anticipated to be within general tolerance for normal slab-on-grade construction. To reduce potential slab movements, the floor system should be supported on a zone of engineered fill a minimum of two (2) feet in thickness. Any existing fill or newly placed fill used to raise the site to construction grade can be used to meet the engineered fill zone requirement.

4.6 Lateral Earth Pressures

4.6.1 Design Recommendations

For soils above any free water surface, recommended equivalent fluid pressures for unrestrained foundation elements when using on-site soils as backfill are:

ITEM	SOIL TYPE	VALUE
Active Case	On-site, imported sand soils and volcanic tuff bedrock On-site clay soils	35 psf/ft 45 psf/ft
Passive Case	On-site, imported sand soils and volcanic tuff bedrock On-site clay soils	400 psf/ft 325 psf/ft
At-Rest Case	On-site, imported sand soils and volcanic tuff bedrock On-site clay soils	55 psf/ft 65 psf/ft
Coefficient of Base Friction	All soils Volcanic tuff bedrock	0.35[1] 0.55[2]

[1]Note: The coefficient of base friction should be reduced to 0.30 when used in conjunction with passive pressure.
[2]Note: The coefficient of base friction should be reduced to 0.50 when used in conjunction with passive pressure.

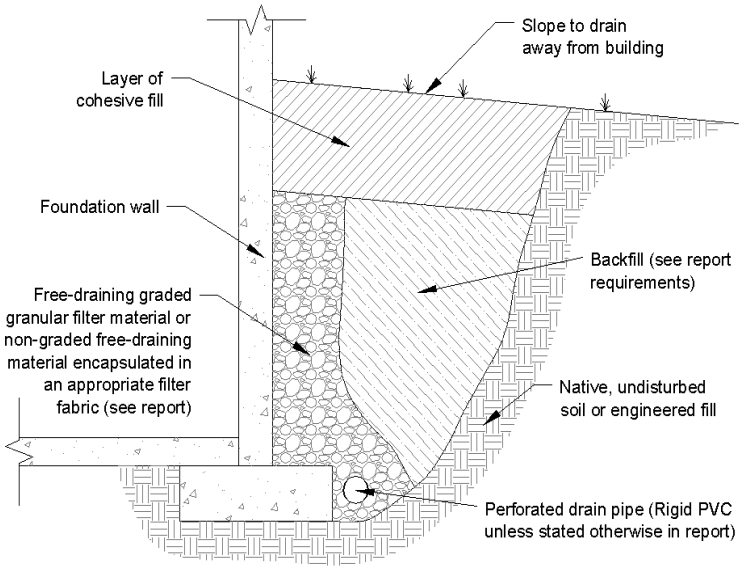
The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Fill against foundations (if applicable) should be compacted to densities specified in the Earthwork section of this report. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors.

4.6.2 Construction Considerations

To control the water level behind cast-in-place retaining walls, we recommend a perimeter drain be installed at the foundation level as shown on the adjacent conceptual sketch and described in the following notes.

- Free-draining granular backfill in this case should consist of ASTM D448 No. 57 Stone or other coarse granular material with less than 5 percent passing the No. 200 sieve. The free-draining material should be encapsulated in a filter fabric.
- Perforated pipe should be rigid PVC, sized to transport the expected water.
- Drainage pipe could be omitted if weep holes that are hydraulically connected to the granular drainage material are installed through the face of the wall, and the discharge water is conveyed away from the wall or other structures.
- Exterior ground surface should consist of a 12 inch clay cap sloped to drain from walls. The clay cap can be replaced by a pavement section



4.7 Mechanically Stabilized Earth Retaining Walls

Mechanically stabilized earth (MSE) walls are typically subcontracted as design-build structures, since design details are often manufacturer specific. Established design methods for modular block walls address local and internal stability, but do not specifically address the global stability of the wall system. Therefore, we recommend the following general and specific considerations be included in the project specifications for the wall design.

Internal stability analyses should conform to the latest design methodology accepted for use by the Federal Highway Administration (FHWA), AASHTO or the National Concrete Masonry Association (NCMA). Since these analysis procedures are based on the use of drained strength parameters, the backfill used for the geogrid reinforced backfill section should be a drainable, granular material to conform with the assumptions of the analysis. Cohesive soil or granular material containing high amounts of fines are not considered drainable and should not be allowed in the geogrid reinforced backfill zone unless provisions are made to provide backslope and surface drainage that would prevent water from entering the backfill. The designer should state in the construction specifications the backfill material description and design strength parameters so that unsuitable materials are not allowed in the backfill zone during construction.

Global stability of the wall system should be analyzed using both drained and undrained strength parameters. Parameters used in the analysis should not exceed those given in the following table for the native and fill materials encountered, or anticipated to be placed, on site for the project. These parameters are based on laboratory testing performed as part of this study and/or our past

experience with similar materials. Confirmatory testing is recommended. The wall contractor/designer should be required to provide the global stability analyses based on the planned final cross section, including the topography above and below the wall, using the generalized subsurface stratigraphy discussed in this report. Terracon should be provided the opportunity to review and comment on the wall system design and analysis prior to construction. Testing and monitoring during construction by qualified geotechnical personnel is recommended.

Recommended Strength Parameters				
Material Type	**Total Stress (Undrained) Parameters**		**Effective Stress (Drained) Parameters**	
	c_u, (psf)	**φ, (degrees)**	**c', (psf)**	**φ', (degrees)**
Foundation Soils	100 (sands) 250 (clays) 350 (bedrock)	30 (sands) 28 (clays) 36 (bedrock)	0	30 (sands) 28 (clays) 36 (bedrock)
Reinforced Backfill*	100	34	0	34
Retained Backfill	50 (sands) 100 (clays) 100 (bedrock)	30 (sands) 28 (clays) 34 (bedrock)	0	30 (sands) 28 (clays) 34 (bedrock)

*Sand and processed volcanic tuff bedrock only

4.8 Pavements

Existing fill soils will require removal and recompaction prior to new construction.

4.8.1 Design Recommendations

Pavement sections based upon a more detailed pavement design could be provided if specific traffic loading, frequencies, and desired pavement design life are provided.

The design approach used to populate the table outlined below was based on the National Asphalt Pavement Association (NAPA), which is specific to low volume pavements. Portland Cement Concrete (PCC) pavement thicknesses were based on the American Concrete Institute (ACI) design recommendations.

The design of pavement thickness was based on the following:

- Traffic Class I for the light duty traffic areas include a maximum of 7,000 design EALs
- Traffic Class II for the heavy duty traffic areas include a maximum 27,000 design EALs

- A soil characterization of "poor to good" based on the subgrade soils encountered at the site
- A design life of 20 years

As a minimum, we recommend that the following typical pavement sections be considered.

Traffic Area	Alternative	Recommended Pavement Section Thickness (inches)			
		Asphalt Concrete Surface	Portland Cement Concrete	Aggregate Base Course	Total
Light Duty - Parking Areas	A	2-½	---	6	8-½
	B	---	5*	---	5*
Heavy Duty – Interior/ Main Drives & Truck Access Areas	A	4	---	6	10
	B	---	5-½	---	5-½

*Minimum per ACI

These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

Each alternative should be investigated with respect to current material availability and economic conditions. Rigid concrete pavement is recommended in areas of truck traffic and truck turning areas. Concrete, a minimum of 6 inches in thickness, is recommended at the location of dumpsters where trash trucks will park and load

4.8.2 Construction Considerations

Pavement materials and placement should conform to New Mexico State Department of Transportation Standard Specifications for Highway and Bridge Construction (2014 Edition).

Aggregate base course (if used on the site) should consist of a blend of sand and gravel which meets strict specifications for quality and gradation. Use of materials meeting NMDOT specifications is recommended. Aggregate base course material should be tested to determine compliance with these specifications prior to importation to the site.

Asphalt concrete (if used on the site) should be obtained from an approved mix design stating the properties, optimum asphalt content, job mix formula, and recommended mixing and placing temperatures. Asphalt concrete should conform to NMDOT specifications. Aggregate used in asphalt concrete should meet a particular gradation. Use of materials meeting New Mexico State Department of Transportation SP-III or SP-IV specifications are recommended. The mix design should be submitted prior to construction to verify its adequacy. The asphalt materials should be

placed in minimum and maximum lifts of 2-½ and 3-½ inches, respectively, and should be compacted to a minimum of 92% to a maximum of 97% percent of maximum theoretical density (ASTM D2041).

Portland cement concrete should conform to NMDOT specifications. Future performance of pavements constructed at this site will depend upon several factors, including maintaining stable moisture content of the subgrade soils and providing for a planned program of preventative maintenance.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

Pavement design methods are intended to provide structural sections with adequate thickness over a particular subgrade such that wheel loads are reduced to a level that subgrade can support. The support characteristics of the subgrade for pavement design do not account for the shrink movements of the soils encountered on this project. Thus the pavement may be adequate for a structural standpoint, yet still experience cracking and deformation due to shrink related movement of the subgrade. It is, therefore, important to minimize moisture changes in the subgrade to reduce collapse/consolidation movements.

Future performance of pavements constructed at this site will be dependent upon several factors, including:

- Maintaining stable moisture content of the subgrade soils.
- Providing for a planned program of preventative maintenance.

The performance of all pavements can be enhanced by minimizing excess moisture which can reach the subgrade soils. The following recommendations should be considered at the minimum:

- site grading at a minimum 2% grade away from the pavements;
- the subgrade and the pavement surface have a minimum ¼ inch per foot slope to promote proper surface drainage.
- consider appropriate edge drainage and pavement under drain systems,
- install pavement drainage surrounding areas anticipated for frequent wetting
- install joint sealant and seal cracks immediately,
- compaction of any utility trenches for landscaped area to the same criteria as the pavement subgrade.
- seal all landscaped areas in, or adjacent to pavements to minimize or prevent moisture migration to subgrade soils;

- placing compacted, low permeability backfill against the exterior side of curb and gutter; and
- placing curb, gutter and/or sidewalk directly on subgrade soils without the use of base course materials.

4.9 Swimming Pool

4.9.1 Design and Construction Recommendations

Shallow excavations into the on-site medium dense to dense soils are expected to be accomplished with conventional earthwork equipment. However, very dense soils and/or hard to very hard volcanic tuff bedrock was encountered at relatively shallow depths beneath the site. Excavations into these materials will require extra effort, heavy duty or specialized excavation equipment to advance excavations. A qualified contractor with experience in the area and similar soil and bedrock conditions should review the data contained in this report and determine the means and methods to accomplish the required excavation depths at the site.

The swimming pool should be bedded on a layer of free-draining granular material to provide a solid base for construction. A clean material with a maximum 1-1/2-inch size and a minimum 3/8-inch size is recommended.

To reduce potential movement of the deck slab surrounding the pool, we recommend that the deck slab be supported on a zone of engineered fill/recompacted native soils. The recommended thickness of engineered fill/recompacted native soils is 1 foot. Adequate pool and deck drains will need to be incorporated into the final design to mitigate subsurface water infiltration to the soils. Loose soils will require removal and recompaction prior to new construction.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation, and pavement construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be

immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, and bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

FIELD EXPLORATION

SITE LOCATION

The Hill Apartments ■ Los Alamos, NM
April 12, 2019 ■ Terracon Project No. 66185216

Terracon GeoReport

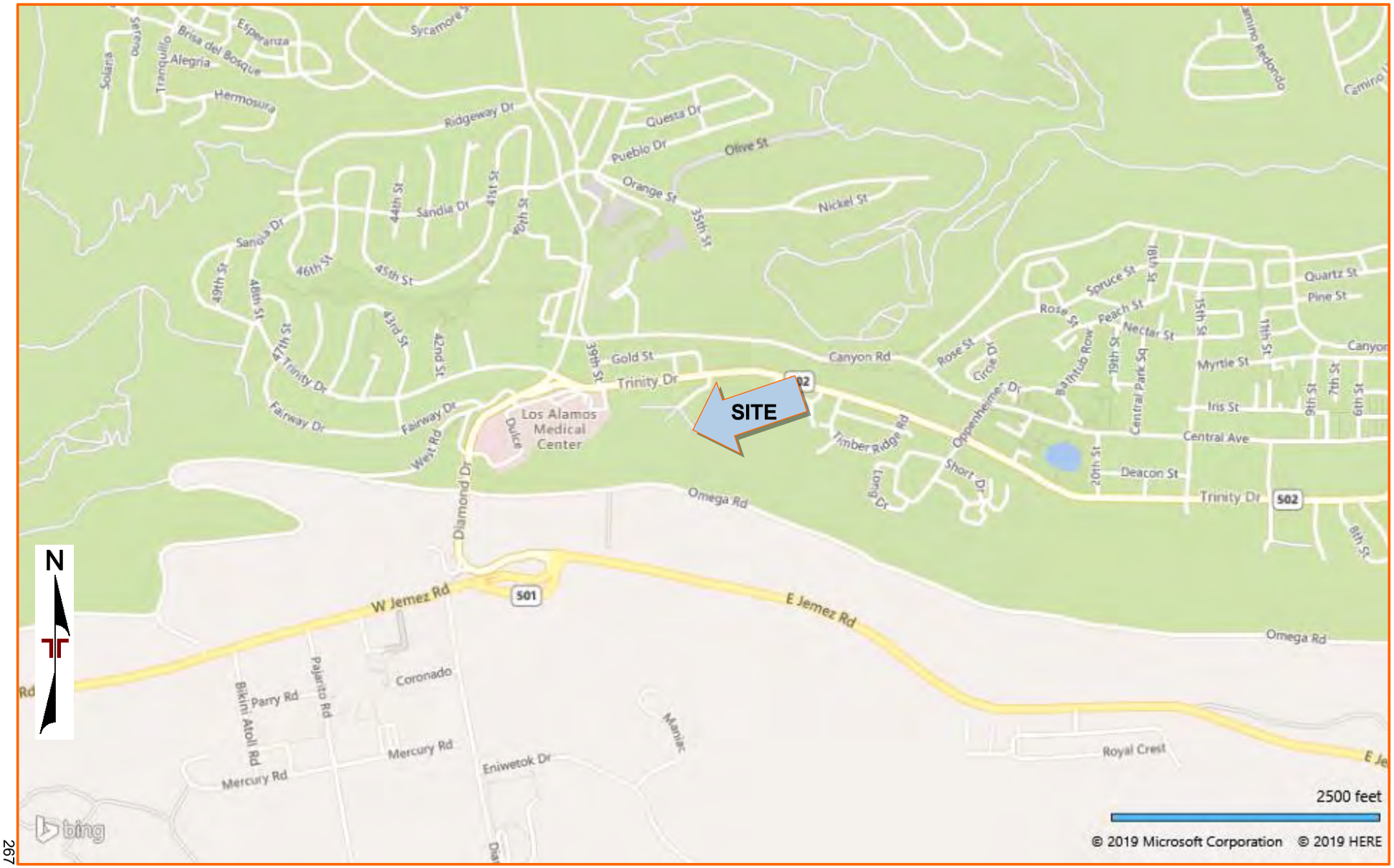


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

The Hill Apartments ■ Los Alamos, NM

April 12, 2019 ■ Terracon Project No. 66185216

Approximate shear wave velocity profile test

Approximate boring location

NOTE: B-01, B-13 through B15, P-04 and P-05 not drilled due to site access limitations.

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Field Exploration Description

Fourteen (14) test borings were drilled at the site on March 13 and 14, 2019. The borings were drilled to depths of approximately 6 to 26 feet below the ground surface at the approximate locations shown on the attached Site Location Map and Boring Location Plan. The test borings were located as follows:

Borings	Location	Depths (feet)
B-02 thru B-12	Buildings	21 to 26
P-01 thru P-03	Pavement Areas	5 to 6-½

*Originally designated Boring Nos. B-01, B-13 through B-15 and P-04 and P-05 not drilled due to site access limitations. See note below regarding shear wave velocity analysis

The test borings were advanced with a truck-mounted CME-75 drill rig utilizing 8-inch diameter hollow-stem augers.

The borings were located in the field by using the proposed site plan and measuring from existing property lines and adjacent structures/elements. Coordinates at each boring location were determined from a hand-held GPS unit. The accuracy of boring locations should only be assumed to the level implied by the method used.

Lithologic logs of the borings were recorded by the geotechnical field technician during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

A CME automatic SPT hammer was used to advance the split-barrel sampler in the borings performed on this site. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

Groundwater conditions were evaluated in the borings at the time of site exploration.

To assess boring locations not accessible to truck-mounted drilling equipment and to determine the seismic site characterization (Soil Site Class) per the 2015 International Building Code (IBC), a micro-tremor, soil profile shear wave analyses was performed at the site to investigate the shear wave velocity profile in the upper 100 feet of the soil profile.

BORING LOG NO. B-02

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8813° Longitude: -106.3154°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), dark brown, very dense								
	2.0 **VOLCANIC TUFF**, brown to purple, medium hard to very hard								
					50/2"	9			
		5			50	10	100	NP	11
		10			18-38-34 N=72	11			
		15			30-50/5"	6			
		20			35-50/1"	7			
	25.7	25			31-50/2"	6			
	Boring Terminated at 25.67 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-13-2019 | Boring Completed: 03-13-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-03

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8816° Longitude: -106.3151°

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**ASPHALT CONCRETE - 2"**								
0.3	**AGGREGATE BASE COURSE - 2"**								
	SILTY SAND WITH GRAVEL (SM), with volcanic tuff fragments, tan to purple, medium dense								
					50	11	90	NP	21
5.0	**VOLCANIC TUFF**, grey to purple, medium hard to very hard	5			20-35-35 N=70	8			
		10			28-50/4"	9			
		15			33-50/5"	7			
		20			27-42-50/5"	10			
21.4	***Boring Terminated at 21.42 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-13-2019 | Boring Completed: 03-13-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-04

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8817° Longitude: -106.3149°

DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**ASPHALT CONCRETE - 2"**								
0.3	**AGGREGATE BASE COURSE - 2"**								
	CLAYEY SAND (SC), dark brown, loose								
					17	19		31-21-10	49
		5			8	22	63		
8.0	**VOLCANIC TUFF**, purple to grey, very hard								
		10			57-45-92 N=137	13			
		15			29-50/4"	8			
		20							
21.0	***Boring Terminated at 21 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-13-2019 | Boring Completed: 03-13-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-05

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8809° Longitude: -106.3147°

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**ASPHALT CONCRETE - 2"**								
0.3	**AGGREGATE BASE COURSE - 2"**								
	CLAYEY SAND (SC), with volcanic tuff fragments, brown to purple, medium dense								
					31	8	78		
4.0	**VOLCANIC TUFF**, with sand, brown to purple, medium hard to very hard								
		5			16-23-20 N=43	6		NP	32
		10			18-36-50 N=86	5			
		15			23-40-47 N=87	5			
		20			50/5"	5			
25.3		25			50/3"	6			
	Boring Terminated at 25.25 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-13-2019 | Boring Completed: 03-13-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-06

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8814° Longitude: -106.3141°

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**ASPHALT CONCRETE - 2"**								
0.3	**AGGREGATE BASE COURSE - 2"**								
	SILTY SAND WITH GRAVEL (SM), brown to dark brown, loose to medium dense								
				X	7-7-6 N=13	16		NP	33
		5			7	11	85		
8.0	**VOLCANIC TUFF**, brown to purple, medium hard to very hard								
		10		X	12-23-25 N=48	12			
		15		X	24-41-49 N=90	7			
		20		X	50/6"	6			
25.4		25		X	50/5"	7			
	Boring Terminated at 25.42 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-13-2019 | Boring Completed: 03-13-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-07

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8811° Longitude: -106.3147°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	**ASPHALT CONCRETE - 3"**								
0.4	**AGGREGATE BASE COURSE - 2"**								
	POORLY GRADED SAND (SP), light brown to brown, very dense			X	15-23-32 N=55	19			
4.0	**VOLCANIC TUFF**, brown to purple, medium hard to very hard	5			63	12	87	NP	11
		10		X	18-22-25 N=47	8			
		15		X	22-39-44 N=83	15			
		20							
21.0	***Boring Terminated at 21 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-13-2019 | Boring Completed: 03-13-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-08

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8814° Longitude: -106.3146°

DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**AGGREGATE BASE COURSE - 2"**								
	SILTY SAND WITH GRAVEL (SM), dark brown, medium dense								
					10-10-10 N=20	16		NP	26
		5			19	16	102		
8.0	**VOLCANIC TUFF**, purple, hard to very hard								
		10			23-29-33 N=62	15			
		15			20-35-50 N=85	7			
		20			33-50/2"	8			
25.4		25			50/5"	9			
	Boring Terminated at 25.42 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-13-2019	Boring Completed: 03-13-2019
Drill Rig: CME 75	Driller: EDI
Project No.: 66185216	Exhibit: A-10

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-09

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8809° Longitude: -106.3143°

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	**ASPHALT CONCRETE - 3"**								
0.4	**AGGREGATE BASE COURSE - 2"**								
	CLAYEY SAND (SC), dark brown, dense								
					7-22-19 N=41	15			
4.0	**WELL GRADED SAND WITH SILT (SW-SM)**, brown, dense								
		5			60	19	86	NP	11
8.0	**VOLCANIC TUFF**, trace sand, brown with red tint, medium hard to very hard								
		10			16-17-24 N=41	10			
		15			24-36-34 N=70	9			
		20			35-50/5"	8			
25.5		25			50/6"	7			
	Boring Terminated at 25.46 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-14-2019	Boring Completed: 03-14-2019
Drill Rig: CME 75	Driller: EDI
Project No.: 66185216	Exhibit: A-11

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-10

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8812° Longitude: -106.3139°

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**ASPHALT CONCRETE - 2"**								
0.4	**AGGREGATE BASE COURSE - 3"**								
	CLAYEY SAND (SC), brown, medium dense								
					22	25	86		
4.0	**SILTY SAND (SM)**, brown, medium dense								
		5			8-12-12 N=24	20		NP	49
8.0	**WELL GRADED SAND WITH GRAVEL (SW)**, with volcanic tuff, brown to grey purple, very dense								
		10			36-50/6"	6			
		15			25-32-44 N=76	9			
18.0	**VOLCANIC TUFF**, tan to pink, very hard								
		20			20-35-49 N=84	2			
		25			29-50/4"	3			
25.8	***Boring Terminated at 25.83 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-14-2019 | Boring Completed: 03-14-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-12

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-11

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8816° Longitude: -106.3144°

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**ASPHALT CONCRETE - 2"**								
0.3	**AGGREGATE BASE COURSE - 2"**								
	SANDY LEAN CLAY (CL), dark brown, very stiff			X	6-10-13 N=23	19		38-22-16	58
4.0	**CLAYEY SAND (SC)**, with volcanic tuff fragments, tan to purple, loose	5			18	13	98		
8.0	**VOLCANIC TUFF**, grey to purple, hard	10		X	18-25-35 N=60	5			
		15		X	20-28-28 N=56	5			
21.0		20							
	Boring Terminated at 21 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-14-2019 | Boring Completed: 03-14-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-13

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. B-12

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8818° Longitude: -106.3146°

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**ASPHALT CONCRETE - 2"**								
0.3	**AGGREGATE BASE COURSE - 2"**								
	SANDY LEAN CLAY (CL), brown to dark brown, very stiff			X	6-9-12 N=21	14		29-20-9	52
4.0	**CLAYEY SAND (SC)**, brown to dark brown, medium dense	5		X	22	12	102		
8.0	**VOLCANIC TUFF**, purple, very hard	10		X	15-26-20 N=46	5			
		15		X	17-36-50/5"	8			
		20		X	50/3"	6			
25.3		25		X	50/3"	8			
	Boring Terminated at 25.25 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-14-2019	Boring Completed: 03-14-2019
Drill Rig: CME 75	Driller: EDI
Project No.: 66185216	Exhibit: A-14

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. P-01

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8819° Longitude: -106.3153°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.2	**ASPHALT CONCRETE - 2"**								
	0.3	**AGGREGATE BASE COURSE - 2"**								
		SILTY SAND (SM), brown to purple, dense								
						10-21-24 N=45	14		NP	34
	4.0	**VOLCANIC TUFF**, purple, medium hard								
			5			50	12	83		
	5.8	***Boring Terminated at 5.83 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-14-2019	Boring Completed: 03-14-2019
Drill Rig: CME 75	Driller: EDI
Project No.: 66185216	Exhibit: A-15

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. P-02

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8811° Longitude: -106.315°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SILTY SAND WITH GRAVEL (SM), brown to purple, medium dense								
					33	7	82	NP	27
4.0	**VOLCANIC TUFF**, purple, firm								
		5			12-14-14 N=28	4			
6.5	***Boring Terminated at 6.5 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-14-2019	Boring Completed: 03-14-2019
Drill Rig: CME 75	Driller: EDI
Project No.: 66185216	Exhibit: A-16

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

BORING LOG NO. P-03

PROJECT: The Hill Apartments

CLIENT: LAH Investors, LLC
Santa Fe, NM

SITE: Trinity Drive and 35th Street
Los Alamos, NM

LOCATION See Exhibit A-2

Latitude: 35.8812° Longitude: -106.3142°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.2	**ASPHALT CONCRETE - 2"**								
	0.3	**AGGREGATE BASE COURSE - 2"**								
		SILTY SAND (SM), light brown to brown, medium dense to dense								
						5-15-16 N=31	19		NP	22
			5							
						50	23	82		
	6.0	***Boring Terminated at 6 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
4905 Hawkins St NE
Albuquerque, NM

Boring Started: 03-14-2019 | Boring Completed: 03-14-2019
Drill Rig: CME 75 | Driller: EDI
Project No.: 66185216 | Exhibit: A-17

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66185216 THE HILL APARTMEN.GPJ MODELLAYER.GPJ 4/12/19

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger	Shelby Tube	Split Spoon
Rock Core	Macro Core	Modified California Ring Sampler
Grab Sample	No Recovery	Modified Dames & Moore Ring Sampler

WATER LEVEL

- Water Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
N	N value
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

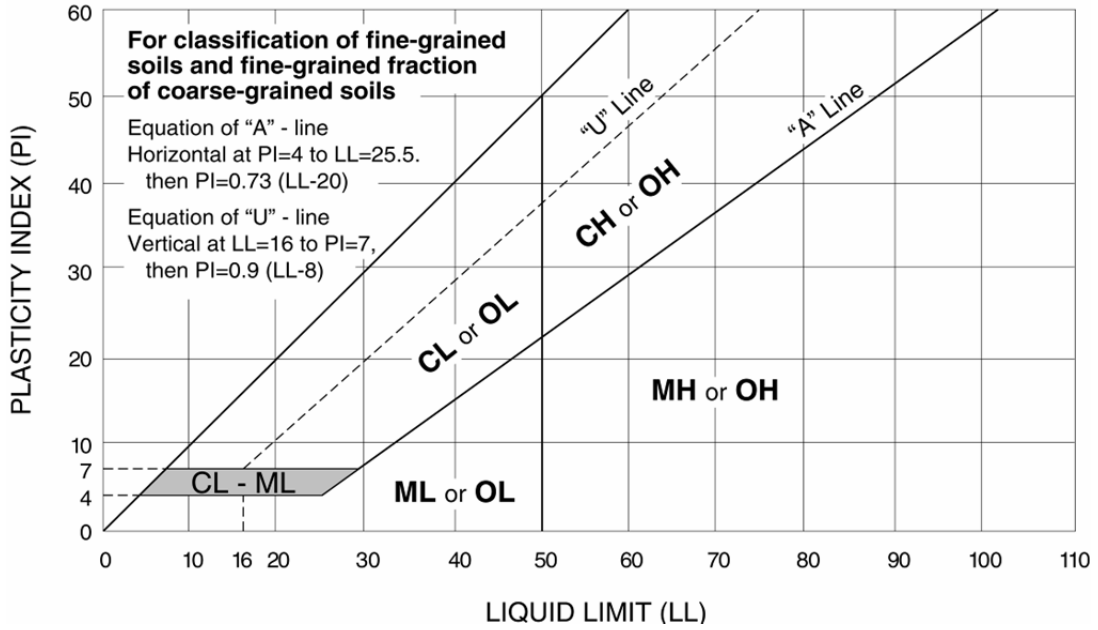
UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



APPENDIX B

LABORATORY TESTING

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix A. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

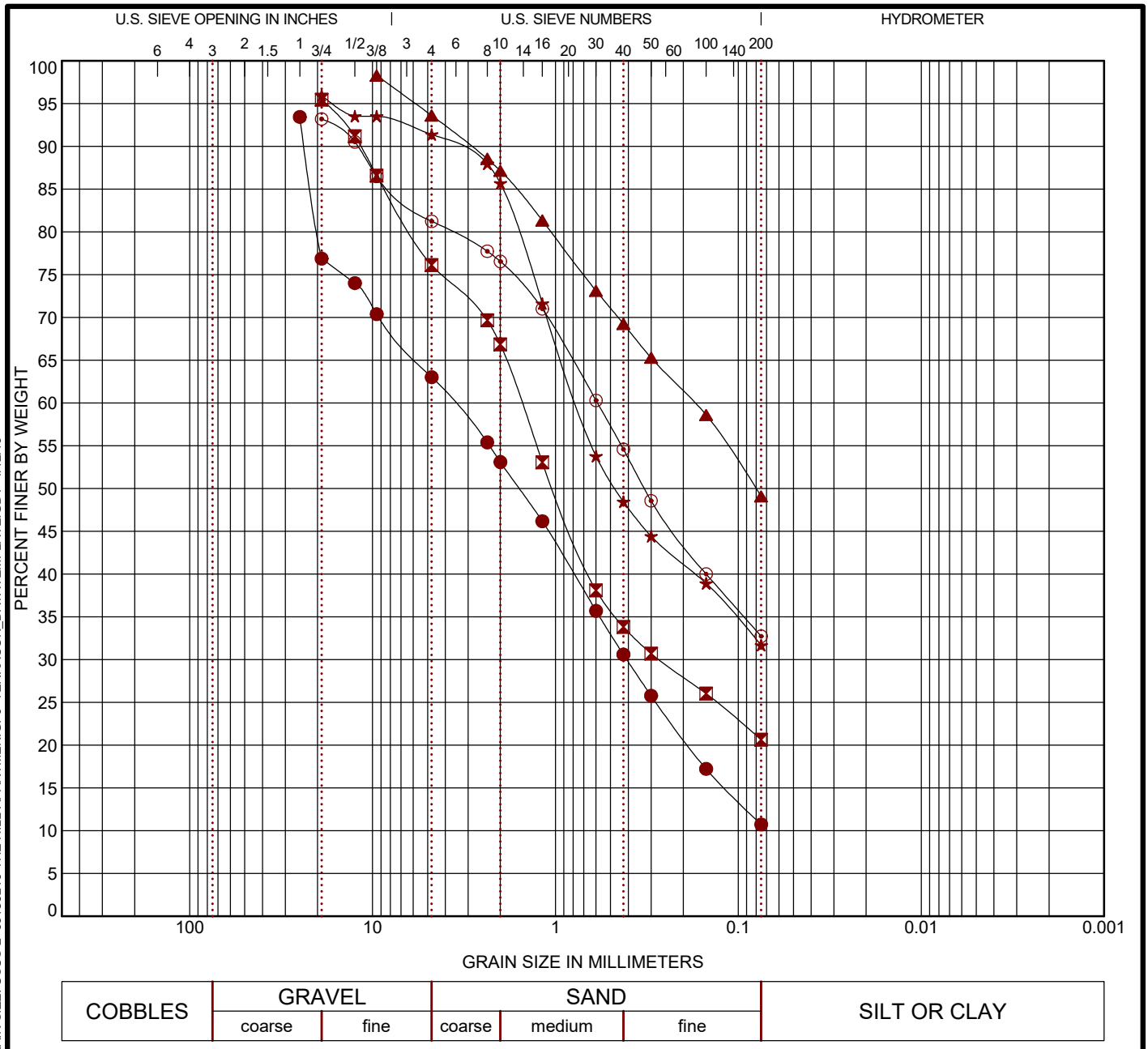
Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- Atterberg Limits
- Sieve Analysis
- Consolidation/Compression
- In-situ Water Content
- In-situ Dry Density
- Soluble Sulfates

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-02	5 - 5.8	POORLY GRADED SAND with SILT and GRAVEL (SP-SM)	10	NP	NP	NP	0.66	51.87
⊠	B-03	2.5 - 3.3	SILTY SAND with GRAVEL (SM)	11	NP	NP	NP		
▲	B-04	2.5 - 3.5	CLAYEY SAND (SC)	19	31	21	10		
★	B-05	5 - 6.5	SILTY SAND (SM)	6	NP	NP	NP		
⊙	B-06	2.5 - 4	SILTY SAND with GRAVEL (SM)	16	NP	NP	NP		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-02	5 - 5.8	25	3.603	0.407			30.4	52.3		10.7	
⊠	B-03	2.5 - 3.3	19	1.539	0.27			19.3	55.5		20.6	
▲	B-04	2.5 - 3.5	9.5	0.173				4.7	44.5		49.1	
★	B-05	5 - 6.5	19	0.76				4.6	59.7		31.7	
⊙	B-06	2.5 - 4	19	0.589				12.0	48.5		32.7	

PROJECT: The Hill Apartments

SITE: Trinity Drive and 35th Street
Los Alamos, NM

Terracon
4905 Hawkins St NE
Albuquerque, NM

PROJECT NUMBER: 66185216

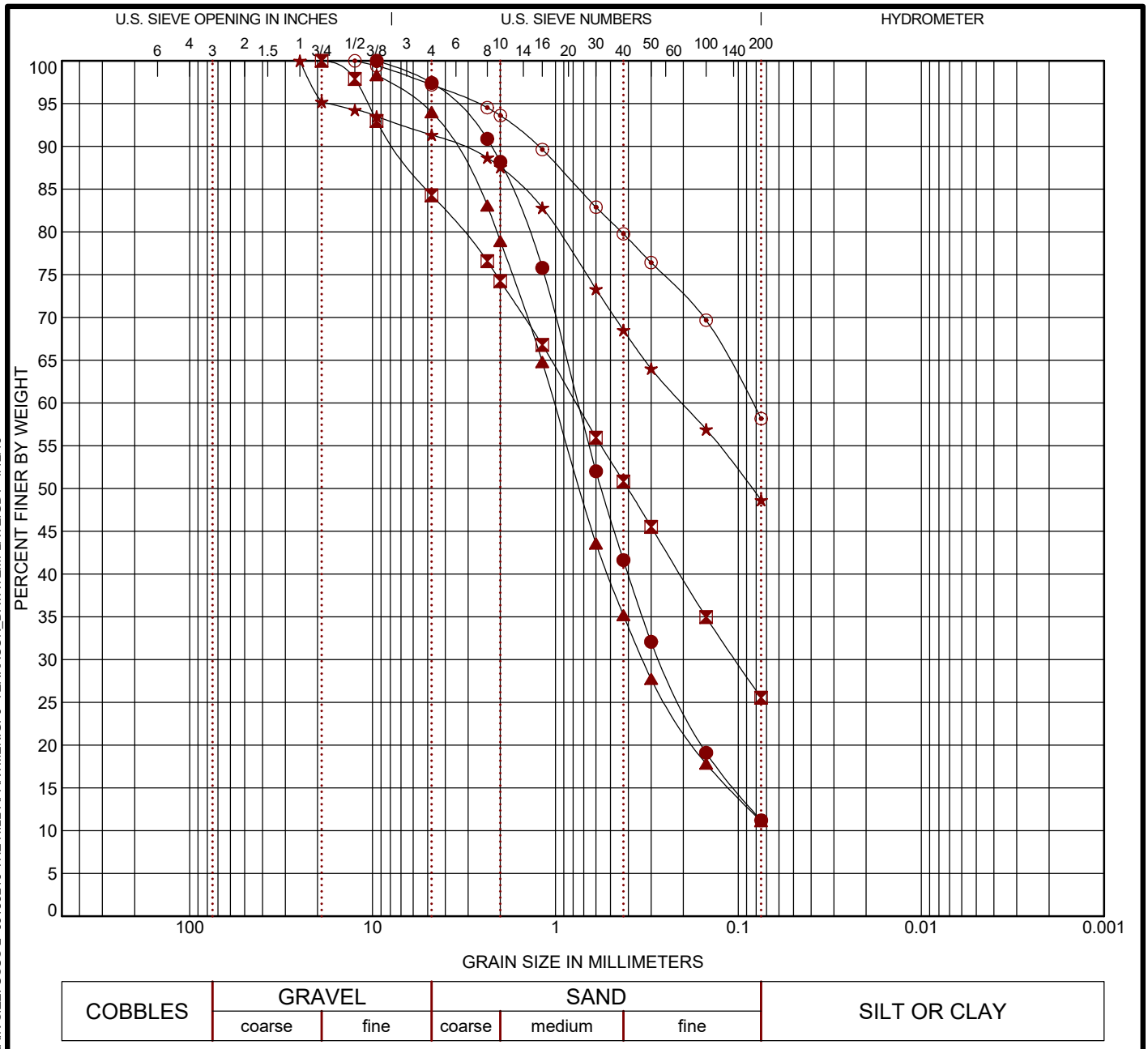
CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-2

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



	Boring ID	Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-07	5 - 6	WELL-GRADED SAND with SILT (SW-SM)	12	NP	NP	NP	1.42	11.16
⊠	B-08	2.5 - 4	SILTY SAND with GRAVEL (SM)	16	NP	NP	NP		
▲	B-09	5 - 6	WELL-GRADED SAND with SILT (SW-SM)	19	NP	NP	NP	1.64	15.13
★	B-10	5 - 6.5	SILTY SAND (SM)	20	NP	NP	NP		
⊙	B-11	2.5 - 4	SANDY LEAN CLAY (CL)	19	38	22	16		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-07	5 - 6	9.5	0.753	0.268		0.0	2.6	86.2		11.2	
⊠	B-08	2.5 - 4	19	0.773	0.104		0.0	15.7	58.7		25.5	
▲	B-09	5 - 6	9.5	1.013	0.333			4.3	82.9		11.1	
★	B-10	5 - 6.5	25	0.203			0.0	8.7	42.7		48.6	
⊙	B-11	2.5 - 4	12.5	0.084			0.0	2.8	39.0		58.2	

PROJECT: The Hill Apartments

SITE: Trinity Drive and 35th Street
Los Alamos, NM

Terracon
4905 Hawkins St NE
Albuquerque, NM

PROJECT NUMBER: 66185216

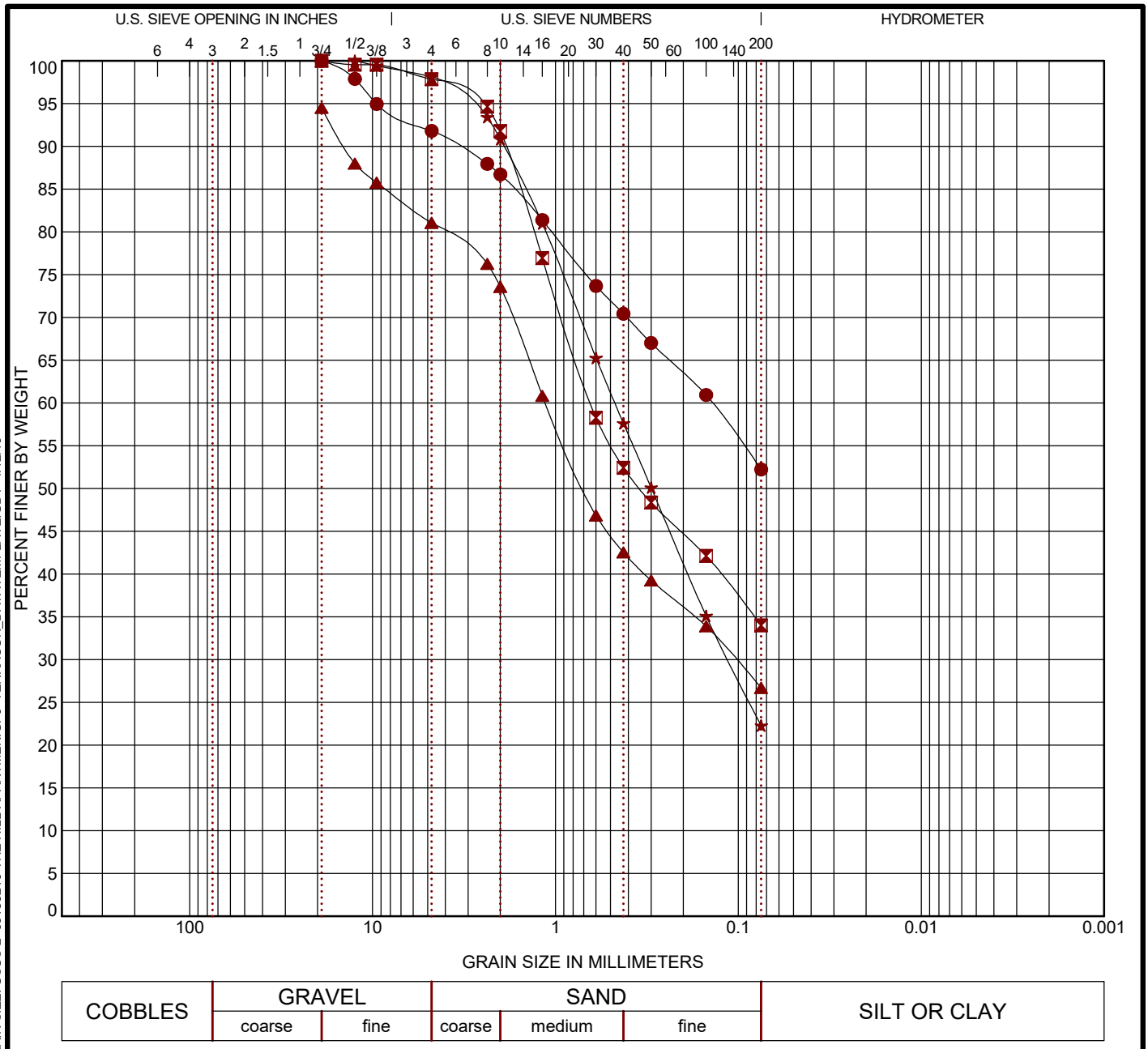
CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-12	2.5 - 4	SANDY LEAN CLAY (CL)	14	29	20	9		
⊠	P-01	2.5 - 4	SILTY SAND (SM)	14	NP	NP	NP		
▲	P-02	2.5 - 3.5	SILTY SAND with GRAVEL (SM)	7	NP	NP	NP		
★	P-03	2.5 - 4	SILTY SAND (SM)	19	NP	NP	NP		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-12	2.5 - 4	19	0.139			0.0	8.2	39.6		52.2	
⊠	P-01	2.5 - 4	19	0.639			0.0	2.2	63.9		34.0	
▲	P-02	2.5 - 3.5	19	1.133	0.103			13.4	54.4		26.7	
★	P-03	2.5 - 4	12.5	0.473	0.114		0.0	1.9	75.8		22.3	

PROJECT: The Hill Apartments

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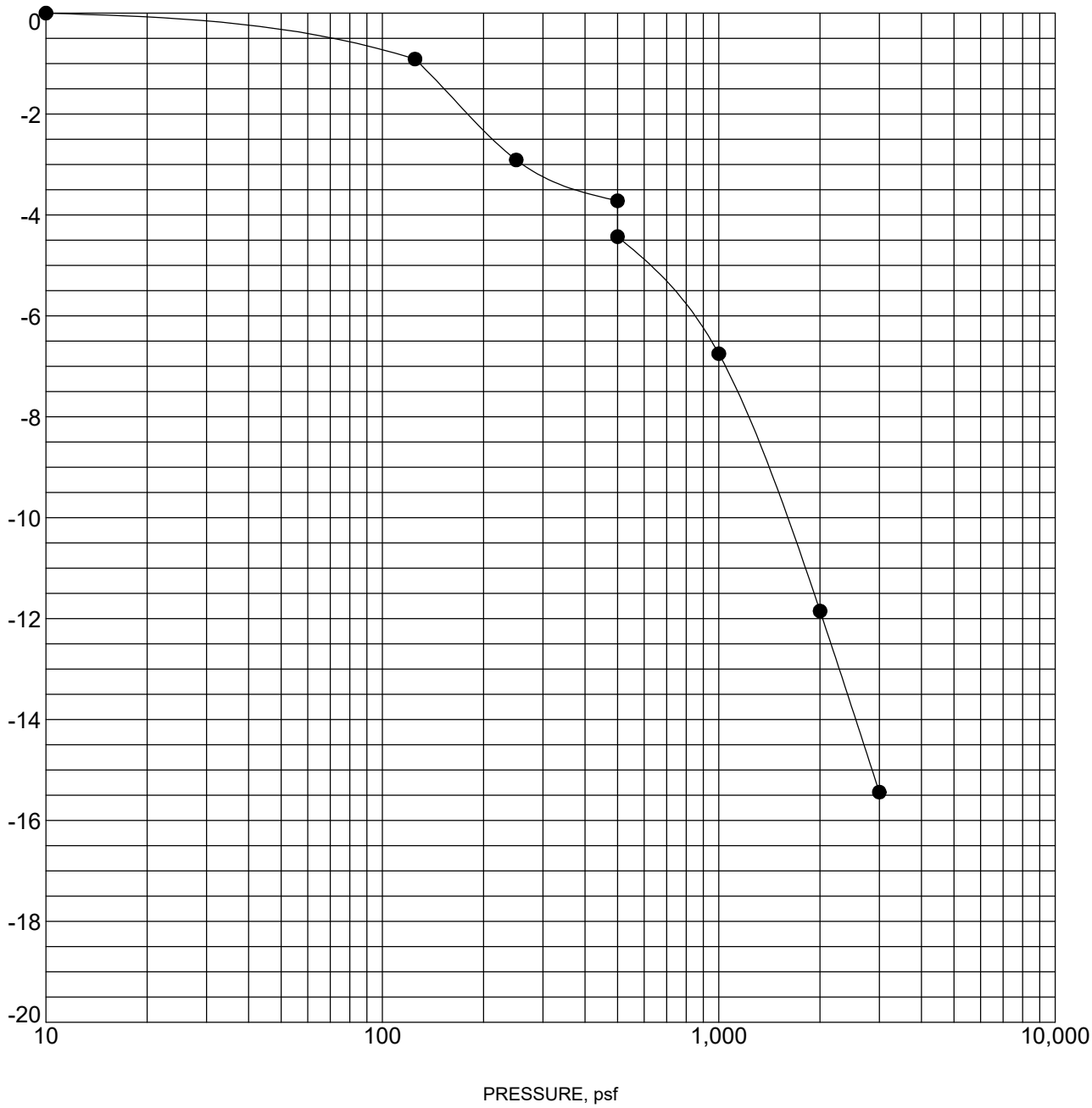
CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-04	5 - 6 ft	CLAYEY SAND(SC)	63	22

NOTES:

PROJECT: The Hill Apartments

SITE: Trinity Drive and 35th Street
Los Alamos, NM

Terracon
4905 Hawkins St NE
Albuquerque, NM

PROJECT NUMBER: 66185216

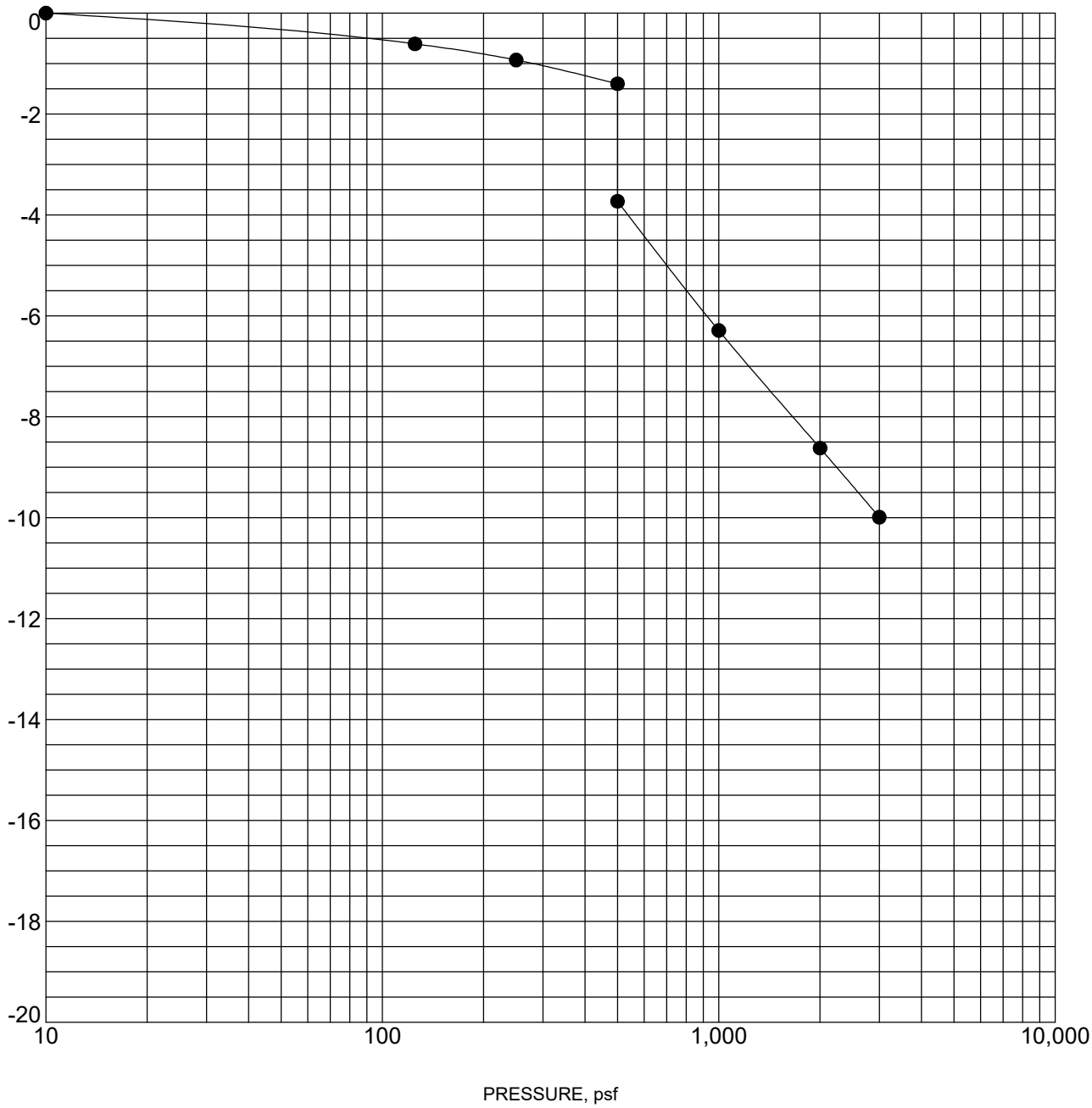
CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-1

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-06	5 - 6 ft	SILTY SAND with GRAVEL(SM)	85	11

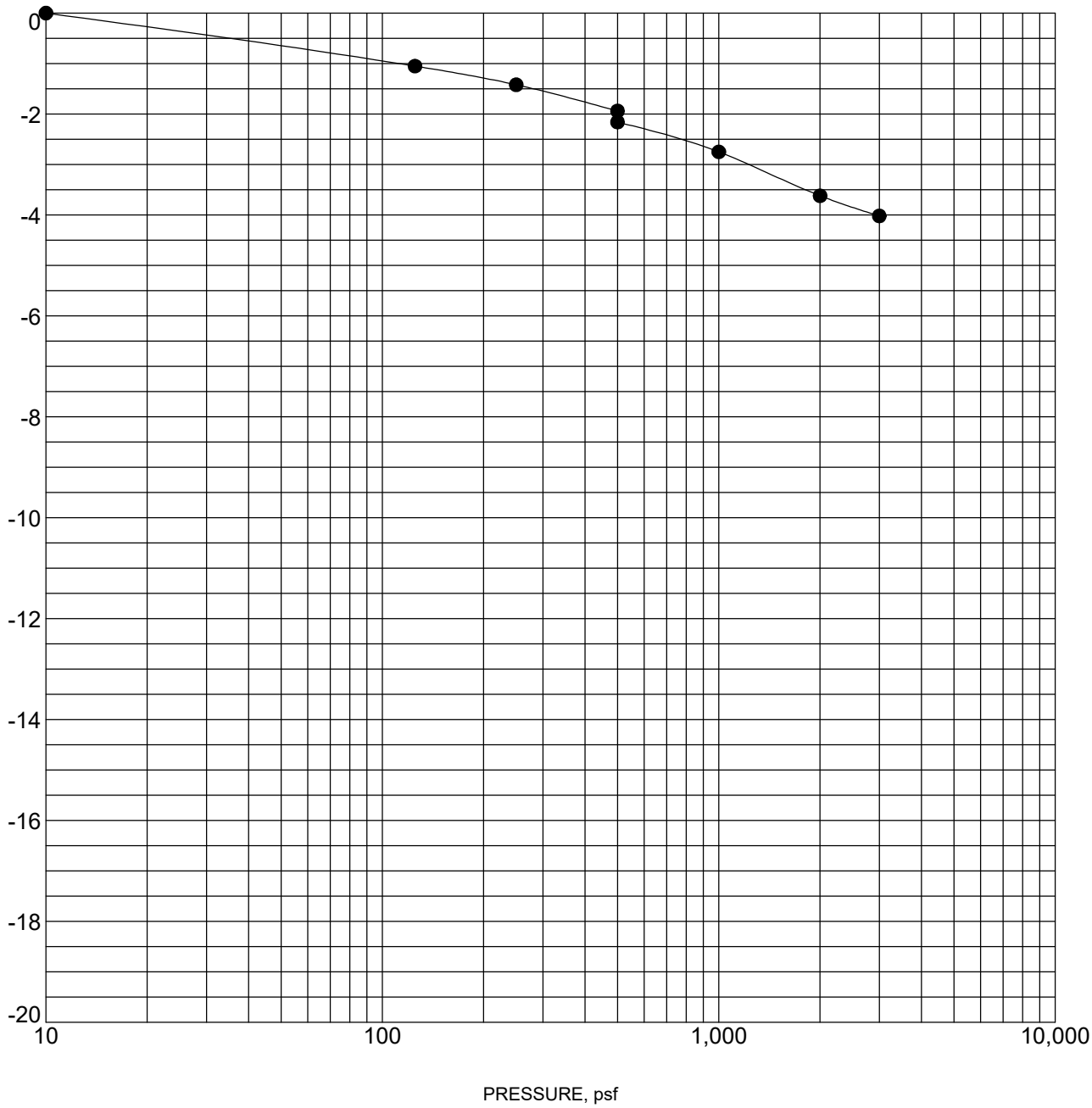
NOTES:

PROJECT: The Hill Apartments	Terracon 4905 Hawkins St NE Albuquerque, NM	PROJECT NUMBER: 66185216
SITE: Trinity Drive and 35th Street Los Alamos, NM		CLIENT: LAH Investors, LLC Santa Fe, NM
		EXHIBIT: B-2

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-08	5 - 6 ft	SILTY SAND with GRAVEL(SM)	102	16

NOTES:

PROJECT: The Hill Apartments

SITE: Trinity Drive and 35th Street
Los Alamos, NM

Terracon
4905 Hawkins St NE
Albuquerque, NM

PROJECT NUMBER: 66185216

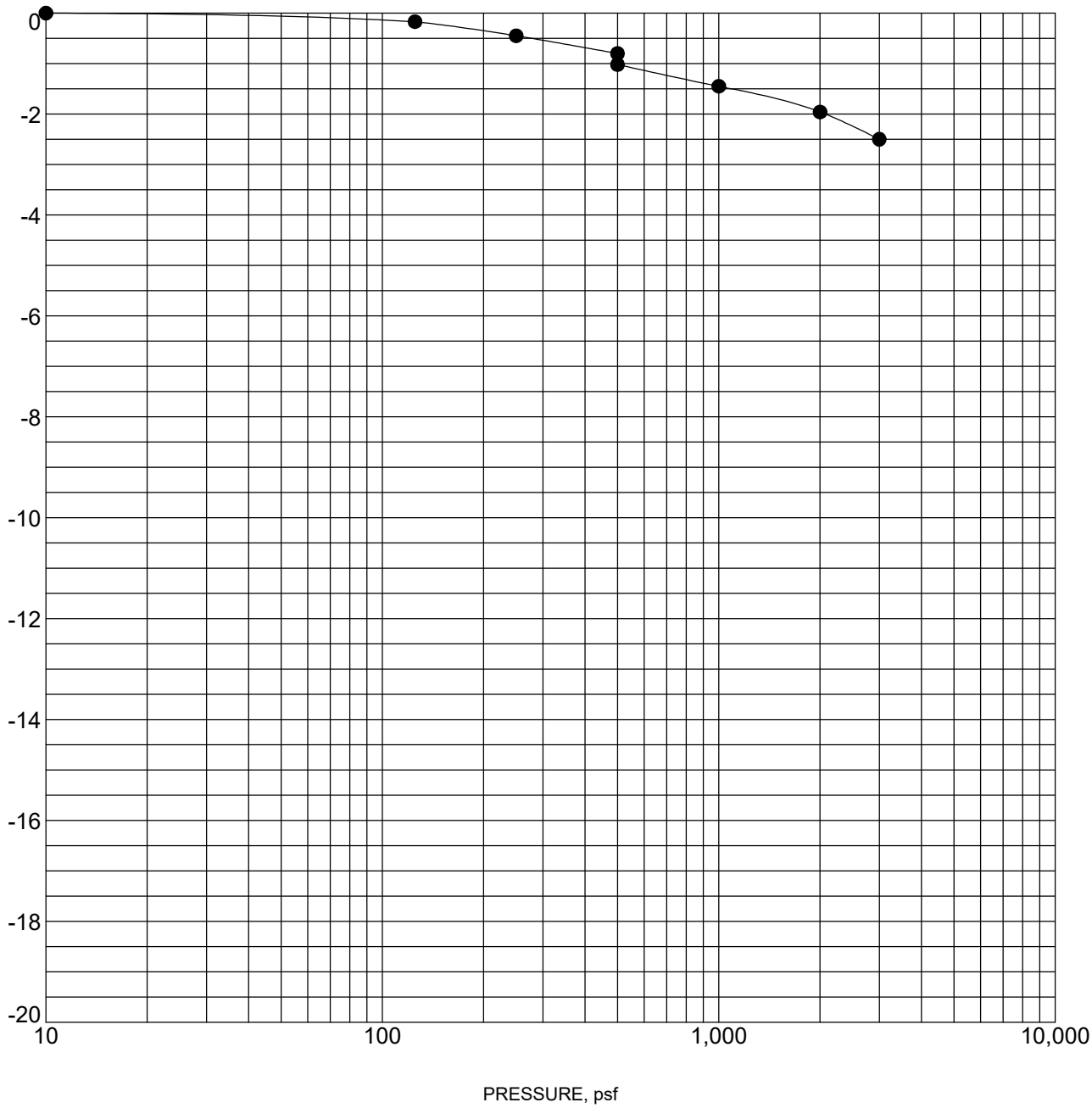
CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-10	2.5 - 3.5 ft	CLAYEY SAND(SC)	86	25

NOTES:

PROJECT: The Hill Apartments

SITE: Trinity Drive and 35th Street
Los Alamos, NM

Terracon
4905 Hawkins St NE
Albuquerque, NM

PROJECT NUMBER: 66185216

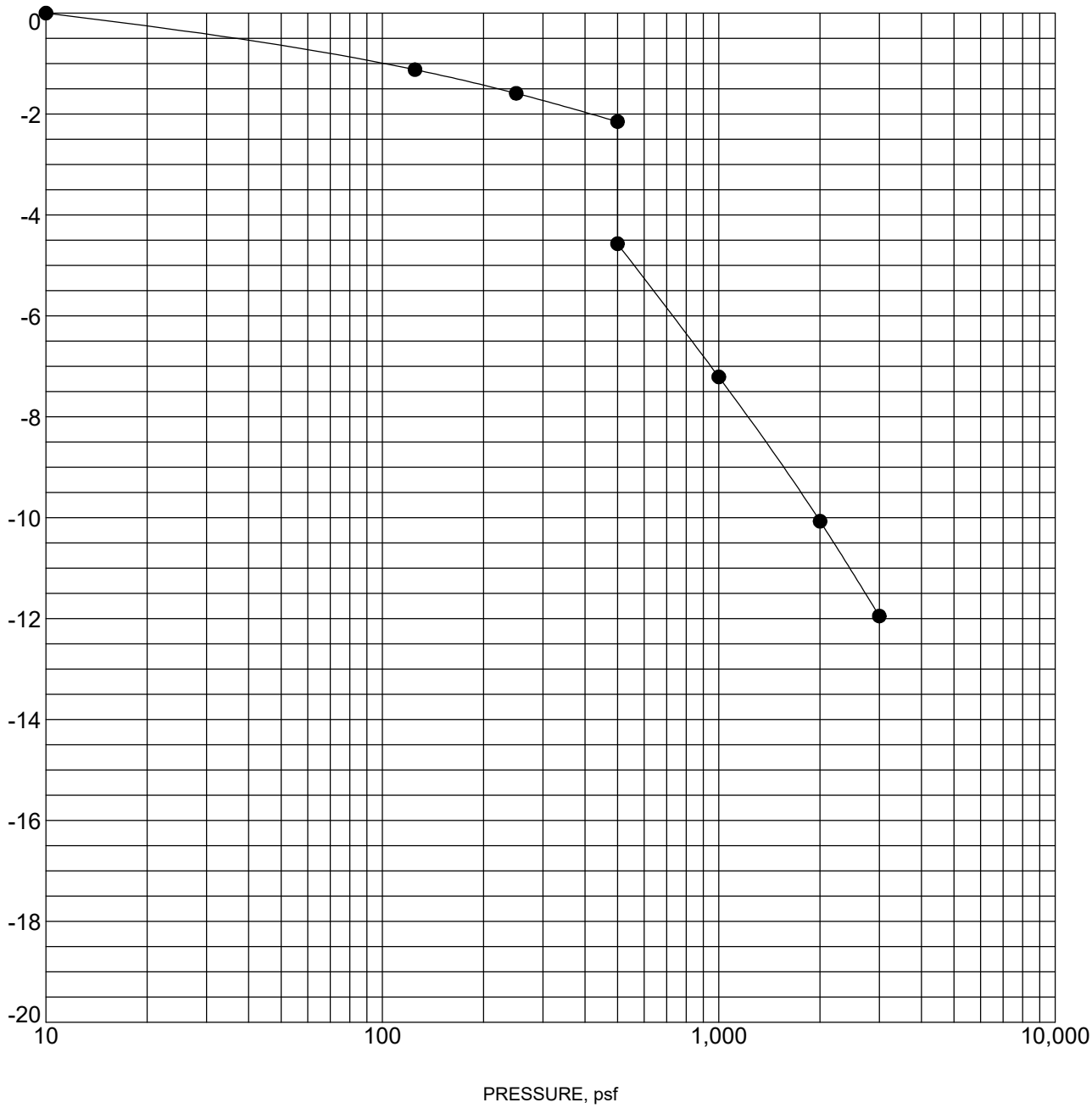
CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-11	5 - 6 ft	CLAYEY SAND(SC)	98	13

NOTES:

PROJECT: The Hill Apartments

SITE: Trinity Drive and 35th Street
Los Alamos, NM

Terracon
4905 Hawkins St NE
Albuquerque, NM

PROJECT NUMBER: 66185216

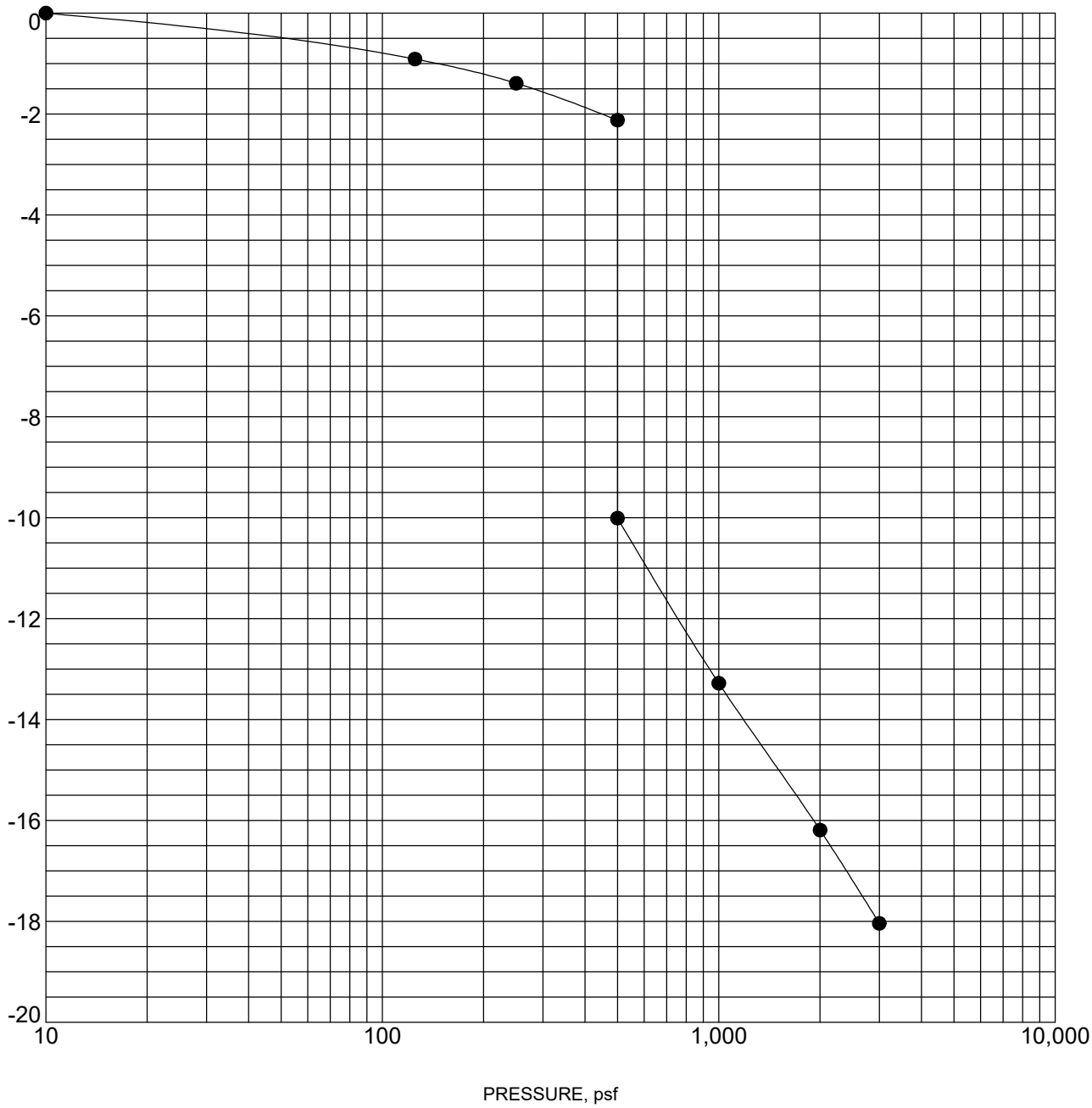
CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-12	5 - 6 ft	CLAYEY SAND(SC)	102	12

NOTES:

PROJECT: The Hill Apartments

SITE: Trinity Drive and 35th Street
Los Alamos, NM

Terracon
4905 Hawkins St NE
Albuquerque, NM

PROJECT NUMBER: 66185216

CLIENT: LAH Investors, LLC
Santa Fe, NM

EXHIBIT: B-6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66185216 THE HILL APARTMEN.GPJ TERRACON_DATATEMPLATE.GDT 4/12/19

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 05, 2019

Mike Anderson

Terracon
4905 Hawkins, NE
Albuquerque, NM 87109
TEL: (505) 797-4287
FAX: (505) 797-4288

RE: The Hill Apartments OrderNo.: 1904135

Dear Mike Anderson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 4/2/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order: **1904135**
Date Reported: **4/5/2019**

CLIENT: Terracon
Project: The Hill Apartments
Lab Order: 1904135

Lab ID: 1904135-001
Client Sample ID: B-06@5.0'
Collection Date: 4/2/2019 8:45:00 AM
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Sulfate	120	7.5		mg/Kg	5	4/4/2019 10:35:20 PM	44105

Lab ID: 1904135-002
Client Sample ID: B-02@25'
Collection Date: 4/2/2019 8:45:00 AM
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Sulfate	ND	7.5		mg/Kg	5	4/4/2019 11:00:08 PM	44105

Lab ID: 1904135-003
Client Sample ID: B-05@2.5'
Collection Date: 4/2/2019 8:45:00 AM
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Sulfate	13	7.5		mg/Kg	5	4/5/2019 12:14:35 AM	44105

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1904135**
05-Apr-19

Client: Terracon
Project: The Hill Apartments

Sample ID: **MB-44105** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **44105** RunNo: **58880**
Prep Date: **4/4/2019** Analysis Date: **4/4/2019** SeqNo: **1981023** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	1.5								

Sample ID: **LCS-44105** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **44105** RunNo: **58880**
Prep Date: **4/4/2019** Analysis Date: **4/4/2019** SeqNo: **1981024** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29	1.5	30.00	0	96.5	90	110			

Sample ID: **1904135-002AMS** SampType: **ms** TestCode: **EPA Method 300.0: Anions**
Client ID: **B-02@25'** Batch ID: **44105** RunNo: **58880**
Prep Date: **4/4/2019** Analysis Date: **4/4/2019** SeqNo: **1981051** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31	7.5	30.00	3.018	93.9	71.9	115			

Sample ID: **1904135-002AMSD** SampType: **msd** TestCode: **EPA Method 300.0: Anions**
Client ID: **B-02@25'** Batch ID: **44105** RunNo: **58880**
Prep Date: **4/4/2019** Analysis Date: **4/4/2019** SeqNo: **1981052** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	32	7.5	30.00	3.018	95.9	71.9	115	1.86	20	

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: TER-Alb Work Order Number: 1904135 RcptNo: 1

Received By: **Isaiah Ortiz** 4/2/2019 2:40:00 PM I-OK

Completed By: **Desiree Dominguez** 4/2/2019 3:47:45 PM DD

Reviewed By: TMM 4-2-19

LB: IO 4/2/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐ Not required
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

~~# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)~~
~~Adjusted? _____~~
~~Checked by: _____~~

IO 4/2/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	26.4	Good	Not Present			

Chain-of-Custody Record

Client: Terracon

Mailing Address: 4905 Hawkins NE
ABQ, NM 87109

Phone #: 505-797-4287

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: The Hill Apartments

Project #: 66185216

Project Manager: MIKE ANDERSON

Sampler:

On Ice: ☐ Yes ☒ No

# of Coolers: 1

Cooler Temp(including CF): 26.4°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1904135	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
4/2/19	8:45	Soil	B-06 @ 5.0'	Jar		-001							/			
"	"	"	B-02 @ 25'	Jar		-002							/			
"	"	"	B-05 @ 2.5'	Jar		-003							/			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4/2/19	14:40	Q. Vrejo	[illegible]	COO	4/2/19	1440
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

APPENDIX C

SHEAR WAVE VELOCITY PROFILES REPORT

March 29, 2019

Terracon Consultants Inc.
4905 Hawkins NE
Albuquerque, NM 87109

Attention: Mr. Michael E. Anderson, MBA, P.E.

RE: **Shear Wave Velocity Profiles**
The Hills Apartments
Los Alamos, New Mexico
Terracon Project No. 66185216
Geolines Project No. NM-190013

Dear Mr. Anderson:

This letter report presents the results of our refraction microtremor measurements and analysis for the referenced project. The purpose for our services for this project is to provide a calculated average shear wave velocity of subsurface materials at The Hills Apartment site to a depth of 30 meters (100 feet). This information is to help Terracon classify the site.

Field Work

Field work was accomplished on March 19, 2019. Surface wave measurements were obtained at one geophone array location using a Seismic Source DAQ III Data Acquisition Link seismograph. The geophone array consisted of 24, 10-Hz (nominal) Geospace Technologies p-wave geophones, that were placed 10 feet apart. Geophones were set up on the ground surface in a relatively straight line. The array location was established in the field by measurement from natural and cultural features and use of a sport grade hand held Global Positioning System receiver (Garmin GPSMAP 64st). Array locations are accurate only to the degree implied by the methods used. The approximate locations for the geophone arrays are shown on Plate 1, *Site Map*. Global Positioning Coordinates are provided for the arrays on Plate 2, *GPS Data*.

Digital sampling of surface waves under passive and active conditions were recorded at two millisecond intervals for events of 30 second duration. After setting up each geophone array, about 10 events of 30 second duration were recorded to obtain surface wave measurements. Ambient or passive conditions were recorded in about half of the total events recorded. About half of the records were saved while energy was imparted to the ground, or in active source conditions. Active conditions consisted of striking the ground surface approximately twice per second for about three seconds during the 30 second recorded event. The data collected from each array was reduced, processed and stacked using Optim Software's SeisOpt® ReMi™v4.0 software.

Data Reduction

Data collected from overlapping segments of each geophone array were analyzed to provide one-dimensional profiles of calculated shear wave velocity for materials underlylng the geophone locations. The segments were eight geophone spacings in length for Array 1. The analytical

segments overlapped adjacent segments. For example, if the overall geophone array consisted of 24 geophones spaced 10 feet apart, an analytical segment would be 80 feet in length and it would overlap each adjacent segment by 40 feet. The one-dimensional profile developed for each array segment averages the calculated shear wave velocity of underlying materials over the length of the segment analyzed. One-dimensional profiles of-shear wave vefocities for analytical segments used to construct cross sections at the array locations are presented on the attached Plates 3 and 4, Cross Section 1-0 Segment Profile Data.

To draw two-dimensional cross sections of shear wave velocities underlying each overall array, each one-dimensional profile is applied to an overall array length at the center of the segment analyzed. For examplet a one-dimensional profile of shear wave velocity with depth for a segment located from 30 to 90 feet from the array starting point is applied to the cross section at 60 feet from the beginning. Results from analysis of all seven segments from an array are applied and averaged over the cross-section area assuming a gradational change in velocity over distance. The ReMi analytical method presents solutions that are not necessarily unique. Apptication of averages over overlapping segments and inherent uncertainties from non-unique solutions suggest that indicated depths where velocity changes occur, and the calculated velocities shown should be considered approximate.

Recommendations
The calculated average shear wave velocity for the 100 feet is 1250 ft/s (feet per second) and is consistent with an 2015 IBC Site Class C.

Closure
The information provided in this report is provided the result of remote sensing instruments and technLques. Data provided are approximate- and should be. considered supplemental to the overall characterization efforts performed by others.

Professional services for this project were performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers practicing in this or similar localities. No warranties, express or implied, are intended or made.

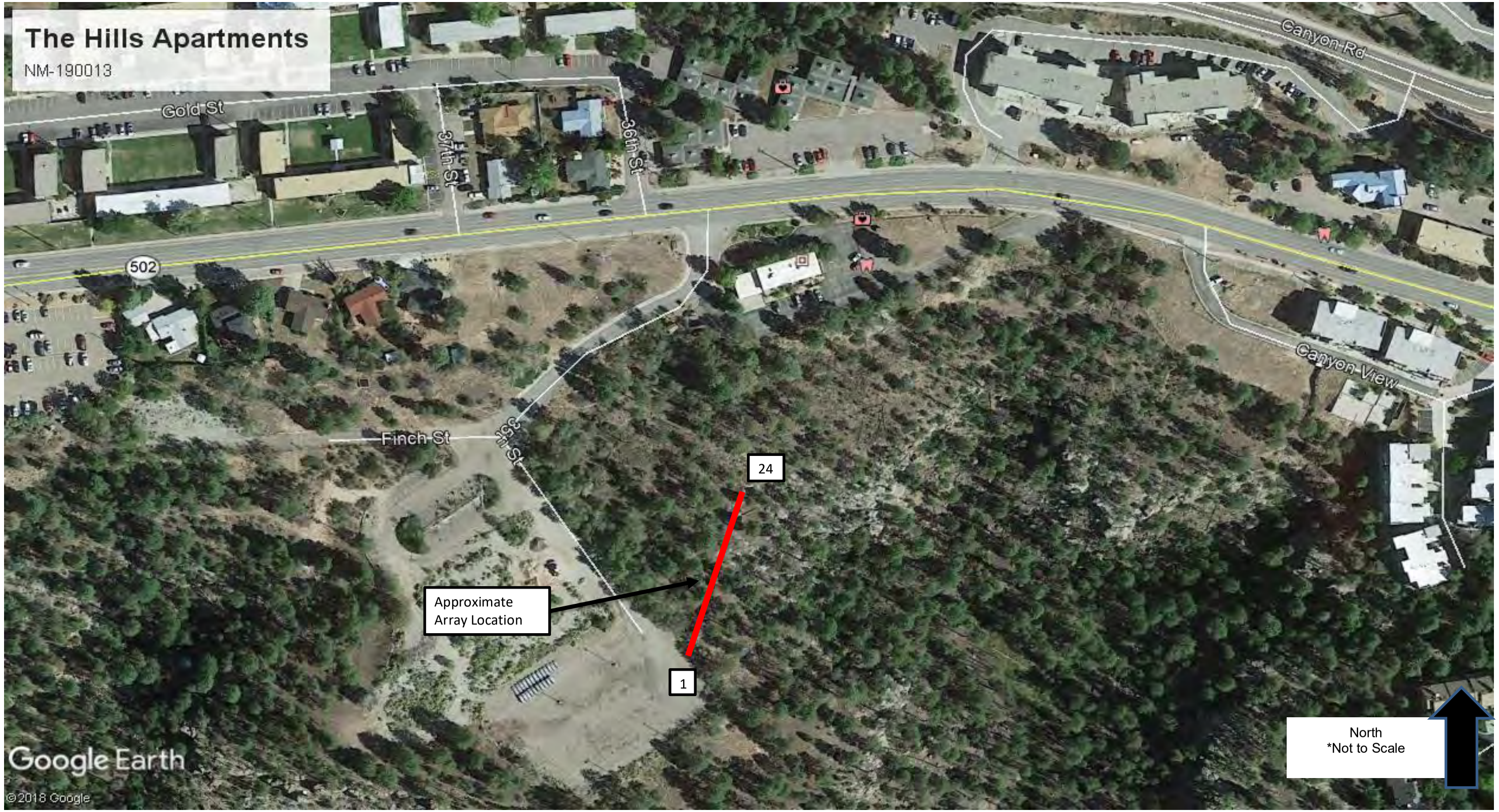
Respectfully Submitted:

Zachary J. Rockhold
Project Manager

Reviewed By:

Otto C. Holmquist, P.E.
President and CEO

OTTO C. HOLMQUIST
NEW MEXICO
13286
PROFESSIONAL ENGINEER
3/29/2019



GEOLINES Terracon Project No.: 66185216	Terracon Consultants Inc.	SITE MAP	
	The Hills Apartments Los Alamos, New Mexico	PROJECT NO.:	PLATE NO.
		NM-190013	1

Global Positioning System Coordinates for Seismic Arrays

Project No.:	**NM-190013**
Project:	**Terracon Project No.: 66185216**
Date:	**Tuesday, March 19, 2019**
Comments:	**General investigation area location provided by Terracon. Acutal loactions of array adjusted based on field conditions. Endpoint coordinates provided by sport grade handheld quality GPS recievers and map datum WGS84 was used.**

Array Name	Array Orentation Geophone 1-24	Geophone Spacing (ft)	Number of Geophones	Array Length (ft)	Location Latitude/Longitude Latitude (Degrees)	Longitude (Degrees)	Comments
Array 1	S to N	10.00	24	230.00	35.88127	-106.31400	Geophone 01
					35.88155	-106.31389	Geophone 12
					35.88186	-106.31377	Geophone 24

GEOLINES

Terracon Project No.: 66185216

Terracon Consultants Inc.

The Hills Apartments
Los Alamos, New Mexico

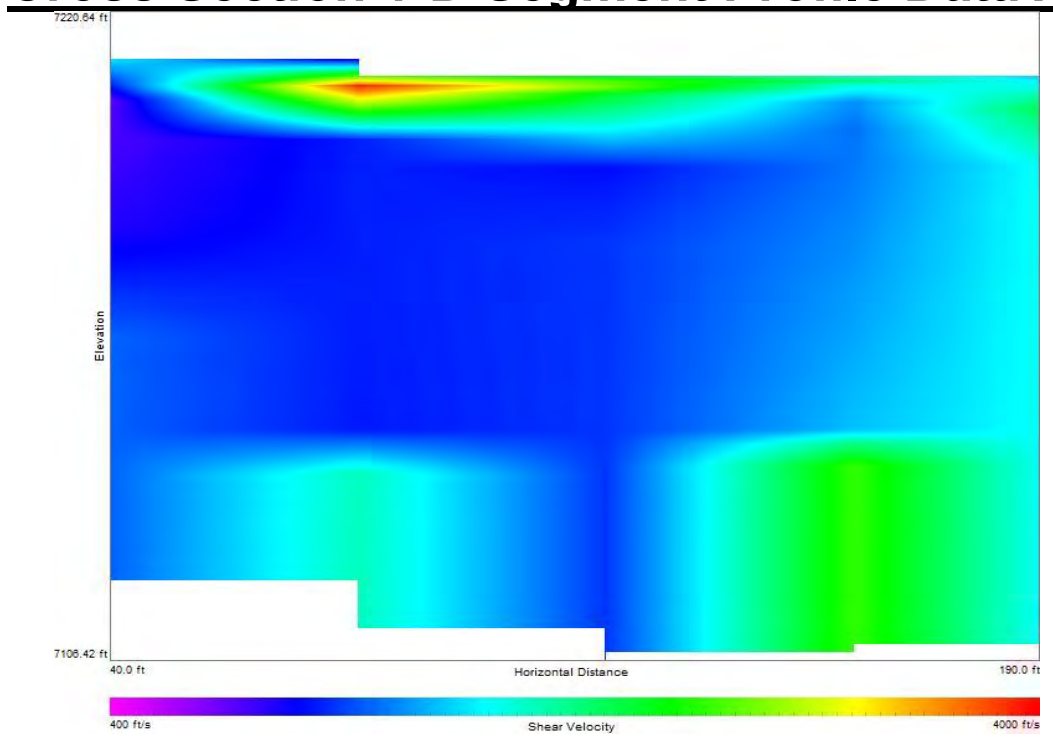
GPS Data

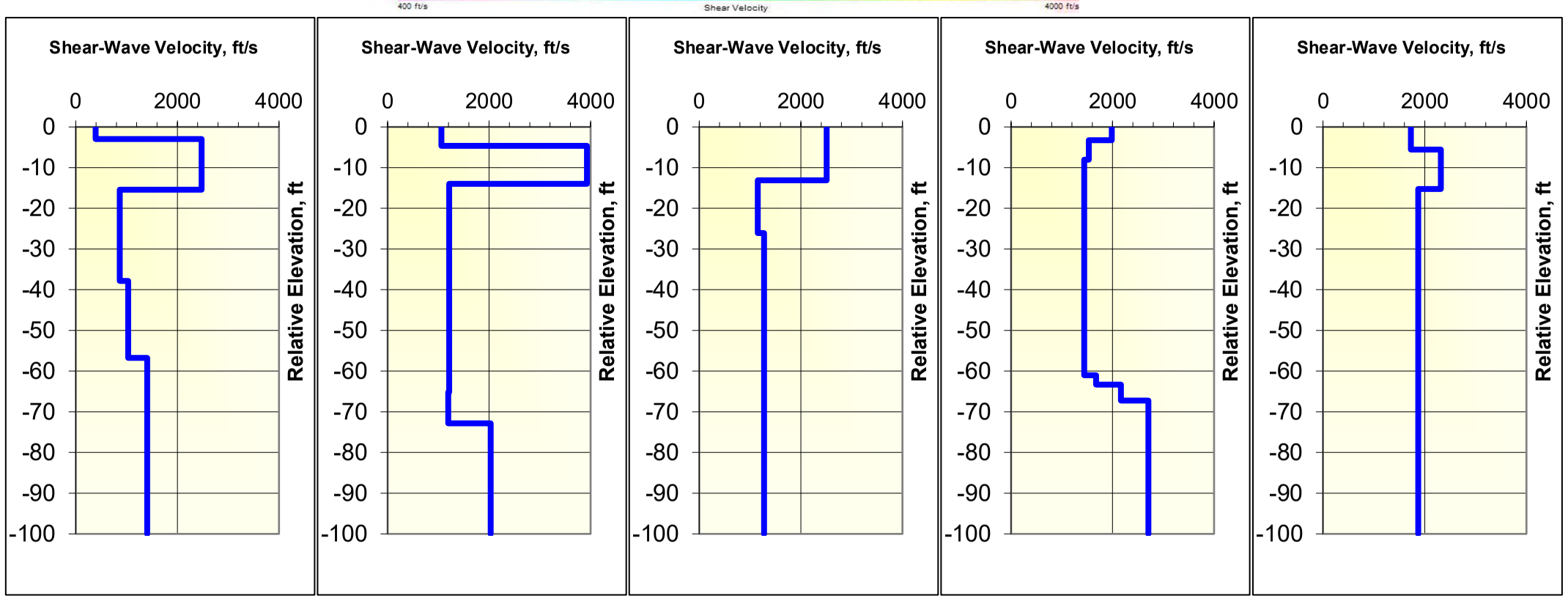
PROJECT NO.:	PLATE NO.
NM-190013	2

Cross Section 1-D Segment Profile Data Array 1

S

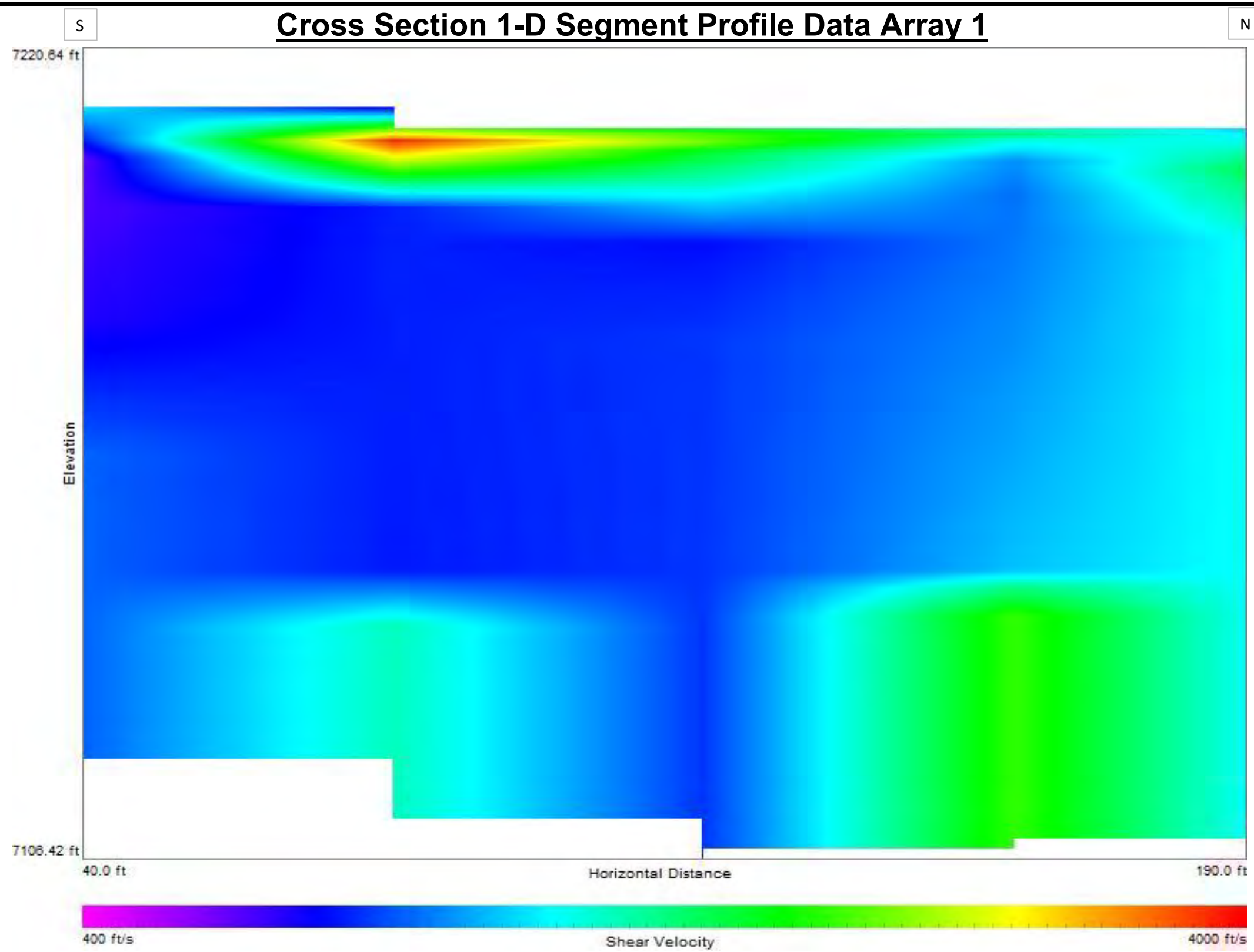
N





GEOLINES Terracon Project No.: 66185216	Terracon Consultants Inc. The Hills Apartments Los Alamos, New Mexico	Cross Section 1-D Segment Profile Data Array 1 PROJECT NO.: NM-190013 PLATE NO. 3

Cross Section 1-D Segment Profile Data Array 1



GEOLINES

Terracon Project No.: 66185216

Terracon Consultants Inc.

The Hills Apartments
Los Alamos, New Mexico

Cross Section 1-D Segment Profile Data Array 1

PROJECT NO.:	PLATE NO.
NM-190013	4

County of Los Alamos

Staff Report

July 10, 2019

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.: A.

Index (Council Goals):

Presenters:

Legislative File: **12121-19**

Title

Minutes from the Planning And Zoning Commission Meeting on June 12, 2019

Recommended Action

I move that the Commission approve the Minutes for June 12, 2019

Attachments

A - Draft Minutes for June 12, 2019

County of Los Alamos

BCC Meeting Minutes

Planning and Zoning Commission

1000 Central Avenue
Los Alamos, NM 87544

Terry Priestley, Chair; Beverly Neal-Clinton, Vice-Chair; Melissa Arias; Jean Dewart; Jessie Dixon; Craig Martin; Neal Martin; and April Wade, Commissioners

Wednesday, June 12, 2019 | **5:30 PM** | **Council Chambers**
1000 Central Avenue

1. CALL TO ORDER/ROLL CALL

Present 9 - Commissioner Dixon, Commissioner Dewart, Commissioner Wade, Commissioner Martin, Commissioner Priestley, Commissioner Priestley, Commissioner Neal-Clinton, Commissioner Priestley and Commissioner Priestley

Absent 2 - Commissioner Arias and Commissioner Martin

2. PUBLIC COMMENT

3. APPROVAL OF AGENDA

Commissioner Dixon made a motion to approve the agenda as presented. Commissioner Dewart seconded; motion passed unanimously.

4. PUBLIC HEARING(S)

A. **12041-19** SIT-2019-0035 CANYON WALK APARTMENTS

Daniel Terlecki, dba Bethel Development Inc., requests Site Plan approval for the construction of 70 new apartment units totaling 85,612 ft2 to be located at 120 DP Road. The property consists of approximately 4.25 acres; is currently vacant and is zoned Mixed-Use (MU).

Attachments: Staff Report_SIT-2019-0035-CANYON WALK compressed (exhibits)

Dan Terlecki, of Bethel Development, Inc., requests Site Plan Approval to develop a multi-family affordable rental housing complex, located at 120 DP Road. The subject site is currently vacant. The proposed development will consist of seven apartment buildings containing a total of 70 total residential units; each building having two stories on the south side and three stories on the north side. The development will include a single-story office building for property management purposes, and a small maintenance shed.

The project will have on-site parking and access to Canyon Rim multi-use trail which passes through the site. The property contains 4.2487 acres and is zoned MU (Mixed use).

Owner/Applicant: Daniel Terlecki, dba Bethel Development, Inc.
Case Manager: Ryan Foster, Principal Planner

Dan Terlecki, of Bethel Development Inc., presented their request for site plan

approval to develop an affordable housing complex. He shared project history providing information on financing, site details, and aesthetic descriptions. They would like to start construction in the early fall, as funding requires that it be completed by December 2020.

Ryan Foster, Principal Planner presented the request with a slideshow. Chairman Priestley requested that the Powerpoint be added to the record; Staff acknowledged.

Commissioners, applicants and public were given the opportunity to comment.

Vice Chairman Neal-Clinton moved to approve Case No. SIT-2019-0035, request for Site Plan Approval to develop a multi-family affordable rental housing complex, with associated on-site landscaping, parking and traffic circulation, located at 120 DP Road, for the reasons stated in the staff report and per testimony entered at the public hearing, subject to the following conditions of approval:

1. A landscape buffer shall be provided between the curb and sidewalk, from the trail to the east.

2. The southwest parking stall shall be removed from the Canyon Rim trail easement.

3. The plans shall detail the location of the drainage inlet and outlet to the canyon.

4. A revised and re-platted Site Plan shall be prepared and submitted prior to filing an application for a Building Permit, incorporating all items as required by the Planning & Zoning Commission at the public hearing.

5. A final utility plan shall be submitted prior to building permitting.

6. The final plat shall depict right-of-way on DP Road.

7. The crosswalk to the Canyon Rim trail shall be illustrated on the site plan.

8. Signage and landscaping shall be placed so as not to impede sight distance at driveways and provide sight triangles to demonstrate compliance with engineering and County standards at the time of Building Permit submittal. A signage detail shall be submitted for review and approval. All signage will be reviewed separately and requires approval of a separate sign permit.

9. All exterior lighting shall comply with County Code §16-276 (Outdoor Lighting) and with the New Mexico Sky Protection Act (Article 74-12 NMSA 1978).

10. Approval of Building Permits is required prior to commencing construction.

I further move to authorize the Chair to sign Findings of Facts for this case and, based on this decision, to be prepared by County staff.

Commissioner Wade seconded the motion.

Motion carried 5-1 vote.

Yes: 8 - Commissioner Dixon, Commissioner Dewart, Commissioner Wade, Commissioner Priestley, Commissioner Priestley, Commissioner Neal-Clinton, Commissioner Priestley and Commissioner Priestley

No: 1 - Commissioner Martin

Absent: 2 - Commissioner Arias and Commissioner Martin

5. PLANNING AND ZONING COMMISSION BUSINESS

A. **12043-19** Minutes from the Planning And Zoning Commission Meeting(s) on May 22, 2019

Attachments: PZ_Minutes_5-22-2019

Commissioner Neal Martin moved to approve the Minutes as presented. Commissioner Wade seconded. Motion carried 6-0 vote.

B. **Building Permit Processes after P&Z, tentative training**

6. COMMISSION/DIRECTOR COMMUNICATIONS

A. **Department Report**

B. **Chair's Report**

C. **Board of Adjustment Report**

D. **Commissioners' Comments**

7. PUBLIC COMMENT

Commissioner Neal Martin stated that the Council had reviewed and made minor edits to their goals. He requested that a future Agenda include a review of the goals and the changes made to the Work Plan.

8. ADJOURNMENT

PLEASE NOTE: Any action by the Planning and Zoning Commission in granting approval, conditional approval or disapproval of an application may be appealed by the applicant or by persons who have a personal or pecuniary interest adversely affected by the decision as defined by Section 16-454 of the County Code. Such appeals must be filed with the Community Development Department within 15 days of the action in accordance with Section 16-492.

If you are an individual with a disability who is in need of a reader, amplifier, qualified sign language interpreter, or any other form of auxiliary aid or service to attend or participate in the hearing or meeting, please contact the County Human Resources Division at 505-662-8040 at least one week prior to the meeting or as soon as possible.

Public documents, including the agenda and minutes can be provided in various accessible formats. Please contact the personnel in the Community Development Department Office at 505-662-8006 if a summary or other type of accessible format is needed.